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Gradience, Gradualness and Grammaticalization

edited by
Elizabeth Closs Traugott
and Graeme Trousdale

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Volume 90

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Preface

Graeme Trousdale and Elizabeth Closs Traugott
The University of Edinburgh / Stanford University

1. Introduction[1]

While gradualness has been at the forefront of much thinking about grammaticalization (see e.g. Lichtenberk 1991; Hopper and Traugott 2003; Lehmann 2004), and gradience has been at the center of recent discussion about the synchronic architecture of grammars (especially Aarts 2007; also Croft 2007), the relationship between gradience, gradualness and grammaticalization has not been fully addressed, though it has been alluded to, for example in the following statement by Haspelmath: "Since grammaticalization is generally regarded as a gradual diachronic process, it is expected that the resulting function words form a gradient from full content words to clear function words" (Haspelmath 2001: 16539). This state of affairs exists partly because researchers in grammaticalization have focused attention on 'function words' or 'grammatical expressions', while much discussion of gradience has concerned major categories such as noun, verb, or adjective (see Ross 1972; Denison 2001). It is also in part because mechanisms by which change takes place have been held to be reanalysis and analogy (Harris and Campbell 1995), but reanalysis has often been construed as abrupt saltation, therefore not gradual (e.g. Haspelmath 1998). Recently Fischer (2007) has suggested reanalysis does not occur synchronically, only analogy does; on this interpretation too, reanalysis has little to do with gradience.

The present volume seeks to fill some of the gaps in discussions of gradience, gradualness and grammaticalization from a variety of viewpoints, both functional and formal. It arises from a workshop on these issues, which we organized at the conference New Reflections on Grammaticalization (NRG) 4 at the Katholieke

1. This introduction has benefited from the lively interactions among the contributors discussing issues arising from each other's papers, and from Ian Roberts's comments on our paper for the volume.

Universiteit Leuven in July 2008. We asked those presenting at the workshop to revise their papers with a focus on the following questions, understanding 'grammaticalization' as 'diachronic grammaticalization'. The first of these questions is the overarching one, and the second and third narrow in on more specific aspects.

Q1 How are we to understand the intersection between synchronic gradience and grammaticalization?
Q2 What insights does grammaticalization offer for assessing the validity of Aarts's claims regarding synchronic gradience, specifically that there is a significant difference between subsective and intersective gradience?
Q3 What does the intersection between grammaticalization and synchronic gradience tell us about the hypothesis of structural gradualness, and about whether work on grammaticalization needs reanalysis and analogy/extension, or some other mechanism?

All presenters at the workshop contributed to the volume: David Denison, Hendrik De Smet, Martin Hilpert, Amanda Patten, Anette Rosenbach, Ian Roberts, Elizabeth Traugott and Graeme Trousdale. Walter Bisang was invited to contribute as well, and to present data from East Asian languages. In addition we invited commentaries from other linguists to provide both a wider range of theoretical perspectives and case studies from a broader range of languages. These are represented by the commentaries by Elly van Gelderen, Lene Schøsler, and Nigel Vincent and Kersti Börjars.

We left the definition of grammaticalization open, except for the restriction to diachronic grammaticalization. This means that authors were free to adopt either of the two main current approaches to grammaticalization, or to provide ones of their own. The older view of grammaticalization is the more restrictive one, i.e. that it is a process of reduction, increased dependency and obligatorification. Characterizations of grammaticalization from this perspective include such statements as: "A grammaticalization is a diachronic change by which the parts of a constructional schema come to have stronger internal dependencies" (Haspelmath 2004: 26) and "Grammaticalization of a linguistic sign is a process in which it loses in autonomy by becoming more subject to constraints of the linguistic system" (Lehmann 2004: 155).

Less restrictive definitions of grammaticalization include: "The process by which grammar is created" (Croft 2006: 366) and

> Grammaticalization is the change whereby in certain linguistic contexts speakers use parts of a construction with a grammatical function. Over time the resulting grammatical item may become more grammatical by acquiring more grammatical functions and expanding its host-classes. (Brinton and Traugott 2005: 99)

On this view, whether grammaticalization is reduction or expansion depends on the grammatical function to which an expression is developing, and on the language type in question. Functions such as tense, aspect, modality, and case tend to involve reduction in languages with inflections. Other functions such as clause combining and metatextual marking, such as discourse markers, may not (although in languages with second position Wackernagel effects they may).

The view of grammaticalization as extension is consistent with Himmelmann's (2004) characterization of grammaticalization as the consequence of a set of expansions: host-class expansion in which expressions are generalized to more and more immediate collocational contexts, syntactic expansion, in which expressions come to serve new syntactic functions, and semantic-pragmatic expansion. It is also consistent with recent work on micro-parameters and Roberts and Roussou's (2003) theory that grammaticalization involves reanalysis at a higher position in the functional hierarchy (e.g. whereby forms that were base-generated as verbs and moved to the head of TP, such as the pre-modals of English, come to be analyzed as base-generated in T) (see also van Gelderen 2004).

One concern has been how to interpret Lehmann's (1985, 1995) parameter of "obligatorification" within a view of grammaticalization as expansion. Building on Lehmann's observation that "[s]omething is obligatory relative to the context" (Lehmann 1995: 12), Diewald (Forthcoming) shows that a view of grammaticalization as creation of grammar allows for obligatorification understood as "communicative obligatoriness". In German, for example, speakers obligatorily have to choose whether to use a member of the category of modal particles. Schøsler (this volume) suggests that once a paradigm is in place, choices within it are obligatory.

Drawing on Kiparsky (2005), we suggest that the two views of grammaticalization as increased dependency and as extension are not in opposition but complementary, because they answer different questions. The view of grammaticalization as increased dependency asks questions primarily about the development of morphosyntactic (and subsequently morphophonemic) form. Therefore a change from auxiliary verb to clitic to affix involves increased dependency, but not necessarily any change in function. The other view, of grammaticalization as extension, asks questions primarily about changes in function. A change from deontic to epistemic modality (or from clause-internal adverb to contrastive sentential adverb to reformulating discourse markers, as in the case of *in fact*) is a change in function, and this may not involve any change in dependency.

In this volume, all papers address grammaticalization as change in both category status and in function. At the same time they embrace a view of grammaticalization as extension. This is achieved in the Minimalist framework, as represented by the papers by both Ian Roberts and Elly van Gelderen, by defining

grammaticalization as reanalysis to (higher) functional head status, and in most other papers by reference to constructionalization, where form and meaning are linked but free to change in different ways. The constructionalist approach will be discussed in Section 4 below.

In Section 2 we provide a sketch of the issues and point to the papers in the volume that address them. In Section 3 we outline the papers, and in Section 4 we discuss some common themes that emerged.

2. The questions

As will be apparent from the three questions cited above, a major focus of the volume is on gradience and categoriality (and the associated issue of decategorialization in grammaticalization). However, some overarching issues that involve gradience will not receive much attention. These include questions about whether to characterize grammars in terms of competence or performance (see Wasow 2007). We assume that there are different answers to this and related questions, depending on whether one views grammars as grammars of UG and competence, or as grammars of use and performance, or whether one considers the competence-performance distinction to be particularly robust (compare Newmeyer 2003 with Bybee 2006). Valuable insights can nevertheless be gained by approaching the narrower question of how the different perspectives can enhance the understanding of grammaticalization, and hence of particular types of categoriality, specifically, the 'status' of categories diachronically. A proper understanding of these narrower issues will, we hope, lead to better understanding of the overarching issues as well.

2.1 How are we to understand the intersection between a gradient synchronic system and grammaticalization?

It has long been recognized that current variation is both the result of and the reason for change (on which see further Labov 1994, 2001). There are also several well-known aphorisms such as "Today's morphology is yesterday's syntax" (Givón 1971: 413), and "Today's syntax may be the product of yesterday's discourse pragmatics" (Faarlund 1989: 71). Given when these aphorisms were coined, variation is understood to involve alternative options (e.g. OV and VO word order in earlier English, alternations between *ne … pas* and *pas* in the development of negation in French). More recently the variation has also been construed in terms of

non-categoriality or gradience, a term used to refer to the phenomena of better or worse fit to a model, indeterminacy, etc. (Aarts 2007).

One approach, largely associated with generative syntacticians, is to consider structural gradience as a function of performance (E-language) and not central to the concerns of I-language and UG. In this model, variation, e.g. in OV and VO word order in earlier English, is a function of competing grammars (Kroch 1989). Another approach is to address variation head-on and incorporate it in the model (Adger 2006; Hudson 2007). Here we may also think of OT approaches that assume UG and universal constraints (e.g. Kiparsky 2005), and of usage-based approaches in which variation and gradience are considered the norm (Bybee 2006; Goldberg 2006). The issues have become of central concern in recent years as a result of work on categoriality in morphosyntax (e.g. Croft 1991; Aarts 2007) on the one hand, and on processing (e.g. Hawkins 2004; Wasow 2002) on the other. Here only approaches to categoriality will be addressed.

Much of the work in this area has been synchronic (but see Denison 2001). It is therefore timely to consider how work on grammaticalization can illuminate the discussion and how processes of change tie in with the synchronic gradience observed. We propose in Traugott and Trousdale (this volume) that it would be useful to restrict 'gradience' to synchronic analysis, and 'gradualness' to diachronic. The following authors explicitly endorse this suggestion: van Gelderen, Roberts, Rosenbach, and Schøsler. Here we add that it is important to conceptualize the intersection as a potentially temporary state of affairs. Gradience may be relatively stable over long periods of time (see Nichols and Timberlake 1991, who discuss the realignments of instrumental case in Russian from the ninth to seventeenth centuries, and call the process "retextualization"). But not all gradience is stable, and it often shapes forthcoming changes (see especially papers by Hilpert, Patten and Rosenbach).

2.2 What insights does grammaticalization offer for assessing the validity of Aarts's claims regarding synchronic gradience, specifically that there is a significant difference between subsective and intersective gradience?

The distinction between subsective and intersective gradience is a synchronic one. Aarts argues that there is often gradience within categories (subsective gradience), but rarely between them (intersective gradience). He bases this conclusion on a morphosyntactic and distributional approach to gradience. Papers that address this question most directly are those by Bisang, De Smet, Denison, Hilpert, Rosenbach and Schøsler. These authors argue that the distinction does not hold

from the perspective of change, in which intermediary stages necessarily result in gradience. Most especially, it does not hold if semantics is taken into account, or if a language has little morphology.

2.3 What does the intersection between grammaticalization and synchronic gradience tell us about the hypothesis of structural gradualness, and about whether work on grammaticalization needs reanalysis and analogy/extension, or some other mechanism?

One of the hotly debated topics in recent years has been whether reanalysis or analogy is the dominant mechanism in change. While the role of analogy in grammaticalization has long been recognized, it has been felt to be too unconstrained to serve as a restrictive hypothesis on change (see e.g. Givón 1991). Several lines of work have recently led to a reassessment of the assumption throughout much of the work on grammaticalization that reanalysis is the main mechanism of change. This includes work on analogy by Fischer (e.g. 2007), drawing on Anttila's (2003) 'analogical grid' with both paradigmatic (iconic) and syntagmatic (indexical) dimensions. Similarly, work in construction grammar frameworks has drawn attention to the operation of alignment, and pattern match after a period of mismatch (Trousdale Forthcoming). Yet another perspective contributing to the debate is Kiparsky's (2005) proposal that optimality theoretic optimization constraints are restrictive constraints which are essentially analogical, but are actuated through reanalysis. This suggests a considerable amount of agreement in accounts of change across otherwise competing models of linguistic structure.

In this debate a number of factors need to be recognized. With respect to reanalysis, it has until recently been largely associated with large, abrupt changes or 'saltations', in a tradition of historical morphosyntax associated with Lightfoot (1979 and later) in which 'catastrophic' shifts arising from the accumulation of small changes came to be privileged. There is, however, nothing in the definitions of reanalysis as resegmentation (rebracketing), boundary loss and creation, and 'semantic/syntactic reformulation', including category shift (Langacker 1977: 58, 64; see also Eckardt 2006 for semantic reanalysis), which requires saltation to be associated with reanalysis. As Minimalist approaches have shifted attention from macro-parameters as exemplified in e.g. Baker (2001) to micro-parameters as exemplified by the 'cartographic' work on micro-parameters (e.g. Cinque and Kayne 2005), reanalysis has been redefined in the generative literature as small abrupt steps.

With respect to analogy one problem is that the term is sometimes used ambiguously to refer both to a mechanism (partial structural match, the result of

analogical thinking) and to a motivation (analogical thinking itself). This leads to an asymmetry with reanalysis. The latter is considered to be a mechanism only (structural difference, result of parsing); its closest analog as a motivation is parsing.

Papers that focus especially on issues of reanalysis, analogy, and gradualness include: on analogy De Smet, and Schøsler; on reanalysis Bisang, van Gelderen, Hilpert, and Roberts. Rosenbach suggests that the distinction rests in part on whether an extant category is undergoing change, or a new one is developing. Denison questions the value of including category change among types of reanalysis. Both these views have consequences for the kind of non-exemplar based analogy discussed by Kiparsky (2005).

3. The papers

Elizabeth Traugott and Graeme Trousdale's paper, "Gradience, gradualness and grammaticalization: How do they intersect?" is intended to serve as an overview of the theoretical issues that are the focus of the volume, and as a platform from which the individual papers that follow on particular changes can be viewed. The three questions that form the foundation of the volume are discussed and alternative positions are laid out. Key proposals are that gradience should be conceptualized as a synchronic notion, gradualness as a diachronic one. Grammaticalization is a constructional (form-meaning) change that occurs in micro-steps. It is a complex process that cannot be reduced to either analogy or reanalysis. These are processes which intersect with it, leading to change, understood not as innovation alone but innovation that diffuses across structural patterns (system-diffusion) and communities of speakers (speaker-diffusion). Both reanalysis and analogy are important factors in change: micro-steps are reanalyses, sometimes, but not always, based on analogical thinking. The consequence of asking how gradience and grammaticalization intersect is that, like grammaticalization, synchronic gradience needs to be considered from a semantic as well as formal point of view. Both grammaticalization and gradience are sites for gaining a better understanding of the micro-changes that characterize gradualness.

Ian Roberts addresses two central theoretical issues in "Semantic bleaching, grammaticalization and the clausal hierarchy": how best to account for grammaticalization in a categorial Minimalist model, and whether a unified account of bleaching is possible in terms of this model. The article builds on the hypothesis in Roberts and Roussou (2003) that grammaticalization always involves movement 'upwards' to more abstract heads in the functional hierarchy. To this, Roberts adds discussion of feature analysis, which allows for fine, gradient distinctions,

and of the value of Cinque's (1999) modal hierarchy in yielding predictions about the specific paths of grammaticalization of modals. He shows that together these approaches allow for precise articulation of the nature of micro-steps. Roberts also explores the possibility that bleaching when expressions become functional heads can be accounted for in terms of loss of descriptive content, but retention of 'logical' meaning. These logical meanings are 'permutation-invariant' in that they do not depend on empirical facts for their contribution to truth, and do not distinguish among properties of individuals. He concludes that while the hypothesis is robust with respect to modals and quantifiers (e.g. Classical Greek *hólous* 'whole' > Modern Greek *óla* 'all'), and coincides with 'upward' movement in the hierarchy, questions remain with respect to how bleaching can be accounted for in other domains, such as the completive *out* discussed by De Smet.

In "Grammatical interference" **Hendrik De Smet** approaches the question of gradualness and gradience in terms of the way in which grammatical items that are undergoing change may impinge on each other as a result of analogical thinking. His examples are a reinterpretation of the development of the emergence of the much-discussed *for ... to*-infinitive in English, and of the phrasal verbal particles *out* and *forth*. He suggests that in the first example *for* did not arise out of the preposition *for*, but rather as a separate reinforcing element (a position that van Gelderen questions in her commentary). Nevertheless, there is evidence of attraction of subject-marker *for* and the topicalizing *and-now-for* expression. He also uses quantitative evidence to reveal a link between verbs with infinitival *for … to*-infinitive complements and selection of prepositional objects with *for* (e.g. *ask, hope*). Here, then, there is cross-categorial interference. In the case of the verb particles the interference is internal. *Out* is one of a cluster of particles that expresses completion and extinction (*run out*); yet it can also be used to express complete filling of a container (*fill out*). De Smet suggests that analogical exchanges led to the extension of *out* and *forth* into each other's semantic spaces (e.g. *blow candles forth*, *set out*). Gradience in De Smet's view involves mismatch; there is "no one-to-one relationship between the different levels of symbolical organization" (p. 98). Constructional and connectionist models of grammar are best able to account for these types of analogical grammaticalization.

As his title "Category change in English with and without structural change" suggests, **David Denison** focuses on category change in general, with implications for grammaticalization. He demonstrates that the gradience found in many problematic cases shows that what Aarts would call intersective gradience is not rare. Examples Denison discusses include gradience between Noun and Adjective (e.g. *rubbish(y)*), some types of Adjective and Determiner, evidenced by changes in linear ordering (e.g. *certain* in its different meanings), and classificatory problems associated with 'complex prepositions' (e.g. *on behalf of* vs. *on X's behalf*).

Denison suggests that such gradience, and indeed dual inheritance, are to be expected given that analogical thinking is natural to humans. This kind of category change, which is based on extant categories, is sharply distinguished from the development of new categories, such as Modal or Determiner in English. Here there is a complex accretion of morphological, semantic, and frequency effects, leading to reanalysis. No one type of restructuring can explain such changes.

In her commentary entitled "Features in reanalysis and grammaticalization", **Elly van Gelderen** proposes that the small micro-steps of grammaticalization can be conceptualized in terms of features in a Minimalist theory. Grammaticalization is understood as the result of 'internal pressure' in children's acquisition of language, especially Economy Principles and Feature Reanalysis. Van Gelderen elaborates on Roberts's suggestion that feature analysis may contribute to understanding of micro-steps, and reconsiders some of De Smet's and Denison's findings in terms of this type of analysis. Central to van Gelderen's thesis is that change in grammaticalization is unidirectional. Economy principles account for changes from "phrase to head and from lower head to higher head" (p. 130). In the process functional elements lose their semantic, interpretable features, and are renewed by elements that value their features; unvalued/uninterpretable features (unlike valued/interpretable) features have to be valued/checked during the course of a derivation. A probe searches within its c-command domain to find a goal against which it can value its features, whereby an Agree relation is formed. In such a minimalist account, grammaticalized forms that become base-generated in a higher position ('upward' in the hierarchy of functional heads) come to serve as probes. Van Gelderen's conclusion is that change is gradual reanalysis (in the sense of micro-step changes), and directional.

Annette Rosenbach's paper on "How synchronic gradience makes sense in the light of language change (and vice versa)" addresses Aarts's distinction between subsective and intersective gradience, and provides a valuable summary of the main proposal. While embracing the concept of gradience, she argues that it needs to be thought of in terms of semantics as well as morphosyntactic distribution, and in terms of change as well as synchrony. When viewed this way, intersective gradience is no more 'exotic' than subsective gradience. Her initial example is the intersective distinction between determiner genitives like *the woman's blue eyes* and classifying noun modifiers like *an expensive theater ticket*. Typically the determiner genitive is referential and animate, while the noun modifier is non-referential and inanimate (*theater* refers to a type not an individual referentially identified theater). However, various syntactic mismatches are also possible that cross the intersective boundaries with modifiers, e.g. expressions with animate modifiers (*the cheerful Obama supporters*). She shows that until the nineteenth century modifiers were only inanimate. Host-class expansion was initially to locatives and,

in the twentieth century to collectives and human proper nouns, perhaps as part of a general increase in premodification in Modern English. Rosenbach also proposes that expressions like *the Obama supporters* may be evidence of a new construction in English with a backgrounded identifying function.

In "What can synchronic gradience tell us about reanalysis? Verb-first conditionals in written German and Swedish", **Martin Hilpert** starts out from the assumption that one motivation for language change is interactional language use. He shows how a quantitative analysis can provide a methodology for testing alternative hypotheses about particular developments, using a case study of the use of verb-initial conditionals. In English these are restricted to examples such as *Had he known this, he would have cancelled the trip*, but they are common in Swedish and German. One hypothesis is that they originated in dyadic question and answer routines, another that they were analogized to extant complex clause patterns. Hilpert shows that the hypotheses make different predictions, and that several of the predictions from the dialogual account are borne out by contemporary usage patterns, and therefore lend credence to it. Theoretical implications of the study are that reanalysis is an essential process in change, and that a "reanalyzed structure retains aspects of its original source" (p. 200). As a consequence, gradient synchronic data can be used to evaluate hypotheses about developments.

In her paper, "A paradigmatic approach to language and language change", **Lene Schøsler** proposes that change should be conceptualized in terms of reorganization of "closed sets of alternations", and that the traditional concept of an inflectional paradigm should be expanded to include constructional systems that operate on an onomasiological/paradigmatic as well as semasiological/syntagmatic dimension.[2] She cites three different examples: changes in constructions associated with (a) two-argument verb constructions from Latin to French (e.g. constructions with Latin *contingere* 'to meet, oppose, happen' and French *plaire* 'please'), (b) the recent importation into Danish of the verb *brainstorm*, and verbs of electronic communication, e.g. of *skype* into French, and (c) verbal aspect. In all three, argument structure alternation and aspect are shown to cooperate. Schøsler regards paradigms as the synchronic outcome of grammaticalization, i.e. of a series of small-scale reanalyses. The paradigm that is the end-point of grammaticalization is obligatory at the time, but always subject to further reanalysis. Commenting on Rosenbach's paper, Schøsler highlights the importance of the distinction between foreground and background function as

2. The term 'onomasiological' has been largely restricted to formal alternatives on the semantic level, where meaning is kept constant, 'semasiological' to semantic developments where form is kept constant and meaning changes, most especially polysemies arise (see Geeraerts 1997: 17).

a paradigmatic dimension in the changing architecture of the English NP. She also suggests that if the main constructional change has to do with information-structure, then reanalysis must have occurred since there is no model for use of the *-s*-less nominal as a determiner.

Amanda Patten reassesses earlier hypotheses about the development of IT-clefts in her paper "Grammaticalization and the *it*-cleft construction". Using a constructional approach, she shows how step-by-step changes led to the emergence of various types of non-NP foci as well as NP-foci in IT-clefts (*It's not sick he was but tired*, in addition to *It's John who was sick*). Ball (1994) proposed that the non-NP foci originated separately from NP-foci in impersonals. Demonstrating that many properties of non-NP IT-clefts cannot be explained in terms of either the distribution or the function of impersonals, Patten proposes that there is no need to postulate disparate origins for the two types of IT-cleft. Rather, the original NP-focus construction was extended step by step to more schematic constructions. Investigating the variation in phrasal categories permitted in the post-copula position and the information status of the relative clause, Patten shows that gradual change may involve both mismatch between form and function and extension (analogy). The synchronic consequences are that a theory of synchronic gradience must account for both of these aspects of language use.

Walter Bisang provides a construction grammar perspective on some of the issues addressed in the volume in his paper "Grammaticalization in Chinese – a construction-based account". Ancient Chinese presents researchers on grammaticalization and historical linguistics with many challenges. Since the segmental system is monosyllabic in the earlier periods, many lexical items have multiple functions, and the writing system is opaque with respect to pronunciation. Bisang proposes that Ancient Chinese exhibits hidden complexity and 'precategoriality'. In such a situation the distinction between structurally defined subsective and intersective gradience is untenable since morphosyntactic criteria are not available; the only criterion for distinguishing noun and verb is a combination of "scaffolding" (syntactic slots) with "coercion" (default semantic interpretations). His example is the development of the resultative construction in Chinese. In Modern Standard Chinese this construction involves two adjacent Vs, the second of which is interpreted as an aspectually bounded result of the first, e.g. *tā xǐ- gānjìng yīfu le* 's/he wash-clean clothes PF'. No such structure existed in Ancient Chinese. Bisang traces its development with reference to the gradual definition of ambi-transitive verbs as either transitive or intransitive, and the fixing of slot positions.

Finally, in their commentary, "Grammaticalization and models of language", **Nigel Vincent and Kersti Börjars** discuss the importance of recognizing that theory requires data and data requires theory. They point to the theoretical contributions of Construction Grammar and Minimalism represented in this volume,

and also to other possible models, including LFG, stochastic OT, and Dynamic Syntax, and to the value of formal theories of semantics. Attempts to polarize functional and formal approaches are warned against, given the degree of current overlap among theories. A general problem for Minimalist models is argued to be that the number of possible functional heads is unconstrained; a particular one for directionality in grammaticalization is that of "lateral grammaticalization", i.e. re-interpretation at an equivalent level (Simpson and Wu 2002). With respect to gradualness, Vincent and Börjars suggest it is apparent, not real, and that whether a change is interpreted as gradual or discrete depends in part on the fine-grainedness of the approach. Illustrating with an example of Pennsylvania German *fer ... zu* 'for ... to', cognate with English *for ... to* discussed by De Smet, they emphasize that form and meaning may change independently, and in fact structural properties may remain highly stable. They show that different theoretical models might have different answers to the question whether grammaticalization of schematic constructions with slots shows the same kind of directionality as does grammaticalization of lexical items, and conclude that a preferable model will have "a parallel correspondence type of architecture rather than the intrinsic linking of form and function" common to Minimalist and Construction Grammar theories (p. 296).

4. Themes in the papers

Several themes recur in the papers. One is the importance of semantics and pragmatics in accounting for grammaticalization. Semantics plays a role in all of the papers, most especially in those by Bisang, De Smet, Denison, Roberts, Rosenbach, and Schøsler. Since Patten's paper is on information-structure, topic and focus, pragmatics also plays a special role in hers.

A second theme is that gradient data are often associated with variation across register and genre. Hilpert mentions that verb-initial conditionals are favoured in a wide number of spoken and written contexts in Swedish; however in German they are favoured in formal writing concerning procedures and regularities. Rosenbach mentions that the new possessor-less determiner constructions she investigates are especially favored in medical prose, and newspapers. A methodological issue raised in a number of the articles suggests that corpora are essential for understanding change in general, and grammaticalization in particular. The authors who make extensive use of corpora as the basis of their evidence are Bisang, Denison, De Smet, Hilpert, Patten, and Rosenbach.

A subset of the authors (Bisang, Patten, Rosenbach, and Schøsler) adopts a constructionalist approach, arguing that it is particularly effective in accounting

for grammaticalization.[3] There are several reasons for this. One is that although practitioners of grammaticalization have for the most part always thought in terms of form and meaning, they have in practice privileged one, and the typical clines of grammaticalization specify either morphosyntactic (1a) or semantic change (1b):

(1) a. Relational noun > Secondary adposition > Primary adposition > Agglutinative case affix > Fusional case affix (Lehmann 1985: 304)
b. Desire > Intention > Future > Purpose (Bybee, Perkins and Pagliuca 1994: 240)

If a particular case of grammaticalization is cited the representation starts with the form, e.g. *will-* 'main verb want' > *will* 'future auxiliary' > *'ll* (clitic). A constructionalist approach, however, requires that both form and meaning are taken into account equally (Goldberg 1995, 2006; Croft 2001; Fried and Östman 2004).

It has long been observed that lexical items alone do not grammaticalize, only lexical items in 'constructions' do so, cf.: "[G]rammaticalization does not merely seize a word or morpheme … but the whole construction formed by the syntagmatic relations of the elements in question" (Lehmann 1992: 406) and "It is the entire construction, and not simply the lexical meaning of the stem, which is the precursor, and hence the source, of the grammatical meaning" (Bybee, Perkins and Pagliuca 1994: 11). However, the term 'construction' has largely been used loosely to refer to a string or phrase. Different models of construction grammar have made it possible to define more explicitly in what kind of construction grammaticalization starts, what semantic-syntactic mismatches arise as a result of gradual decategorialization, and what kinds of alignments are made. These issues rest on the crucial premise that constructions are grammatical primitives, and as such are both the source and outcome of grammaticalization.

A constructionalization perspective, furthermore, can account in one and the same framework for a number of phenomena, since an expression of any size may be a construction, from morpheme to word to phrase to complex clause structure.[4] It can therefore include grammaticalization with and without lexical origin. The latter includes information-structuring via word order (Lehmann 2008).

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3. Work on grammaticalization and construction grammar includes Bisang (1998), Hoffmann (2005), Noël (2007), Traugott (2008), Trousdale (2008), and a range of papers in Bergs and Diewald (2008). Fried (2008) formalizes change from an HPSG perspective.

4. Schøsler raises concerns about "atomic" constructions, on the grounds that the term 'construction' loses its explanatory force if extended to simple and complex words. However, historically, it does have explanatory force. Many lexicalizations are monomorphemic reductions of erstwhile phrases (see below).

This typically interfaces with the development of demonstratives and anaphoric elements that themselves may have no known lexical origin (Diessel 1999). Furthermore, as Schøsler points out, whether or not analogy is relevant to a change may depend on whether analogy is interpreted in the narrow sense of match in form alone, or as matching of both expression and content. The latter is what is required by a constructional approach.

Despite the dangers of generalizations that polarize positions, we may note here that in many respects there is a complementarity of perspective between traditional grammaticalization and constructionalization. In general grammaticalization has been studied from the perspective of syntagmatic relations between expressions of the "same" source item(s), without detailed consideration of the internal structure of the sets into which they fit and by which they are affected. Very significant work on grammaticalization has been done from a typological perspective taking sets into account, most notably in the work of Heine and Kuteva (2002), but not usually with an eye to how the individual patterns interrelate at a level of granularity often associated with work on individual instances of grammaticalization. Because the perspective of grammaticalization has been largely syntagmatic, it has been closely allied with reanalysis, while constructionalization shifts the perspective to incorporate more substantially analogy and pattern alignment.

Both traditional grammaticalization and constructionalization are concerned with the issue of directionality, a topic addressed in papers by Roberts and van Gelderen. The debates on this subject in the late nineteen-nineties and the early part of the present decade (see Newmeyer 1998; Campbell 2001) provided important correctives to overly strong hypotheses. Since unidirectionality is a testable hypothesis, it has been found to be supported as a general tendency, despite examples of degrammaticalization, or what Haspelmath has called 'antigrammaticalization' (see Norde 2009). From the perspective of grammaticalization unidirectionality involves increased grammaticality; from that of constructionalization, increased schematicity where grammaticalization is concerned, decreased schematicity where lexicalization is concerned (Trousdale Forthcoming).

We may note that there is nothing in gradualness, gradience, reanalysis, and exemplar-based analogy that leads to unidirectionality. We may consider directionality to be a function of non-exemplar based analogy understood in the restrictive sense of optimization (Kiparsky 2005), or of a Preference Principle in a Minimalist grammar (van Gelderen, this volume). Or we may consider it to be a function of the competing motivations in interaction: speakers desiring to be self-expressive, and clear to their interlocutors (increase in signal, which enables

innovations and particular types of interpretations), at the same time as being inclined to decrease the signal in rapid speech and routinized expressions (leading to attrition and loss) (Langacker 1977; Du Bois 1985).

5. Conclusion

The authors of the papers approach the question of what a grammar should account for, and therefore what is central to grammaticalization, in very different ways. Nevertheless, the volume suggests, and Roberts's paper explicitly states, that a kind of consensus has emerged around the crucial role of micro-changes in diachronic and of gradience in synchronic accounts.

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Gradience, gradualness and grammaticalization

How do they intersect?

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This volume is intended to address three questions: (1) How are we to understand the intersection between synchronic gradience and grammaticalization? (2) What insights does grammaticalization offer for assessing the validity of Aarts's (2007a) claims regarding synchronic gradience, specifically that there is a significant distinction between subsective and intersective gradience? (3) What does the intersection between grammaticalization and synchronic gradience tell us about the hypothesis of structural gradualness, and about whether work on grammaticalization needs reanalysis and analogy/extension, or some other mechanism? In this paper we present an overview of what we consider to be central issues in answering these questions and in developing a theory of micro-changes.

1. Introduction[1]

In this chapter, we are concerned with some issues in discussions of linguistic gradience, the extent to which diachronic change may be said to be gradual, and the relationship between a gradient system and gradualness in change, from the perspective of grammaticalization understood as the development of grammatical functions.[2] Specifically, we are interested in how gradience in the synchronic system (Aarts 2004, 2007a, b; Croft 2007) intersects with the gradual changes which appear to be characteristic of grammaticalization, on the assumption that:

1. Many thanks to Hendrik De Smet for many insightful comments on an earlier draft of this paper, and to David Denison, Ian Roberts, and Anette Rosenbach for discussion of the issues.

2. A definition of grammaticalization as increase in morphosyntactic dependency (see Haspelmath 2004) might suggest different issues.

"changes are always manifested in synchronic variation" (Andersen 2001: 228). We argue that while there are some overlaps between gradience and grammaticalization, (i) evidence from grammaticalization causes problems for accounts of gradience which focus solely on morphosyntactic distribution and (ii) the intersection of grammaticalization and gradience is only a small part of the emergence of grammatical constructions. Therefore we suggest that some current formulations of gradience might benefit from some rethinking, based on evidence from diachronic grammaticalization. Similarly, theories of grammaticalization might also benefit from better understanding of the concepts of abruptness and gradualness. This is especially the case in light of the ongoing debate regarding the relative importance of reanalysis and analogy in grammaticalization (see *inter alia*, Hopper and Traugott 2003; Lehmann 2004; Kiparsky 2005; Fischer 2007; Roberts 2007).

The term 'gradience' is used in a number of ways in linguistic discourse. We are primarily concerned with two ways in which the term has been used. One pertains to the nature of boundaries between categories, the other to the organisation of members within a category. Together, these may be characterised as the "(perceived) interlacing of the categories of the language system" (Aarts 2004: 5). For reasons of space we exclude a number of alternative conceptualizations of, and solutions to problems of, gradience in grammar. In particular, we do not address: (a) gradience as degrees of 'grammaticality' understood as the well-formedness of a particular utterance (Sorace and Keller 2005; see also the collection of articles in Fanselow, Fery, Schlesewsky and Vogel 2006); (b) gradience as frequency effects. The latter may be correlated with gradience as degrees of well-formedness or category membership (an issue sometimes addressed within OT and probabilistic approaches to grammar, e.g. Bod, Hay and Jannedy 2003), or with constraints on collocations (Hilpert 2008).

We are by no means the first to consider the relationship between gradience, gradualness and grammaticalization. DeLancey (1997) cites grammaticalization as a reason for the need to consider syntactic categories to be gradient. Lightfoot argues that:

> Given that the abstract layers and sub-layers of language (i.e. lexicon, phonology, morphology, syntax, semantics, etc.) can be interpreted as gradiently related categories, we may claim that the dynamic processes which utilize said categories are likewise of a gradient nature. (Lightfoot 2005: 590)

Unlike Lightfoot, we do not consider diachronic processes themselves to be gradient. Rather, we argue that most instances of change involve small micro-steps that are in fact discrete and therefore abrupt (in a tiny way) (see §4). However,

because different parts of a construction may undergo changes at different points in time, the change to the construction as a whole may appear to be gradual.[3]

In establishing how to model syntactic gradience, and in attempting to answer whether such gradience is the product of gradual diachronic change, we may contrast formal, generative approaches to change with functional accounts. The former typically see change as the product of abrupt syntactic reanalyses (Lightfoot 1979, 1999; Roberts 1993, 2007; Roberts and Roussou 2003). By contrast, functional approaches to change see the process as gradual, such that every "intermediate step in the process [of syntactic change: ET/GT] represents an intermediate construction type in structural terms" (Croft 2001: 313). Similarly, proponents of emergent grammar (Hopper 1987; Bybee and Hopper 2001) have also stressed that synchronic gradience is an effect of diachronic gradualness. Differences between generative and emergentist views on gradience and gradualness highlight a further central question: what is meant by 'change'? For generative grammarians, what changes is (parameterized configurations of) grammars, and change happens during acquisition (see Kiparsky 1968; Lightfoot 1999). For most functionalists, structural changes are aligned with patterns of use, and usage shapes grammatical representation (Croft 2000; Bybee 2006). Such structural changes occur across the lifespan, and spread across social networks (Milroy 1992) or the speech community (Labov 2001).[4] Some formalists exclude gradience not only from matters of linguistic form, but also from matters of function (Bouchard 1995: 33). While we recognise that the gradual spread of change is both 'structural' (i.e. through the linguistic system) and 'social-contextual' (i.e. transmitted across groups of speakers and texts, at different levels of formality, in different locations, at different times), we will focus here only on the former (see particularly §2.2). However, we acknowledge the importance of the latter (on which see further Bybee and Hopper 2001; Bybee 2003, 2006, 2007). The assumptions made in the rest of this chapter are broadly consistent with functional approaches to change in general and grammaticalization in particular.

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3. See also the quotation from Haspelmath (2001: 16539) provided in the first paragraph of the preface to this volume.

4. To some extent this presents the extremes on the formalist – functionalist continuum. Recent research which models on-going change within the minimalist program (e.g. Adger and Smith 2005; Adger 2006) has paid greater attention to the sociolinguistics of change, though even here, the division between "use" and "grammar" remains, such that "syntax is Socio-free and Use-free" (Adger 2007: 700). Similarly, change (and grammaticalization in particular) has been considered within OT by Kiparsky (2005); for an exploration of historical syntax in stochastic OT, see Clark (2004).

We suggest programmatic answers to the three questions posed in the preface. First we provide some definitions of gradience (§2.1), and gradualness (§2.2). Regarding the first question about the intersection of synchronic gradience and grammaticalization we make some observations on the limits of the intersection (§3.1). In response to the next question about Aarts's approach to gradience, we examine the extent to which distinctions between different kinds of synchronic gradience can be upheld from both a typological and a historical perspective, with a focus on the latter (§3.2). The final question concerns the relationship between gradience, structural gradualness, and grammaticalization, with a particular focus on reanalysis (§4.1) and analogy (§4.2). §5 is the conclusion.

2. Some background

In order to answer the question about the intersection between gradience and grammaticalization, we propose to distinguish gradience as a synchronic phenomenon, and gradualness as a diachronic one. Synchronically, strings can be arranged on continua of categoriality and of grammaticalness. We see diachronic gradualness as a sequence of discrete micro-steps affecting various aspects of the use and structure of a linguistic sign.

2.1 Gradience

One aspect of gradience is that some members of a category are 'better' than others. This relates either to Goodness of Exemplar or to Degree of Membership in prototype theory (Denison 2001, 2006; Aarts 2004, 2007a, 2007b; Rosenbach 2006, 2007; Croft 2007). For example, the noun *fun* has adjective properties in expressions like *it was very/so fun* (Denison 2001: 127); the partitive *sort of* (head) has modifier properties in *these sort of ideas* (Denison 2001: 134). Another aspect of gradience is the fuzziness of boundaries between categories (Denison 2006). Investigating the more complex and heterogeneous category 'adverb', and ways in which particular instances may overlap cross-linguistically within the languages of Europe with nouns, verbs, converbs, and adjectives, Ramat and Ricca (1994) point to the difficulty of establishing the relevant sets.

In an attempt to establish criteria for gradience, Aarts (2004, 2007a, b) suggests that there are two different types of gradience, based on morphosyntactic distributional criteria. These will be discussed in more detail below in §3.2. Suffice it now to point out that he distinguishes intracategorial, 'subsective' gradience within a category and intercategorial, 'intersective' gradience between categories

(Aarts 2007a: 97). Subsective gradience can be illustrated by the 'goodness of fit' of items within the category of adjectives, for example, their ability to appear in attributive and predicative position, and to cooccur with an intensifier, to be graded, or prefixed by *un-*. *Utter* fails on all but the first criterion:

(1) a. an utter disgrace (attributive)
b. *the problem is utter (predicative)
c. *very utter (intensification)
d. *utter/utterer/utterest (gradedness)[5]
e. *unutter (*un-* prefixation) (Aarts 2007a: 106)

Another example is gradience within a single class of verbs (Aarts 2007a: 98–101), from main verb (*hope to*) to catenative (*seem to*), semi-auxiliary (*have to*), modal idioms (*had better*), marginal modals (*dare*), and central modals (*can*) (see Quirk, Greenbaum, Leech and Svartvik 1985: 137).

While subsective gradience involves only a single category or set of properties, and is assessed in terms of prototypes, intersective gradience involves two categories or sets of properties which may converge "on a cline" (Aarts 2007a: 97). An example of intersective gradience is the distinction between adverbs and adjectives, e.g. some adverbs 'mimic' adjectives, as does *now* in *the now generation* (p. 136), *almost* in *his almost-victory* (p. 138); see also Rosenbach (2007, this volume) on possessives and NN compounds. Likewise, Denison (2006) treats both noun-adjective gradience (*very/so fun*) and partitive-postdeterminer gradience (*sort of*) as intersective.

2.2 Gradualness

Gradualness refers to the fact that most change involves (a series of) micro-changes, an issue which is sometimes overlooked in considerations of more general patterns of language change. As Brinton and Traugott (2005: 150) observe, although change is sometimes understood (or at least formulated) as A > B, studies of gradualness in linguistic change attempt to uncover "the tiny local steps between A and B that the arrow '>' encompasses". Successions of micro-changes may in some cases lead to macro-effects, as Lightfoot (1979) showed. He privileged macro-changes. However, since these do not occur without prior micro-changes, the latter need to be theorized as much as macro-changes. Micro-changes are discrete (Hopper and Traugott 2003) and, as conventionalizations, cognitively abrupt (in

5. As Denison points out, *utterest* occurs in e.g. *utterest nonsense/contempt*, and should at best be marked with a '?'.

a tiny way) for individual speakers[6]. However, on the assumption that innovation is not change, only consolidation of an innovation via transfer to a community is, changes at the level of the community are not discrete/abrupt.

Following Timberlake (1977) and Lichtenberk (1991) it has become standard in much of the grammaticalization literature to think of reanalysis followed by actualization,[7] in other words of "the formulation of a novel set of underlying relationships and rules", followed by "the gradual mapping out of the consequences of the reanalysis" (Timberlake 1977: 141; developed further in e.g. Harris and Campbell 1995; Andersen 2001, 2006). In the functionalist literature a distinction is made between actualization that occurs within the linguistic system and actualization across speakers, spaces, and time. The former, 'structural gradualness', is an orderly progression across semantic/pragmatic, lexical and syntactic structures (see Himmelmann's 2004 three types of expansion: semantic-pragmatic, host-class, and syntactic). It may involve gain or loss of properties one by one (Lichtenberk 1991). Sometimes structural gradualness is regarded as a progression from more marked to less marked status (e.g. Timberlake 1977; Andersen 2001; Fanego 2004). The concept of structural gradualness is not consistent with parametric analysis, and so has not been adopted in most generative frameworks (although appeals to markedness have been, see e.g. Roberts and Roussou 2003). Parametric change is considered 'abrupt', and gradualness in this framework is reserved for transition of types and tokens through the community correlated with increased frequency of types and tokens (Kroch 2001; Hale 2007; Roberts 2007: 335). According to Lightfoot, this 'social' gradualness is actually outside of the purview of generative historical syntax (e.g. Lightfoot 1991: Chapter 7, 1999: Chapter 4).

'Reanalysis plus actualization' has had the unfortunate effect of contributing to a polarization of reanalysis and gradualness, despite Harris and Campbell's attempt to downplay the contrast (1995: 48). For example, arguing that language change is grammar change and comes about solely through child language acquisition, Lightfoot (1979 and elsewhere) privileges abruptness, understood as

6. We are here assuming that at some point speakers have a new representation of a linguistic expression that they did not have at an earlier time. This may be an abstraction away from neurological processes involved in change, but is necessary if we are to distinguish 'change' from 'emergence'. 'Emergence' is ambient and non-discrete, whereas 'change' picks out conventionalizations that become part of a community's repertoire at some approximate point in time.

7. 'Actualization' has to do with "how a language moves from one state to a succeeding state" (Kroch 2001: 726), and is the equivalent of what Weinreich, Labov and Herzog (1968) identified as the "transition problem".

saltation, and catastrophic change,[8] all of them associated with reanalysis (and recently with parameter-change) after multiple local micro-changes (e.g. Lightfoot 1991, 1999; Hale 1998; Roberts 2007). But over time the parameters have become smaller (see e.g. Cinque and Kayne 2005), and even though parametric change is regarded as abrupt, the abruptness can hardly be regarded as 'saltation'.

Another possible reason for the association of reanalysis with saltation is the unintended consequence of the way in which that most 'clines' of grammaticalization are represented. Typically they are represented schematically in terms of broad changes (macro-steps) to distinct-seeming categories along a cline, such as:

(2) main verb > auxiliary verb > clitic > inflection
(*will* 'to will' [main verb] > *will* [auxiliary] > *'ll* [clitic])

(3) Partitive/Measure Phrase > Quantifier > Degree Modifier
(*a lot of fans is for sale* 'a unit of' [Partitive] > *a lot of fans are for sale* 'many/much' [Quantifier] > *a lot happier* 'very much' [Degree Modifier])

These schemas are, however, "generalizations over changes" (Andersen 2001: 214), and (deliberately) idealize over many things. Above all, since they identify macro-types of change, not individual micro-changes, they obscure the orderly progression of changes across linguistic contexts, such as the host-class expansion (Himmelmann 2004) of auxiliating verbs to new main verb collocates (see e.g. Hilpert 2008). Another factor that these clines obscure is that both the old and new structures coexist in individuals as well as communities, e.g. at the time that *be going to* was first used as an expression of future it coexisted as a polysemy with the motion-with-a-purpose expression. We may hypothesize that the expressions became homonymous only after a considerable length of time, and after a sufficient number of changes had occurred to allow phonological reduction of the future. When they did so, their relationship to each other presumably became opaque and ultimately completely broken ("divergence", Hopper 1991).

Micro-steps, then, are ultimately consistent with gradualness, given a theory of continuity over time, and of synchronic polysemy. On the view presented here, gradualness is not an issue of indeterminacy, vagueness, or undecidability (Klamer 2004), although particular instances of potential change may be undecidable, even in context. Nor is it to be understood as an issue of drift (Haspelmath 1998), or monotonic incremental change as Janda implies when he equates gradualness with continuity (Janda 2001: 307, questioning how "continuous/gradual" increases in

8. While in earlier work Lightfoot referred to "cataclysmic re-structuring" (1979: 78), more recently this has been defined less dramatically as "bumpy discrepancies" between input to a child and output of the child's mature grammar that have significant systemic effects (Lightfoot 1999: 89).

grammaticalization are). It is also not to be equated with slow progression over long periods of time (Bruyn 1996: 39). Changes may occur at different times and at different rates (*pace* Kroch 1989, 2001). The speed at which some changes come about may in part be a function of other ongoing changes in the language, since any particular change is embedded in the larger context of changes in the language (Weinreich, Labov and Herzog 1968), whether or not there is already a frequently-used model, or whether contact has occurred. Nor is gradualness "imperceptible" change (Kiparsky 1968: 175).[9]

Because gradualness is discrete and identifiable by small-scale changes in linguistic properties, we can see gradualness as in some ways a diachronic dimension of gradience. However, it is not the dynamicized equivalent of gradience for reasons to be discussed immediately below.

3. How are we to understand the intersection between synchronic gradience and grammaticalization?

Various hypotheses have been put forward about the likelihood that synchronic variation will reflect past history. For example, Bybee, Pagliuca and Perkins (1991) hypothesize that the most inflected expression of futurity is the oldest:

> [F]utures with only or predominantly 'late' uses are morphologically reduced relative to 'young' futures, suggesting a dynamic correlation of generalization of meaning with concomitant reduction in the formal expression of future grams. (Bybee, Pagliuca and Perkins 1991: 47)

Heine and his colleagues have further argued that history can be reconstructed from synchronic variation (e.g. Heine 2002). However, systemic changes may interfere, and if so the reconstruction will not be supported. Nevertheless, it is a reasonable hypothesis that gradience is the result of small-step changes such as are associated with gradualness. Understanding the limits on and the issues connected with this intersection is crucial.

In what follows we assume that some instances of grammaticalization do intersect with synchronic gradience. The question is which aspects of grammaticalization do so (§3.1), and whether Aarts's model of gradience can allow such intersection to be accounted for (§3.2).

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9. Hock (1991: 633) notes that the neogrammarians "had recourse to the criterion of 'imperceptible/gradual' vs. 'perceptible/abrupt'".

3.1 How does grammaticalization intersect with gradience?

A basic assumption of grammaticalization, understood from a functional perspective as involving meaning and form, is that at the level of specific changes, the process begins with mismatches between the pragmatics/semantics and form of a construction (in the Construction Grammar sense of a form-meaning pair, Croft 2001), and is manifest in various morphosyntactic ways, including decategorialization (e.g. Hopper and Traugott 2003[10]). Therefore, on first thought, grammaticalization and gradience should intersect easily. But the interface is actually quite problematic, and somewhat minimal, especially where gradience is defined purely or even primarily in morphosyntactic terms.

a. Gradience as defined by Aarts and Denison (for example) is conceptualized in terms of discrete syntactic or morphosyntactic distributional properties, with little attention to function and meaning, as exemplified by: "Assignment of an element α to a particular class takes place by examining and enumerating the morphosyntactic properties of that element" (Aarts 2004: 21). Furthermore, Aarts privileges syntax as autonomous. However, much work on grammaticalization is conceptualized in terms of degrees of grammatical function. This is on the assumption that there is a continuum between lexical, contentful constructions and grammatical functions (Lehmann 1985, 1995; Hopper and Traugott 2003). Noun, verb, and adjective are on the contentful end, while grammatical ones are on the abstract, procedural end. Grammaticalization shifts a linguistic expression "further toward the functional pole of the lexical-functional continuum" (Haspelmath 1999: 1045), and specifically to function as a marker of "deictic relational structure" (Diewald Forthcoming). This means that only a sub-part of what is considered to be grammaticalization could possibly intersect with gradience as construed by Aarts and Denison.
b. What is often considered criterial for grammaticalization is that there is a sequence of changes. Typically, semantic/pragmatic, morphosyntactic, and morphophonological changes may affect an item that is grammaticalizing. Bybee, Perkins and Pagliuca (1994: 20) refer to this phenomenon as "the dynamic coevolution of form and meaning", while McMahon (1994: 161) has called it "cross-componential change", or "a syndrome of related changes". Denison (2005), Traugott (2007) and Trousdale (2008c), among others, have discussed the development of degree modifiers from 'NP *of* NP' constructions (Denison on *sort/kind of*, Traugott on *a bit/lot*, and Trousdale on *a hell of a*). In each case the decategorialization of the first noun in the 'NP *of* NP' sequence is

10. The term 'mismatch' is, however, not used there.

shown to be a part of a wider grammaticalization process involving a series of pragmatic inferences, semanticizations, syntactic reanalyses and phonological reductions. Most grammaticalization sequences evolve over considerable lengths of time; sometimes the original source is lost (e.g. the original main verb use *mot-* 'able to' that is the predecessor of *must* (past tense form)), or becomes homonymous with it (e.g. *will* as main verb and as auxiliary). This means that all the various stages of a particular instance of grammaticalization may not coexist at any one moment in the history of a language, or if they do exist, they may not be considered to be in a gradient relationship to each other, so the link to synchronic variation may not be direct.[11]

c. Relatedly, in the grammaticalization literature, the fact that older and newer variants are polysemous, at least initially, is of key importance. From this perspective, 'non-central' members of a gradient cline are assumed to originate in central ones, and can be shown to do so from historical texts. Famously, current 'core modals' originated in main verbs that could be inflected, have objects, etc. (Lightfoot 1979, and virtually every study of the history of modals since then). Expressions that are grammaticalizing could be expected to have both core and more marginal uses, i.e. be multifunctional. However, in Aarts (2007a) gradience is not discussed in terms of polysemy, or coexisting patterns of usage, so again there is a mismatch of structures under consideration.

d. A better fit with the concerns of work on gradience can, however, be found in the current shift in research on grammaticalization to membership of categories (e.g. what expressions may become degree modifiers, modals, etc.). Work on polysemy traces the development of the meaning of an expression while keeping form relatively constant, e.g. motion *be going to* > future *be gonna*. By contrast, work on what expressions come to serve a particular function traces the development of forms while keep meaning relatively constant. The shift in interest toward patterns arises in part out of focus on patterns of Source and Target changes (Heine and Kuteva 2002), and on constructional change (e.g. Bergs and Diewald 2008), understood as changes in form-meaning pairings. We see either the creation of a new construction (rare) or the gradual reconfiguration of extant constructions (more common), in which membership of a particular constructional 'set' (i.e. a series of related constructions at different degrees of schematicity, clustered around a particular node in the constructional network) is involved in expansion and change, through the acquisition of more indexical or procedural meanings (Trousdale 2008b).

11. The abstract constructions of which they are individual expressions, may of course coexist.

e. Again, to the extent that gradience can be seen to be a characteristic of systemic or typological structure (e.g. transitivity is said to be a more flexible construction in English than in German, Taylor 1998), the intersection with grammaticalization will be the stronger. Change does not occur in a systemic vacuum. In particular, specific as well as more general types of grammaticalization may be constrained or expanded because of systemic changes in a language (Lehmann 2004; Fischer 2007). Likewise, it has been suggested that counterexamples to grammaticalization, such as the degrammaticalization of *-s* genitive in English and Swedish, can be accounted for as residues after radical changes, in this instance, 'deflexion' or loss of inflections (Norde 2001).

In sum, at best, only the tip of the iceberg that is grammaticalization intersects easily with synchronic gradience, to the extent that the latter is understood as syntactic and morphosyntactic distribution.

3.2 What insights does grammaticalization offer for assessing the validity of Aarts's (2007a) claims that there is a significant distinction between subsective and intersective gradience?

In this section we focus on a particular point of Aarts's argument, namely that there is a distinction between two kinds of gradience, intersective and subsective. We recognize that Aarts's work is synchronic, and is not intended to reflect or predict change. However, as stated at the beginning of Section 2, some kind of connection between synchronic systems and change is logically inescapable. As Aarts (2004: 37) notes, sequences of changes such as are typical of grammaticalization are of particular concern in establishing the relevant properties for assigning membership of a category. There is a danger that a model of gradience which focuses on distribution alone will fail to capture the right generalizations about the nature of grammatical categories if we do not know what the relevant properties for category membership are (i.e. what attributes we associate with particular categories) or whether some of these properties are more important than others (e.g. whether ability to appear in attributive position is a more central characteristic of adjectives in English than the ability to appear in predicative position). This is compounded by the fact that, as Aarts himself recognizes, "languages are not static entities" (Aarts 2004: 37), and is of particular concern when it comes to establishing patterns associated with intersective gradience: intersective gradience is not the outcome of an intersection of categories, but rather of an intersection of properties associated with particular categories.

As noted in §2.1, Aarts understands gradience in terms of discrete morphosyntactic distributional properties. Subsective gradience involves subcategorizations, for example *before*, *since*, can be regarded as subcategorized according to such patterns as __NP, __S, __0 (i.e. uses as prepositions, conjunctions, and adverbs) (Aarts 2007a: 150–154). Intersective gradience involves overlapping morphosyntactic properties, e.g. both Adj and Adv can serve as modifiers (*then*, *upstairs*, Aarts 2007a: 136–138). Aarts's main aim is to come to a position "that allows for gradience, but nevertheless maintains sharp boundaries between categories" (Aarts 2004: 1), in an attempt to find a middle ground between formalists who marginalise gradience to the periphery of grammatical analysis, and functionalists who believe that gradience is central because it is so widespread in grammars; furthermore he suggests that intersective gradience is less common than subsective gradience.

If we wish the two types of gradience to have any reality for change, for example, to reflect or even predict optimal paths of change, then we might expect them to reflect or predict different trajectories. By hypothesis subsective gradience might lead to well-attested change, while intersective gradience might lead to changes that are less widely attested, or that have undergone more complex sets of change. But neither part of this hypothesis is borne out. With respect to subsective gradience, we may ask whether any verb has gone through successive sub-parts of the verbal gradient mentioned in Section 2.1: main verb – catenative – semi-auxiliary – modal idiom – marginal modal – central modal. There is no evidence that any verb has done so in English or any other languages; however, the cline cited in (2) above is cross-linguistically well attested. Cross-linguistic diachronic evidence shows that verbs may gradually be assigned more modal-like properties, without necessarily first acquiring properties of a catenative, then properties of a semi-auxiliary, then properties of a modal idiom, and so on. With respect to intersective gradience, we may consider the example of the development of complementizers. One well-known source is demonstratives (Frajzyngier 1991; Diessel 1999), and another is verbs of speaking, such as *say* (Deutscher 2000: Chapter 5). They do not appear to have had significantly different histories from the development of auxiliaries that might be attributed to intersective gradience. Furthermore, there is no evidence that *that*-complementizers arose via an adjectival stage; they always appear to have had pronominal properties (as in *She said that: that X*).

Further problems exist within patterns of what would need to be subsective gradience according to the Aarts model, in the development of adpositions and subordinators in Romance and some Bodic languages of Sino-Tibetan (see further Croft 1991, 2007). The grammaticalization of adpositions to subordinators in these languages is not uniform, with formatives in different languages displaying different properties. To this extent, it is questionable whether prepositions and

complementizers should be brought together under a single category (an issue which Aarts himself mentions is up for debate). What might be subsective gradience in one language may be intersective gradience in another; and the diachronic data raise further concerns.

Aarts concludes his book by saying that intersective gradience "is arguably far less widespread than is often claimed because many perceived cases are the fall-out of the less than optimal way grammarians have set up their categorial taxonomies" (Aarts 2007a: 242). His attempt to be precise about a structural way to account for gradience has brought many important questions to the fore. However, in so far as the hypothesis of intersective gradience may be tested by evidence from gradualness and from grammaticalization it appears that intersective gradience may itself be the fall-out of a less than optimal way of thinking about gradience. Aarts also claims that it is "paradoxical for adherents of gradience models that their starting point must always be rigid discreteness" (2004: 19). However, the starting point would not have to be rigid discreteness in a constructional approach to grammaticalization. Grammatical constructionalization starts out from a position in which rigid discreteness of formatives is seen as atypical in language, because the primitive is not the formative, but the construction (Croft 2001, 2007). This is made particularly clear when one considers the notions of reanalysis and analogy. We address these issues in the next section.

4. What does the intersection between synchronic gradience and grammaticalization tell us about whether work on grammaticalization needs reanalysis and analogy/extension, or some other mechanism?

In answer to this question, we propose that the gradience that is attested synchronically arises as the result of successive small-step changes resulting from the operation of the well-known mechanisms of reanalysis and analogy (the 'how' of change).[12,13] As Bybee has pointed out:

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12. Harris and Campbell (1995: 50) say there are only three basic mechanisms in syntactic change: reanalysis, extension (including analogy), and borrowing. We will not discuss the third of these here. See also Andersen (2008) for a more extensive set of basic mechanisms in morphosyntactic change. Semantic analogues to reanalysis and analogy are conceptual metonymization and metaphorization (Anttila 1989: 141–142; Hopper and Traugott 2003: 84–93).

13. In a move that is different from that of most other researchers on grammaticalization, Haspelmath (1998: 344) claims that "The main mechanism of syntactic change is grammaticalization". This is because, in his view, grammaticalization is "the gradual drift in all parts of the

> By postulating a finite set of mechanisms attributable to human neuromotor, perceptual, and cognitive abilities, which interact with linguistic substance in acquisition and in language use, a range of possible language structures and units will emerge. (Bybee 2001: 190)

These structures are hypothesized to have similar properties because "the cognitive and neuromotor capabilities of humans are the same across cultures" and "uses to which language is put are similar" (ibid.). The mechanisms operate on change in general, not only grammaticalization, and are motivated by various activities in which speakers engage (the 'why' of change, see Section 4.3). In historical linguistics mechanisms are usually conceptualized in terms of 'before' and 'after', i.e. comparison of earlier and later stages, not of the neuronal processes themselves. Hypotheses about the latter are, however, the focus of Fischer (2007).

Before continuing, it will be useful to summarize some of the arguments that have been presented so far regarding the role of reanalysis and analogy in grammaticalization. In 1912 Meillet famously wrote:

> Tandis que l'analogie peut renouveler le détail des formes, mais laisse le plus souvent intact le plan d'ensemble du système existant, la "grammaticalisation" de certains mots crée des formes neuves, introduit des catégories qui n'avaient pas d'expression linguistique, transforme l'ensemble du système.
> ['While analogy can renew details of forms, but usually leaves the structure of the existing system intact, "grammaticalization" of certain words creates new forms, introduces categories that had no linguistic expression beforehand, transforms the system as a whole']. (Meillet 1958: 133)

Since then the concept of analogy (at that time construed mainly in terms of what is now known as 'four-part analogy' and 'leveling') has been refined beyond anything that Meillet would have recognized, and the concept of reanalysis as we now understand it has been introduced. Whether reanalysis can be identified with grammaticalization or whether it has anything significant to do with it has been a topic of debate in the last twenty-five years, starting with Heine and Reh (1984), but foreshadowed in Langacker (1977) and Timberlake (1977), and their discussion of reanalysis in morphosyntactic change. While analogy has long been considered an important factor (see e.g. Givón 1991), it has until recently not been at the center of attention in work on grammaticalization. The fundamental

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grammar toward tighter structures, toward less freedom in the use of linguistic expression at all levels" (p. 318). Such a conclusion not only privileges grammaticalization as unique but appears to assume that it is possible to interpret repeated moves toward dependency as an independent mechanism. If a mechanism is a neurological process, this seems implausible, assuming changes in brain states are discrete; they may occur repeatedly, but each change is a single step.

importance of extension in most instances of grammaticalization has in the last decade led to significant rethinking of the role of analogy. Several of the issues are discussed from very different perspectives in Lehmann (2004) and in more detail in Fischer (2007), and will not be repeated here.

4.1 Reanalysis

In a definition that is still widely drawn on, at least in the functionalist literature, Langacker identified reanalysis as "change in the structure of an expression or class of expressions that does not involve any immediate or intrinsic modification of its surface structure" (Langacker 1977: 58), i.e. it is covert. He went on to characterize two types of reanalysis. One is "resegmentation", i.e. boundary loss, boundary creation, and boundary shift. The other is "syntactic/semantic reformulation" (p. 64), which ranges from semantic change to change in agreement patterns. Drawing on Langacker (1977) and also Timberlake (1977), and assuming a version of Government and Binding syntax, Harris and Campbell defined reanalysis as involving change in constituency, hierarchical structure, category labels and grammatical relations in underlying structure (1995: 50) without change in surface structure, including morphological marking, and word order. They regarded rebracketing and restructuring as specific kinds of reanalysis (p. 51). Crucially, they considered reanalysis to depend on "a pattern characterized by **surface ambiguity or the possibility of more than one analysis**" (ibid., bold original). This in itself may lead to the semblance of synchronic gradience: in the development of quantifiers emerging from 'NP *of* NP' constructions in English (Traugott 2007), it is possible that a hearer was unable to decide whether or not the speaker intended a partitive or non-partitive meaning (e.g. [*I bought* [[*lots*] *of fans*]]] vs. [*I bought* [[*lots of*] *fans*]]). In such circumstances, gradience may be seen as a gradual phenomenon, in which speakers and hearers negotiate meaning, matching patterns to existing constructions, or even modifying existing constructions to accommodate particular instances of use. Recently, Lehmann has defined "reanalysis of a construction" more generally as "the assignment of a different grammatical structure to it." (Lehmann 2004: 162).[14] Under any of these definitions, particularly the latter, provided we allow both semantics and phonology to be included, as Langacker (1977) does, any structural change will involve reanalysis. Since diachronic grammaticalization involves structural change, reanalysis should necessarily be involved. But the question remains in what way it is involved.

14. By 'construction' Lehmann presumably means syntactic string, not form-meaning pair.

The following main positions have been taken regarding the relationship between grammaticalization and reanalysis:

a. Grammaticalization and reanalysis intersect but are independent (Hopper and Traugott 2003; Lehmann 2004). Arguments put forward for their independence include the fact that grammaticalization is unidirectional but reanalysis is not. Lehmann (2004: 164) cites the following factors as reasons for regarding them as independent: "reanalysis does not imply loss of autonomy" or of information, and is not gradual. He also rejects suggestions that grammaticalization is reanalysis on the grounds that reanalysis consists of two stages, whereas grammaticalization is a sequence "'S1, S2 …Sn'" (Lehmann 2004: 165) (see Section 3.1, point b)).
b. Grammaticalization is derivative of (i.e. an epiphenomenon of) reanalysis, which is itself an epiphenomenon of child language acquisition: "the notion of Diachronic Reanalysis is derivative of aspects of the process of language acquisition. Since grammaticalization is derivative of Diachronic Reanalysis, we see that this is a doubly derivative notion" (Roberts 1993: 254). Typical expressions of this position include: "reanalysis (also sometimes extension) is the determining mechanism that explains grammaticalization and without appeal to these mechanisms grammaticalization has no explanatory power of its own … Grammaticalization is always the result of reanalysis" (Campbell 2001: 151, 144). While Roberts (1993: 252) adheres to the concept of parametric change as "a random 'walk' through the space defined by the set of possible parameter values", Roberts and Roussou (2003: 201) suggest grammaticalization can be "reduced … to an instance of parameter change", upward "along the functional hierarchy" (p. 202). This upward reanalysis accounts for unidirectionality, in their view, and can give rise to new functional material (p. 209); in this sense, grammaticalization involves a subset of types of reanalysis.
c. Reanalysis is largely irrelevant to grammaticalization because it has properties inconsistent with it. For example, Haspelmath (1998: 315) says "pure grammaticalization"[15] should be explained "without reference to reanalysis". This is because, unlike grammaticalization, reanalysis is abrupt, non-gradual, bidirectional, requires ambiguity in the input structure, and most importantly

15. 'Pure grammaticalization' presumably means grammaticalization that does not involve analogy (see Lehmann's contrast between "pure grammaticalization without analogy" (Lehmann 2004: 161) and "analogically-oriented grammaticalization" (Lehmann 2004: 162). In our view, 'pure grammaticalization' does not, and indeed cannot, exist if we consider change to be change in patterns of use.

> does not involve loss of autonomy/substance (Haspelmath (1998: 327).[16] There is, however, nothing in the definitions provided by Langacker, Harris and Campbell, or Lehmann, to require abruptness. All change is 'abrupt' or 'discrete' in the sense that it is discontinuous from generation to generation. It is also 'abrupt' when a new meaning or structure comes to be represented in a speaker's brain.

Before concluding this section, we may note that one can only 're-analyze' something that pre-exists, so if a child learns a language and parses a particular string with a new analysis, no 're-analysis' has occurred from the point of view of the learner.[17] When the language learner later acquires the 'older' form-meaning pairing, then his or her grammar will have been locally reanalyzed in this respect. Like many metalinguistic terms, including 'language change', the term 'reanalysis' is therefore not accurate in a compositional semantic sense, except in the case of language users who reanalyze their own structures. The non-compositionality of the technical term may have contributed to misunderstandings about its role in change.

4.2 Analogy

Reanalysis has often been construed as operating at least in part syntagmatically (cf. rebracketing), and covertly. By contrast, analogy has traditionally been construed as operating paradigmatically, most obviously in instances of morphological change, where affixal paradigms may be at issue, and overtly (Anttila 1989: Chapter 5). Like reanalysis, analogy is not unidirectional but "Analogical grammatical change … may cooccur and interact with [grammaticalization] in particular historical changes" (Lehmann 2004: 162). By the latter he means that in some individual instances the change seems to have been helped by the prior existence of a model. For example, the grammaticalization of Latin *hab-* 'have'

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16. The implication that grammaticalization does not involve ambiguity does not appear to be founded in any textual evidence. However, we do not agree with Heine (2002) and Diewald (2002) that pragmatically ambiguous contexts (whether 'bridging' or 'critical') are a necessary prerequisite for grammaticalization, especially when grammaticalization of non-lexical material occurs, e.g. in the grammaticalization of information structure. Nevertheless, where corpus data are available, they show that in many cases of lexical > grammatical change examples in which the new structure is only potentially inferrable clearly do precede unambiguous ones (see Traugott Forthcoming).

17. Andersen (2001: 231, ft. 3) has suggested the term "neo-analysis" or "neanalysis" for novel analyses by language acquirers.

after an infinitive, as in *cantare habeo*, into a tense inflection, as in Italian *canterò*, was helped by the prior existence of verbal tense affixes. The presence of models may also account for the "fertility" of certain grammaticalization paths, in some languages, such as Modern Mandarin co-verbs > prepositions (p. 161).

Whereas much work on analogy has focused on individual local changes, and attraction to exemplars, a recurring theme in later work has been the possibility of conceptualizing rule generalization/extension (or, more recently, constraint optimization) as analogy at a higher metalinguistic level of analysis (Kiparsky 1968, 2005). Kiparsky (2005) suggests a distinction should be made between exemplar-based analogy, which is language-specific and may lead to counterexamples to the unidirectionality of grammaticalization, and UG-based constraints-based analogy, which leads to optimization, hence unidirectionality.

If, in the spirit of usage-based grammars, we think in terms of exemplar-based analogy, including extension, grammaticalization involves generalization to greater type- as well as token-frequency, e.g. grammaticalized *be going to* 'future' came to occur over time with more and more verbs, not only action but also state (Bybee 2003; for a statistical account see Hilpert 2008). Himmelmann (2004) sees this kind of structural 'host-class' expansion as key to grammaticalization. Here too we may see intersections with synchronic gradience. In the development of *hell of a* (> *hella* in Californian English) as a degree modifier, we see host class expansion from co-occurrence with bare nouns (*a hell of a calling*) and with premodified nouns (*a hell of a short journey*) to co-occurrence with bare adjectives (*hella good*) and adverbs (*hella quickly*). Co-occurrence with premodified nouns allows for a (semantic and syntactic) gradience in which bridging contexts occur, allowing for alternative parsings; indeed, only context will determine whether, when a speaker describes something as *a hell of a short journey*, he means that the journey was unbearable, though short, or whether it was surprisingly short.

Analogy may therefore be understood as a mechanism of change: the earlier structure is restructured to match an existing one, and as a result, the newer one has a new structure. This is reanalysis in the sense of "the assignment of a different grammatical structure" (Lehmann 2004: 162). Fischer (2007) emphasizes that analogical thinking and reasoning (Itkonen 2005) precede much change, a point with which we agree. It is a point made some time ago by Givón, among others:

> Almost all creative-elaborative diachronic change in language, be it phonological, morpho-syntactic, semantic or discourse-pragmatic, is in principle analogical. That is, it involves the language user's recognition – conscious or subliminal – of similarities between two structural or functional contexts.
>
> (Givón 1991: 258, emphasis original)

In this sense it is a precondition or 'motivation' for much change, but does not constitute change, or even innovation in the individual. Fischer emphasizes that pattern-finding is typical of primates (Fischer 2007: 249), another point with which we agree. But when it comes to an instance of innovation, she assumes that analogy may not involve reanalysis. For example, she says that:

> When a construction like *I am going to get some water* is 'reanalysed' from 4(a)[18] to 4(b):
>
> (4) a. [I am going [to get some water]]
> b. [I am going to [get some water]]
>
> it in fact joins another token-set. It leaves the construction-type of [V [to INF]] and joins the construction-type of [Aux V]. (Fischer 2007: 145)[19]

This claim is immediately preceded by "reanalysis in fact does not occur in the physical sense of the word" (p. 145). For a speaker who innovates (4b), that structure exists in addition to (4a), and so (4a) has hardly 'left' one construction type and joined another: an additional mental representation has been created for the relevant part of the string in (4a). If reanalysis does not occur in a physical sense, neither does leaving one linguistic category for another. In any event, a classic case of reanalysis has occurred: rebracketing without overt surface change. Furthermore, acquisition of membership of a different construction-type is a category change, and hence a case of reanalysis. Rebracketing and re-categorizing have neuronal implications. The speaker now has a different knowledge structure, arrived at by parsing. In so far as a child or other speaker adopts the new structure, they have interpreted strings like *I am going to get some water* in a different way from speakers who do not have (4b). The question "whether there is any meaningful place left for reanalysis as a type of change" (De Smet 2009) seems to be based on the problems mentioned above of the 're-' in the term, the association of reanalysis with abruptness, and neglect of relationship between reanalysis (mechanism) and parsing (motivation).[20]

4.3 Distinguishing mechanisms from motivations

We assume that it is important, at least for heuristic purposes, to distinguish motivations, preconditions and potentials for change from actual processes of change,

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18. (4a) and (4b) appear as (3a) and (3b) in Fischer (2007).

19. By "construction", Fischer means 'string', not 'form-meaning pairing'.

20. De Smet (p.c.) argues, however, that parsing is based on analogical thinking.

even if the distinction is sometimes hard to uphold. We therefore distinguish between parsing and interpretation as a precondition and potential for change, and reanalysis as a mechanism. Parsing is consistent with indexicality and metonymic thinking (see Hopper and Traugott 2003: 92–93; Fischer 2007: 126 on factors involved in reanalysis). The change involved is discrete, but typically the steps are minimal, i.e. structurally gradual. The fact that accumulated micro-changes may in the end lead to macro-changes can be captured by the term 'macro-reanalysis'.

A parallel distinction can be made with respect to analogy. Analogical thinking is a motivation or precondition for change that needs to be distinguished from the mechanism. We propose to continue calling the former 'analogy' and to dub the latter 'analogization' in order to index change. Analogical thinking is consistent with notions of iconicity, metaphor, and set-making (Hopper and Traugott 2003: 92–93; Fischer 2007: 126). The mechanism in individual cases is, however, in fact a reanalysis. Hopper and Traugott (2003: 68) already suggested that all analogy may be reanalysis, and Kiparsky (2005) points out that his theory of UG-based analogy results in the unification of grammaticalization "with ordinary analogy – not just in the trivial sense of classifying them both as instances of reanalysis". Like all kinds of reanalysis, then, analogization is discrete. This means there is an asymmetric relationship between analogization and reanalysis: all analogization is reanalysis, but not all reanalysis is analogization. Analogy in the sense of analogization is therefore not primary and reanalysis secondary (*contra* Fischer 2007: 329).[21] This is a claim about mechanisms. If we turn to motivations, and prerequisites for grammaticalization, analogical thinking and reasoning (Itkonen 2005) may be more important than has often been recognized, but parsing is also crucial. This in fact would seem to follow from Fischer's reliance on Anttila's (2003) "analogical grid", which has two axes: form and function, contiguity (the indexical axis) and similarity (the iconic axis) (Fischer 2007: 323).

In answer to the question whether grammaticalization needs reanalysis and analogy/extension, therefore, we suggest that grammaticalization is not reducible to any mechanism (see Lehmann 2004). It is the tendency for successive micro-reanalyses to occur, some involving analogization, some not. Sometimes such successive occurrences may take place over many centuries, sometimes they may be fairly rapid. The two mechanisms discussed here, reanalysis and analogization/extension operate independently of grammaticalization. While analogization/

21. Fischer (2007) writes of analogy as both motivation and mechanism. She (personal communication) considers that a distinction between motivation and mechanism is not really necessary. But from the perspective of the historian of language, motivation needs to be separated out as it logically precedes change, and involves factors that are largely language-independent.

extension are far more wide-spread than has often been recognized, reanalysis can be regarded as the dominant mechanism since there is no change without reanalysis.

5. Conclusion

Although there is a clear relationship between diachronic gradualness and synchronic gradience, the evidence from grammaticalization has shown that the intersection of all three raises many challenging issues. It is true that some instances of synchronic gradience may be the result of grammaticalization – but others are not, e.g. gradience of 'nouniness' in cases such as *hold one's breath*, *take one's time* (Ross 1981, cited in Aarts 2007a) is the result of lexicalization. It is true that, taken as a whole, grammaticalization is a gradual process – but the micro-steps involved are discrete and therefore abrupt for individual speakers. It is true that some of these micro-steps may give rise to gradient systems at any synchronic 'slice' in the development of a particular language – but successive reanalyses may take place either over considerable periods of time, or they may be fairly rapid. We have discussed some of the ways in which gradience, gradualness and grammaticalization construed as functional change intersect. We have defined gradualness as discrete ('abrupt') micro-steps in change. We have suggested that gradience is best distinguished from gradualness as a synchronic phenomenon, and we have established some of the ways in which models of synchronic gradience might be refined given the evidence from grammaticalization.

From the perspective of grammaticalization, it would appear that distributional gradience, without a distinction between subsective and intersective gradience, can be matched with structural aspects of grammaticalization at particular instances in the history of an expression. But grammaticalization involves far more, and to account for semantic as well as morphosyntactic factors a variationist and constructional approach to gradience may be preferable (see Croft 2007). The importance of (synchronic and diachronic) variation is critical here. Variation over time involves the emergence of grammatical constructions: a gradual, global process, but one which involves a series of discrete local micro-reanalyses. Two major points fall out from this. First, while we agree that analogical thinking is an important motivation for change, we see the mechanism of analogization as a process involving discrete reanalyses to other constructional types. Second, because the emergence of constructional types is a gradual phenomenon involving changes at all levels of the construction, accounts of synchronic gradience will be enriched by a consideration of the "meaning or function that the constructions and formative encode" (Croft 2007: 422). This is not

to suggest that morphosyntactic distribution is irrelevant, merely that it is only part of the appropriate methodology for establishing typologically consistent patterns of linguistic structure.

Ultimately, as work on the gradience-grammaticalization interface is carried out, gradience could be an ideal testing ground for hypotheses about the expressions that are most likely to undergo grammaticalization, and perhaps more critically, the way in which grammatical constructions emerge. Both grammaticalization and gradience could be sites for gaining a better understanding of the "step-wise acquisition of properties" (Denison 2006: 300) that is so fundamental to micro-changes, while at the same time the gradual sequence of changes involved in grammaticalization could help us to formulate some of the principles involved in macro-changes.

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Grammaticalization, the clausal hierarchy and semantic bleaching

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This paper takes questions regarding gradience and gradualness to be questions concerning the nature of grammatical categories. A notion of grammatical category is pursued which is not gradient, but rather more "traditional" in the sense that category membership is an instance of standard set membership. In order to deal with some of the empirical difficulties, both synchronic and diachronic, in consistently assigning category membership across all lexical formatives, a fine-grained and elaborate system of categories, following on from Cinque's (1999) influential work on the clausal hierarchy, is adopted. In the context of this approach, Roberts & Roussou's (2003) formal approach to grammaticalization, which relies on the central idea that grammaticalization is always upward and leftward in the syntactic structure, is shown to makes some interesting and seemingly correct predictions.

1. Introduction[1]

Here I will take the questions regarding gradience and gradualness to be questions concerning the nature of grammatical categories. The simplest view of grammatical categories exhaustively assigns the grammatical formatives that make up the lexicon of a language to one of a finite, probably rather small set of grammatical categories, in a one-to-one fashion:

(1) a. cat → N
    b. enjoy → V

1. This paper is an expanded version of 'Diachrony and Cartography: Paths of Grammaticalisation and the Clausal Hierarchy' in Brugè, Cardinaletti, Giusti, Munaro and Poletto (to appear). Thanks to the Leuven audience, three anonymous OUP reviewers of the submission to the Cinque volume, as well as to the editors of and several other contributors to the present volume, for very helpful comments. All errors are mine.

c. between → P
d. red → Adj
e. quickly → Adv
f. if → C
g. must → M
h. the → D

Most theories of grammar do not allow for the possibility that a formative may fail to be specified for grammatical category; i.e. it is, implicitly or explicitly, part of the theory of the lexicon that lexical entries must contain a categorial specification for all formatives listed.

However, it is pretty clear that the mapping cannot be as simple as one-to-one: many lexical formatives appear to belong to more than one category: e.g. *round* as in *He ran round*$_{\text{P}}$ *the track*, *The car rounded*$_{\text{V}}$ *the corner*, *a round*$_{\text{A}}$ *hole*. One alternative is to allow for 'polysemy' not only where the different meanings associated with each category have a clear intuitive connection (as in the case of *round*; this is also sometimes known as 'heterosemy'), but also where the categorial distinction alone doesn't obviously account for the meaning difference (also as in the case of *round*). Another alternative is to allow for underspecification, at least of lexical roots, thereby abandoning the idea that lexical items are exhaustively mapped to grammatical categories (see for example Marantz 1997 for an influential recent proposal). Still another alternative is to call the notion of strict, exhaustive categorisation into question, and to take it that formatives can be 'more or less' members of a given grammatical category, with perhaps prototypical and non-prototypical examples; this, as I understand it, is what lies behind the notion of gradience.

Here I will pursue a notion of grammatical category which is not gradient, but rather more 'traditional' in the sense that category membership is an instance of standard set membership; hence a given lexical formative either is or is not a member of a given grammatical category.[2] However, in order to deal with some of the empirical difficulties, both synchronic and diachronic, in consistently assigning category membership across all lexical formatives, I will adopt a much more fine-grained and elaborate system of categories, following on from Cinque's (1999) influential work on the clausal hierarchy. In the context of this approach, I will try to show that Roberts and Roussou (2003)'s formal approach to grammaticalization, which relies on the central idea that grammaticalization is always

2. See Baker (2003: 14–16) for an interesting critique of prototype-based theories of categories. It is worth remembering, though, that this is against the background of the basically correct observation that standard principles-and-parameters approaches to generative grammar have almost nothing to offer in terms of a theory of grammatical categories.

upward and leftward in the syntactic structure, makes some interesting and seemingly correct predictions. I will also, very tentatively, suggest that the appearance of synchronic gradience or diachronic gradualness may be due to the fact that categorial distinctions are very fine: the signs of category change from one category to another may be very subtle and so fine-grained as to appear gradient. These changes correspond to what Traugott and Trousdale (this volume, p. 23–24) call 'micro-changes', pointing out that "micro-changes are discrete … and … cognitively abrupt … for individual speakers". A useful analogy here might be with calculus: just as a seemingly continuous curve can be treated as a series of discrete infinitesimal steps, so a seemingly gradient category (or gradual change in category membership) can be seen as a change in membership between two very similar, but nonetheless discretely distinct, syntactic categories. This naturally implies that we have some way to 'measure the distance' between categories: this can be done with an appropriate feature system which breaks down major categories (N, V, etc.) into smaller ones (count noun, transitive verb, etc.) up to a fairly fine-grained level. In the case of functional categories, which will be the major concern in what follows, we will be dealing with categories such as Modal, which can be divided into epistemic, alethic, deontic, etc.

Like all other aspects of grammatical structure, categories may change. More precisely, given the rather 'traditional' view of category-membership that I adopt here, a given lexical item may be a member of category C at one period of a language, but of category C' ≠ C at some other period of that same language.[3] For example, the French negative word *rien* was a Noun (meaning 'thing' < Latin *rem*) in Old French, with gender and number features like any other French Noun. In Modern French, however, it belongs to a closed class of negative items, often called 'n-words', which play a role in the expression of clausal and other types of negation, and which lack gender and number. The goal of this paper is to explore a specific class of category changes, known as grammaticalization, in relation to Cinque's (1999, 2004) functional hierarchy of clausal categories. Here the appearance of

3. This statement is deliberately oversimplified for expository purposes. In particular, I do not mean to imply that a formative can only be a member of a single category synchronically. It is clear that there are many examples of multiple categorial membership by a single element. For example, *need* is both a verb (*I don't need a Ferrari*) and a modal auxiliary (*you needn't buy me a Ferrari*) in my English. Adopting Cinque's hierarchy will inevitably lead to more cases of this type. For example, as mentioned below, *can* may be $\text{Mod}_{\text{Ability/Permission}}$ (*you can leave now*), $\text{Mod}_{\text{Possibility}}$ (*it can rain later*), $\text{Mod}_{\text{Epistemic}}$ (*These results can mean that …*) and perhaps $\text{Mood}_{\text{Evidential}}$ (*That can be him now*). It is not clear to me how much synchronic variation of this type is allowed. As a reviewer points out, this unfortunately means that the correlation between synchronic gradience and diachronic gradualness is not completely straightforward. Nonetheless, Cinque's hierarchy offers a good structural way of expressing both.

diachronic gradualness may be traceable to the same source as synchronic gradience as sketched above: the fine-grained nature of categorial distinctions may make these distinctions appear gradient.

This is not to imply that I consider gradualness to be the straightforward diachronic correlate of gradience. Gradualness may manifest itself in the historical record in all kinds of ways (competing grammars in the sense of Kroch 1989, shifting literary fashions, shifting populations (see Hale 2007 on this)). Also, any kind of change may at least appear gradual, while presumably only certain phenomena may be gradient (for example, it is unlikely that word-order change can really be gradient; we would not want to express a grammatical rule for word order by saying, for example, that O precedes V 35% of the time). Very tentatively, it seems that there may be a one-way implicational relation between the two concepts: synchronic gradience implies diachronic gradualness, but not vice-versa. Here again, I concur with the statement made by Traugott and Trousdale (this volume, p. 26):

> Because gradualness is discrete and identifiable by small-scale changes in linguistic properties, we can see gradualness as in some ways a diachronic dimension of gradience. However, it is not the dynamicized equivalent of gradience.

Grammaticalization is usually defined as the process by which new grammatical morphemes are created (see Meillet 1912; Hopper and Traugott 2003). As such, it is an important and ubiquitous form of morphosyntactic change. Roberts and Roussou (2003) (henceforth R&R) propose a formal account of grammaticalization and grammaticalization paths, as these have been identified in the literature (see in particular Heine and Reh 1984; Lehmann 1985; Heine, Claudi and Hünnemeyer 1991; Traugott and Heine 1991; Heine 1993; Bybee, Perkins and Pagliuca 1994; Hopper and Traugott 2003 and the compendium of cases of grammaticalization in Heine and Kuteva 2002). R&R's approach centrally features the following three ideas:

a. "the diachronic movement of a given morpheme, possibly tracked over many centuries through successive reanalyses, is always 'upwards' in the structural hierarchy of functional categories" (R&R, p. 36);[4]
b. "Successive upward reanalysis along the functional hierarchy is thus how we define grammaticalization paths" (R&R, p. 202);
c. "the path is traversed by the loss of steps of head movement, leading to changes from Move to Merge" (R&R, p. 71).

4. One case which appears to be a counterexample to this generalisation is the well-known grammaticalization of verbs meaning "say" or "tell" as complementizers, attested in Bantu languages and some creoles (Lord 1989). See Roberts and Roussou (2003: Chapter 3) on this.

None of these claims is *a priori* obvious, and all of them receive considerable empirical support in R&R's work. The goal of this paper is to combine R&R's claims with the proposals for the structure of the clause in Cinque (1999, 2004). We will see that the two approaches are mutually reinforcing, and that they predict a number of paths of grammaticalization which have been independently observed.

The paper is organised as follows: Section 2 summarises in more detail the main elements of R&R's approach, adding one significant new element; Section 3 briefly summarises the main conclusions of Cinque (1999); Section 4 illustrates a number of well-known examples of grammaticalization, showing how they always feature categorial reanalysis from a lower to a higher position in the hierarchy of functional elements identified by Cinque; Section 5 briefly considers the nature of semantic bleaching and the account of that phenomenon which was offered in R&R, Chapter 5, and attempts to relate these ideas to the Cinque hierarchy.

2. The formal approach to grammaticalization

R&R propose that the basic mechanism of grammaticalization is the loss of movement, schematised in (2) (the arrow represents time, and so (2a) and (2b) should be seen as subparts of two *états de langue* in the Saussurean sense):

(2) a. $[_{XP}\ Y + X\ [_{YP}\ t_Y]]$ > b. $[_{XP}\ Y = X\ [_{YP}\ \ldots\ Y\ \ldots]]$

At the earlier diachronic stage, Y underwent movement to X, leaving a trace/copy in its launching site. At the later diachronic stage, the element formerly merged as Y is merged directly as X; this is what the 'Y = X' notation is intended to indicate. The formal change between the earlier and the later stage is thus the loss of movement and the associated change in category membership of Y from Y to X. The loss of movement is caused by the fact that the parameter-setting device (i.e. the language acquirer) is computationally conservative, in that there is a built-in preference for relatively simple representations (cf. Clark and Roberts 1993: 315–316). Representational simplicity is defined in (3):

(3) A structural representation R for a substring of input text S is simpler than an alternative representation R' iff R contains fewer formal feature-syncretisms than R'. (R&R, 201)

('Feature syncretism' here refers simply to the co-occurrence of more than one formal feature on a single syntactic head position.) If movement from Y to X as in (2) entails at least one feature more on X than merger of Y as X (this will, in the simplest cases, be a movement-triggering diacritic), then the simplicity metric militates

against the postulation of movement by language acquirers. A movement relation will be acquired only where the trigger experience forces it, i.e. where it is robustly cued, in the sense of Lightfoot (1999, 2006). If the primary linguistic evidence for the movement relation is unclear or absent, then non-movement will be assumed as the default option. Hence loss of movement is expected as a mechanism of syntactic change, driven by abductive reanalysis of input on the part of language acquirers, the reanalysis in turn being forced by the simplicity metric in (3). Change takes place when some aspect of the trigger forcing the more complex analysis is lost; this may happen through phonological change, some other syntactic change, or presumably external factors such as contact and borrowing. Grammaticalization is just one kind of change that is brought about in this way. For a discussion of the formal similarities and differences between grammaticalization and other kinds of change, with the focus on word-order change, see R&R, pp. 205–209.

As already hinted in the above account, we can follow Chomsky (2000, 2001) in taking Move (construed technically as Internal Merge) to be the combination of Agree and a special diacritic feature of the target. Agree is a relation between two positions A and B such that:

(4) a. A asymmetrically c-commands B;
b. A is lacking in some feature specification that B has;
c. A and B are in a local domain (see below).

The standard configuration for Agree is thus as in (5):

(5) … $A_{[F: --]}$ … $B_{[F: val]}$ …
(Probe) (Goal)

Under Agree, A and B's features match and A's features are thereby specified (or 'valued'). Agree may be associated with movement if the Probe (A) has a movement-triggering feature. In terms of R&R's schema in (2), then, X is a Probe and Y is a Goal. After reanalysis, there is no Agree relation since X = Y and Agree is taken to be irreflexive.

However, one gap in R&R's approach was that it did not readily allow for the possibility of new Agree relations emerging, and hence new instances of movement, which are then prone to reanalysis as described above. It is here that the locality condition on Agree is relevant. This condition is given in (6):

(6) Probe A Agrees with Goal B only if there is no Goal B' such that B' intervenes between A and B.[5]

5. Intervention is defined in terms of relative asymmetric c-command relations. So, a more technical statement of (6) would be (i):

In other words, A cannot Agree with B in the configuration in (7), owing to the presence of the intervening, closer Goal B:

(7) … $A_{[F: --]}$ … $B'_{[F: val]}$ … $B_{[F: val]}$ …

But now, suppose B' probes B in (7) and triggers movement of B. Suppose further that reanalysis of the movement takes place along the lines described in (2) such that B' = B. At this point, the former B can be probed by A, B can move to A and further reanalysis can take place. In this way B takes on new features, to match those of A. Another scenario is where A is reanalysed as a new Probe for B, with B continuing to move no further than B'. In this way too, B takes on new features. This could also happen if A, or even a category above A, triggered movement of B for some independent reason.

A simple illustration of R&R's basic approach comes from their treatment of the development of Romance determiners from Latin demonstratives (Harris (1978), Vincent (1997), Lyons (1999), Giusti (2001)). It is well known that Latin lacked determiners, as the invented example in (8) shows:

(8) *Regina* *rosas* *amat*
Queen-NOM roses-ACC loves
'The queen loves (the) roses'.

Here either DP can in principle be definite or indefinite; Latin simply does not obligatorily mark this notional category.

On the other hand, Latin had a rich demonstrative system, featuring a three-way deictic distinction:

(9)

Person	Personal	Demonstrative
1st	*ego*	*hic, haec, hoc*
2nd	*tu*	*iste, ista, istud*
3rd	*ille*	*ille, illa, illud*

(Harris 1978: 69)

In addition to the demonstratives in (9), Latin also had the purely anaphoric element *is, ea, id*, which completely died out in Romance (as did *hic, haec, hoc*), and the pronoun *ipse* ('the same') which was grammaticalized as a definite article in Sardinian and some varieties of Catalan. Generally across Romance, however, *ille* gives rise to both 3rd-person pronouns and articles, as follows:

(i) Probe A Agrees with Goal B only if there is no Goal B' such that B' asymmetrically c-commands B and A asymmetrically c-commands B'.

(10)		Masculine	Feminine	Neuter	
	Latin:	*ille/illi*	*illa/illae*	*illud/illa*	(NOM)
		illum/illos	*illam/illas*	*illud/illa*	(ACC)
	French:	*le/les*	*la/les*		
	Italian:	*il/i*	*la/le*		
	Portuguese:	*o/os*	*a/as*		
	Spanish:	*el/los*	*la/las*		

Giusti (2001) argues that the Latin demonstrative occurs in a position lower than D, from where it usually moves to SpecDP. This is shown in the structure in (11a):

(11) a. $[_{DP}\ [_{DemP}$ *(il)le*$]\ [_{D'}$ D $[_{NP}$ (DemP) N']]]
b. $[_{DP}\ [_{D}$ *(il)le*$]$ NP]

(11b) shows the structure after the change: *(il)le* has been reanalysed as a D-element. If we distinguish D, the determiner category, from Dem, demonstratives, in the context of an elaborated structure for nominals (DPs), along the lines adopted by Giusti and many others (see, for example, Cinque 1994, 2005), we can think of both categories as nominal, and both as referential. D carries the feature [±definite], while we may characterise Dem as [+definite, ±proximate]. The change in *ille* from (distal) demonstrative to definite determiner shown in structural terms in (11), then, involved the loss of the [–proximate] feature and the retention of the [+definite] feature, as well as the loss of the movement triggering feature on D. There was thus a category change (involving loss of features), but of a fairly subtle and fine-grained nature. R&R suggest, still following Giusti (2001), that the causes of the reanalysis were the phonological weakening of *ille* and the loss of overt case morphology.

If categories are bundles of features, then we can make sense of Aarts's (2007) notions of subsective and intersective gradience in the obvious way: subsective gradience involves a gradient relation between two feature bundles such that one is a subset of the other, while intersective gradience involves a gradient relation where there is no subset-superset relation between the relevant features (but some feature(s) must be shared in order for the gradience to be possible at all). It is not clear to me how these relations might apply in practice to the cases under discussion here, however (and see Traugott and Trousdale (this volume) and Denison (this volume) for some critical comments).

Leaving aside further details of this particular instance of grammaticalization, the change schematised in (11) illustrates two central aspects of R&R's approach: that reanalysis involves the suppression of a movement relation, and that the formerly moved element is, after grammaticalization, first-merged in a higher position than previously. There is also suppression of an Agree relation here, since

formerly D probed for Dem, but in the new structure it no longer does. We could say that *(il)le* 'moves up the tree' diachronically (this is not to imply a diachronic grammar, which Lightfoot 1979 correctly argued is an incoherent concept in generative theory; it is simply a way of describing the change affecting this formative if one compares the two representations in (11)). This 'diachronic movement' directly reflects the properties of the formal, synchronic operation Move; as such it is upwards, local, cyclic and always targets functional heads. These are all formal properties of grammaticalization, as R&R show.

A further aspect of R&R's approach concerns markedness. Developing a proposal made in Roberts (2001: 105–107), they suggest that there are two kinds of markedness: formal markedness and substantive markedness. Formal markedness relates to their approach to parametrization: they propose that this amounts quite simply to the presence of a diacritic on a functional feature, written as *, requiring PF-realisation of that feature. The functional lexicon of each language contains a random distribution of these diacritics.[6] Substantive markedness corresponds to the Jakobsonian notion of markedness, in that marked values are inherently more complex in various respects than unmarked ones; this kind of markedness plays a role in Cinque's system, as we shall see in the next section. R&R link the two notions by proposing that a substantive marked value corresponds to the presence of a subfeature associated with a functional head, while unmarked values correspond to the absence of such features (the defaults are 'filled in' at LF, to the extent that they are required for semantic interpretation). If we take the association of a diacritic with a feature to be a purely mechanical, random operation, then a functional head with a subfeature has two chances of being associated with a diacritic, hence substantively marked values are more frequently overtly realised. The maximally unmarked case, a substantive default value lacking a *, may not be syntactically present (see the discussion in R&R's Note 6, p. 215).

The above paragraphs present, in a rather synoptic form, the main points of R&R's approach. We now turn to the second idea behind our main claim: Cinque's analysis of clause structure.

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6. The PF-realisation requirement can be satisfied in various ways, leading to the postulation of a markedness hierarchy, as follows (where '>' means is 'is more marked than'):

(i) $F^*_{Move/Merge} > F^*_{MoveXP/Merge} > F^*_{MoveX/Merge} > F^*_{MoveXP} > F^*_{MoveX} > F^*_{Agree} > F^*_{Merge} > F$.

See R&R, pp. 209–213, for discussion.

3. The Cinque hierarchy

Cinque's initial observation concerns the well-known fact that many types of adverbs must occur in a fixed order.[7] In (12), for example, the sequences *usually already* and *always completely* cannot appear in the inverted order:

(12) a. At this time of the day, John has usually already eaten.
??At this time of the day, John has already usually eaten.
b. He always completely lost his mind when he saw her.
*He completely always lost his mind when he saw her.

The standard view in generative grammar was that adverbs (or Adverbial Phrases) adjoin to the maximal projections they modify (cf. Jackendoff 1972; Zubizarreta 1982; Roberts 1987; Sportiche 1988). This can give rise to a natural classification of adverbs according to the category they are adjoined to; such classifications are proposed in Jackendoff (1972), Zubizarreta (1982), Travis (1984) and Roberts (1987) among others. Cinque (1999) departs from this approach, arguing instead that adverbs appear in a rigid universal order which parallels auxiliary and affix order (see below on these orders). He accounts for this by saying that adverbs occupy the unique specifier position of dedicated functional heads (indeed, he adopts the approach to phrase structure put forward in Kayne (1994), according to which each head may have at most one specifier). Thus the rigid universal order of adverbs reflects the rigid universal order of clausal functional categories.

Cinque's motivation for saying that AdvPs occupy specifier positions stems from the possible positions of various kinds of verb forms across Romance. The paradigm in (13) shows that in Italian a past participle can appear in between any of the 'lower' adverbs above *tutto* ('all'), although it cannot appear lower than *tutto*:

(13) a. *Non hanno di solito mica più sempre completamente rimesso tutto bene in ordine*
b. *Non hanno di solito mica più sempre rimesso completamente tutto bene in ordine*

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7. Circumstantial adverbials such as those in (i) have different properties:

(i) a. He attended classes every day of the week at a different university.
b. He attended classes in each university on a different day of the week.

As the examples in (i) show, such adverbials vary in order, can be in one another's scope, are typically PPs, cannot appear to the left of VP (unless they are topicalised) and are predicated of the event. Cinque (1999: 30) suggests that such adverbials are merged in VP-shells, as shown in (ii), and that leftward movement of the main VP can give rise the various surface orders:

(ii) $[_{VP}$ [every day] *v* $[_{VP}$ [at the university] *v* $[_{VP}$ John attended classes]]].

c. *Non hanno di solito mica più rimesso sempre completamente tutto bene in ordine*
d. *Non hanno di solito mica rimesso più sempre completamente tutto bene in ordine*
e. *Non hanno di solito rimesso mica più sempre completamente tutto bene in ordine*
f. *Non hanno rimesso di solito mica più sempre completamente tutto bene in ordine*
g. **Non hanno di solito mica più sempre completamente tutto rimesso bene in ordine*
h. **Non hanno di solito mica più sempre completamente tutto bene rimesso in ordine*
'They haven't usually any longer always put everything properly in order'.

In Sardinian, participles can appear lower than the equivalent of *tutto*:

(14) a. *Apo bene mandigadu*
I-have well eaten
b. *Apo mandigadu bene*
I-have eaten well
c. *Apo tottu mandigadu*
I-have everything eaten
d. *Apo mandigadu tottu*
I-have eaten everything.

Finally, in French, participles must appear in the rightmost, lower position to the right of *bien*:

(15) a. *Il a bien compris la question*
He has well understood the question
b. **Il a compris bien la question*
He has understood well the question.

There is thus evidence that a head can appear anywhere in the sequence of adverbs. Since the adverbs are phrasal categories, they cannot themselves be heads, while the participle fairly clearly is a head. This suggests that exactly one head position is associated with each adverb, a conclusion which falls out naturally if each adverb is a unique specifier. A similar argument is made for finite verbs in relation to higher adverbs, as illustrated in (16):

(16) a. *Gianni per fortuna probabilmente forse intelligentemente fu invitato*
b. *Gianni per fortuna probabilmente forse fu intelligentemente invitato*

c. *Gianni per fortuna probabilmente fu forse intelligentemente invitato*
d. *Gianni per fortuna fu probabilmente forse intelligentemente invitato*
e. *Gianni fu per fortuna probabilmente forse intelligentemente invitato*
'John was fortunately probably perhaps intelligently invited'.

Here we see that the finite verb can intervene anywhere in the sequence of adverbs, which must be evaluative (*per fortuna* 'fortunately') > evidential (*probabilmente* 'probably') > epistemic (*forse* 'perhaps') > subject-oriented (*intelligentemente* 'intelligently').

In addition to the evidence from adverb positions, Cinque also provides cross-linguistic evidence regarding the order of clausal functional projections from the relative positions of auxiliaries, particles and affixes. As is well known, English auxiliaries pattern in the order *Tense/Mood – PerfAsp – ProgAsp – Voice*:

(17) Mary might have been being arrested.

Cinque suggests that, since English only allows one suffix per word, auxiliaries are required in association with the Aspect and Voice markers (*-en, -ing, -en*). Many agglutinating languages, however, allow suffixes to be stacked on the verb. Korean is an example:

(18) *cap-hi- si- ess- ess- keyss- sup- ti- kka*
V-Passive Agr Ant Past Epistemic Agr Evid Q
'Did you feel that (unspecified argument) had been caught?'

The order of affixes is *Voice – Aspect – Tense – Mood1 – Mood2*, almost the exact mirror image of the English order. If we think of the affixes as 'rolled up' by successive operations of head-movement, then we in fact observe that the basic clausal order is the same as that in English.

Consider next German, an OV language with English-like morphology. Here we observe the order *Voice – Asp – Mood* in subordinate-clause verb clusters:

(19) … *daß er von der Bank angestellt worden sein muß*
… that he by the bank employed been have must
'… that he must have been employed by the bank'. (Cinque's (24), p. 58)

Similarly to the Korean example above, this order can be derived by successive operations of movement from an underlying order like that of English (in this case, the movement may well be phrasal – see *inter alios* Hinterhölzl (1999), Haegeman (2000), Hróarsdottir (2000), Koster (2000), Koopman and Szabolsci (2000), and Biberauer (2003) for variants of this approach to Continental West Germanic word order).

Cinque lists the following orders of auxiliaries/particles/affixes in a range of languages (see Cinque (1999: 153f.) for more detailed discussion, more languages, and references):

(20)	a.	Modern Greek:		T	Asp	Voice	V
	b.	Basque:		T	Asp	Voice	V
	c.	Finnish:		T	Asp	Voice	V
	d.	Celtic:		T	Asp-perf	Asp-prog	V
	e.	Chinese:	Mod		Asp-perf	Asp-completive	V
	f.	Bantu:		T	Asp		V
	g.	Arabic:	Mod	T	Asp	Voice	V
	h.	Mokelese (Micronesia):			Asp-habitual	Asp-perf	V
	i.	Navajo:		T	Asp		V
	j.	Gungbe:		T	Asp-habitual	Asp-prog	V

The common pattern is rather clear, and corresponds closely to the ordering of adverbs.

On the basis of this evidence, Cinque (1999: 90,106) argues that the structure of the clause contains at least the following sequence of functional heads:

(21)	$Mood_{Speech\ Act}$	$Mood_{Evaluative}$	$Mood_{Evidential}$	$Mod_{Epistemic}$ T(Past)
	T(Future)	$Mood_{Irrealis}$	$Mod_{Necessity}$	$Mod_{Possibility}$
	$Asp_{Habitual}$	$Asp_{Repetitive(I)}$	$Asp_{Frequentative(I)}$	$Asp_{Celerative(I)}$
	$Mod_{Volitional}$	$Mod_{Obligation}$	$Mod_{Ability/Permission}$	$Asp_{Celerative(I)}$
	T(Anterior)	$Asp_{Terminative}$	$Asp_{Continuative}$	$Asp_{Perfect(?)}$
	$Asp_{Retrospective}$	$Asp_{Proximative}$	$Asp_{Durative}$	$Asp_{Generic/progressive}$
	$Asp_{Prospective}$	$Asp_{SgCompletive(I)}$	$Asp_{PlCompletive}$	Voice
	$Asp_{Celerative(II)}$	$Asp_{SgCompletive(II)}$	$Asp_{Repetitive(II)}$	$Asp_{Frequentative(II)}$
	$Asp_{SgCompletive(II)}$			

Here each head takes the category to its immediate right as its immediate structural complement, in a standard X'-theoretic schema. Moreover, each head is associated with a marked and unmarked value of a feature. For example, the unmarked value of $Mood_{Speech\ Act}$ is declarative, while the marked value is –declarative (for a full list of the marked and unmarked values of each of the heads in listed in (21), see Table 6.1 in Cinque 1999: 130).

As we have seen, Cinque provides three main types of evidence for the clausal hierarchy he proposes. The empirical case for the hierarchy in some form approximating that in (21) is very strong indeed. What we can also observe is that the differences among many of the categories are very fine-grained, especially among adjacent, or structurally close categories. At the top of the hierarchy we have four

'speaker-oriented' mood categories, followed by two tenses, three further modal categories (without the speaker orientation here), a series of aspectual categories, three root-modal categories, and then a long series of aspectual categories. I will not attempt a featural breakdown of these categories, but it is clear that they, to a degree, fall into 'fields' and that, within these fields, differences may be rather subtle. Moreover, a single lexical item may be able to instantiate several categories: *can*, for example, may be $\text{Mod}_{\text{Ability/Permission}}$, $\text{Mod}_{\text{Possibility}}$, $\text{Mod}_{\text{Epistemic}}$ and perhaps $\text{Mood}_{\text{Evidential}}$ (see Note 3). These incremental differences among categories, combined with the possibility of multiple exponence for many lexical items, may give rise to the impression of synchronic gradience.

4. Grammaticalization and the Cinque hierarchy

In this section, I will suggest that diachronic evidence from cases of grammaticalization, once this phenomenon is understood formally along the lines put forward by R&R and described in Section 2, may further support a version of the Cinque hierarchy. In order to try to establish this idea, I will consider some well-known morphosyntactic changes, many of which have been analysed in the literature on grammaticalization. In each case I will argue that the change should be seen as 'upward' reanalysis in R&R's sense as described in Section 2. The 'upward' path appears to correspond fairly closely in each case to a subpart of the Cinque hierarchy. It may be, then, that grammaticalization phenomena can provide further evidence for the hierarchy, given assumptions about syntactic change along the general lines of those made by R&R.

4.1 Romance futures/conditionals

This is a very well-known change in the history of many Romance languages. The future and conditional paradigms of French, Italian, Spanish and Portuguese derive from a Late Latin periphrasis featuring the infinitive followed by finite forms of *habere* ('to have').[8] The close formal parallels between the future endings of French and the present forms of *avoir* ('to have') are a reflex of this change:

(22) Future tense: *-ai*, *-as*, *-a*, *-ons*, *-ez*, *-ont*
avoir: *ai*, *as*, *a*, *avons*, *avez*, *ont*
(cf. Fleischman 1982; Pinkster 1987; Hopper and Traugott 1993: 42–44)

8. There is only one attested example where 'modal' *habere* in the Late Latin periphrasis is non-finite; see R&R, Note 11, p. 50, and the references given there.

R&R (Chapter 2, Section 2) break this case of grammaticalization down into three changes, as in (23) (in (23a) *amare* moves as a (possibly remnant) XP, so there is no issue with the Head Movement Constraint):

(23) a. $[_{ModP}\ [_{VP}\ [_{XP}\ amare]\ t_{habeo}\ [_{Mod}\ habeo]]] > [_{ModP}\ [_{XP}\ amare]\ [_{Mod}\ habeo]]$
b. $[_{ModP}\ [_{XP}\ amare]\ [_{Mod}\ habeo]] > [_{ModP}\ [_{XP}\ t_{infin}]\ [_{Mod}\ amar + aio]]$
c. $[_{ModP}\ [_{Mod}\ amar + aio]\ [_{VP}\ t_{infin}]] > [_{T(Fut)P}\ [_{T(Fut)}\ amer+ò]\ [_{VP}\ t_{V+fut}]]$

The change from (23a) to (23b) is really the change of a lexical verb (if *habere* ever truly was a fully lexical verb, which I will assume here for simplicity) to a modal auxiliary expressing deontic obligation or necessity. This change is directly comparable to the very well-known change which created the Modern English modals (Lightfoot 1979; Roberts 1985; Warner 1993), and I will say no more about it here. The change from (23b) to (23c) was a morphosyntactic change from auxiliary to affix, combined with a semantic change from modal to future marker.[9] An example of the intermediate stage is (24), from Benveniste (1968: 90):

(24) *in nationibus a quibus magis suscipi habebat*
among nations-ABL by which-ABL most to-be-accepted had
'Among nations by which the most was to be accepted'.

According to Benveniste, the periphrasis "acts as the equivalent of the future passive participle" and "served to indicate the predestination of an object to follow a certain course of events."

An example of the outcome of the third stage is (25), a 7th-century inscription, given in Tekavčić (1980: 237):

(25) *et quod sum, essere abetis*
and that I-am, to-be have-2PL
'And what I am, you will be'.

As shown in (23c), this latter change involved the reanalysis of a modal expressing obligation or necessity as a future morpheme:

(26) $Mod_{Necessity}$ / $Mod_{obligation}$ > T(Future)

9. There was almost certainly an intermediate stage where the auxiliary was a clitic of some kind. The strongest evidence for this comes from the 'mesoclisis' phenomenon involving this auxiliary, abundantly attested in archaic Ibero-Romance, but also attested in all other branches (except Gallo-Romance). Here, we find the order *pronominal clitic – auxiliary – verb* and *pronominal clitic –verb – auxiliary* alongside, in 'Tobler-Mussafia' contexts, where the pronominal clitic would otherwise have been first, *verb – auxiliary – clitic*. The fact that the auxiliary never appears first in these contexts supports the idea that the auxiliary is also a clitic. I will leave this very interesting complication aside here; for a brief discussion, see R&R, p. 55–56.

Most importantly in the present context, the development of *habere* as a future/conditional marker involves 'upward reanalysis' of the first-merged position of *habere* through the Cinque hierarchy, as we can see.

This account actually brings to light a difficulty that the Cinque hierarchy appears to create: that of maintaining sufficiently local relations among positions, while at the same time allowing for all heads to be present in all clauses (as argued by Cinque 1999: 132–134), and therefore requiring apparently 'long-distance' Agree and Move relations. For example, given the discussion of (26), we might want T(Future) to attract $\text{Mod}_{\text{obligation}}$ across eight heads, according to the structure in (21). We could iterate the Agree relation eight times, but this would be cumbersome and artificial, as well as raising the question of why *habere* never passed through a stage of being first-merged in intermediate positions such as $\text{Asp}_{\text{Celerative(I)}}$ given R&R's general approach. Clearly, what is required is a radical relativisation of probing features in relation to intervention-determined locality. At the very minimum we need to distinguish Tense and Mood heads on the one hand from Aspect heads on the other. Another possibility is to consider the features that make up the functional hierarchy to be *substantive* functional features, while those that enter into Agree and Move relations involve, following Chomsky, *formal* functional features. Where a head accepts first-merge of a verbal/auxiliary element, we may consider that it forms a compound in the Numeration of the form [F, v], where F is the substantive functional feature (Asp, Mod, etc.) and *v* is a formal categorical feature (verb). A probing head may have a categorical feature or an unvalued φ-set in Chomsky's sense. If all substantive heads intervening in the sequence between Probe and Goal lack formal features, they will be completely inert for the Agree/Move relations triggered by the formal features and hence not count as interveners. These ideas are explored more in Roberts (Forthcoming).

The change interacts with changes in word order between Late Latin and the earliest stages of Romance. To the extent that Classical Latin had rigid verb-final order, the V-Aux order can be analysed as VP raising to SpecMod, giving (27):

(27) … $[_{\text{ModNecP}}\ [_{\text{VP}}$ magis suscipi$]\ [_{\text{Mod}}$ habebat$]]$

When VP-Aux order was lost as a part of the general word-order change, the sequence infinitive + *habere* was first reanalysed as V-movement to Aux (which may or may not have interacted with remnant VP-movement, given the general freedom of word order):

(28) $[([_{\text{VP}}$ magis $t_{\text{V}}])$ … $[_{\text{ModNec}}\ [[_{\text{V}}$ suscipi$]\ [_{\text{Mod}}$ habebat$]]]]$

Here V and Aux form a single head. Once Mod becomes phonologically weak it reduces first to a clitic and then to a suffix and is finally reanalysed as a lexical

suffix, i.e. as part of the higher head. Of course, this is possible only if there is strict adjacency between the two heads, i.e. no material can intervene between the two; this is guaranteed by the V-adjunction analysis seen here, and is in fact empirically the case as noted by Benveniste (1968).

However, despite the evidence for upward reanalysis of *habere* here, it is arguable that the surface position of the inflected verb or auxiliary was never affected. Before the word-order change from OV to VO, this was a medial position: no higher than Chomsky's (1995, 2001) *v*, a position lower than the entire temporal and modal field into whose Specifiers various XPs move, generating surface verb- or auxiliary-final order. After the word-order change, on the other hand, verbs consistently moved high into the T/M field, presumably for morphological reasons. The first-merged position of the auxiliary changed, however, along the lines we have seen. Assuming that a higher functional head such as T probes the auxiliary at all stages, then we must assume that the change from Mod to T(future) involved the loss of the Agree relation when the modal comes to be first-merged in T. Moreover, to the extent that 'modal auxiliary' *habere* emerged before the word-order change, as suggested by (23), then this element must have been licensed by an Agree relation with Mod_{Nec}, with no actual merger into that position at the Classical Latin stage.

4.2 Perfects to preterits

In all the major Romance languages, the synthetic preterit tense comes from the Latin present perfect, e.g. Latin *cantavit* > Spanish/Italian *cantò*, French *chanta*, etc.[10,11]

Cinque (1999: 81–83) gives the following Reichenbachian analysis of the Tense positions T(Past), T(Future) and T(Anterior) in the clausal hierarchy in (11) (here X_Y means 'X precedes Y on the timeline') (see Table 1).

Perfect tenses have the values R_1, S; R_1, R_2; E_R_2, and past tenses have the values R_1_S; R_1, R_2; E, R_2. So we see that the change from perfect to past tense involves a shift from marked to unmarked T(Anterior) and from unmarked to

10. Some varieties have lost these forms completely: "almost all" Northern Italian dialects, according to Cordin (1997: 88), and she notes that "[t]he same tendency is attested in Sardinian".

11. Vincent (1988: 56) points out that forms such as *cantavit* were in fact ambiguous between a perfect ('s/he has sung') and a preterit ('s/he sang') reading in Latin. However, no such ambiguity is found in any Modern Romance variety, to my knowledge. Sihler (1995: 586) implies that this dual usage was due to a dual origin of the forms in the stative and the aorist. Thus the stative "eventually merged, formally and functionally, with the old aorist. Before this happened, however, it was manifestly a kind of present tense."

Table 1. Cinque's Reichenbachian analysis of Tense heads

Head	Default value	Marked value
T(Past)	R_1, S	R_1–S
T(Future)	R_1, R_2	R_1–R_2
T(Anterior)	E, R_2	E–R_2

marked T(Past). Here, the marked feature 'moves up the tree' diachronically. We can think that this marked property is associated with the Probe for V-movement. In other words, 'past' inflectional features change their value from T(Ant) to T(Past) with no change in the form of verbal inflection and none in the distance traversed by the verb, given the constant presence of agreement features also triggering V-movement.[12]

The fact that a similar change has taken place in some varieties of German confirms that Agree rather than movement is at stake. It is likely that German verbs do not move in subordinate clauses (or they move no further than Chomsky's *v*-position, briefly mentioned above). In main clauses, they move to the second position, which is higher than the entire temporal/modal field. Nonetheless, the change in the temporal value of the 'perfect tense' indicates that the temporal features triggering the crucial Agree relation have diachronically moved 'up the tree'.

4.3 Modals

The English premodal (to use Lightfoot's (1979) term) *motan/must* may illustrate a change from $\text{Mod}_{\text{Ability/Permission}}$ to $\text{Mod}_{\text{Obligation}}$ to $\text{Mod}_{\text{Epistemic}}$ (Traugott and Dasher 2002: 122f.). The following examples serve as illustrations:

(29) a. *Wilt ðu, gif ðu most, wesan usser her aldordema*?
will you, if you can, be-INF our army leader?
'Are you willing, if you are able, to be the leader of the army?'
(8th century, Genesis, 2482; Traugott and Dasher 2002: 122)

12. This kind of change is not restricted to Romance, as the following quotation illustrates:

> The periphrastic resultative/perfective construction … of Germanic and Romance languages, for example, has occasionally extended its use to marking past tense: in Modern Colloquial German, it is taking over the functions of the older past tense (Bybee et al. 1994: 85). Similarly, what Westermann (1907: 139) calls the 'Dahome' dialect of Ewe appears to have experienced a shift from perfect to past marker, and in Atchin, the auxiliary *ma* 'come' merges with pronominal forms to make a past tense auxiliary (Bybee et al. 1994: 86). (Heine & Kuteva 2002: 231)

b. *Ac ðanne hit is þin wille ðat ic ðe loc ofrin mote*
and then it is thy will that I thee sacrifice offer must
'But then it is Thy will that I must offer Thee a sacrifice.'
(c1200 *Vices and Virtues* 85.5; Warner 1993: 175; Traugott and Dasher 2002: 124)

c. I have wel concluded that blisfulnese and God ben the sovereyn god; for whiche it mote nedes be that sovereyne blisfulnesse is sovereyn devynite
'I have properly deduced that blissfulness and God are the supreme good; therefore it must necessarily be that supreme blissfulness is supreme divinity.'
(c1389 Chaucer, *Boece* p. 432, l. 124; Traugott and Dasher 2002: 129)

These changes are well-known, and *motan/must* is not the only element to have undergone them; it simply happens to exemplify them rather well in its recorded history. Again, note that English inflected verbs/auxiliaries probably had 'German' syntax in the first two examples (9th century and 1200), although the question is trickier regarding Chaucerian English. Again, then, what changes is the position of the probing features rather than the surface position of the verb.

4.4 Some less well-known cases

Here I simply list a few further cases of grammaticalization from a range of languages (most, but not quite all, are from Heine and Kuteva 2002). We consistently observe diachronic movement of a formative from a relatively low to a relatively high position in the Cinque hierarchy.

The first case is Portuguese *acabar* ('finish') turning into Sranan Creole *kaba*, an adverb meaning 'already':

(30) *Mi memree wie abie piekienwan kaba*
I think we have little-one already
'I thought we already had little ones.' (Heine and Kuteva 2002: 134)

A similar example is Burmese *-pì-* 'to finish' turning into the adverbial *-pi* 'already'. According to Cinque (1999: 94), *already* occupies SpecT(Anterior), so this is a case of reanalysis of $\text{Asp}_{\text{Completive}}$ as T(Anterior), again an upward reanalysis in terms of the clausal hierarchy.

Second, Heine and Kuteva (2002: 138) give a number of examples where a verb or particle meaning 'finish' develops into a perfective marker: Lhasa *tsháa* (Lord 1989: 369), Burmese *pì* (Park 1992: 16), Kongo *mana* (Laman 1912: 185–186; Heine and Reh 1984: 88); Mandarin *liǎo* 'to finish' > *le*, perfective marker.

These can be seen as $Asp_{Completive}$ being reanalysed as $Asp_{Perfect}$, again an instance of 'upward' reanalysis.

Third, future markers often develop into markers of epistemic modality. Some examples are given in (31):

(31) a. English:
(Knock at door): That'll be John.
b. German:
Sie wird jetzt zu Hause sein
She will now at home be
'She will be at home by now'.
c. French:
Ce sera/?va être Jean
That will-be/is-going to-be John.
d. Bulgarian:
Tja šte e pri prijatelja si po tove vreme
She FUT is at boyfriend her at this time
'She will be at her boyfriend's place at this time'.
e. Swahili:
A-ta-ku-wa nyumba-ni sasa
CL-FUT-INF-be house-LOC now
'He will be at home by now'.

Again, Mod_{Epi} occupies a higher position than T(Fut) in Cinque's hierarchy, and so the change can be seen in these terms.

Fourth, Heine and Kuteva (2002: 184) give a number of examples of iterative markers developing into an adverb meaning 'still': Ket *haj* 'again' > *hy* 'still' (van Baar 1997: 92); Ewe *-ga-* verbal iterative prefix > 'still' (van Baar 1997: 92); Tayo *akor* 'again' > 'still'. Cinque (1999: 95) places *still* in Spec, $Asp_{Continuative}$, and so this would be a case of reanalysis of $Asp_{Repetitive}$ as $Asp_{Continuative}$.

Finally, Cinque (2004: Chapter 1) argues very convincingly that the 'restructuring verbs' of Italian and other Romance languages, a class of modal, aspectual and conative verbs which give rise to various kinds of transparency effects in relation to their complement infinitives (most notably, clitic-climbing), are in fact best analysed as functional heads occupying the appropriate modal and aspectual positions in a single clausal functional hierarchy. In these terms, it is interesting to note the following cases of grammaticalization, all of which can be distilled from the data in Heine and Kuteva (2002):

(32) a. begin > inceptive (Lingala; Heine and Kuteva 2002: 52)
b. come > consecutive (Kxoe, Godié, Negerhollands; Heine and Kuteva 2002: 69)

c. come from > near past (Jiddu, Teso, Sotho, Klao, Nyabo, French, Yoruna, Malagasy; Heine and Kuteva 2002: 72–73)
d. come to > future (Bambara, Kono, Akan, Wapa, Efik, Koyo, Duala, Ganda, Zulu, Acholi, Teso, Lotuko, Tamil; Heine and Kuteva 2002: 75–8)
e. go > change-of-state (English, Tamil, Haitian; Heine and Kuteva 2002: 156)
f. go to > future (Bari, Sotho, Zulu, Margi, Klao, Igbo, Teso, Ecuadorian Quechua, Tzotzil, Tamil, Basque, Krio, Negerhollands, Haitian; Heine and Kuteva 2002: 161–163)
g. keep > continuous (Icelandic, Swedish, Imonda, Waata, Mudung; Heine and Kuteva 2002: 184–185)
h. remain > durative (Portuguese, Kxoe; Heine and Kuteva 2002: 254–255)
i. stand > continuous (Bulgarian, Italian, Spanish, Ngambay-Moundou, Kxoe, Diegueño, Imonda, Tariana; Heine and Kuteva 2002: 280–282)
j. want > future (Latin, Romanian, Mabiha, Swahili, Kimbundu, Bulgarian; Heine and Kuteva 2002: 310–311)

All of these changes either involve a change from a lexical to a functional verb, or a change of one functional element to another one higher up in the hierarchy. This evidence supports both the Cinque hierarchy and R&R's conception of grammaticalization.

4.5 Conclusion

We observe numerous cases of grammaticalization involving upward reanalysis in the Cinque hierarchy and, strikingly, no clear cases of 'downward reanalysis'. It is noteworthy that many of the cases of upward reanalysis involve reanalysis of the probe for a given element rather than of its merger position, although the two interact crucially, as we saw in Section 2.

There are really two aspects to this conclusion. On the one hand, there is the structural correlate of grammaticalization (upward reanalysis); this was largely established by R&R. On the other, a point not fully developed in R&R, there is the role played by the Cinque hierarchy. It is this highly articulated structure which gives the possibility of accounting for both diachronic gradualness and synchronic gradience. Essentially, the idea is that a seemingly analogue cline or curve can in fact be broken down into many small, but discrete, individual steps. As the most detailed set of proposals for the structure of the clause so far made, Cinque's hypotheses offer this possibility in the most radical form. The nature of many kinds of grammaticalization seems to favour this view. What favours it still more is the view of gradualness proposed by Traugott and Trousdale (this volume) that

structural changes should be seen as structural micro-changes, and gradualness is the accumulation of these discrete micro-changes. If the micro-changes involve incremental steps through the Cinque hierarchy on the part of very small (often singleton) classes of lexical items, then we see exactly how Cinque's proposals may be relevant.

5. Semantic bleaching and grammaticalization

It has often been observed that grammaticalization involves what can be intuitively characterised as 'semantic bleaching' (see the discussion of Gabelentz 1891 in Hopper and Traugott 1993: 20). For example, when nouns are reanalysed as determiners, they lose inherent descriptive content; when verbs are reanalysed as auxiliaries, they lose argument structure.

Although 'bleaching' is an intuitive, useful and expressive description of this process, it might be worth exploring a more precise formulation. R&R, following von Fintel (1995), propose that semantic bleaching is the process of loss of non-logical meaning. In these terms, then, grammaticalization of lexical material will typically involve the loss of non-logical meaning.

The distinction between logical and non-logical meaning can be made in terms of permutation/isomorphism invariance (Mostowski 1957; Sher 1996; Keenan 1996). Permutation-invariant meanings are meanings which do not depend on empirical facts for their contribution to truth; such interpretations depend purely on set-theoretic or numerical aspects of relations among referents, not on any intrinsic properties of the referents themselves. As Keenan (1996: 61) puts it, in relation to Determiners: "the 'logical' Dets are ones which cannot distinguish among properties according to which particular individuals have them. So such Dets do not themselves make any contingent (= empirical) claims about how the world is". Thus, a logical determiner (or quantifier) such as *every* merely express a subset relation: *Every boy runs* means that the set of boys is a subset of the set of runners. It cannot express anything about the individuals making up the sets, only about the relation between those sets. The truth of *Every unicorn runs* in a unicorn-free world such as our own underlines the point that such quantifiers do not make empirical claims. On the other hand, lexical elements like *run* (or *boy* or *unicorn*) have a meaning such that any actual individual (or individual in a model) can be assigned, or not, to the set denoted by that item.

The diachronic sources of quantifiers provide good examples of how grammaticalization may create purely logical meanings. Haspelmath (1995) identifies as the main source of 'all', at least in the Indo-European languages, an adjective

meaning approximately 'whole'. The following comparison/contrast between Classical Greek and Modern Greek illustrates:

(33) a. *hólous oíkous* (Classical Greek)
whole houses (i.e. families)
b. *óla tá spítia* (Modern Greek)
all the houses

Haspelmath (1995: 367) characterises the meaning of 'whole' as follows: "being in good shape, … not being damaged, … not lacking in any of the integral parts, … functioning properly". This is a property of individuals, and as such a non-logical meaning. But where *whole* modifies a collective Noun (cf. *the whole family/team/government* etc.), the property of "not lacking in any of the integral parts" can be taken to mean that all members of the set denoted by the collective Noun are relevant to the interpretation of the sentence in which the DP containing the Noun appears. This comes close to the meaning of a universal quantifier, cf.:

(34) The whole family is here.

Here the absence of one member of the family makes the sentence false, both on the 'integral' meaning of *whole*, and if *whole* is taken as a universal. Here we see how a meaning such as 'integral' could be reanalysed as universal quantification. In many natural situations, the two logical forms in (35) will give rise to the same truth value:

(35) a. Here(f) & whole(f) 'the whole family is here'
b. $\forall x: x \in F$ [here (x)] 'all members of the family are here'

However, in (35a) 'whole' is a predicate of individuals, while in (35b) the logical constant $\forall$, which denotes a subset relation between two sets (the family and the individuals that are present), corresponds to the Modern Greek item *óla*.

Another example comes from the Modern French n-word *rien*, which, as we mentioned in the Introduction, comes from the Old French Noun *rien(s)* 'thing'. R&R, pp. 136ff., argue for reanalysis of this element from N to Num inside an articulated DP. Now, from a semantic perspective, the change is from λx *(thing (x))* ('the set of x such that x is a thing'), to (taking n-words to be a kind of negative quantifier) $\lambda P \lambda Q \neg \exists x[P(x) \& Q(x)]$ ('the sets P and Q such that nothing is in both'). Note that, to know the meaning of *thing*, knowledge of what things are is required, i.e. knowledge about the world. On the other hand, to know the meaning of *rien*, it is only necessary to know a relation between two sets; changing the individuals in the sets around does not matter. This is what lies behind the concept of permutation invariance. This example also indicates is that, while grammaticalization may

involve decrease in complexity in syntax, it may increase the complexity of the (formal) semantic representation.

Similarly, the word for 'thing' often develops into the wh-expression for 'what'; this has happened with *cosa* in some varieties of Italian (Munaro 2005), to *beth/peth* in Welsh; Classical Arabic *šay?* ('thing') gives the negation marker *ši* in Lebanese Arabic, a non-specific indefinite marker in Moroccan Arabic and the wh-formative *š-* in Moroccan Arabic in words like *š-kun* ('who') and *š-nu* ('what'), also in Moroccan Arabic (Ouhalla 2002); here we see the same development as with *rien*, but creating different kinds of quantifier ('wh-' or non-specific indefinite rather than negative).

Can we link semantic bleaching with upward reanalysis, as we have tried to elucidate both concepts here? This would entail that the categories higher in the Cinque hierarchy are more 'bleached', i.e. more purely logical in content, than those lower down. Roughly speaking, Mood involves quantification (of different kinds) over possible worlds; Tense involves ordering relations among E, R_n and S, and Aspect involves relating times to event types by operators like punctual AT and durative IN. Intuitively, then, the logical properties of the higher functional heads are simpler than those of the lower ones (although all are purely logical, assuming AT and IN can be given set-theoretic definitions; see also below on aspectual *out*).

Interestingly, as far as I can see, this does not carry over to Cinque's highest four heads, $Mood_{Speech\ Act}$, $Mood_{Evaluative}$, $Mood_{Evidential}$ and $Mod_{Epistemic}$, all of which appear to involve a 1st-person element in their semantics. So it remains unclear whether we can consider the higher functional categories to be *featurally* simpler (corresponding to their simpler semantic properties) than lower ones. This suggests that, as we reach the top of the hierarchy, contextual factors (such as 1st-person) become crucial to interpretation. This is in turn consistent with (i) the fact Cinque explicitly limits his hierarchy to the traditional core clause, or IP in classical government-binding terms, i.e. the C-system, or 'left periphery' is excluded, and (ii) the fact that the C-system clearly contains information relating to context and to participants, since it relates to illocutionary force on the one hand and to notions such as topic and focus on the other. It may, then, be more appropriate to speak of 'pragmaticization' of elements in the left periphery, and it may be that the mechanisms involved here are rather different from those involved in grammaticalization as characterised by R&R (see again Traugott and Dasher 2002). I will leave this question open here.[13]

13. A reviewer points out that Tense too, to the extent that it involves deixis, depends on pragmatics for its interpretation. Aspect too may crucially involve a 1st-person perspective. Furthermore, s/he points out that permutation/isomorphism invariance characterises non-pragmatic

6. Conclusion

The main purpose of this paper has been to argue that the combination of R&R's formal approach to grammaticalization and Cinque's hierarchy of functional projections yields predictions about paths of grammaticalization which appear to be borne out in the literature on grammaticalization. The most important idea is that grammaticalization involves 'upward reanalysis' through the hierarchy. An important proviso to this, not fully recognised by R&R, is that the probing features associated with an Agree relation may themselves undergo upward reanalysis. The interaction of Agree with Move, and with the first-merged position of functional elements, remains an area to be further investigated. Finally, the relation of semantic bleaching with the conception of grammaticalization was discussed; here the results are inconclusive: there is some reason to think that higher functional heads, at least modal ones, are 'more bleached' than lower ones, but what remains unclear is exactly how logical properties map on to syntactic features.

A case in point in this last connection (as Elizabeth Traugott reminds me) is the discussion of the semantic bleaching of *out* in De Smet (this volume). Historically, the particle *out* as in *set out, dressed out, rigged out* derives from the directional preposition *out*; De Smet traces this very interesting development. Intuitively, the particle *out* has undergone semantic bleaching, losing its locative sense of "motion from the interior to the exterior of a container" to, quoting the *Oxford English Dictionary* definition quoted by De Smet (p. 92) "comprehensively, to the last detail, in a way that provides or includes everything necessary". It seems what is retained is the notion of completion: of the patient of motion having crossed an abstract boundary in its entirety, and hence being in the state described in a complete and entire sense. The notion of completion is an aspectual notion, and can be described in terms of a logical calculus of change of state (see Dowty 1979), and hence may be treatable under the heading of permutation/isomorphism invariance as described above. As we saw above, the notion of entirety, although close to universal quantification, is not quite the same thing. But there is also the question of the category membership of the particle *out*. This is a very difficult question, since it raises the question of the correct analysis of Modern English verb-particle constructions, which is a perennially thorny matter (see den Dikken 1995 for a relatively recent proposal). It is certainly possible that verbal particles are not functional categories in Modern English.

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meaning. Since many cases of grammaticalization involve a shift from pragmatics to semantics, it could be that this kind of account is favoured by the view of (core, non-left-peripheral) categories put forward here. These points are all of real interest and are well-taken, but pursuing them in any detail would take us too far afield here.

As stressed earlier, the highly articulated structure given in the Cinque hierarchy plays a central role. This is what allows us to reanalyse a seemingly analogue cline or curve as consisting of many small, but discrete, individual units. As the most detailed set of proposals for the structure of the clause so far proposed, Cinque's hypotheses offer this possibility in the most radical form. The nature of many kinds of grammaticalization seems to favour this view. Moreover, as noted earlier, the view proposed by Traugott and Trousdale (this volume) that structural changes should be seen as structural micro-changes, with gradualness emerging as the accumulation of such changes, is still more consonant with this picture. It may be, then, that we are close to a convergence of views arising originally from quite distinct traditions of grammatical and historical analysis. In that case, we may be getting something right.

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Grammatical interference

Subject marker *for* and the phrasal verb particles *out* and *forth*

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Two instances of grammaticalization are examined that illustrate the gradual character of change and the categorial ambivalence of grammaticalizing items. The first change is the development of the subject marker *for* in the English *for... to*-infinitive, whose expansion into new grammatical environments is shown to be steered by the historically related but syntactically distinct preposition *for*. The second change is the semantic and collocational development of the phrasal verb particles *out* and *forth*, which are argued to have influenced each other's trajectory of change. Both case studies show how grammaticalization processes can be guided by connections between grammaticalizing elements and other elements in the grammar. It is proposed that such connections form the substance of gradience and can be successfully described and explained in a constructionist and connectionist model of language. This interpretation of gradience in turn can shed light on some of the sub-processes (persistence, decategorialization, paradigmaticization) and motivations of grammaticalization.

1. Introduction

The journey of a grammaticalizing item through a language's categorial space is a complicated one. For one, there is the ambivalent character of grammaticalizing items in relation to the 'source' and 'target' of the grammaticalization process. Grammatical items seem to be at once connected to their source category and to abandon their source category for a new (grammatical) target category. A grammaticalizing item 'decategorializes' (Hopper 1991), losing membership of its source category. As a result of high frequency, it may become independently 'entrenched' (Bybee 2006), receiving a kind of categorial autonomy, or else it may undergo 'paradigmaticization' (Lehmann 1985) and be integrated in a new and more selective club of grammatical elements. But the grammaticalizing item also

tends to show a degree of 'persistence' (Hopper 1991) that betrays its origins as a once-lexical element and ties it to its source category. For another, there is the relationship between grammaticalizing items and the system of grammar in which grammaticalization proceeds. While recurrent grammaticalization pathways can be identified cross-linguistically, indicating that grammaticalization is steered by general functional principles (Haspelmath 1999; Heine and Kuteva 2002), the language-specific features of a grammar, too, are found to constrain grammaticalization in setting out the routes a grammaticalizing item can follow (Fischer 2007).

Given the interactions between grammaticalizing items, lexical (or less grammatical) sources and grammatical systems, grammaticalization poses challenges to our theories of the structure of grammar and grammatical categories and forces us to fine-tune our conception of grammar to our understanding of change (Traugott and Trousdale, this volume). Against this background, this paper aims to dig deeper into the relations that hold or arise between grammatical items and how these relations can steer historical developments. The extent of this steerage is easily underestimated, even despite terminological recognition in notions such as 'persistence' and 'paradigmaticization'. Next to exploring the different ways in which grammatical items may interfere, this paper also aims to examine how grammatical interference effects can be built into a theory of grammar and grammaticalization.

These goals are primarily approached through two case studies. The first case study deals with the development of subject marker *for* and demonstrates how the subject marker historically relates to two other *for*s in English, namely Middle English reinforcing *for* and the preposition *for* (Section 2). It is the relationship between the subject marker and the preposition that is of particular interest here, as it illustrates a situation of simultaneous categorial discreteness and attraction, presenting a case of very long-term persistence. The second case study deals with the semantic development of the phrasal verb particles *out* and *forth* (Section 3). It is argued that semantic change in these particles is not merely motivated by the internal dynamics of a semantic category but also influenced by the grammatical associations between particles. This shows that neighbouring grammatical representations can impinge on each other's development.

The two case studies have a number of theoretical implications (Section 4). They show that change in grammatical items is indeed gradual and may involve subtle changes in semantic and/or collocational behaviour next to and partly independent of the more conspicuous morphosyntactic changes. Because these changes are partly triggered by the relations a grammatical element has to other grammatical elements, they reveal a close interaction between grammatical change and the intricacies of the grammar in which change proceeds (cf. Fischer 2007). Most importantly, the case studies hint at some characteristics of the model

of grammar that would be able to describe grammaticalization in general. The model of grammar must allow for multiple connections between grammatical elements, for instance to explain how phenomena such as decategorialization and persistence can occur side by side in an item's development. These connections take the form of mismatches between the different layers of symbolical organization in grammatical categories (Rosenbach, this volume; Patten, this volume) and can be accounted for with the help of constructionist and connectionist models of language, with an ultimate explanation couched in terms of activational overlap. To the extent that these models successfully describe the changes, they suggest a promotion of grammatical gradience to being the rule rather than the exception in grammatical organization.

It should be noted that neither case study involves an entirely straightforward example of grammaticalization. The development of subject marker *for* has explicitly been characterized as not being an example of grammaticalization (Haspelmath 1998). The development of phrasal verb particles, while treated as an instance of grammaticalization by Brinton and Traugott (2005), still lacks some of the hallmark characteristics of grammaticalization, such as formal reduction, fixation, or a major sudden increase in productivity. Still, if it is assumed that grammaticalization is a cluster of changes that tend to co-occur or trigger one another, it is also conceivable that not all instances of grammaticalization undergo all characteristic changes, for instance because of the constraints imposed by a given grammar (Fischer 2007). In that light it is significant that both changes at issue show certain clear characteristics of grammaticalization, particularly decategorialization and semantic bleaching. Moreover, both the *for...to*-infinitive and phrasal verb particles have been steadily (if slowly) extending their range of use (cf. 'host-class expansion' in Himmelmann 2004). Finally, what matters most for present purposes is what the changes tell us about the simultaneous associations with different categories that items under change can maintain, and what this can reveal about processes such as decategorialization, paradigmaticization and persistence in grammaticalization. Therefore, the two changes discussed are instructive not just as examples of grammaticalization, but because clearer cases of grammaticalization move through the same categorial limbo (cf. Denison, this volume; Rosenbach, this volume).

2. *For* and the *for...to*-infinitive

For...to-infinitives are *to*-infinitives with an explicit subject marked by *for*, as in (1). As (2) shows, the pattern appeared at the end of the Middle English period. Since then it has gained in frequency and it is now used in a wide set of different

syntactic positions, including subject, extraposed subject, subject complement, verb complement, purpose adjunct, relative postmodifier, and more (Poutsma 1926; Visser 1963–1973; Wagner 2000; De Smet 2008).

(1) It was neither my intention or aim for this to happen. (CB)

(2) Also it ys a certayn techinge for hele to be keped, þat a man vse metys þat accordyn to his complexioun and nature (1400–49, IMEPCS)
'Furthermore, it is certain advice for health to be kept that a man must use food that accords to his constitution and nature.'

In this section I will start by briefly tracing the history of the *for...to*-infinitive and of its subject marker *for*, showing how at its emergence subject marker *for* is only distantly related to the preposition *for* (Section 2.1), then to argue that following its emergence the subject marker has at least twice gravitated (back) into the sphere of influence of the preposition (Sections 2.2 and 2.3).

2.1 The emergence of the *for...to*-infinitive

The emergence of *for...to*-infinitives has been described in terms of rebracketing, with ambiguous sequences as in (3) as the pattern's source (Harris and Campbell 1995; Haspelmath 1998; see also van Gelderen, this volume). On this scenario, the *for* of the *for...to*-infinitive derives from the preposition *for*. The old reading of (3) involves a prepositional phrase introduced by *for* controlling an extraposed *to*-infinitive; the new reading collapses the prepositional phrase and the *to*-infinitive into a single constituent that functions as extraposed subject.

(3) a. it'd be good for them to know that I am around (CB)
b. it_i'd be [good for them] [to know that I am around]$_i$
c. it_i'd be [good] [for them to know that I am around]$_i$

De Smet (2009) has argued against this view on the grounds that *for...to*-infinitives did not first appear in the environments that gave rise to most ambiguity – which is indeed the extraposition context illustrated in (3) – but in purpose adjuncts, as shown by (2) above. The alternative account De Smet (2009) offers holds that *for...to*-infinitives arose from Middle English *to*-infinitives with 'reinforcing' *for* as in (4) – a pattern that itself arose in the course of the Middle English period, probably as a means of emphasizing the purposive force of the *to*-infinitive (Fischer 2000).

(4) i cam for to donne mines fader wille. (a1225, HC)
'I came to do my father's will.'

The argument for linking subject marker *for* to reinforcing *for* rather than to the preposition *for* runs as follows. Middle English *to*-infinitives still regularly showed OV-order, which in combination with reinforcing *for* gave rise to the two following patterns, shown in (5), one with the object of the *to*-infinitive preceding *for* (which remains attached to the *to* of the infinitive), the other with the object of the *to*-infinitive introduced by *for*.

(5) a. Þe halie gast ivende fram heuene to hearþe, mankun for to alesen.
(c1200, MED)
'The Holy Spirit came from heaven to earth to deliver mankind'

b. and he besohte at gode þat naht ne scolde reinin, for ðe folke to kastin.
(1200–49, IMEPCS)
'and he requested from God that it would not rain, to chastise the people.'

The latter pattern is superficially similar to a present-day *for...to*-infinitive, except that *for* does not introduce the subject but the object. When OV-order became increasingly unacceptable, language users could rid themselves of undesirable uses as in (5b) in two ways, either by reverting word order to canonical VO or by passivizing the whole *for*-NP-*to*-VP sequence. The latter option gives rise to something that looks exactly like a modern *for...to*-infinitive, with subject marker *for*. Note that Fischer (1991) has given a similar account of the emergence of certain AcI patterns in the Middle English period.

Additional evidence supporting the alternative account of the emergence of subject marker *for* comes from the following considerations. First, the timing of the appearance of subject marker *for* roughly fits with the disappearance of OV-order and follows relatively closely on the emergence of Fischer's AcI's. Second, the earliest *for...to*-infinitives are indeed predominantly passive. Third, as indicated above, *for...to*-infinitives first appeared in adjunct positions (and, by extension, in positions where the infinitive has goal-oriented semantics), which is also the position where reinforcing *for* seems to have been most common in Middle English (Warner 1982; Pak 2005). Note that none of these arguments are countered by van Gelderen (this volume) and that her alternative account does not explain the timing of the change nor the prevalence of passive *for...to*-infinitives among the earliest instances.

If subject marker *for* does not derive directly from the preposition *for*, we would expect few similarities between the subject marker and the preposition. Indeed, synchronically the two are different enough, formal identity notwithstanding. The subject marker is semantically distinct from the preposition; it occurs in a syntactic position where no other prepositions can be used; and unlike a preposition it can be followed by the filler element *there* (e.g. *it's not common for*

there to be so much rain in March). These should be sufficient reasons to speak of grammatical homonymy but, as the following two sections are to show, this still does not mean that there are no links between the subject marker and the preposition. Apparent categorial distinctness notwithstanding, the preposition has in fact influenced the development of the subject marker. The following two sections give two examples to illustrate the point, the first of which is fairly speculative, but the second is supported by good empirical evidence and, as such, projects some of its plausibility onto the first.

2.2 The survival of the *for...to*-infinitive

An issue De Smet (2009) does not address is how *for...to*-infinitives, after they arose in late Middle English, survived. There was no reason to interpret the first instances of subject marker *for* as categorially distinct from reinforcing *for* – strictly speaking, what had changed was word order, not the status of *for*. But while reinforcing *for* disappeared quickly in all its old uses during the Early Modern period in the majority of varieties of English, it continued as the subject marker in *for...to*-infinitives. Indeed, it is the exclusive survival of those sequences where *for* introduces the subject of the *to*-infinitive that now prompts us to analyze *for* as an infinitival subject marker and not as a reinforcing element.

One plausible reason for the survival of *for...to*-infinitives is the pattern's superficial resemblance to sequences of a prepositional phrase with *for*. Similarity to other sequences generated by the grammar made *for...to*-infinitives a passable English construction. The ambiguities are well-known and involve, particularly, the extraposition contexts often quoted as the source of *for...to*-infinitives, but also other syntactic environments, as shown in (6).

(6) And this me semeth shuld be sufficient instruction <u>for</u> the husbande to kepe measure. (1534, PPCEME)

There is no incontrovertible argument to support this solution to the survival problem, except that superficial similarities between new and established patterns are often seen to enhance the acceptability of the new form (Naro 1981; Bybee and Slobin 1982; Aitchison 1991; Plank 2004). Superficial familiarity may have facilitated or even triggered several of the changes discussed in the present volume. For example, the similarity of *-ish* in *rubbish* to an adjectival suffix may be making adjectival uses of *rubbish* more acceptable (Denison, this volume); the existence of unmarked genitives in northern dialects may have furthered the extension of noun modifiers to incorporate proper nouns (Rosenbach, this volume); and the existence of impersonals could still have facilitated the emergence of non-

NP focus *it*-clefts, even if they cannot be the pattern's direct source (Patten, this volume). A similar familiarity effect may have improved the *for...to*-infinitive's chances of survival when it was threatened with extinction. If *for...to*-infinitives survived thanks to their superficial similarity to patterns with a *for*-phrase controlling a subsequent *to*-infinitive, this is indicative of a first connection between subject marker *for* and the preposition *for*.

2.3 The diffusion of the *for...to*-infinitive

The second example of interaction between subject marker *for* and the preposition *for* comes with better empirical support. *For...to*-infinitives not only survived but gradually extended their range of use, spreading over a wide range of grammatical environments (De Smet 2008). The way in which this process unfolded is revealing of the categorial status of *for* and the *for...to*-infinitive. For a start, *for...to*-infinitives have very systematically invaded environments that also allow *to*-infinitives. For instance, the *for...to*-infinitives in (7) are unacceptable presumably because *to*-infinitives are too.

(7) a. *The recombinant material has been used where possible in children to prevent spontaneous bleeds and avoid for arthritic damage to develop.
b. *It crept up on me without for me to be really aware of it.

Any sensible grammarian will take this as a sign that *for...to*-infinitives and *to*-infinitives are related and, without necessarily specifying the exact categorial relationship, will recognize that *for...to*-infinitives are a kind of *to*-infinitive.

Crucially, however, the distribution of *to*-infinitives was never the only mould the *for...to*-infinitive was cast into. Throughout its history the *for...to*-infinitive has been attracted to contexts that also allow prepositional phrases with *for* in a roughly equivalent function. To illustrate this with anecdotal evidence first, the few historically attested occasions on which *for...to*-infinitives have deviated from the distribution of the *to*-infinitive all involve environments previously associated with a prepositional phrase with *for*. The Early Modern example in (8a) shows the use of a *for…to*-infinitive as a topicalizing construction, in parallel to a *for*-phrase meaning 'concerning NP', as in (8b). Poutsma (1926) notes the use (unattested in my data) of the construction illustrated in (9), where the *for...to*-infinitive copies the function of *for*-phrases meaning 'in favour of NP'. For Present-Day English, it is worth pointing out the example from FLOB in (10a), which resembles the one in (8a) but, given the long time-lag between attestations, probably represents a use that arose independently. Here, the *for...to*-infinitive is found in the slot normally reserved for *for*-phrases in the semi-productive *and-now-for*-construction,

illustrated in (10b) and best known from the Monty Python catch-phrase and film title *And now for something completely different*.[1] Each of these minor extensions indicates that *for...to*-infinitives somehow associate with *for*-phrases.

(8) a. And for any longer stay to have brought a more quantity, which I hear hath been often objected, whosoever had seen or proved the fury of that river after it began to arise, […] would perchance have turned somewhat sooner than we did. (1596, CEMET)
b. And for Your Boast, That you Exposed your Lives and Fortunes in the Kings Ser-vice, it would have been better for Him if you had not been so for ward. (1687, LC)

(9) The father was for his son to go into the army. (Poutsma 1926: 787)

(10) a. And now for the performance to begin. (FLOB)
b. And now for our financial report. (CB)

The same analogical principle is at work on a larger scale throughout the distribution of *for...to*-infinitives, where it explains statistical preferences in the pattern's usage. The clearest evidence comes from the area of verb complementation. A handful of earlier examples aside, *for...to*-infinitives began to infiltrate the system of verb complementation only in the eighteenth century (about three centuries after their emergence as a clause-type). From the start, *for...to*-infinitives were markedly more successful with verbs also subcategorizing for prepositional objects with *for*, producing alternations as in (11)–(12) (De Smet 2007).

(11) a. if you feel more than the slightest twinge be sure to ask for the anaeasthetic [sic] to be topped up. (CB)
b. I didn't have to ask for permission to come here, I just came. (CB)

(12) a. the endowment mortgage does not provide for the full amount borrowed to be repaid at the end of the term. (CB)
b. We want to earn not just enough money to live comfortably, but more, to provide for luxuries (which quickly become necessities). (CB)

Table 1 documents the tendency by showing the proportion of *for...to*-infinitival complements that complement a verb also selecting a prepositional object with *for* (e.g. *ask*, *hope*, *wait*, *wish*) to those that complement a verb not selecting prepositional objects with *for* (e.g. *contrive*, *indicate*, *like*, *mean*). The figures in Table 1

1. Ian Roberts (p.c.) pointed out that the *for* in (10b) can be omitted while that in (10a) can't and therefore represents a different phenomenon. In the present view, this underscores the point that two items that are syntactically different nevertheless develop distributional and semantic similarities.

Table 1. *For...to*-infinitival complements with matrix verbs selecting *for*-objects and other matrix verbs

	1710–1780	1780–1850	1850–1920	1961/1990s
Matrix verb selects *for*-objects	5 (100%)	18 (90%)	29 (87%)	47 (92%)
Matrix verb does not select *for*-objects	0 (0%)	2 (10%)	4 (13%)	4 (8%)

come from the three sub-periods of CLMETEV, which cover Late Modern English, and LOB/FLOB, which represent the second half of the twentieth century.[2]

From Table 1 it is immediately clear that *for...to*-infinitives have never been very successful with verbs not already taking *for*-objects. In fact, apart from *like*, which occurs with a *for...to*-infinitive three times, none of these verbs are attested with a *for...to*-infinitive more than once in the entire corpus. Moreover, even though *for...to*-infinitives have gradually spread over an increasing number of verb types, the tendency for them to avoid *for*-less contexts is diachronically stable. Even for Present-day English, it is easy to think up a list of verbs that are common with *to*-infinitives but far less readily combine with *for...to*-infinitives (which need not mean that *for...to*-infinitives are categorically excluded), probably in part because they take no *for*-objects:

> *advise*, *agree*, *afford*, *bear*, *decide*, *demand*, *desire*, *expect*, *force*, *guarantee*, *hate*, *intend*, *love*, *offer*, *order*, *permit*, *prefer*, *promise*, *propose*, *recommend*, *request*, *say*, *suggest*, *summon*, *urge*, *want*

Finally, the tendency is again supported by anecdotal evidence. For example, it is probably no coincidence that the appearance of *for...to*-infinitival complements with the verb *arrange* or the verb *argue* follows closely on the appearance of *for*-objects with the same verbs (De Smet 2007).

In the face of all this evidence, a link between the subject marker and the preposition is very plausible, whatever its precise nature, and regardless of the obvious differences that also obtain between the two. With respect to gradience, the *for...to*-infinitive presents an example of feature-sharing across syntactically distinct elements. In terms of grammaticalization, this translates as an instance of host-class expansion that is guided by the contingencies of a given grammar (*for...to*-infinitives being moulded into the distribution of *for*-phrases), at the same time revealing a phenomenon akin to persistence (the two *for*s are after all

2. For the last sub-period of CLMETEV and for the LOB/FLOB data, *for...to*-infinitives complementing the verb *wait* have not been included because they make up a disproportionate share of the data. If these instances had been included the figures would have been even more dramatic.

historically related). Note additionally that, true to the term 'persistence', the connection between the two *for*s may also manifest itself in the absence of change, as suggested by the survival of *for...to*-infinitives in the Early Modern period. Finally, if the influence of prepositional *for* over subject marker *for* is treated as a case of persistence it also tells us something about decategorialization, which in the case of *for* fails to come with the radical break the term suggests between a grammatical item and its less grammatical source.

3. The phrasal verb particles *out* and *forth*

A link between ostensibly different elements can also be observed in the domain of phrasal verb particles. Here, while the interfering elements belong to the single syntactic category of verb particles, their grammatical representations interact on a level one would still expect to be discrete, namely the particles' individual meanings and collocational profiles.

Originating as spatial adverbs, English verb particles have developed increasingly abstract meanings that typically modify the *aktionsart* of the verb they combine with, making the process designated by the verbal stem completive (*up*, *down*, *out*, *off*) or repetitive/continuative (*along*, *about*, *around*, *on*) (Denison 1985; Brinton 1988; Brinton and Traugott 2005).[3] The contrast between spatial semantics and an *aktionsart*-specifying function (broadly conceived) is illustrated in such pairs as given in (13) and (14). As the examples further show, semantic changes also bring about shifts in particles' combinatorial potential, and can therefore affect collocational profiles, triggering extensions to non-spatial verbs (cf. Hilpert 2008).

(13) a. Þa ahof Paulus up his heafod. (971, OED)
'Then Paulus lifted up his head.'

b. Þe sunne drach up þene deu. (a1225(?OE), MED)
'The sun dried up the dew.'

(14) a. Weilawei deþ þe schal adun þrowe þer þu wenest heȝest to steo. (c1250, OED)
'Alas, death will throw you down where you think to rise highest.'

b. I was tracked down in rather less time than it had taken me to cover the ground. (1888, OED)

3. The syntactic transition from adverb to particle is not discussed in this paper and no position is taken on when items stop being adverbs and become particles.

Judging from the extensive polysemy in English phrasal verb patterns, both in present-day usage and historically, the diachronic pathways that led from spatial semantics to abstract *aktionsart* semantics must have been complex, probably involving both metaphor and metonymy and affecting the spatial adverbs themselves as well as specific lexicalized verb-adverb or verb-particle combinations. However, this larger issue is to be dealt with only sketchily here, for the main point to be made is that the semantic developments and concomitant collocational extensions that particles undergo are not exclusively a 'particle-internal' affair, with meanings changing under their own dynamics, but may occasionally be driven by the exchange of collocational and semantic features between particles. This implies that semantic and collocational changes in specific items may be triggered by other members of the larger class to which they belong or which they are in the process of entering.

The following two sections consider part of the semantic development of the phrasal verb particles *out* and *forth*. The discussion focuses on *out* first, whose semantic and collocational development is briefly outlined to illustrate the typical pattern of change proceeding through metaphorical and metonymic meaning extension (Section 3.1); then the interaction between *out* and *forth* is addressed as an example of how grammatical interference can come into play as an additional mechanism of change (Sections 3.2 and 3.3).

3.1 Main semantic and collocational developments in *out*

Like other spatial adverbs, *out* has been recruited as a phrasal verb particle and has developed a variety of new uses with new non-spatial meanings. The original adverb marks verbal actions as causing or being accompanied by movement from the enclosure of a container (e.g. *leap out*, *pour out*, *spit out*), as in (15).

(15) You may pull it out with a paire of nippers. (1580, OED)

The basic spatial sense of *out* is schematized in Figure 1. The spatial use allows for two major perspectives, indicated by the schematized eyes in Figure 1. Depending on whether movement from a container is seen from within or from outside the container, the moving object is seen to disappear or to appear. In contrast, several of the new senses mark actions as running their full course to a point of completion, with various shades of meaning. In such uses, spatial semantics have often entirely disappeared and *out* specifies the *aktionsart* of the verb (e.g. *dress out*, *cross out*, *empty out*, *fill out*, *spell out*, *trace out*).

The following is a brief sketch of the most significant developments in *out*. The discussion focuses only on the emergence of completive uses of *out* that

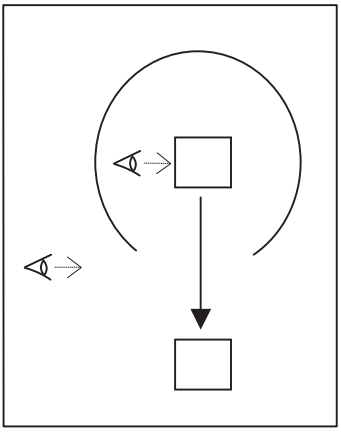

Figure 1. Spatial semantics of *out*

have clearly gained some productivity (with a reasonably transparent relation between verb and particle), and is largely restricted to a time-span up to and including Early Modern English, which is the period most relevant to the cases of 'inter-particle' semantic interference to be discussed below. Abstract completive semantics developed along more than one trajectory of semantic change, taking different senses of spatial *out* as starting point. Notwithstanding possible crossovers and mergers between trajectories, this also resulted in more than one completive use of *out*, characterized by different additional facets of meaning. More precisely, completive meanings tend to be dependent on specific collocations, typically fitting some semantic sub-class (e.g. combinations with verbs of representation, destruction, etc.), while other combinations remain unambiguously spatial or at least conspicuously lack completive semantics. This need not mean that the various sub-uses represent an equal number of constructions (in the sense of Goldberg 1995, each with their own semantic idiosyncrasies), but it does imply that new completive uses gain productivity slowly and locally.

By the Early Modern period, some five major clusters of completive uses can be identified. Restrictions of space forbid a detailed discussion, but each of these clusters of uses has its own history and derives more or less independently from one of the spatial senses of *out*. In its most prominent completive use, illustrated in (16), *out* combines with verbs to mark a process by which the subject (in intransitive uses) or object (in transitive uses) somehow comes to the end of its existence. This point of 'extinction' is also the end point incorporated in the semantics of the verbal process. Historically, the pattern can be tentatively traced back to uses such as (17), where *out* combines with *go* to mark the completion of a time period. Such uses were also available for *go* in isolation, so initially *out* did not by

itself mark completion, but the association between *out* and a completed time period could metonymically transfer to *out* and could give rise to new phrasal verb uses with reference to time as in (16a–b), and through metaphorical extension and/or semantic generalization to the more general uses involving various forms of extinction (of life, light, etc.).

(16) a. Þe thre dais was runnen vte, And þe ferth on hand. (a1300, OED)
'The three days had run out, and the fourth was on hand.'

b. Biginneð anan Veni creator spiritus..ant seggeð swa al þe ymne ut. (c1230(?a1200), MED)
'Begin at once *Veni creator spiritus* and in this way say out the whole hymn.'

c. Alle erthely thynges schul were owte. (a1500(?c1414), MED)
'All earthly things will wear out.'

d. The Wilde Gallant has quite played out his game; He's marry'd now, and that will make him tame. (1669, OED)

(17) Marrch wass þa Neh all gan ut till ende. (?c1200, MED)
'March was then nearly all gone out to the end (i.e. nearly over).'

There is a smaller family of uses revolving around the literal or metaphorical emptying of a container, which probably arose through a metonymic reversal of container and contained. Paradoxically, *out* also developed a use that implies complete filling of a container, probably from earlier verb particle combinations that denote actions causing an object to extend outward. These two uses are illustrated in (18)–(19):

(18) a. Have you not seen the chapel, madam, since it has been cleaned out? (1740, CLMETEV)

b. You will hardly be quite at rest till you have talked yourself out to some friend. (1764, OED)

(19) a. Giue me your Doublet, and stuffe me out with Straw. (1597, OED)

b. Whom pomp and greatness sits so loose about, That he wants majesty to fill them out. (a1700, OED)

A further family of uses involves the creation or production of some output, as in (20). Here the completive character of the phrasal verb resides in its marking the completion of the creative process. The production uses are motivated by the underlyingly spatial metaphor that producing something is bringing it out of non-existence into existence, but the semantic extension can also be accounted for through metonymy as producing something and bringing it into the open are typically contiguous actions.

(20) a. Worke out youre awne saluacion with feare and tremblynge. (1534, OED)
b. Too mean a subject for despair, or, at least, unworthy of having any remedy … thought out for it. (1847, OED)

Finally, *out* can combine with verbs of representation, as in (21). These uses are completive, first, because representation requires for an object to be surveyed in full with the eye of the mind and then reproduced and, second, because the phrasal verb encodes a representative act that ends in a full representation. These representational uses can likewise be seen to build on the spatial sense of bringing something from containment into the open: the first semantic extension, then, is a shift from physically bringing something into the open to drawing attention to it by making it (better) visible or public, as in (22); the next step is that the pattern comes to denote (rather than imply) the production of a representation of the object.

(21) a. Canst thou yet further depaint me out that congregation, which thou callest a kingdom or commonweal of Christians? (1553, OED)
b. That way to eternall glory, which our Saviour hath chalked out. (1643, OED)
c. She traced out the lovely curve of her lips in soft pink. (CB)

(22) He þat schewyth out wyth his mowth..þe malyce of his herte … is gylty to þe counseyl. (c1450, MED)
'He that shows out (i.e. reveals) with his mouth the malice of his heart … is guilty to the counsel.'

The picture of semantic and collocational developments that thus emerges is one in which one use leads to another under the self-contained dynamics of metaphorical and metonymic meaning extension. This way of looking at the history of phrasal verbs has great explanatory potential, but it ignores the fact that historical developments do not occur in a grammatical vacuum. The following two sections discuss the interaction of *out* with another particle, *forth*, arguing that some semantic and collocational innovations may have arisen in one particle at least partly under the influence of the other rather than under its own internal dynamics.

3.2 Semantic and collocational overlap between *out* and *forth*

To see how *out* and *forth* could interact, we must start with the semantics of *forth*. As a spatial adverb, *forth* means 'forward'; that is, *forth* marks advancement of an object, as in (23).

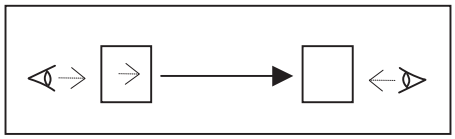

Figure 2. Spatial semantics of *forth*

(23) Heo ferden <u>forð</u> & eeuer heo drowen west & norð. (c1205, OED)
'They travelled forth and drove on west and north.'

The spatial semantics of *forth* are schematized in Figure 2. Two major constellations are possible, depending on whether movement is with respect to an implied observer or not. If an observer is contextually available (schematized by the eyes in Figure 2), the advancing object may approach the implied observer or remove itself, but in either case the object remains (or at least ends) within the observer's field of attention, as movement always takes place along the observer's line of vision. Else, the object moves forward along the axis of its inherent front-back orientation or along the path it is already travelling.

From these basic spatial senses, *forth* has developed its own non-spatial uses. For example, from its use marking an object's movement further along a path, *forth* has developed into a marker of continuation, as in (24).

(24) I woll that myne Executours … parfourme <u>forth</u> my deuouaciouns <u>forth</u> as I was wonte. (1428, OED)
'I want my executers to perform forth (i.e. continue performing) my devotions as I used to do.'

Importantly, despite different spatial semantics and partly divergent developments, there is a certain degree of overlap between *forth* and *out*, both collocationally and semantically. Collocational overlap is evident in the spatial uses, as shown in (25a–d). Depending on which aspect of the meanings of *forth* and *out* is highlighted by a particular verb-particle combination and in a particular context, the two can even be interchangeable, in which case overlap is also semantic.

(25) a. Þe proud kyng … sendis <u>out</u> his sandis-men with selid lettirs. (c1450(?a1400), MED)
'The proud king sends out his messengers with sealed letters.'
b. Send <u>forth</u> þi son … hastely A-non with-owte teryenge. (?a1475, MED)
'Send forth your son quickly straightaway without tarrying.'
c. Now ly downe, strecche <u>out</u> þi þrote! This takeþ me ful nye, God wote. (c1460, MED)
'Now lie down and stretch out your throat! God knows this afflicts me deeply.'

d. Thanne peyne I me to strecche forth the nekke … As dooth a dowue sittyng on a berne. (c1390, MED)
'Then I strain myself to stretch forth my neck as does a dove sitting on a branch.'

Overlap is also evident in derived non-spatial uses, as in (26). Since *forth* and *out* sometimes trigger similar implicatures, it is unsurprising that they have undergone some parallel semantic developments. In the resulting non-spatial uses interchangeability between the particles generally increases, as meanings become more abstract.

(26) a. Strecchiþ forþ 3oure charite. (?a1425, MED)
'Stretch forth (i.e. extend, exert to the full) your charity.'
b. Strecche out therfor al thy wille in kepynge this maydenhode. (a1450, MED)
'Stretch out (i.e. exert) all your will to keep this virginity.'
c. He puttiþ forþ accusasiouns & blames. (a1398, OED)
d. Myn hert put out gode worde; y saye my werkes to þe kynge of glorie. (c1350, OED)
'My heart puts out good words; I tell my works (i.e. moral actions) to the king of glory.'
e. It is you, that haue chalk'd forth the way Which brought vs hither. (1610, OED)
f. O were Thy margents ['comments'] cliffes of itching lust, Or quotes to chalke out men the way to sin. (1600, OED)

The result of this overlap is a strong paradigmatic tie between *out* and *forth*, essentially predicting that where one particle occurs the other is likely to occur as well, often with a similar and sometimes with a near-identical meaning. This in turn has two consequences. First, *out* and *forth* have come to compete over certain environments, which in the long run has led to a considerable decrease in the use of *forth*, largely (though not exclusively) to the benefit of *out*. Second, the collocational and semantic similarities between the two particles could come to serve as a basis for analogical exchanges by which *out* and *forth* copied each other's distribution and each particle extended its range of use into the territory of the other. Presumably, some or most of these analogical extensions are indistinguishable from particle-internal developments through the familiar mechanisms of semantic and collocational change. However, particularly in the Early Modern period, certain extensions took place that are more easily explained as having been analogically modelled on the use of the competing particle, than as having arisen through the usual mechanisms of metonymy and metaphor. This means

that in these cases semantic and collocational change is not or not only a matter of one use of a particle developing into another use of the same particle but centrally involves inter-particle interference.

3.3 Inter-particle interference

Examples of inter-particle interference can be identified when some extension in the use of a particle appears to be undermotivated by the older use and meaning of the particle, yet closely resembles some use of the competing particle. To illustrate this situation, the examples in (27) show the use of *forth* with the meaning of *out* in contexts otherwise reserved for *out*.

(27) a. Whiche Zedechias … was led also captiue to Babylon, his eyen [i.e. eyes] put forthe. (1534, OED)
b. By negligence of a scholler appointed by his Scholemaister, to put forth the lights of this Chappell, the Image of our Lady … was with all this apparrell, ornamentes and Chapple it selfe brent [i.e. burnt]. (1598, OED)
c. wherefore didst thou locke me forth to-day. (1590, OED)
d. they will blow them [candles] forth. (1659, OED)
e. The males often~times fall forth [i.e. 'quarrel'], for sometimes eight … males follow one lioness. (1607, OED)

Similar examples occur outside phrasal verb contexts, as shown by (28), where *forth* takes the place of *out* in prepositional phrases introduced by *out of*.

(28) a. Whan your mayster is forth of towne. (c1500, OED)
b. They shuld be all slaine forthe of hande. (1564, OED)

For each of the examples in (27)–(28) it is questionable whether the observed extension of *forth* into a new lexico-grammatical context could have been motivated only semantically. For example, no development can be traced from the spatial semantics of *forth* to the specific sense of extinction found in combinations such as *blow forth a candle* or *put forth the lights* in (27b, d) above, whereas it can be traced for *out* in *blow out* and *put out* (see Section 3.1). Likewise, from the moment it appears, *forthe of hande* in (28b) lacks semantic compositionality, but its meaning, 'immediately', is familiar from the idiomatic *out of hand*. The best explanation for these uses is therefore not in terms of semantically motivated developments internal to the use of *forth*, but in terms of analogical extensions that can occur more or less independently of the particle's semantics, because they are modelled on the use of *out*.

The examples in (27)–(28) represent minor and isolated extensions of *forth* into the domain of *out*. In the opposite direction, a more elaborate example of extension is found, with *out* copying a range of related uses of *forth* and thereby extending its own range of completive uses. For *out*, Early Modern English saw the appearance of a small group of verb-particle combinations in addition to the major uses described above (Section 3.1), combining with verbs "[w]ith reference to dress, decoration, appearance, equipment, etc." and meaning "comprehensively, to the last detail, in a way that provides or includes everything necessary" (OED s.v. *out*, 12a). Specific combinations, with the date of their earliest attestation, are *set out* (?1523, 1526), *furnish out* (1571), *rig out* (1593), *fit out* (1670), *deck out* (1729), *dress out* (?1698, 1740), *dizzen out* (1745), *kit out* (1906). Examples are given in (29).

(29) a. Not set out with fayre & fyne clothes. (1526, OED)
b. To make crosses, chalices, coapes, vestementes, and other like plaierly garmentes, to furnishe out the stinckyng Masses. (1571, OED)
c. Set out and furnished with bowes and arrowes. (1585, OED)
d. Rigging out two warlike Gallies, he sailed with them into the great sea. (1593, OED)
e. Down came my wife and daughters, drest out in all their former splendour. (1766, OED)

The meaning of the verb-particle combinations in (29) is completive, but does not fall directly under any of the groupings described in the previous section. Here, the relevant additional sense is one of providing an object with all it needs to be ready for action or use.

It is difficult to trace the 'preparational' use in (29) back to other earlier uses of *out*. The early attestations given in (29) lack a spatial sense or an evident metaphorical reinterpretation of a spatial sense, and the verb-particle combinations at issue have no prior uses with *out* that could have invited a metonymic shift – the only possible exception is *set out*, which is returned to further below. The preparational use can be explained, however, as another instance of inter-particle interference. That is, the preparational meaning of *set out*, *furnish out*, *fit out*, *dress out*, etc. arose first in verb-particle combinations with the same lexical verbs but with the particle *forth*, and has then extended from *forth* to *out*. The semantic and collocational exchange required from *forth* to *out* would have followed naturally from the overlap between the two particles, just like the exchanges in the opposite direction illustrated in (27)–(28) above. Beyond that, the explanation derives its plausibility from the fact, first, that the semantics of *set out*, *furnish out*, etc. correspond remarkably closely to those of earlier combinations with *forth*; and, second,

that for *forth*, the relevant semantic developments can actually be traced through the historical data.

The examples in (30) demonstrate that *forth* used to combine with the same set of verbs as preparational *out* in (29) above. Semantically, the resultant phrasal verbs were highly similar to the combinations with *out*, denoting a process of adorning or equipping an object with all that is necessary for some (implicit) purpose. Collocationally, the similarity is also striking.[4]

(30) a. Noon owner, Vitailler, nor setter-forth of eny Shippe or Vessell. (1451, MED)

b. The romanis dressit furth þis play In the maist solempne maner þai culd or mycht, to mak It þe more sichty and glorius to the pepill. (1533, OED)
'The Romans dressed forth this play in the most solemn manner they could or might, to make it the more conspicuous and glorious to the people.'

c. To reg furth how mony schippis thai sall think meit. (1563, OED)
'To rig forth as many ships as they will think meet.'

d. The Funerall Bakt-meats Did coldly furnish forth the Marriage Tables. (1602, OED)
'The baked meat of the funeral, when cold, furnished forth the wedding tables.'

e. Up, and at the office all the morning, where great hurry to be made in the fitting forth of this present little fleet. (1668, CEMET)

For *forth*, the historical data indicate that the relevant semantics of adornment or equipment in (30) could develop through metonymy in combinations with the verbs *dress* and *set*. Moreover, the development received additional support through a metaphor of 'advancement' specific to *forth*. In line with its spatial semantics, *forth* frequently combined with verbs such as *serve* or *mess* ('serve (food)'), to emphasize the forward motion of physically serving food, as in (31a). The verb *dress* could also be used in the sense of serving food (MED s.v. *dressen*), and like *serve* or *mess* combined with *forth*, as in (31b). However, *dress* was also used to denote the action of arranging or preparing a dish just prior to serving. Since the two senses are contiguous, as is illustrated by the ambiguous example in (31c), *dress forth* could shift from one sense to the other, resulting in the relevant meaning of 'preparing, adorning' (cf. (30b) above).

4. The only combinations lacking for one of the two particles are the two most recent extensions of the pattern with *out* (viz. *dizzen out* and *kit out*) and a Middle English reflexive use of *make* with *forth* (in the sense of 'make oneself ready') that is no longer on record after 1500.

(31) a. Boyle it wel and messe yt forthe. (1381, MED)
'Boil it well and serve it forth.'
b. Þen put yn þe Oystrys þer-to, and dresse it forth. (a1450, MED)
'Then add the oysters to it, and dress it forth (i.e. serve it).'
c. When thi felettes byn rosted, dresse hom forthe and poure the syrippe theron. (?c1425, MED)
'When the filets are roasted, dress them forth (i.e. serve/arrange them) and pour on the syrup.'

A second pathway of change can be reconstructed for *set forth*. Predictably, *set* could combine with *forth* to denote physical advancement of an object. In (32a–c) this sense of physical advancement comes with the implication that the object is advanced also figuratively, i.e. optimized, put in order or set ready for use – as (32c) shows, this includes uses of *set forth* that involve serving food, just like *dress forth* above. In (32d–e), then, this notion of optimizing an object for use has become the main sense of *set forth*.

(32) a. And boxes ben y-set forþ, bounden with yre, To vnder-take þe tool of vntrewe sacrifice. (c1400(?a1387), MED)
'And boxes are set forth, bound with iron, to receive the toll of illicit sacrifice.'
b. And the lay brethren at the preface of hygh masse schal sette forth the seyd stolys before the rectours that they may knele at hem. (IMEPCS)
'And at the preface of high mass, the lay brothers must set forth the said pews before the rectors, so that they can kneel at them.'
c. reyse the legges and the wynges as of a crane, and sauce hym with vynegre, and mustard, and pouudre of gyngeuere, & sett hym forth. (a1450, IMEPCS)
'Lift the legs and wings as of a crane, and sauce it with vinegar, mustard and ginger powder, and set him forth.'
d. Let sette 3oure schippis forth on flote, […] And sayle forth with-outen dwellyng. (c1425(c1400), MED)
'Have your ships set forth (i.e. made ready) afloat, and sail forth without tarrying.'
e. Setting forth some Lady, Will cost as much as furnishing a Fleete. (1626, OED)

At this point, it is instructive to compare *set forth* to *set out*. The early uses of *set out* typically lack the implication of optimizing an object for use observed in (32a–c) above. For example, *out* may be used to emphasize the creation of distance between subject and object, as in (33a), or to signal that the object is placed in a visible position for display, as in (33b), or that the object is created new, as

in (33c), but none of these uses imply that the object is somehow improved or optimized.

(33) a. He … putte the litil faunt with ynne, and sette out hym in the flaggi place of the brinke of the flode. (1382, OED)
'She put the child inside [the basket], and set it out between the reeds on the bank of the stream.'

b. ȝit I woll have an oþir certayne of þe, as þis: If it happe me to dye for þe in batill, and not to have victory, þat þu sette out my blody serke on a perch afore. (a1500(?a1450), IMEPC)
'But I want another assurance from you: if I happen to die for you in battle and not to be victorious, you must set out my bloody skirt on a pole in front.'

c. the seide Bysshop hath set oute of purpos a grete bulk stale, a purpresture. (1447–8, HC)
'the said bishop has set out on purpose a big stall building, in violation of land-use.'

At least two reasons can be advanced for why the preparational implication that is seen to recur regularly in *set forth* is largely missing in *set out*. The first is the contrast between the original spatial semantics of *forth* and *out*. In spatial terms, *forth* unlike *out*, implies a prior orientation of an observer to the goal of movement. This means that in a transitive construction with *forth*, an object is manipulated into a position already prominent to the manipulator (cf. Figure 2 above). In practice, this often means an object is manipulated into a position where it can further an existing goal, as illustrated for *bring forth* and *put forth* in (34a). The second reason is that in Middle English other specific verb-particle combinations with *forth* already denoted some form of improvement or benefit to the object (i.e. metaphorical advancement), as shown for *draw forth*, *drive forth* and *put forth* in (34b–d), which gave additional support to the development of a sense of optimization in *set forth*, while the same supporting metaphor was absent for *set out*.

(34) a. Þei … Bringe forþ Ballede Resouns … And puyte forþ presumpciun to preue þe soeþ. (c1390(a1376), OED)
'They bring forth (i.e. advance) crafty reasons and put forth presumptions to prove the truth.'

b. He … loueþ and draȝþ uorþ his children. (1340, MED)
'He loves and draws forth (i.e. raises) his children.'

c. Favour of þe fend droof forþ his fortune; For by helpe of þe fende..he fonde tresour. (a1387, MED)
'The devil's favour drove forth (i.e. promoted) his fortune; for by the devil's help he found treasure.'

d. Bot yit to putte himselve forth, He moste don his besinesse.
(a1393, MED)
'However, to put himself forth (i.e. promote himself) he must do his business.'

From this it can be seen that what was a likely semantic development for *forth* was less natural and likely for *out*, which tended to lack the relevant implicatures, and fundamentally lacked the supporting metaphor of figurative advancement. Consequently, it is plausible that *set out*, *furnish out*, etc. arose not so much through a semantic development specific to *out* and driven by the typical mechanisms of semantic change, but as a result of *out* incrementally copying the collocational profile and meaning of *forth*.

With respect to gradience, this means that we have another case in which one linguistic element (*forth*) influenced the development of another (*out*) and vice versa, implying the existence of a tie between grammatical representations. With respect to grammaticalization, the development of *out* and *forth* shows how host-class expansion and perhaps even semantic bleaching are sensitive to the particularities of the grammar in which change proceeds. In this case, though, the influence is exerted mutually by elements within a single paradigm of grammaticalizing items. As such, the developments also bear on our understanding of paradigmaticization, which can be seen as a thoroughly interactive process in which paradigmatically related elements feed on and into each other's development. The interactiveness may help explain the parallel developments characteristic of grammaticalization within a functional domain (Hopper 1991), as well as the competition between elements that could ultimately lead to the increasingly tightly integrated paradigms originally envisaged by Lehmann (1985).

4. Implications

The two case studies presented here indicate that grammatical representations can be simultaneously discrete and connected. Subject marker *for* and the preposition *for* are syntactically and semantically sufficiently different to treat them as homonyms, yet formal similarity still causes the subject marker to keep gravitating toward the preposition and to model its distribution after that of the preposition. Similarly, *out* and *forth* are formally distinct items, but they have influenced each other's distribution and meaning, presumably because their distribution and meaning already partly overlapped. The feature-sharing that thus arises between grammatical representations is represented schematically in Figure 3, with the dotted lines marking the (main) extensions discussed in the above. 'Form' in

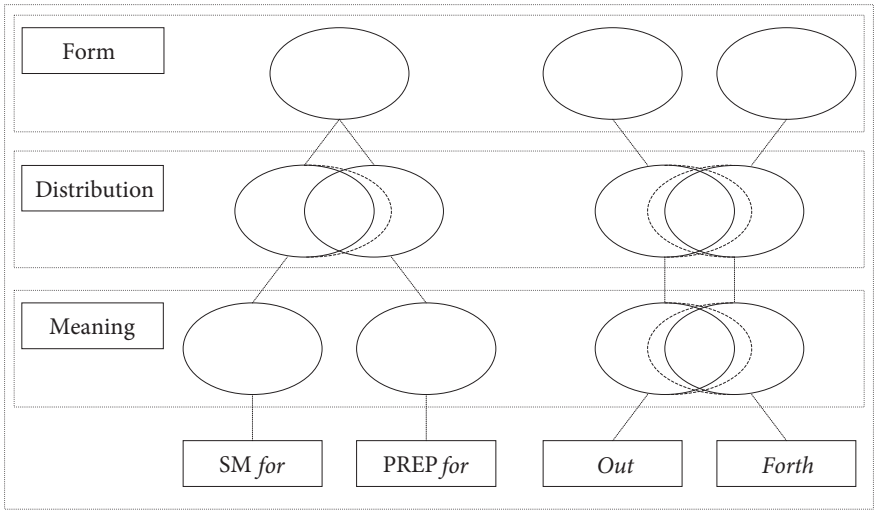

Figure 3. Grammatical interference between subject marker and preposition *for* and between phrasal verb particles *out* and *forth*

Figure 3 stands for phonological representation; 'distribution' for collocational behaviour; 'meaning' for semantic representation.[5]

The analogical extensions observed are of central importance, because they are the evidence that the 'connections' between grammatical representations are actually observed by language users. That is, they prove that the connections are not chance similarities but form the basis for language users to (subtly) change their linguistic behaviour in reinforcing the commonalities they perceive. This can only mean that the connections must have acquired some substance in the mind of the language user. The following two sections address two of the main ensuing issues: How can we fit these connections into a coherent picture of grammar (Section 4.1)? And what can the connections tell us about grammaticalization (Section 4.2)?

5. For simplicity, a fourth organizational layer for 'syntax', i.e. representations of items' syntagmatic potential, has been omitted. On this layer the representations for subject marker and preposition *for* would be radically distinct, whereas those for *out* and *forth*, which belong to the single syntactic category of phrasal verb particles, would largely overlap (though not completely, given differences such as the use of *out* as a preposition). In principle, even further layers of symbolical organization could be added, such as a layer covering sociolinguistic information, or a layer specifying which language/dialect an item belongs to, etc.

4.1 Gradience and the structure of grammar

The linguistic situations presented in the case studies fit the notion of gradience, in that grammatical representations are found to share some features but not others (Aarts 2007; Traugott and Trousdale, this volume). At the same time, treating the above cases as instances of gradience is only possible under a certain conception of gradience, which it is important to spell out before proceeding.

First, it is assumed that gradience does not require a complete shading over of one grammatical category into another, with a full spectrum of intermediate instances. Complete shading over is the extreme case, but no prerequisite (cf. Aarts 2007). Second, it is assumed that gradience goes beyond morphosyntax (cf. Traugott and Trousdale, this volume; Rosenbach, this volume). In the above case studies, the features shared are not the morphosyntactic features in terms of which gradience is described in Aarts (2007), or the variable grammaticality judgments on the outputs of a battery of syntactic tests produced by Ross (1973). Rather, the above case studies suggest that a meaningful conception of gradience must also involve cross-categorial feature-sharing in semantic representations and in lexically-determined distributions. Third, from this it follows that gradience can be more finely described if grammatical categories are treated as linguistic symbols that integrate a multiplicity of representations on different levels (formal, distributional, semantic, etc.), which form categories in their own right. Gradience is the situation where there is no one-to-one relationship between the different levels of symbolical organization. Thus, the subject marker *for* and the preposition *for* are syntactically and semantically distinct, but they are formally identical and converge in their collocational behaviour. In other words, a formal category does not map uniquely onto a single semantic, syntactic and distributional category. Similarly, the phrasal verb particles *out* and *forth* are formally distinct, but they converge collocationally and semantically. Here, semantic and collocational categories map onto distinct formal categories.

Gradience can therefore be thought of as a form of mismatch, consisting in the absence of a one-to-one correspondence between the different layers of grammatical organization within and across the representations of grammatical elements, as described graphically by Figure 3 above. I believe this conception of mismatch essentially corresponds to the notions of mismatch and gradience developed in Patten (this volume) and Rosenbach (this volume) and can also cover some of the examples in Bisang (this volume). For instance, Patten (this volume) describes how prepositional phrases take on a referential function in the *it*-cleft, causing partial convergence between prepositional and noun phrases at one layer of symbolical organization (the semantic/functional layer) despite overall discreteness at another (the syntactic layer). Patten's discussion shows that prepositional phrases

and noun phrases must somehow be co-categorized, since otherwise language users could not fit them into a single constructional slot (cf. Croft 2007).

In order to represent these gradient situations, a model of grammar must be able to contain partial generalizations. Subject marker *for* and preposition *for*, and the phrasal verb particles *out* and *forth* started out with some superficial similarities – formal in the case of the former, collocational and, to some extent, semantic in the case of the latter. That language users have reinforced these similarities by analogically copying features of one element onto the other testifies to their awareness of the prior similarities and indicates that they can generalize over the manifest differences the grammatical elements also display. This awareness can only be represented in the form of some generalization. At the same time, as the differences between interfering grammatical elements are not completely lifted, generalizations must be complemented by more specific representations that detail the unique features of each element. Much of the behaviour of the grammatical elements involved is in fact incompatible with the generalization. In that sense, generalizations are partial.

A model that is well-equipped to describe situations of partial generalization over continued idiosyncrasy is construction grammar (Langacker 1987; Goldberg 1995, 2006; Croft 2001). A construction grammar model allows for redundant grammatical representations over multiple levels of generalization. This means that language users can generalize over grammatical expressions despite obvious differences; and that language users construct and have access to multiple levels of generalization, each of which is assumed to be somehow cognitively real. Redundant representation has primarily been applied to idiomatic expressions, whose syntax is recognizably that of some highly schematic construction, but whose semantics need to be specified at some more specific level of representation (Goldberg 1995). But redundancy also makes construction grammar good at reconciling autonomy and convergence between grammatical categories. The autonomy is categorial discreteness at a lower level of generalization; the convergence is categorial unity at some higher level of generalization (cf. De Smet to appear). Note that this view nicely matches Langacker's (2000) description of analogy. Note further that, like other contributions in this volume (by Bisang, Denison, and Traugott and Trousdale), a description of gradience in terms of partial generalization to some extent undermines Aarts's (2007) distinction between subsective and intersective gradience, in that intersectively gradient phenomena too must fall under a partial generalization and are therefore integrated in a single category after all.

Going one step further, while partial generalization offers a way of representing gradience synchronically, it merely stipulates the possibility of gradience but does not explain how gradience arises. Here a connectionist model offers an attractive

complementary perspective (Berg 1998; Lamb 1999; Bybee and McClelland 2005; Schlüter 2005; Hudson 2007). The contribution of a connectionist approach consists in further breaking down the symbolical units that are the building blocks of a construction grammar into patterns of interconnected nodes that can activate one another. In this model, the cognitive activation of a symbol that is essential to its production and interpretation, is in fact activation of a particular pattern of nodes within a much larger network of nodes and connections.[6] What is significant at this point is that activation spreads through this pattern as well as beyond the pattern into the larger network.[7] As a consequence, one symbol can activate another, and this is particularly likely if they already share a subset of features. On this view, it is the connectedness of the whole system that leads to interference. The inevitable noise of activation fluctuating through a connectionist system can be enough for the 'wrong' pattern of nodes to reach its activation threshold first (Berg 1998: 297). For example, both *out* and *forth* are activated by certain lexical contexts. What distinguishes the swapping of *out* for *forth* from a slip of the tongue, then, is its likelihood, which is determined by the activational overlap between *out* and *forth*. Activational overlap is likewise responsible for grammatical interference in the case of *for*. When activation of certain lexical contexts already spreads to the form *for* by virtue of their association to the preposition, the subject marker and the *for...to*-infinitive can share in increased activation levels too, so that their production becomes increasingly probable.

4.2 Grammaticalization

The preceding discussion is relevant to grammaticalization theory in a number of ways. First, if the cross-categorial connections implied by grammatical interference are taken seriously, it seems unlikely that any individual grammatical change can be properly understood in isolation, i.e. outside of the grammatical system in which it takes place (Fischer 2007).

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6. Further characteristics of a connectionist network are of less consequence here, but note that the above may misleadingly suggest that the nodes of the network are somehow representative of bits of information. In fact, representations are encoded not in the nodes themselves but abstractly in the connections between nodes and, ultimately, their connections to the receptive and productive systems (Lamb 1999).

7. What keeps a symbol together is the strength of its internal connections as well as inhibitory external connections that can prevent activation from spreading further once a certain threshold of activation is reached, but the implication remains that in the end the whole grammar is interconnected.

Second, in the spirit of Traugott and Trousdale (this volume), the notions of gradience and partial generalization and their further breaking down in terms of connectionism may offer a descriptive and explanatory framework for the development of grammaticalizing items. Specifically, gradience and partial generalization offer a way of reconciling the tension between 'decategorialization' and 'persistence' (Hopper 1991), as instances of ambivalent categorial status can be recognized simply as such. Persistence can be reconceptualized as an analogical force that keeps historically related elements in a forced union, despite the syntactic consequences of decategorialization, as illustrated by the relation between subject marker *for* and the homonymous preposition. The case study on *out* and *forth*, on the other hand, offers us a glimpse of the workings of 'specialization' (Hopper 1991) and 'paradigmaticization' (Lehmann 1985), showing how items in a closed paradigm become interrelated, and feed and reinforce each other's development toward more abstract meanings. In that respect, gradience might offer a promising perspective on explaining the catalytic effect whereby the grammaticalization processes of similar elements in a given functional domain seem to be mutually reinforcing (cf. Bisang, this volume).

Third, the two case studies, being characterized by minor extensions in items' usage, confirm the highly gradual character of developments in grammaticalization. In terms of morphosyntactic description, change can be thought of as proceeding through micro-steps, as argued by Traugott and Trousdale (this volume) (see also Denison, this volume; Roberts, this volume). However, the connectionist framework suggested here provides a complementary perspective in which gradualness is truly 'smooth', in that the connections that underlie gradience have to gather strength incrementally before they can trigger an (inevitably) abrupt morphosyntactic change in a language users' output. In this sense, diachronically abrupt steps are a byproduct of the discreteness of our linguistic coding devices and need not be matched by a fully corresponding stepwise development at the level of representation.

Fourth, in the above, analogy has figured prominently, with change proceeding through observed similarities. Borrowing the terminology of Traugott and Trousdale (this volume), analogy can be seen to operate as a fundamental 'motivation' of change, as pattern recognition through similarity is intimately linked to the generalizations that make up a construction grammar and to the patterns of activational overlap that can trigger change from a connectionist point of view. As far as the case studies go, we see how analogy can work minor changes that affect the categorial status of grammatical elements in terms of shifting associations to related elements. Going beyond the case studies presented here, it follows that the grammatical framework suggested can accommodate categorial change through analogical extensions (cf. Fischer 2007; De Smet 2009; Bisang, this volume; and

Denison, this volume). On such a view, reanalysis and parsing become epiphenomenal to the matching of specific patterns to their abstract representations on the basis of perceived similarities.

5. Conclusions

This paper has described two cases of grammatical interference, whereby a grammatical element adapts its behaviour to some other grammatical element to which it is related formally, semantically, collocationally, or in some other way. This confirms that incidental similarities between grammatical elements can turn linguistically significant, triggering changes that reinforce the similarities. The implication is that some form of relationships must exist between otherwise independent grammatical elements. It has been proposed that these relations are the true substance of gradience in grammar. Consequently, a model of grammar must be able to capture the relations. This can be done by means of the notions of partial generalization and by breaking down grammatical symbols into networks of connections that are by nature also connected to one another. The recognition of the interconnectedness of grammatical items is relevant also to grammaticalization theory. It may offer a way of reconciling the tension between persistence and decategorialization, shed light on the process of paradigmaticization, and point to the motivations underlying some of the mechanisms at work in grammaticalization.

Digital data sources

CB = *Collins Cobuild Corpus*.
CEMET = *Corpus of Early Modern English Texts*.
CLMETEV = *Corpus of Late Modern English Texts*.
FLOB = *Freiburg-LOB Corpus of British English*.
HC = *Helsinki Corpus of English Texts*.
IMEPCS = *Innsbruck Middle English Prose Corpus Sampler*.
LC = *Lampeter Corpus of Early Modern English Tracts*.
LOB = *Lancaster-Oslo/Bergen Corpus of British English*.
MED = *Middle English Dictionary*.
OED = *Oxford English Dictionary* (2nd ed.).
PPCEME = *Penn-Helsinki Parsed Corpus of Early Middle English*.

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Category change in English with and without structural change

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This paper offers a partial taxonomy of changes of category (word class), exemplified with recent English data. The paper takes as its starting point a structuralist syntax which employs constituent structure and conventional category labels but which lacks empty categories or elaborate functional structure. No fixed, universal inventory of categories is assumed. Three types of category change are distinguished: those where only the affected node and its phrasal projection change labels; those where the topology of the syntactic tree is altered as well; and those where a wholly new category enters the grammar. Most but not all of the examples of category change involve grammaticalization. There is evidence of gradience, and semantics may lead syntax. A distinction is drawn between ambiguous and equivocal syntax, where the latter is underdetermined. I suggest that WYSIWYTCH ('What you see is what your theory can handle') militates against the recognition of syntactically equivocal strings, and I conclude that for handling grammatical change of the kind surveyed, a rigidly structuralist syntax may turn out to be unrevealing.

1. Introduction[1]

This chapter is limited to category change. However, since most grammaticalization involves category change, and much category change involves grammaticalization, the concerns of this chapter – and indeed some of the examples – have a direct bearing on the thematic questions posed by the editors.

I take as my starting position the kind of constituency syntax practised, for example, in Huddleston and Pullum (2002) – that is, working with the initial assumption that for any grammatical sentence, we can and should find a systematically

1. I am grateful for improvements and references suggested by the editors and by Tine Breban, Hendrik De Smet, Marianne Hundt, Anette Rosenbach and Nigel Vincent.

justified, rigorous structural description that is closely tied to its actual non-null morphemes.[2] (However, I return to this assumption in §§2.2, 2.3, 3.2 and 5 below.) One way of organising a discussion of category change is according to the effect on such syntactic structure: does the change only require a different label for the node in question and its immediate phrasal projection, or does it require a change in the topology of the tree? Furthermore, is the replacing category one that already existed in the language, or is it a new addition to the inventory of categories? It is on this basis that the chapter is organised. I discuss a handful of category changes in the history of English and attempt to generalise from them about questions of gradience and gradualness. Anything which can be said in this context about category change in general should apply to grammaticalization as well.

2. Category change without structural change

2.1 N~A

In previous work I have written about change from noun to adjective (Denison 2001, 2007), giving detailed consideration to examples like *fun* and *key*. Now Huddleston and Pullum (2002: 1643) say that conversion from noun to adjective is "very rare", citing flower names like *rose* and *orange* and, from more recent times, *sexist* and *Oxbridge*, and suggesting that the frequent citation of *fun* in this context actually "reflects the paucity of clear examples". Haspelmath too lists conversion between noun and adjective in either direction as "unattested (or rare) changes" and goes on to say that "word-class changes invariably turn content-words into function-words" (Haspelmath 1998: 329). That would suggest that all category changes are instances of grammaticalization. Perhaps Haspelmath's statements have statistical validity cross-linguistically, but neither corresponds to my experience for English, though of course if you look at grammaticalization alone, content-word > function-word is what you will find. But in English it is entirely possible to find transfers both ways between N and A and therefore not involving loss of content.

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2. Notice that Huddleston and Pullum relax the generally accepted constraint against upwards branching in constituency structure trees – see for example (2002: 412, 419–422, 1073) – though only for what they call 'fused-head' and 'fused relative' constructions. One explicit reason is to reduce the amount of overlap that has to be recognised between categories, by which they mean a given word showing multiple, non-simultaneous category memberships (i.e. *in different contexts*) (Huddleston and Pullum 2002: 421).

While the conversion A > N can be brought about by ellipsis – *hopeful (boy/girl)*, *daily (newspaper), bitter (beer)* – which is an abrupt process, I suggested that N > A was stepwise ('gradual' in the sense used by Traugott and Trousdale, this volume). I give a brief illustration of the latter using web data for *rubbish*, which for some speakers is well on the way to having an adjectival use alongside its nominal one:

(1) A self-confessed "rubbish" golfer won a £15,000 car after fluking a hole-in-one. (BBC, 8 Jul 2008, http://news.bbc.co.uk/1/hi/scotland/north_east/7494943.stm)

(2) A totally horrible and rubbish gig which was the beginning of the end of the relationship between the singer and me. (http://flickr.com/photos/khl/sets/1349235/ <accessed 19 Jan 2009>)

(3) i know its [*sic*] rubbish but i need it to win the manufacturer's race to win an older, rubbisher version. (http://www.gtplanet.net/forum/showthread.php?t=59545andpage=24 <accessed 12 Jul 2008>)

(4) And today was rubbish. […] It started off alright, […] [b]ut after that it started to get rubbisher. (http://wyldethingy.blogspot.com/2006/05/not-best-day-ever.html, dated 8 May 2006 <accessed 12 Jul 2008>)

(5) Because i like to take a lot of photos when i go out but the light on my V975 seems very rubbish. (http://3g.co.uk/3GForum/showthread.php?t=34311, dated 28 Feb 2006 <accessed 13 Jul 2008>)

(6) And the prize for rubbishest blogger in the world goes to… Me! (http://changingcycles.blogspot.com/2008/03/and-prize-for-rubbishest-blogger-in.html, dated 30 Mar 2008 <accessed 19 Jan 2009>)

(7) and I can't imagine Harry Hall's selling anything rubbish. (http://yacf.co.uk/forum/index.php?topic=7464.15, dated 19 Sep 2008 <accessed 19 Jan 2009>)

The word *rubbish* could in principle be either a noun or an adjective in pre-nominal modifier or predicative use, as in (1) and the first instances in (3) and (4). Coordination with a true adjective as in (2) is suggestive of adjectivehood without being incontrovertible proof. However, a comparative *rubbisher* in (3) and (4) and modification by *very* in (5), both incompatible with nounhood, are clear indications of adjectival status. So too are a superlative, *rubbishest* as in (6) or *most rubbish*, and post-pronominal use as in (7).

Historically speaking, *rubbish* is a late Middle English (ME) noun of obscure etymology, whose first sense in the *Oxford English Dictionary* (*OED*) is "[w]aste or refuse material, in early use esp. such as results from the decay or repair of buildings; debris, litter, refuse; rejected and useless matter of any kind". It developed a derogatory attributive use by the end of the 16th century, apparently losing it again by the late 18th century, according to *OED*, which has no such citations between 1722 and 1979. Interestingly, the derived adjective *rubbishy* is only found from 1795, and in the metaphorical sense 'worthless' from 1824, so it is almost as if the standard language wouldn't tolerate the adjectival use of *rubbish* once *rubbishy* was available. (The dates don't quite match.) The British National Corpus (BNC) has *rubbishy* 12×, always as a pre-modifier, and *rubbish* about 15× as a pre-nominal modifier[3] in the metaphorical sense. There is also the mainly nineteenth-century adjective *rubbishing* "paltry, worthless, rubbishy" (*OED* s.v.).[4]

The accidents of word formation are not predictable, nor are they entirely random. In earlier work I speculated as follows about N > A conversion (Denison 2007):

> The circumstances which license such a transition seem to include:
> – lexical gap = absence of an adjective (morphologically related or otherwise) with appropriate semantics
> – N is, or can be, a mass noun or at least can be used without D (*an article in draft, a work of genius*)
> – N is semantically gradable

In the case of *rubbish*, there is hardly a lexical gap, since we have *rubbishy* as well as many etymologically unrelated synonyms (*crappy, useless, bad, …*), so evidently the functional pull is not essential. However, *rubbish* meets the other criteria. It is a mass noun, therefore usable in the singular without D. It has an obvious metaphorical extension to a subjective, evaluative meaning. It even has an ending which looks more like a productive adjectival ending than a nominal one.[5] The web examples cited as (1)–(7) illustrate two contexts which neutralise

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3. NB. The head *psychobilly* in the string *the Neff's rubbish psychobilly* is tagged by BNC as an adjective; *rubbish* never is.

4. I am grateful to Elizabeth Traugott for pointing out this alternant and indeed antedating *OED* to 1791 from an example in LION: English Prose Drama.

5. *OED* lists 1320 noun lemmas ending in *-ish*, but most are compounds of *dish, fish, wish*, or nouns that are primarily other parts of speech, including nationality names. Apart from real rarities, the genuinely established nouns include *anguish, dish, fetish, finish, fish, flourish, garnish, gibberish, kadish, parish, polish, radish, relish, rubbish, skirmish, tarnish, varnish, wish*. The class of *-ish* adjectives is larger (1565 lemmas) and – crucially – open-ended.

the A~N distinction, namely pre-nominal modifier and predicative complement, and which therefore are potentially equivocal syntactically.[6] (There is no relevant semantic ambiguity, however.) The transition to adjectival use need not involve structural change. It is a semantically motivated analogy, since premodifiers of provenance, material, etc. are often nouns, whereas subjective, gradable premodifiers are more typically adjectives. Once the word has developed an adjectival value, it can start to be inserted in uniquely adjectival slots, as with *rubbisher* and *rubbishest* and *very rubbish*.

Those two contexts are not the only relevant ones. Consider now this variant of the complement context:

(8) It was really rubbish.

A context like (8) is also plausible as a *basis* of reanalysis (Harris and Campbell 1995: 72). In the older analysis where *rubbish* constitutes an NP, *really* cannot be part of the predicative complement, since adverbs generally don't modify nouns (Huddleston and Pullum 2002: 563), so *really* must therefore be modifying the verb or even the clause (cf. *It was really a mess/a disaster/the end of the world*). Once *rubbish* has gained the possibility of being an AP in (8), then *really* can move inside the predicative complement as an adjective-modifier – but that is not part of the change of category, merely a later consequence:

(9) a. … [really] $[\text{rubbish}]_{\text{NP}}$ >
b. … [really] $[\text{rubbish}]_{\text{AP}}$ >
c. … $[\text{really rubbish}]_{\text{AP}}$

(10) You can bid 2NT, as a SECOND NEGATIVE, showing a really rubbish hand – a queen is about the limit of this.
(http://www.dur.ac.uk/bridge.club/TEACHING/bighands2.html, n.d. <accessed 14 Jul 2008>)

Example (10) must have the analysis (9c), as *really* comes between determiner and head noun and therefore can only be functioning as modifier of an AP within the NP.

It may be no accident that *really rubbish* seems on the basis of very unsystematic informant testing to be more acceptable than *very rubbish* (and the string

6. I choose 'equivocal' here in deliberate avoidance of the term 'ambiguous', commonly used in syntax. In semantics there is a traditional distinction between 'equivocal' and 'ambiguous' sentences: crudely put, an equivocal sentence is simply underdetermined for both producer and recipient, whereas the producer of an ambiguous sentence must have intended one or other of the possible readings. The implication that one of the morphosyntactic analyses must be right (and the other(s) wrong) is unnecessary.

a really rubbish gets 9570 Google hits, compared to 2290 for *a very rubbish* <14 Jul 2008>). That is consonant with the suggestion that strings involving *really* are often categorially equivocal as to the node dominating *rubbish*. On the other hand the imbalance is even greater with *rubbishy* (184 *a really rubbishy* to 9 *a very rubbishy*), where there is no suggestion of category change.[7]

2.2 Constructions

In the preceding section I have discussed two or three contexts in which the A~N distinction may be neutralised. The category is only ambiguous within an approach which requires each word in a grammatical sentence to be assigned to one and only one category. I preferred to see the category in such cases as underdetermined (hence my use of the term 'equivocal'). It is a small step from that preference to a fundamentally different take on syntactic analysis, namely one espoused by Croft (2001, 2007) and discussed by several contributors to this volume, where categories are not grammatical primitives at all. In that case it would be constructions that speakers (and linguists) manipulate, and – in Radical Construction Grammar at least – categories would be a mere epiphenomenon. The contexts which I noted would then be constructions: perhaps the attributive construction, the predicative construction, and so on. They would be defined by their semantics as well as by their syntactic behaviour, and within those constructions the question of possible category change would not be pertinent. Some of my data on *rubbish* and similar words could be offered in support of a Construction Grammar analysis, for example on grounds of economy of description.

However, contexts such as that in (5) are not equivocal. My focus in this paper is more on change and indeed the stepwise nature of the changes observed. Furthermore, the paper is organised on the working assumption that we can usefully discuss both categories and category change, so I will not pursue a Construction Grammar interpretation further.

2.3 Gradience

A different approach to the N > A transition is to invoke gradience. I have done some brief informant testing on the data in (1)–(7) to test my strong intuition that some of the different adjective-like uses of *rubbish* would for many speakers vary

7. For a semantic explanation of certain selectional restrictions holding between particular intensifiers and adjectives, see Kennedy and McNally (2005). Euphony might be involved too in this case.

Table 1. Acceptability scores for adjectival *rubbish*

Example	**1**	**2**	**3(i)**	**3(ii)**	**4(i)**	**4(ii)**	**5**	**6**	**7**
Form	*rubbish golfer*	*horrible and rubbish gig*	*it's rubbish*	*rubbisher*	*rubbish*	*rubbisher*	*very rubbish*	*rubbishest*	*anything rubbish*
Mean	4.7	2.85	4.75	2.5	4.6	1.95	2.55	2.45	4.5
SD	0.571	1.2683	0.91	1	0.503	0.887	1.276	1.05	0.761

in (un)acceptability. The examples were presented to 21 third-year students on a written questionnaire, with no further instructions than to ignore spelling and to score from 1 (unacceptable) to 5 (acceptable) as examples of colloquial speech.

The results are striking. Most of the neutralised N~A contexts score an average of at least 4.6 out of 5, as might be expected, and with little variation, though the coordination *a totally horrible and rubbish gig* drops down to below 3. Most of the clear A contexts – comparative, superlative, modification by *very* – score poorly, in the range 1.95–2.55. But one clear A context – postmodification of an indefinite pronoun – scores almost as high as the first group.

If we take these results at face value, it follows that the passage from noun to adjective is not an abrupt, all-or-nothing process but a stepwise progress. Noun and adjective share many distributional properties, and for some speakers *rubbish* acquires more and more of the properties of adjectives. This is gradience: microsteps rather than abrupt saltation from N to A. There is no implication, however, that such a process need take an extended time to be completed.

I doubt that *rubbish* has gone all the way to full adjectivehood yet, though. One indication that it may still be what Harris and Campbell (1995: 54) call an 'exploratory expression' is that users can play with it:

(11) B: you are all rubbish and i hate you all [*cry*]
SM: No you are rubbish.
B: you are rubbisher
SM: you are the rubbishest person on this board.
B: rubbish. you are the rubby rubbiesht rubbish person on this board
SM: You are the most rubbishiestest person in the world and stop sending me abusive e-mails about helicopters.
B: you are rubbish at everything, and like rubbish helicopters and rubbish war films
(http://forum.comeonboro.com/index.php?topic=24520.0;prev_next=next, dated 15 Apr 2008 <accessed 12 Jul 2008>)

It isn't clear just what *rubby rubbiesht* in the middle of (11) is – a sort of blend of *rubbish* and a superlative inflection? – while the last contribution from "SM" contrives to form a triple superlative, though apparently of *rubbishy*.

Consider now some possible N > A transitions involving proper nouns as starting point. They too seem to illustrate a gradient. Nigel Vincent (p.c. 16 Apr. 2009) offers this recent-sounding example, though it is a pattern that is actually quite well established:

(12) Just because you do not like "the media", there is no need to go all Daily Mail on us and knock the hell out of something you do not understand.
(Michael Kenward, comments on *Times Higher Education* website, 13 Mar. 2009 http://www.timeshighereducation.co.uk/story.asp?sectioncode=26andstorycode=405758andc=1)

While *Daily Mail* is clearly a proper name, that newspaper's world-view is well known enough in Britain for the connotations to be exploited satirically as in (12). The *go X* construction doesn't require X to be an adjective, even if that is probably the unmarked filler of the slot, as in *go (all) shy*, cf. Huddleston and Pullum (2002: 264). No doubt the use of a noun here is also partly licensed by *all* (Buchstaller and Traugott 2006; Quirk, Greenbaum, Leech and Svartvik 1985: 447); adverbial *all* + NP has occurred since early Modern English. The construction in (12) permits certain nouns as well as adjectives so long as the semantics and pragmatics are compatible with the NP receiving a (possibly vague) referential meaning and having both a descriptive and resultative function – properties more prototypically belonging to APs. If this represents a micro-step away from prototypical N and towards A, *Daily Mail* nevertheless remains close to the N pole of the gradient.

Graeme Trousdale calls my attention to examples like the following (p.c. 28 Jan. 2009):

(13) While Stevenson's novel [*Dr Jekyll and Mr Hyde*: GT] is ostensibly set in London, Grant feels the tale has been wisely chosen as the focus for this year's Edinburgh City of Literature campaign. "It does seem a very Edinburgh story […]" (*The List*, 14 February 2008)

Since Huddleston and Pullum cite *Oxbridge* in *He has a very Oxbridge accent* as having "acquired distinctively adjectival properties" (2002: 1643), it would seem that *Edinburgh* in (13) has gone somewhat further towards adjectivehood than *Daily Mail* in (12) – *very* is usually regarded as unavailable as a noun modifier. However, compared with *Oxbridge* (a mid-nineteenth-century coinage of Thackeray's), *Edinburgh* is a more prototypical proper noun, since *Oxbridge* was from the first used attributively and has both sense and reference.

To the extent that anyone feels that (12) and (13) are playful or contrived or otherwise unnatural, we might analyse them as involving 'coercion'. In Michaelis (2004, reference from Amanda Patten's chapter in this volume), it is the syntax

which coerces the semantics, though to me coercion makes at least as much sense the other way round, the semantics coercing a proper noun for the nonce into – or at least *towards* – the syntax of an adjective.

Saltation can be approached in a different way. Roberts, with some support from van Gelderen (both in this volume), reinterprets Aarts's distinction between subsective and intersective gradience (Aarts 2007) in terms of feature bundles, with subsective gradience involving one feature bundle that is a subset of another, as against intersective gradience, which does not show any subset-superset relation. Whether the distinction is modelled with features or with morphosyntactic distributional properties, it is a distinction which does not seem helpful in a case like the one sketched for *rubbish*. Roberts writes:

> A useful analogy here might be with calculus: just as a seemingly continuous curve can be treated as a series of discrete infinitesimal steps, so a seemingly gradient category (or gradual change in category membership) can be seen as a change in membership between two very similar, but nonetheless discretely distinct, syntactic categories. This naturally implies that we have some way to 'measure the distance' between categories: this can be done with an appropriate feature system which breaks down major categories (N, V, etc.) into smaller ones (count noun, transitive verb, etc.) up to a fairly fine-grained level.
>
> (Roberts, this volume, p. 47)

Even if new subcategories can be invoked for some intermediate stages between N and A, they must for Roberts be subcategories either of N or of A, not of both – yet some contexts are simply underdetermined. I do agree with one point, that the change is not a continuous one. Inventing a series of intermediate categories may save the theory by a procedure which is somewhat reminiscent of Anderson's very different notional theory of categories, which allowed fractional placements of intermediate categories along a single cline (Anderson 1997). Featural approaches do in principle permit a distinction between subsective and intersective gradience, so long as the defining features for adjacent categories do not overlap. Yet this is not always so. There are cases where the same feature is used with different values to define different categories, such as ability vs. inability to take plural marking, or even with the same value, such as occurrence with intensifiers (for both A and Adv).

However, by Aarts's criteria a stepwise transition between categories actually confounds the distinction that he invokes between subsective and intersective gradience (2007, etc.), since the loss of prototypicality within one category (subsective gradience) is not substantially different in nature from the acquisition of an equal number of features of another category (intersective gradience) and then onwards to full membership of the new category (subsective gradience again). Other

problems with the distinction are raised by Bisang and by Traugott and Trousdale (both in this volume), including failure to make allowance for semantic criteria, and poor prediction of cross-linguistic diachronic facts. Note too that even when membership of the new category is fully established, layering will usually maintain the old categorisation beside the new. Imagine speakers whose grammar permits full adjectival use of the word *rubbish*. They will surely be able to use the word as a noun too. For such speakers, *rubbish* in a common sentence like *It's rubbish* or in an NP like *a rubbish idea* cannot safely be assigned to either category, N or A, to the exclusion of the other. To insist on a unique category, in my opinion, would be to practise an artificial pseudo-rigour imposed by certain linguistic theories and not by the facts of the language.

2.4 A~D

Adjective and Noun are both major categories. As I have argued in Denison (2006), Determiner is more grammatical, more marginal, and (at least in English) more recent. I have discussed some ongoing transitions from A to D, which we can reconsider here under the heading of non-structure-changing category changes. (There is no need at this point to distinguish between central determiners and post-determiners.) Such changes are also potential examples of grammaticalization.

Consider the nascent quantifying determiners *certain, various* and *several*. They already show some determiner-like properties such as the partitive construction – what Payne and Huddleston called the 'fused-head construction' (Payne and Huddleston 2002: 410–412):

(14) a. certain of our great cities (165× in BNC)
b. various of these approaches (32×)
c. several of the papers (1088×)

They also – especially *certain* – retain some behaviour that is clearly adjectival:

(15) a. but I'm not certain
b. the infinitely various capacities of children
c. The limitations to production are several

The structures of most interest here are potentially equivocal NPs of the type

(16) $[\textit{various}\ (X^{n})\ N]_{NP}$

where the word in question either premodifies (as A) or determines (as D) the head of the NP (N); the term X^n here stands for one or more intervening postdeterminers or premodifying adjectives or nouns, as in

(17) a. various ethnic minority languages
b. several other countries

Easily the most frequent collocations in this group are simple two-word NPs like

(18) a. certain people
b. various questions
c. several horses

without intervening elements. I have estimated frequencies from the BNC (from which, incidentally, all the examples (14)–(20) are taken). I tabulate three figures for each of the words under study: overall total occurrences of the word; uses tagged in the BNC as immediately followed by a plural noun, the vast majority of which will be of the type shown in (18); and potential uses like (17) that do have intervening premodifiers.[8]

Table 2. Two-word NPs involving *certain*, *various*, *several*

	total occurrences of word in BNC	**in 2-word NP**	**in NPs with other words intervening before head**
certain	21767	8369	< 3164
various	15261	7220	< 3184
several	23414	13746	< 5210

8. 'Plural noun' includes the tag both for plural common noun (NN2) and for common noun, neutral for number, like *aircraft, people* (NN0). To estimate the number of two-word NPs I have excluded examples where the string of word + plural noun was preceded by an adjective, article, numeral, determiner or possessive, as in *his various bequests*, or was followed by a second noun, as in *several police officers*. I used the BNC*web* software (version 4.2), with CQP queries of the type

(i) [pos != "(AJ.|AT.|CRD|D..|ORD|POS|)"] [word = "certain" %c] [pos = "(NN0|NN2)"] [pos != "NN."]

The figure in the last column represents contexts where the word is directly followed either by an adjective or by two nouns, the first non-plural; the latter context in particular certainly includes irrelevant examples where the second noun is not part of the same NP, so the figures are overestimates. Queries were of the type

(ii) [word = "certain" %c] ([pos = "AJ."] | [pos = "(NN0|NN1)"] [pos = "NN."])

The most common equivocal context, then, is a two-word NP, and in a relatively lean structuralist account without empty categories or functional projections, the two lexical categories will simply be sisters. Over time the first word in pattern (18) could switch from A to D while remaining left sister of the head noun. Even with a second modifier in the string, the topology could remain essentially unchanged whether the item was construed as A or as D, assuming a stacked-adjective analysis for the earlier state:

(19) [various [unresolved questions]]

None of this seems at all mysterious, and furthermore, any syntactic theory should be able to handle it. As to whether the process falls under the heading of reanalysis or not, it seems better to me to invoke analogy: what is happening is language users unconsciously observing how *various* in certain common syntactic frames behaves 'rather like' a Determiner, or *rubbish* 'just like' an Adjective. It is arguable whether a change of category without structural change merits the term 'reanalysis' – and in the kind of lean topology that I favour, there is no rebracketing or structural change. Of course, with a syntax-centred model of language and more elaborately articulated syntactic structures, almost everything that can be said about language will be in some way 'structural', which may help to explain why Elly van Gelderen (this volume) is baffled by the structural ~ non-structural distinction I try to draw in this paper.

There is a useful synopsis of what has been meant by the terms 'reanalysis' and 'analogy' in Traugott and Trousdale (this volume, §§4.1, 4.2), and the conclusion that "all analogization is reanalysis" depends on the more inclusive definition of reanalysis, as does the following passage, cited in Traugott (Forthcoming) in discussion of Harris and Campbell (1995):

> Nevertheless, the distinction between changes that concern constituency, hierarchical structure, category, grammatical relations, or boundary types, and similar primarily "covert" aspects of syntagmatic linguistic structure on the one hand (reanalysis), and changes based on overt patterns and templates that serve as exemplars on the other (analogy), is a useful one (Hopper and Traugott 2003).

In the present paper I have chosen to subdivide the covert class by distinguishing changes that concern constituency or hierarchical structure from those that concern (just) category.

I turn now to the post-determiner developments studied by colleagues at Leuven (Breban 2006, 2008; Breban and Davidse 2003; Davidse, Breban and Van linden 2008), which are not so straightforward syntactically. Post-determiners typically co-occur with a central determiner. In fact, Davidse, Breban and Van linden (2008) restrict their corpus counts to examples with the definite

determiner *the*, and their discussion so far is largely confined to the semantics and pragmatics of the process. They say "postdeterminers form a unit with the determiner, with the latter determining the general definite or indefinite value of the determiner complex" (Davidse, Breban and Van linden 2008: 478), sometimes with orthographic coalescence (English *another*, many Dutch examples like *dezelfde*). What kind of units? – lexical, semantic, syntactic? In published work they have not been explicit about the syntax. If the syntax went with the semantics, the implication would be of a re-bracketing:

(20) a. [the [old cards]] ?>
b. [[the old] cards]

I am not convinced that such a change has in fact taken place in all the cases they discuss. The internal constituency structure of NPs is neither particularly salient nor easy to test, but the *one*-test seems to point the wrong way in this example (invented by me):

(21) Pick any two cards. Memorise them. Now put the cards back, shuffle the pack thoroughly, pick another two, and replace the pack face down. If your new hand contains either of the old cards, what are the chances that the other one is on top of the pack?

Here the pronoun *one* in *the other one* is a substitute for what used to be called an N-bar, but in any case a constituent: *one* = *old card*, where *old* means 'former, previous'. So *old* forms a constituent with its head noun *card*, not with *the*. Tine Breban has suggested that there are several intermediate stages between adjective and post-determiner, and that syntactically, *old* 'former' may be among the more conservative of the nascent post-determiners, still remaining more of an entrenched classifier than a post-determiner (p.c. 19 Jul. 2008, 25 Feb. 2009). In any case, Breban and I are in agreement that the principal syntactic effect of the change from A to post-determiner is in fixing of the linear ordering so that the item occurs immediately after central determiners and before adjectives, and she offers clearer examples of this ordering, such as:

(22) That is, if the undergraduate takes one 3-cr graduate course beyond the usual three graduate courses, he/she will receive a tuition remission for only the final 6 credits in the program (rather than the usual 9 credits). (http://www.villanova.edu/artsci/liberalstudies/programs/5year.htm)

Here the post-determiner *usual* precedes numerals.

Although Breban, Davidse et al. convincingly describe ongoing changes in the English NP, a purely syntactic treatment may not show much or even *any* evidence

of change. As Francis and Yuasa have demonstrated elsewhere, "semantic change can occur in the absence of syntactic change, leading to cases of 'mismatch' between syntax and semantics" (Francis and Yuasa 2008: 47). This too would support my suggestion above that it makes more sense to talk of semantics coercing syntax than the converse. The different aspects of grammaticalization need not all occur simultaneously.

3. Category change with structural change

3.1 *on behalf of*

Consider the underlined expression seen in

(23) Asshe himself was filled with pride on behalf of his daughter. (CD2 2449)[9]

At first blush *on behalf of* looks like a complex preposition, as Quirk et al. suggest (1985: 670–673). They talk of gradience between complex prepositions and free NP sequences and give nine indicators of syntactic separatedness. *On behalf of* fails eight out of nine of them, implying that it is very close to the complex preposition end of the scale. Aarts comments that "[w]hichever way we look at the matter, it seems to be reasonable to posit a gradient between more or [*sic*] less fixed $P^1N^1P^2N^2$ constructions" (Aarts 2007: 178), though his "seems" gives the clue to his theoretical stance, on which more below. The major corpus study is that of Hoffmann, who includes *on behalf of* among the 30 most frequent complex prepositions in the written component of the BNC (Hoffmann 2005: 25, 62, 79). In ICE-GB2, its three words are 'ditto-tagged' as a single grammatical item, a preposition. The word *behalf* scarcely occurs without *on* in British English (American English also allows *in*). The complex preposition can share a complement with a coordinated simple preposition:

(24) the responsibility of the teacher is to act for and on behalf of society. (CLY 1013)

(25) unless it is in writing and signed by and on behalf of both Parties (CCU 149)

All of this supports the intuition that *on behalf of* forms a unit. Again, the question is, what kind of unit?

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9. This example and many subsequent ones without an explicit attribution to a different source are taken from the BNC.

There are, however, dissentient voices who are unwilling to recognise it as a grammatical unit. For them, each word is assigned its own category. What is the category of *behalf* in Present-Day English (PDE)?[10] If it is a separate word it must be N, since it has a rare plural (*behalfs* 2×, *behalves* 3× in BNC, as against 4014 singular – the plural is never used with *of*-phrase). It can be preceded by a possessive:

(26) Charles felt sure that Daddy could pull the odd string on his daughter's behalf. (GUF 3203)

And of course the availability of examples like (26) – the one failed test mentioned above – is disastrous for claims of unity: the alternation between *on behalf of his daughter* in (23) and *on his daughter's behalf* in (26) seems exactly parallel to the variation between the two productive possessive patterns seen in *the legs of the piano* and *the piano's legs*. (As far as I can tell, this particular alternation is not discussed by Hoffmann (2005).) And if that is the case, then *on behalf of* is failing to behave as an indecomposable and uninterruptible unit, while the *of* within it seems to be merely a predictable grammatical formative. And there is further evidence too in support of the dissenters, in that the *of* can be repeated in coordination or shared with another P NP sequence:

(27) However, I want to concentrate here on the technical work that the Faculty does on behalf, not only of its members, but of the Institute membership as a whole. (CBW 150)

(28) And I pay tribute now […] to those who deliver the service on behalf and in the name of the Board of Social Responsibility. (F86 283, sim. J6P 164)

Huddleston and Pullum discuss the syntax in detail in relation to a different potential complex preposition, *in front of*, mentioning *on behalf of* as another case in point (Huddleston and Pullum 2002: 618–623), and advocating the structure

(29) $[\text{on } [[\text{behalf}]_{\text{N}} [\text{of NP}]_{\text{PP}}]_{\text{NP}}]_{\text{PP}}$

(likewise Roberts (p.c. 12 May 2009)).[11] Haspelmath illustrates potential reanalysis with *on (the) top of* (1998: 332). All come to the conclusion that there are no

10. We see the process of univerbation repeating itself, since the word *behalf*, now morphologically unanalysable, was itself formed in Old English (OE) from the PP *by* + *half*. It functioned as Adv/P, and in ME changed category to N and blended its syntax with that of *half*. I will take those earlier processes as long completed and therefore irrelevant to PDE.

11. Notice incidentally that (27) and (28) are as awkward for the right-branching analysis of (29) as for the complex preposition analysis!

syntactic grounds for recognising such strings as complex prepositions. (There is also a brief, non-committal survey with references in Brinton and Traugott (2005: 64–65).)

Now it seems to me that everyone is making difficulties for themselves. For example, ICE-GB2, one of the most carefully and consistently tagged of corpora, takes *behalf* as part of a complex preposition when followed by *of*, but as N when preceded by a possessive. Thus the rather parallel PPs in (30) are parsed rather differently, while the two uses of *behalf* in (31) (which is actually from the BNC) would have had to be kept apart in the ICE-GB system:

(30) We are acting with the authority of the United Nations and on behalf of the whole world. (ICE-GB S2B 030 051)
with <PREP(ge)> the <ART(def)> authority <N(com,sing)> of <PREP(ge)> the United Nations and on <PREP(ge,ditto):1/3> behalf <PREP(ge,ditto):2/3> of <PREP(ge,ditto):3/3> the whole world[12]

(31) Females also compete with each other for rank, on their own behalf and on behalf of their kids. (CJ3 1804)

Here BNC's tagging, normally not terribly reliable, is at least consistent: it always treats *behalf* as N and recognises no multi-word unit.

The distribution of *behalf* does not involve wholly free variation, however. The pattern *on behalf of* only occurs 18× with a pronoun as complement, of which 12 have the pronoun post-modified by *all* and one has it coordinated with another pronoun. Thus in the whole of the BNC there are only five of the following type:

(32) And for that, on behalf of them, we thank you. (CH1 4747)

(33) Am I there to speak on behalf of the council? Am I there to speak on behalf of me? (KRP 1740)

as against some 844 of *on* + [possessive determiner] + *behalf*. And note the rhetorical parallelism and contrastive emphasis of (33). This particular skewing can be explained perfectly adequately with reference to thematic structure and the choices made in ordinary possessives and also in transitive phrasal verbs, where personal pronouns are strongly disfavoured in rightmost position, yet there may be an incipient tendency to restrict use of the possessive variant of *on behalf* to pronominal NPs (appearing as the possessive determiners *my, his, our*, etc. – 844×), to proper nouns (114×), and to relationship nouns (17×), with other common nouns occurring some 143 times. In the spoken portion of the BNC, which might represent better the way the language is moving, the figures for a possessive before

12. I have given the relevant tags only.

behalf are as follows: possessive determiner (91×), proper name (2×), common noun (3×) – and notice that all three common noun examples are rather weak exceptions to the incipient generalisation I have proposed.[13] The ICE-GB2 corpus (speech and writing) has no common nouns there at all. It has 30 examples of *on behalf of X* as against eight of *on X's behalf*. Of the latter, seven have a possessive determiner (*my, our, your, his, their*), one a proper noun with possessive *'s* (*Mr Barnsley's*). The DCPSE (speech only) adds more of the same: *on behalf of X* 6×, *on our/his behalf* 3×.

If that is the way possessive *behalf* is going, this would be rather more like the restrictive possessive *-s* found in Dutch and German and would imply the obsolescence of genuine alternation between *on X's behalf* and *on behalf of X*. That in turn suggests that *on behalf of* is on the way to being univerbated.[14] Note here what Bybee says about usage:

> In this framework there is no strict separation of lexicon and grammar, but rather units of varying lengths and degrees of complexity may be stored lexically with the following properties: (i) the degree of strength or entrenchment of stored units is based on their text frequency; (ii) connections or associations of both a phonological and semantic nature are made among items, based on similarity or identity; and (iii) schemas of varying degrees of generality emerge from these representations. (Bybee 2003: 610)

In Bybee's framework some sort of entrenchment of *on behalf of* would surely have to be recognised, and Hoffmann presents statistical data in support of treating complex prepositions as units. How far does such a tendency have to go before the objection to treating *on behalf of* as a complex preposition loses its force?

Now in practice the creators of tagged corpora clearly have to take a decision on the most appropriate analysis of each individual example (or at the least, allow their tagging program to do so); see Denison (2007). The BNC does employ

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13. Two identical examples (*on the plaintiff's behalf*) in the same text are in courtroom discourse, which is probably more formal and archaic than other speech, while the third is the following:

(i) just one question that I wasn't able to put on the Committee's behalf, but I think it is something that we would be very grateful for a short written comment and that is … (K77 346)

where *the Committee* is coreferential with *we*.

14. It may be that we have incipient grammaticalization rather than lexicalisation, on the basis that there are many complex prepositions of the same basic shape, and most often involving the purely grammatical, non-spatial preposition *of*. Hendrik De Smet points out (p.c. 30 Jan. 2009) that the apparent incipient selectivity for certain sorts of NP complement might suggest that complex prepositions would not necessarily be (full) members of the category P.

'ambiguity tags' in certain circumstances to mark a word of uncertain category, but this would be a very clumsy device where not just the category of a word but even the number of separate items is at issue. However, the discursive description of a published grammar can take a more nuanced approach, and there it should be possible to present and to maintain dual analyses where both have some explanatory value.

3.2 Non-gradient accounts

As already noted, Huddleston and Pullum (2002) do not recognise such a complex preposition as *on behalf of*, or at least the string's entrenchment – not as a grammatical fact, anyway. Hard-nosed syntactic analysis says that at most there is a little idiom formation going on, with varying degrees of fossilisation, but nothing of interest to syntax. Why does the constituency approach fail to recognise changes like these until they have gone to completion and are safely in the past? Why too does Aarts (2004, 2007) reject nearly all inter-categorial ("intersective") gradience, by means of a mechanical counting of all available diagnostics, equally weighted, which almost always leads to a majority decision one way or the other? I propose an acronym:

(34) WYSIWYTCH
"What you see is what your theory can handle"

There is a serious purpose beneath this gently satirical coinage. Much conventional syntax makes a number of assumptions, including *inter alia* a strict separation of syntax and semantics,[15] a basic organisation of grammar by constituency (but cf. Haspelmath (1998: 332–333) on the advantage of dependency representation), and no discontinuous constituents. Every grammatical sentence can be divided into words, and every word in any unambiguous sentence belongs to exactly one of a small number of word classes. There is no redundancy in grammar, and any speaker of a given variety of a language has a coherent grammar which accounts for everything acceptable that can be said, once the lexicon has mopped up any oddities; likewise for a linguist's grammar, whether or not it claims psychological reality/plausibility. A linguist's grammar must

i. account for observed facts;
ii. be internally coherent and self-consistent;

15. It is notoriously difficult to get students or lay people to see the difference between syntactic and semantic facts.

iii. aim for elegance and economy;
iv. prefer a compositional analysis over 'pre-fabs' wherever possible.

One suspects that (ii) and (iii) are sometimes allowed to outrank (i). I'm not even sure that (ii) and (iii) are indispensable: clearly they are desirable *ceteris paribus*, but to my mind, not so desirable as to be maintained at *any* price. In relation to (iii), Anette Rosenbach (p.c. 1 Feb. 2009) points me to this sceptical comment:

> […] there is little if any evidence for regarding efficiency of design as a particularly common feature of biological systems. In fact, quite the opposite is the case. (Johnson and Lappin 1997: 327)

As for (iv), I doubt that it is defensible psychologically.

In earlier work I had explored gradient effects in syntax, e.g. Denison (1990), and in a conference paper in 1999 I made explicit reference to the disconnect between mainstream syntax with its rigid Aristotelian distinctions and mainstream morphology with its recognition of prototype effects. That paper was eventually published as Denison (2001) (and cf. also Denison 2006: 281), by which time I had become aware of Haspelmath (1998), where similar ideas are independently sketched.

I am certainly not advocating outright abandonment of the kind of approach exemplified by the *Cambridge Grammar*. The intellectual rigour of that work is of the highest standard, and a huge amount has been achieved over the years within its general frame of reference. Simply abandoning all the insights would be counterproductive. But bearing WYSIWYTCH in mind, maybe we can concede that strict structuralism isn't *always* the most insightful way of looking at things, and grammatical change is one domain where it does less well. For a detailed, critical, cross-linguistic survey of assumptions about universals in categories, constituency, hierarchies and much else, see Evans and Levinson (2009).

One suggestion I like to entertain is that what those kinds of structural approach capture are the most favoured points in the space of possible grammars. Human beings have a pattern-forming mentality, and furthermore they seem to want to categorise the world in Roschian fashion, so why not linguistic entities too? Then such phenomena as dual constituency or dual inheritance, and non-central or overlapping categorisations, might turn out to be marked situations, more likely to be unstable and to lead to further change than straightforward constituency or inheritance and central membership of categories, but nevertheless an indispensable part of diachronic linguistic description.

4. New category

So far I have looked at changes from one category to another, assuming that the replacing category was available for pattern-matching, and distinguishing cases where the new categorial assignment is compatible with an existing syntactic structure from those where it is not. If, however, the category change is to a new category, where does that fit into the dichotomy of structural conservation vs. structural change? I argue that such a situation cannot be dealt with in the same terms at all.

I am aware of two cases in the history of English where a new word class has arisen in historical times: Determiner and Modal, as discussed in Cort, Denison and Spinillo (2006) and by Roberts (this vol.).[16] Both categories are closer to the grammatical end of the lexical ~ grammatical continuum than their parent categories, and so entry into one of these categories inevitably implies that grammaticalization has taken place. The reasons for their addition to the inventory of categories (whether by speakers in the past, as we presume, or by historical linguists) consist of a substantial accretion of facts, including morphological ones, semantic ones, and changes in frequency of syntactic distribution. In such cases it makes no sense to look for some single syntactic structure as a basis of reanalysis, hoping to be able to show that either

i. the structure once had V (or A) at a certain node, and this changed to M (or D) without major topological change

or

ii. the structure once had V (or A) at a certain node, and this changed to M (or D) while at the same time the topology of the tree was reconfigured

in the spirit of the dichotomy I have invoked in this paper so far in §§2 and 3, respectively.

It seems to me that (i) is ruled out because speakers can have no reason to infer a different category assignment – at most they might create a new subcategory of an existing category on the grounds that many other members of the category were not available in that pattern. As for (ii), radical restructuring of a single pattern (at whatever level of generality) is even less motivated. Such restructuring (of both category space and the syntactic structure of a particular pattern) cannot come from consideration of that one pattern alone: it demands some kind of

16. I discount 'syncategoremic' items: those that do not belong to a category, which is equivalent to calling them unique members of a category.

metric for weighing up a diverse set of patterns and distributions and innovating a more efficient overall way of capturing them. And, *contra* Haspelmath (1998: 341), I see no reason why dual analyses might not last quite a long time, and indeed be available within a single grammar; after all, it is not the individual speaker who is responsible for, and who has to track, any long-term directionality or drift.[17]

5. Conclusion

As far as word classes are concerned, I repeat part of the conclusion of a so-far unpublished draft on parallels between the histories of the minor categories D(eterminer) and M(odal):

> At present we are inclined to the view that the best way to characterise a category typologically is by a notional – principally semantic – account. See here Croft, Langacker, and others. Such characterisations allow one to generalise across languages, as indeed is widely recognised, e.g. by Huddleston (1984: 74–5) in his contrast between (often notional) **general** definitions and (structurally defined) **language-specific** definitions. However, a definition which works cross-linguistically is also one which should work diachronically across a single language at different periods of its history, and that is why we find that of the linguistic domains we have considered here, it is semantics which seems most stable. There are nouns in Old English and in PDE, and as a class they meant much the same then as now. However, their distributional and formal properties, though similar, are certainly not the same in OE and PDE. The more transient word classes, like those we have studied in this paper, may actually have no lexical members at a given time (arguably true in OE of both D and M), even though the meanings associated with the classes (e.g. definiteness for D, modality for M) can be expressed in OE by other means. A lexical class as a whole, then, considered as a morphosyntactic category of phonetically non-null words, is neither fixed nor universal. (Cort, Denison and Spinillo 2006, emphasis original)

Holger Diessel (2008) has drawn attention to the non-universality of all categories apart perhaps from N, V and Demonstratives/Deictics. This gives typological support to a 'surfacey' syntactic analysis which only recognises those categories that have non-null membership in a given language, rather than positing as an axiom that all languages must make full use of a fixed, universal set of categories.

As for syntactic constituency, while it certainly gives a frame for the analogical category changes of §2, it hardly plays any significant part in those changes – and indeed, probably any grammatical model would do. For those category

17. Though cf. Labov (1994: 580–586, also cf. 65–66, 595) on probability matching.

changes that involve structural reconfiguration (§3), constituent structure nicely represents the earlier and later states, but in itself it doesn't explain anything, and certainly not directionality (though see here Roberts's claim that "grammaticalization is always upward and leftward in the syntactic structure" (Roberts, this volume, p. 45); grammaticalization plays a part in all the examples I have discussed but for the N > A ones. Where category change involves a new category (§4), constituent structure representations can do little more than contrast the old and the new – the latter only when changes have crystallised and new patterns have been formed. Again, structural representations are not explanatory of the change that has taken place, and they cannot represent incipient change at all. Of course we need to confirm that the very limited set of examples considered in this paper are reasonably representative of category change, but the interim conclusion is that constituency has really not offered much help.

To some extent Construction Grammar (in most of its various flavours) may reduce the discomfort of underspecification, by focussing on the whole rather than the parts: questions such as whether *rubbish* in *a rubbish idea* is N or A (see §2.3 above), whether *behalf* in *on behalf of my family* is an independent noun or serves as part of a three-word preposition, can be relegated to a secondary consideration and possibly left undecided. But the parts cannot be ignored altogether. Here the possibility of dual or multiple inheritance allows a construction to inherit properties of different constructional schemas. I leave this point undeveloped now, but it has in any case been discussed in more detail by Traugott and Trousdale (this volume).

In these pages I have been explicitly exploring category change. Implicitly, however, given the major role that category change plays in grammaticalization, the claims translate to claims about grammaticalization and gradience. The challenge now is to widen the evidence base and to demonstrate convincingly the explanatory power of Construction Grammar and gradience in modelling grammaticalization.

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Features in reanalysis and grammaticalization

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This chapter discusses this volume's contributions by Roberts, De Smet, and Denison because they cover a wide range of explanations of gradience and gradual change. These three approaches can be accounted for in a similar way and I offer an account of gradual change using a Feature Economy Principle. This view is slightly different from that in Roberts's chapter but contributes to the spirit of his chapter in seeing language variation as determined by feature variation. I then provide some new data on the grammaticalization of *for* that adds to De Smet's data and that fits with a view of gradual change as feature economy. Finally, I suggest that the cases discussed by Denison as non-structural are really structural and again fit in a framework of Feature Economy.

1. Introduction[1]

This volume examines the connection between gradience and the gradual change so typical of grammaticalization. Gradience involves synchronic continua whereas gradualness and grammaticalization are diachronic. Aarts (2007) and Denison (2001) have given many examples of gradience, where one word is a 'better' category than another. Gradience can of course arise through grammaticalization but need not. Thinking about their exact relationship provides an excellent tool to think about grammatical change, as Rosenbach emphasizes in her contribution. Traugott and Trousdale, the editors, "do not consider diachronic processes themselves to be gradient [but] argue that most instances of change involve small micro-steps that are in fact … abrupt" (Traugott and Trousdale, this volume, p. 20). I agree and will argue that an emphasis on micro-steps suggests that grammaticalization is in fact reanalysis. My view of language change emphasizes acquisition and thereby reanalysis. I will phrase this in terms of features.

1. Thanks very much to Elizabeth Traugott, Graeme Trousdale, and Terje Lohndal for very helpful comments.

Within Minimalism, there are currently two major views, which I sketch in Section 2, on how languages come to be different. One of these is quite compatible with gradual change and micro-reanalyses. The role of features in reanalyses is mentioned by Roberts in his contribution in this volume, and I discuss that proposal in Section 3. Section 4 uses Economy Principles and Feature Reanalysis to re-examine the data on changes involving *for* from De Smet (this volume). I then consider some of the instances of gradient categories that Denison mentions in Section 5, again using a feature approach. In a number of the contributions in this volume, directionality is not taken into account and I think that part is crucial to gradual change. I will therefore link the issue of micro-changes with directionality in Section 6. Section 7 is a conclusion.

2. Where have parameters gone?

Since the early 1980s, parameters (and principles) have played a crucial role in generative grammar in that they account for cross-linguistic variation. In this section, I outline the debate on what parameters look like and how they are relevant to language change. I start with a very brief discussion on the role of principles.

Recent Minimalism (e.g. Chomsky 2004, 2007) attempts to reduce the role of Universal Grammar and to ascribe more to the general cognitive principles. Van Gelderen (2004, 2008a, b, c) formulates several such economy principles that help the child acquire a grammar. The effect of these principles is perhaps the most obvious in unidirectional syntactic change. This change is always from phrase to head and from lower head to higher head and has to have an explanation in internal principle that the language learner employs. Van Gelderen (2004) proposes the Head Preference Principle and Late Merge. If the child encounters input that can be either a head or a specifier, s/he will choose the former. Hence, reanalyses such as from demonstrative to article take place. Late Merge expresses that it is more economical to merge in a higher position than in a lower position and then to move. In Section 4.2, I will phrase Late Merge as a Feature Economy Principle. Technically, we cannot speak of reanalysis by the child, but of the acquisition of grammatical structures and rules on the basis of an input but using principles to build the most economical grammar. I continue to speak of reanalysis, however, for convenience.

Within the Minimalist Program, one encounters two views where parameters are concerned. Baker (2001, 2008), on the one hand, has suggested macro-parameters. Baker (2001), following Sapir, argues that a language has a basic character. Thus, the choice of polysynthesis, for example, implies that the language will have many other characteristics. Chomsky (2004, 2007), Lohndal (2009), and many

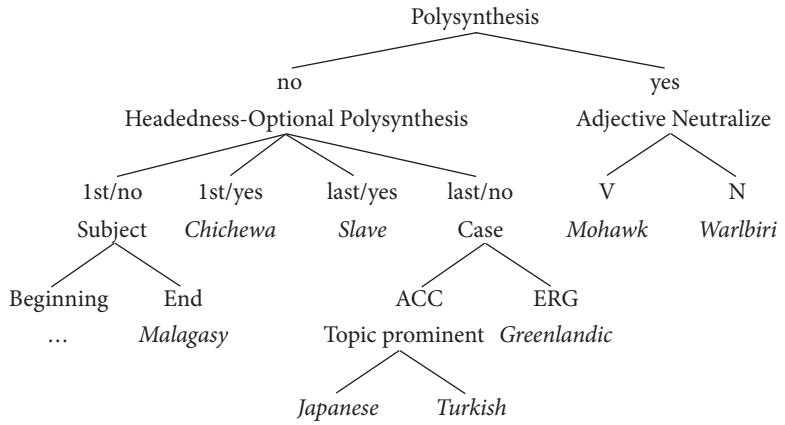


Figure 1. Baker's simplified macroparameter hierarchy

others, on the other hand, attribute as little as possible to the role of parameters and to Universal Grammar in general. Minimalist parameters consist of choices of feature specifications as the child acquires a lexicon, as in Borer (1984), dubbed the Borer Chomsky Conjecture by Baker (2008). All parameters are lexical and determine linearization; therefore, they account for the variety of languages.

Baker's (2001) macroparametric hierarchy is given in Figure 1. There is very little room for gradual reanalysis here: if a language is reanalyzed as polysynthetic, it suddenly has to decide on headedness and subject position as well. There is in this model no way to account for unidirectionality either.

The model also has a flavor of arbitrariness and is difficult to envision as part of Universal Grammar (see also Baltin 2004: 551). As I show in van Gelderen (2009), the settings can change relatively 'fast' in some languages without too many other characteristics changing. For instance, the Northern Athabascan languages lack object polysynthesis whereas the Southern ones have it; otherwise, the two branches are quite similar. This kind of change presents a problem for the hierarchy of macroparameters. In addition, the question arises how this system would have come about as an evolutionary shift.

Baker (2008: 155) suggests two macroparameters, as in (1) and (2). The choices are 'shallower' than those in Figure 1 and one choice can be easily made, without having to go down a set of choices, as one does in Figure 1.

(1) The Direction of Agreement Parameter (DAP)
F agrees with DP only if DP asymmetrically c-commands F.
(Yes: most Bantu languages; No: most Indo-European languages)

(2) The Case Dependence of Agreement Parameter (CDAP)
F agrees with DP/NP only if F values the Case feature of DP/NP (or vice versa).
(No: most Bantu languages; Yes: most Indo-European languages)

The 108 languages that Baker (2008) examines fall into four groups and that is predicted by the DAP and CDAP: those with yes/yes, yes/no, no/no, and no/yes. Therefore, according to Baker, the DAP and CDAP "cannot be recast as the assignment of special feature values to individual lexical items; that view would allow different kinds of agreement to be found within a single language" (Baker 2008). Baker needs minor parameters too, such as if T is a probe in a particular language and how often it may agree, so that is a problem.

The standard Minimalist approach is to account for linguistic diversity in terms of parametrized features. That framework assumes that Case and agreement are always linked which is unlikely given the many languages with agreement and no Case and vice versa. I have provided a possible alternative in Figure 2, using features. This model allows for micro-reanalyses.

This means that languages could be head-marking, dependent-marking, both, or neither. It has to be coupled with a Feature Economy Principle to derive unidirectionality. If certain features (e.g. uninterpretable) are more economical – perhaps because they keep the derivation going – features will be reanalyzed accordingly.

Other attempts involving parametric features are found in Biberauer and Richards (2006), Richards (2008), and Biberauer, Holmberg, Roberts and Sheenan (2009). Initially, a child would use lexical categories (as well as demonstrative pronouns) with interpretable features (see Radford 2000). S/he would then hear evidence in English for Phi-features but would have a preference principle and, if not enough external data were available, s/he would analyze the features differently from a previous generation.

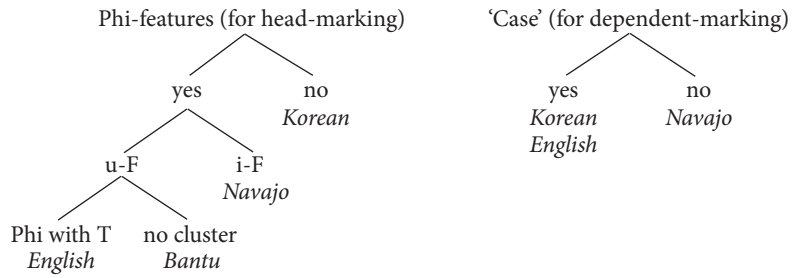


Figure 2. Feature macroparameters (van Gelderen 2009)

In approaches such as those represented in Figure 2, the choices are not as deep and are feature-based. This means that the child may get hints to pay attention to certain features. For instance, if modals are around, a child might postulate a M(ood)P and then needs to decide on the types of features connected to it. The parametric differences expressed in Figure 2 are also in accordance with the view that parameters are only relevant to lexical and grammatical items.

In this section, I have outlined some Minimalist approaches to linguistic diversity and how these relate to gradual, unidirectional language change. Baker's macroparametric approach is hard to use to account for grammaticalization and unidirectional reanalyses; feature-based accounts fare better since they allow for micro-shifts, as I will show below. I first discuss Roberts's contribution since it uses a featural approach.

3. Features

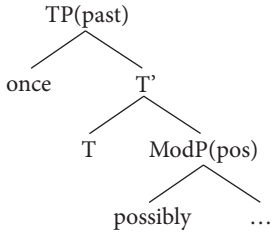
Roberts thinks of a category in the traditional sense, either as one or the other. However, for him, categories come as micro-categories, as in Cinque (1999). In common with much current generative thinking on grammaticalization, Roberts shows that certain heads move upwards as they grammaticalize. In this section, I will quickly summarize some of the main points in Roberts's feature-based approach; in the next section, I show how some of the cases described by De Smet (this volume) can be accounted for using a (slightly different) featural approach.

Cinque (1999), as is well-known, proposes a fine-grained cartography, part of which is given in (3a), and which might look like (3b) in a structural representation.

(3) a. TP-Layer

Tpast	Tfut	Moodir	Modnec	Modpos	ASPhab	ASPrep	ASPfreq
once	*then*	*perhaps*	*necessarily*	*possibly*	*usually*	*again*	*often*

b.



Roberts outlines the Cinquean model and argues that features are the key to gradience even though he does

> not attempt a featural breakdown of these categories, but it is clear that … differences may be rather subtle. Moreover, a single lexical item may be able to instantiate several categories: *can*, for example, may be $Mod_{Ability/Permission}$, $Mod_{Possibility}$, $Mod_{Epistemic}$ and perhaps $Mood_{Evidential}$ … These incremental differences among categories, combined with the possibility of multiple exponence for many lexical items, may give rise to the impression of synchronic gradience. (Roberts, this volume, p. 58)

Roberts then goes on to discuss the well-known grammaticalization of Romance futures and argues for a change from verb to deontic modal to future marker. In other languages, there can be a further change to epistemic modals, as in (4).

(4) (Knock at door): That'll be John. (from Roberts, this volume, example (31a))

This is in accordance with moving to the left and up in the tree in Cinque's hierarchy and should be put in terms of features.

Roberts then introduces a second mechanism relevant to upwards grammaticalization, namely permutation invariance. Certain nouns become determiners and quantifiers, e.g. 'thing' in French and Arabic becomes a negative. This change can be represented as one from (5a) to (5b), certainly a loss of lexical meaning but not of semantic complexity.

(5) a. λx *(thing (x))* ('the set of x such that x is a thing')
b. $\lambda P \lambda Q \neg \exists x[P(x) \& Q(x)]$ ('the sets P and Q such that nothing is in both'). (Roberts, this volume, p. 64)

He attempts to link this to the reanalysis of a lower word as a higher one. The change of a verb to a modal to a future marker may involve such an increase but not all cases of grammaticalization do. As Roberts himself puts it: "it remains unclear whether we can consider the higher functional categories to be *featurally* simpler" (p. 68).

According to Roberts, we need

> an appropriate feature system which breaks down major categories (N, V, etc.) into smaller ones (count noun, transitive verb, etc.) up to a fairly fine-grained level. In the case of functional categories, which will be the major concern in what follows, we will be dealing with categories such as Modal, which can be divided into epistemic, alethic, deontic, etc. (Roberts, this volume, p. 47)

Such a refinement definitely is needed.

For me, one question is what motivates the upwards movement. If the features of the higher position are simpler, there is a reason why a language learner would simplify the item. In agreement with Roberts and Roussou (2003), Roberts (this volume), and van Gelderen (2004, 2008a, b, c) and others, it seems that, in

all cases where we have upwards reanalysis, the reanalyzed element is at some point associated with two positions but the higher position has different features. A good example of that is the shift of *for* from preposition to complementizer. I will therefore discuss the case as presented in De Smet (this volume) and then reanalyze it in terms of upward reanalysis and feature simplification.

4. From P to C

De Smet (this volume) examines the phenomenon of grammatical interference, a diachronic process by which a grammatical item is attracted to a different category without being absorbed by it. De Smet's assumptions and mine are very different. He is very structuralist in his emphasis on a word's "journey … through a language's categorial space" (De Smet, this volume, p. 75) whereas I see grammaticalization as the consequence of internal pressure on the language learner. I will therefore focus on the data rather than on theoretical differences. De Smet's case studies involve the subject marker *for* and the particles *out* and *forth*. I will focus on the former in Section 4.1 and argue that the changes involving *for* present a clear instance of upward grammaticalization. De Smet examines *for* from Middle English on. I will add the picture for Old English in Section 4.2 and show how *for* turns from a preposition into a complementizer. This is much updated from van Gelderen (1993, 1998, 2008c). In Section 4.3, I then add the reanalyses in Middle English.

4.1 De Smet

De Smet's aim is to examine "the simultaneous associations with different categories that items under change can maintain, and what this can reveal about decategorialization … and persistence in grammaticalization" (De Smet, this volume, p. 77). The category of *for* is, of course, both a P and a C in contemporary (and Middle) English. De Smet emphasizes the original purpose function and argues that the complementizer arose as a reinforcer of the *to*-infinitive and is not reanalyzed from the preposition *for* (p. 79). It is never clear what category this reinforcing *for*, e.g. in Middle English (6) or (7), is.

(6) *for ðe folke to kastin*
to the people to chastise
'to chastise the people.' (from De Smet, this volume, example (5b))

(7) *se kyng hit dide <u>for</u> to hauene sibbe of se earl Angeow*
'the king did it (for) to have a relation from Earl A.'
(*Peterborough Chronicle* 1127; from Visser 1972: 1001)

De Smet says that the disappearance of this reinforcing use of *for* "roughly fits" (p. 79) with the disappearance of OV-order, but that's not the case in (7) which is VO and which continues in a second clause, given as (8), i.e. with an OV. Although one might argue the NP *sibbe of se earl Angeow* in (7) is 'heavy' and therefore extraposed, there are lots of other early *for to* examples with VO, as in (9), where the object is not heavy.

(8) *se kyng hit dide <u>for to hauene</u> sibbe of se earl Angeow*
<u>for helpe to hauene</u> togænes his neue Willelm
'to have help against his nephew William.'
(*Peterborough Chronicle* 1127, Thorpe edition, from Visser 1972: 1001)

(9) *me brekeð þe nute <u>for to habbene</u> þene curnel*
'One breaks the nut for to have the kernel.'
(*OE Homilies* I, 79, Visser 1972: 1001)

How did *for* get reanalyzed as a subject marker? According to De Smet, "similarity to other sequences [such as the ACI-EVG] generated by the grammar made *for...to*-infinitives a passable English construction" (p. 80). Then, this construction starts looking like a preposition and that is the reason "that *for...to*-infinitives have never been very successful with verbs not already taking *for*-objects" (p. 83). An example of a subject marker from De Smet is given in (10).

(10) *And this me semeth shuld be sufficient instruction <u>for</u> the husbande to kepe measure.* (from De Smet, this volume, example (6))

The earliest instance of a structure such as (10) that Visser provides is from the mid 15th century. Having *for* be a reinforcer early on (in (6) to (9)) and not a preposition and having it look like the preposition later (in (10)) seems to me ad hoc in De Smet's account. Another quotation from De Smet (this volume) emphasizes this shifting allegiance of *for* again:

> Subject marker *for* and the preposition *for* are syntactically and semantically sufficiently different to treat them as homonyms, yet formal similarity still causes the subject marker to keep gravitating toward the preposition and to model its distribution after that of the preposition. (p. 96)

So, before 1400, *for* is a reinforcer and cannot be a preposition or complementizer, according to De Smet, but after 1400 it starts to look to the preposition as a model to gravitate towards. This part is not well argued.

I turn to an earlier stage of the development of *for* and show how it was reanalyzed as a complementizer, and then speculate how a similar account could work for the later stages, i.e. the introduction of the subject marker.

4.2 From PP to C

As is well known, the earliest use in English of *for* is as preposition and only after 1150 is it a complementizer. In early Old English, e.g., *Beowulf's* (11), a spatial/locational meaning can be observed. There is also an early temporal meaning for *for(e)* in (12), but this is infrequent.

(11) *hlynode for hlawe*
made-noise before mound
'It made noise before/around the gravehill.' (*Beowulf* 1120, Klaeber edition)

(12) *ða geworden aron in iuh for long in asca … dydon 7 worhton*
which become are in you for long in ashes … did and made
'which were done in you (they) long ago would have repented.'
(*Lindisfarne Matthew* 11.21, Skeat edition)

More frequent, already at that point, is the use as a purpose marker, as in (13) and (14). Note that the PPs in both (13) and (14) are preposed and this is very frequent as well.

(13) *wen ic þæt ge for wlenco nalles for wræcsiðum. ac*
expect I that you for daring not.at.all for misery/exile but
for higeþrymmum Hroðgar sohton.
for greatness.of.heart Hrothgar sought
'I expect you were seeking Hrothgar for daring and greatness of heart rather than for being exiled.' (*Beowulf* 338–339, Klaeber edition)

(14) *for werefyhtum … ond for arstafum usic sohtest*
for fighting … and for support (you) us sought
'You wanted us to help fight.' (*Beowulf* 457–458, Klaeber edition)

Visser (1972: 1001) cites an early example of a possible complementizer *for* expressing purpose, as in (15).

(15) *we … sægdon, þæt he in Ibernia þæm londe in elðiodignisse lifde*
we … said that he in Ireland the land in exile lived
for ðæm ecan eðle in heofonum to betanne
for the eternal home in heaven to make-amends
'we said that he lived in Ireland to make amends for an eternal home in heaven.' (Bede VIIII, Miller 1891: 408.15)

The purpose marker in e.g. (14) is typically a predecessor of the cause meaning in (17). Heine et al. (1991: 157), Traugott and König (1991), and Sweetser (1990) provide examples of this cline, which I have given in (16). In the history of English, we only have evidence for the last part of this cline.

(16) Change in *for*
space > time > purpose > cause

(17) *ouþer for untrumnisse ouþer for lauerdes neode ouþer for haueleste ouþer for hwilces cinnes oþer neod he ne muge þær cumon*
'either from infirmity or from his lord's need or from lack of means or from need of any other kind he cannot go there.'
(*Peterborough Chronicle* anno 675, Thorpe edition)

The meanings connected to *for* in (6), (7), (13), and (14) are purpose, but in later Old English, e.g., the *Peterborough Chronicle*'s (17), *for* is also used as a preposition of causation. The passage from which (17) is taken is a twelfth century addition to the entry for the year 675, one which the other versions lack. The preposing of the PP continues into Middle English, as in (18), again with a cause meaning.

(18) *For þan weorldes scome; & for þan muchele grome …*
for/because of worldly shame and for the great blame
þat Dardanisc kun þe we beoð of icomene. heo
that Dardanian tribes that we are from come they
woneð in þisse londe … beoð to-gadere icumene
live in this land … are together come
'They have come together because of the worldly shame and great blame which our ancestors the Dardanian tribes live in.'
(Layamon, Caligula 226–230, Brook and Leslie edition)

In Old and Middle English, *forðæm* and its variants also function as 'because', as in (19). This shows that what was originally an entire PP is functioning as C.

(19) *Theodorus archiepiscopus hine gehalgode on Eoferwic þam forman Eastordæge to biscope to Hagustaldesham. forþam Trumbriht wæs adon of þam biscopdome*
'Archbishop Theodorus hallowed him at York on Easter to bishop of Hexham, because Trumbyrht had been deprived of his bishopric.'
(*Peterborough Chronicle* anno 685)

Table 1 shows the early and late situation that indicates grammaticalization towards a C.

The earliest instance of *for* as a finite causal complementizer in English seems to be in the *Peterborough Chronicle*, if the *OED* is correct, and is from the entry for the year 1135, as in (20). There are two others from the entry for 1135, e.g. (21).

Table 1. Numbers and percentages of demonstrative objects (Dem) with *for* and fronting and complementizer use (van Gelderen 2008c)

	Beowulf	***Peterborough Chronicle***
Dem objects and *forðan*	16/54 = 30%	67/150 = 45%
Fronting	18/54 = 33%	80/150 = 53%
C	0	16

(20) *for þæt ilc gær warth þe king ded*
'because (in) that same year was the king dead.'
(*Peterborough Chronicle*, 1135, 6)

(21) *for æuric man sone ræuede oþer þe mihte*
because every man soon robbed another that could
'because everyone that could robbed someone else.'
(*Peterborough Chronicle*, 1135, 8)

This locates the first use of the causal complementizer *for* with the second scribe of the *Peterborough Chronicle*, who starts adding information from 1132 on. Between 1135 and 1154, the use increases dramatically compared to the period before 1135, since the next year that has an entry, 1137, has 7 instances.

The Middle English of one hundred years later of course has many variants, as in (22) to (24), which according to De Smet would be instances of reinforcers, but which I think are a natural progression of the preposition, from purpose preposition to purpose complementizer.

(22) *þet is umbe forte leaden in-to þe worldes þeowdom, Syones dohter*
'that is about to lead into the world's slavery, Syon's daughter.'
(*Hali M* Bodley, 24)

(23) *Locrin 7 Camber to þon scipen comen. for to habben al þa æhte*
'Locrin and Camber came to the ships to take all the goods.'
(Layamon, Caligula 1113–1114)

(24) *Þe king me bi-tahte þis ard for to beon his stiward*
'The king me granted this land (for the purpose) to be his steward.'
(Layamon, Caligula 6724)

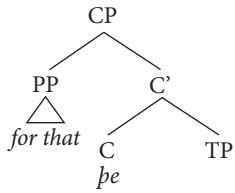
Variants of *forte* are also used as finite complementizers with the meaning of 'until', as in (25) and *for* is used in the Otho version of Layamon where *to* is used in Caligula, as in (26).

(25) *forte hii to see come*
'until they came to sea.' (Layamon, Otho 5971)

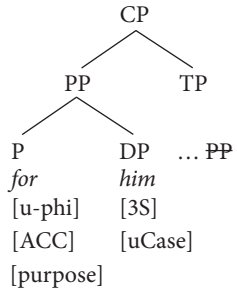
(26) a. *to habben þat meiden to wiue*
'to have that maiden as wife.' (Layamon, Caligula 7171)
b. *for habbe hire to wifue*
'to have her as a wife.'

So, the main syntactic changes of the PP headed by *for* are (a) preposing of the PP, (b) reanalysis of the PP as a CP specifier, and (c) reanalysis of *for* as a C head. A PP occupies the specifier position of the CP, whereas *for* occupies the head position. In Old English, *for* occurs in combinations such as *for ðon ðe, for ði, for ðæm ðe*, as in e.g. (27). With *ðe* present, there is no verb-second, indicating *ðe* is in C and the PP *for þæm* in the specifier position, as shown in (28).

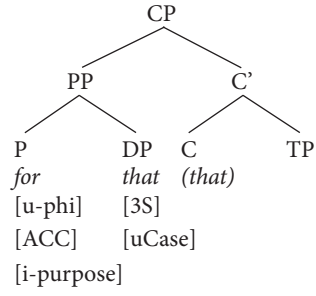
(27) *ac for þæm þe hie us near sint, we … ne magon*
but for that that they us close are, we … not may
'but because they are near to us, we can't …' (*Orosius*, Bately 122.18–19)

(28)


If the PP is topicalized and functions as complementizer, what happens to the features? I have put the developments in (29). I assume the C (when the PP is topicalized) is not specified for purpose (yet) or isn't even present, as in (29a), but that the semantic features of [purpose] connected to *for* express that. When the PP is base generated in the CP, [purpose] is analyzed as an [iF] on *for,* as in (29b). After the reanalysis of *for* as C in (29c), *for* may keep those [iF] features. Alternatively, if it loses them, a new purpose element (e.g. an adverbial) inside the VP has to be added. A complete picture of the changes is given structurally in (29) and in terms of Feature Economy in (30):

(29) a.


>

b.


> c. CP

C: *for*; [u-phi]; [i-purpose]/[u-purpose]

TP[2]: [3S]

(30)

P	>	P	>	C
[u-phi]		[u-phi]		[u-phi]
[ACC]		[ACC]		[i-purpose]/[u-purpose]
[purpose]		[i-purpose]		

A similar development would have to be sketched for the causal P and C but I will not go into that here due to space constraints.

Concluding so far, Feature Economy is argued to be a motivating force of linguistic change, accounting for the change from specifier to higher specifier (in the case of the PPs) and head to higher head (in the case of modals). The reason is that these principles help a child reanalyze their linguistic input. I have reformulated the Late Merge Principle as a Feature Economy Principle in (30) (see also van Gelderen 2008c). Feature loss, I argue, can then be responsible for certain changes. One can think of feature loss as happening through the addition of certain words to the lexicon with different features. I will now turn to the change to *for* as a subject marker.

4.3 *For* as subject marker

De Smet provides (10) above and (31) as examples of *for* as marking the subject of the infinitive.

(31) *Also it ys a certayn techinge <u>for</u> hele to be keped, þat a man vse metys þat accordyn to his complexioun and nature*
'Furthermore, it is certain advice for health to be kept that a man must use food that accords to his constitution and nature.'
(from De Smet, this volume, example (2))

We have discussed De Smet's account of the introduction of structures like (31) above. How could we account for this in terms of Feature Economy? I think we could go back to early explanations, e.g. Visser (1972), that make use of the

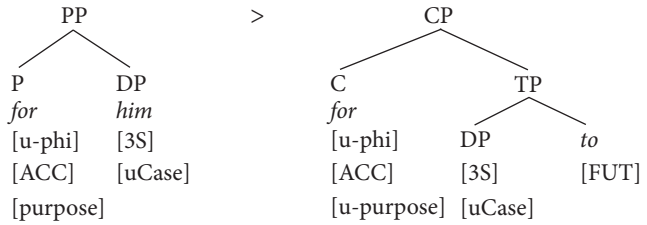
2. Note that only a non-finite TP is compatible with a purpose C. As far as I know, there is no complementizer agreement on non-finite Cs and hence, the [u-phi] features may be absent too.

ambiguity of *for* in (10), (15), and (31).[3] The earliest instance of *for* as a subject marker that I know is (32) and that *for* certainly is ambiguous.

(32) *make 3e redi a hors <u>for</u> poul to ride on*
'Make ready a horse for Paul to ride on.'
(Wycliff Acts 23, from Visser 988; see van Gelderen 1993: 133)

Since *for* is available as a preposition and a complementizer, the reanalysis in (33) is not strange.

(33)



In this section, I have shown how one might go about using Feature Economy to account for the changes involving the preposition *for.* I now turn to some other category switches.

5. Small changes or gradient ones?

Denison (this volume) further considers cases that are challenges for strict categories. In this section, I show how some of the changes Denison discusses are clear reanalyses in higher positions with a loss of phi-features (in accordance with Late Merge/Feature Economy). Denison says of the changes he discusses: "[t]his is gradience: micro-steps rather than abrupt saltation from N to A" and "non-structural" (Denison, this volume, p. 111). I don't think anyone argues for an abrupt saltation from N to A or from A to D but I do think the small changes are structural. Here, I just discuss Denison's data in the light of work by Adamson (2000, not cited by Denison) and by Breban (2008, cited by Denison) on adjectives.

Adamson (2000: 46) provides some examples, such as *rotten* and *dark,* that change over time to have more subjective meanings. For instance, the early meaning of *rotten* is 'sense of decay' and the later one is 'worthless'. Most of her article is about the adjective 'lovely'. In Old English, it meant 'loving' and 'amiable'; in Middle English, it had become 'physically beautiful' and that value judgment was

3. There are many subsequent accounts which I do not have space to go into here.

extended past the physical in later stages. Adamson emphasizes the position of the adjectives. As they become more subjective, they move to the left (or 'up the tree'). In the period between 1500 and 1600, 34% are leftmost and after 1900 91% are. She also looks at the Ns modified by 'lovely'. They change from 'face, creature' to 'laziness' and 'letters' in the 1950s. This is clearly a category change, but one that goes through small stages. There are, of course, a number of proposals for the ordering of adjectives, e.g. Dixon (1982) and Cinque (to appear), and the changes follow a path upwards and leftwards.

Breban (e.g. in Breban 2008) looks at adjectives of difference, namely *different, distinct, diverse, several, sundry*, and *various*. Like Adamson, she tests what she calls the leftward movement hypothesis (Breban 2008: 298) and says that the adjectives of difference provide additional evidence for Adamson's claim. Her tables for each of these adjectives show a gradual change from 1250 to now, where some, e.g. *several* and *sundry* are now only used as quantifiers. Hence, the change is structural.

Denison says that "[w]hile the conversion A > N can be brought about by ellipsis … which is an abrupt process, I suggested that N > A was stepwise" (Denison, this volume, p. 107). I agree with this distinction between the two changes. One of Denison's examples of a change from Noun to Adjective is *rubbish*, as in (34), where it is used as predicative adjective modified by an adverb.

(34) The light seems very rubbish.

Denison posits as conditions for this reanalysis a possibility of the noun to appear without D and to be gradable. This change involves loss of content. It might be helpful to consider Baker (2003), who argues that the difference between nouns and adjectives is that the former have referential features. If that is correct, we could again think of this change as a reanalysis up the tree (from N to A) and with a loss of referential features. The same is true with the change from adjective to determiner, so frequent in the history of English, and discussed by Denison in Section 1.3, again as a "non-structural change."

There are a number of times when I realize definitions are so differently used. For instance, what is to Denison a non-structural change (his Section 1) seems to me clearly structural. This must also be the reason that I don't understand the sentence "strict structuralism isn't *always* the most insightful way of looking at things, and grammatical change is one domain where it does less well" (Denison, this volume, p. 123).

In Section 5, I have briefly mentioned the problem that what looks non-structural to one linguist (e.g. Denison) looks structural to another (e.g. me). Furthermore, the changes involving nouns, adjectives, and demonstratives follow usual pathways of change (e.g. Late Merge).

6. Directionality and renewal

Not many in the volume discuss the directionality of the changes. The grammaticalization literature is of course full of such examples. What I would like to point out here is that Feature Economy provides an account of the unidirectionality and also where the renewal will come from.

In Table 2, typical instances of grammaticalization are provided and the sources of renewal are the left-most elements. They can be full phrases as well as single lexical items and are more clearly provided in Table 3.

These examples are familiar from the vast literature on grammaticalization, e.g. Heine and Kuteva (2002). The reason for the choice of sources of renewal mentioned in Table 3 is that they provide new semantic features for what was 'grammaticalized away': person and number (phi-features) in the case of agreement and copulas, negative features in the case of negatives, spatial features in the case of prepositions, and so on.

In van Gelderen (2008c, 2009), I provide an account of grammaticalization in terms of Feature Economy. It can be stated in (35) (see also (30)).

Table 2. Examples of cyclical change

Negative
negative argument > negative adverb > negative particle > zero
negative verb > auxiliary > negative > zero
Subject (and Object) Agreement Cycle
demonstrative/emphatic > pronoun > agreement > zero
Copula Cycle
demonstrative > copula > zero
verb/adposition > copula > zero
Definiteness
demonstrative > definite article > 'Case' > zero
Place/time
Noun > Adposition > Complementizer

Table 3. Examples of renewal

Agreement:	Emphatic pronoun/noun
Copula:	Demonstrative/verb
Modal:	Verb/adverb
Negative:	Minimizer/Negative DP/Negative AP
Preposition:	Noun

(35) Feature Economy

a.	Adjunct/Argument		Specifier (of NegP)		Head (of NegP)		affix
	semantic	>	[iF]	>	[uF]	>	–
b.	Head	>	(higher) Head	>	0		
	[iF] / [uF]		[uF]				

Once the functional element has lost its semantic and interpretable features, this would be formulated within a Minimalist framework as becoming a probe looking for an element to value its features. Some elements are straightforward renewers: demonstratives have phi-features and can renew agreement and adverbs have temporal or spatial features and renew prepositions and complementizers.

7. Conclusion

In this commentary, I have discussed three chapters that deal with micro-reanalyses and have suggested a way to look at these in terms of Feature Economy. I think we should stop worrying about whether change is gradual or not (it seems to be agreed by most that it is) or directional or not.

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How synchronic gradience makes sense in the light of language change (and *vice versa*)

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The present paper argues for a diachronic approach to synchronic gradience which is based on a mismatch between the syntax and the semantics of constructions. Another central claim made in this paper is that syntactic gradience is not confined to morphosyntactic overlap but may be constituted by semantic overlap (*pace* Aarts 2007). More precisely, it is argued that there is gradience between constructions with genitives (*John's father, a spare visitor's chair*) and noun+noun constructions (*theatre ticket, Bush administration*), which stems from their sharing certain semantic features, while their morphosyntax remains distinct. Based on a quantitative corpus analysis it is shown that the constructions gradually come to adopt semantic features of the other construction over time. This process is facilitated by the presence of various 'bridging constructions' in the history of English.

1. Introduction[1]

There is a longstanding and general divide within linguistics between approaches insisting on sharp category boundaries and those allowing for 'fuzzy edges' or transient stages between categories.[2] This line of division goes along with the distinction between formal and functional approaches to linguistics, with the first – generally – favouring sharp boundaries and the latter admitting gradience

1. I am grateful to the participants of the workshop *Gradience, gradualness, and emergence in grammaticalization* at the NRG4 at Leuven, and particularly to David Denison, Ian Roberts, Lene Schøsler, and the editors, Elizabeth Traugott and Graeme Trousdale, for their detailed comments on an earlier version of this paper.

2. The notion of 'gradience' is not well defined within linguistics; for a very useful overview on the different notions of gradience I refer to Aarts (2004a, b, 2007).

in grammar.[3] The respective positions of this debate have been discussed in detail at various places and will not be repeated here, see e.g. Aarts's important work on syntactic gradience (Aarts 2004a, b, 2007) or the collection of papers in Aarts et al. (2004). It is noteworthy that the concept of gradience in these discussions is almost exclusively viewed from a synchronic perspective, a notable exception being the work by Denison (see e.g. Denison 2001, 2006a, b, and this volume) and Croft (2007). In this paper I will link to the present debate on synchronic gradience in grammar by arguing that a diachronic perspective helps us understand synchronic gradience, and that synchronic gradience, in turn, can be seen as something steering gradual change. In other words, synchronic gradience and gradual language change are intertwined. Note from the outset that priority will be given to the effect of gradual change on the emergence of synchronic gradience in this paper, while the change-inducing role of synchronic gradience will be dealt with only briefly. In this paper I will adopt the terminology introduced by Traugott and Trousdale (this volume), distinguishing between 'gradience' as a synchronic state of affairs and 'gradualness' as a diachronic process. Specifically, I will address one of the central questions to this volume, namely what insights grammaticalization (or, more generally, diachronic change) offers for assessing the validity of Aarts's claims on synchronic gradience, specifically that there is a significant difference between subsective and intersective gradience (cf. Traugott and Trousdale, this volume). These days Aarts's (2004a, 2004b, 2007) work on syntactic gradience represents presumably the most sophisticated and up-to-date approach to the topic. The aim of this paper is to question and modify some of the basic assumptions made by Aarts (2004a, b, 2007) from a diachronic perspective. In particular I argue for

1. a diachronic view on gradience (in contrast to Aarts, whose perspective is exclusively synchronic),
2. the importance of semantic-functional overlap as constituting gradience (in contrast to Aarts who accepts only morphosyntactic criteria for assigning category membership),

3. This is a somewhat simplified description. Note, for example, that recently probabilistic approaches have been introduced into formal linguistics, which do allow for gradience in grammar (see, for example, the contributions in Bod et al. 2003, which give a good overview on the field; or the recent work by Bresnan and colleagues on stochastic OT and probabilistic grammar, e.g. Bresnan et al. 2001, Bresnan & Aissen 2002, Bresnan 2007 and Bresnan et al. 2007).

3. the use of quantitative data tracing and documenting the gradualness of change leading to the observed gradience (whereas Aarts's work is not based on quantitative empirical evidence), and
4. a case of intersective gradience (which, according to Aarts, should be very rare).[4]

The paper is divided into three parts: I first outline the key ideas underlying Aarts's approach to gradience and contrast these with my own (Section 2). I then, in Section 3, illustrate the claims outlined above by providing evidence for the gradience between constructions with determiner genitives and constructions with noun modifiers (Rosenbach 2006, 2007a). This section will also provide the main data to answer the question of how synchronic gradience makes sense in the light of language change. Finally, I conclude with a short summary and reflection on the relation between synchronic gradience and language change, where I also take a brief look at linguistic typology.

2. Modifying Aarts's assumptions on syntactic gradience

Aarts (2004a, b, 2007) acknowledges that gradience exists, but at the same time he insists on "some degree of idealization […] in order for a description of a language to be possible at all" (Aarts 2004a: 37). It is this tension between a liberal view on gradience (from the perspective of a structural linguist) and the desire to describe language systems in an orderly way which appears to characterize his approach to gradience and which seems to motivate many of his assumptions on gradience.

Central in Aarts's approach to gradience is the distinction between 'subsective gradience' and 'intersective gradience'. Subsective gradience refers to gradience *within* a category, with members being more or less central members of a category. In other words, members may show different degrees of category membership, as illustrated in Figure 1 below, where X1 exemplifies a central member of category A, while X2, and even more so, X3 are peripheral members of that category.

In Aarts's approach category membership is constituted by the application of morphosyntactic criteria. The degree to which these criteria are fulfilled determines then the degree of category membership.

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4. As correctly pointed out to me by Elizabeth Traugott (p.c.) one example for intersective gradience does not really challenge Aarts's claim that intersective gradience is rare. What I claim is that the example(s) presented in this paper suggest that intersective gradience may not be that rare if we include semantic (and functional) criteria into our definition of gradience.

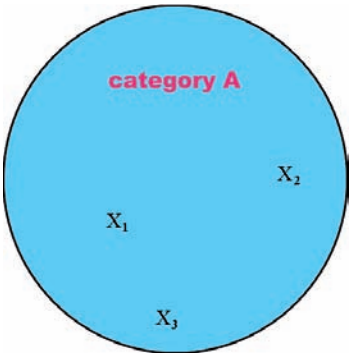

Figure 1. Illustration of subsective gradience

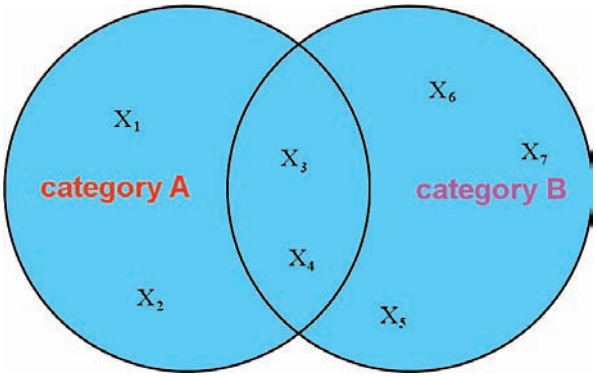

Figure 2. Illustration of intersective gradience

The term 'intersective gradience', in contrast, refers to gradience *between* two categories, that is, to the fact that a certain element may – at the same time – exhibit features of two categories and thus be simultaneously a member of two categories, as illustrated in Figure 2, where X3 and X4 constitute elements fulfilling the criteria for both category A and category B.

According to Aarts, intersective gradience is possible in theory but extremely rare in practice. In my view, Aarts's assumption of the exceptional (i.e. rare) status of intersective gradience falls out naturally from his general assumptions on gradience, in particular (i) his restriction to strictly morphosyntactic criteria for determining category membership and (ii) his exclusively synchronic perspective. Aarts's restriction to morphosyntactic criteria certainly does justice to his wish for an 'orderly' description of language systems (after all, morphosyntactic facts are typically more straightforward than the subtleties of semantics or even pragmatics). It is also clear that with a focus on morphosyntactic properties

of categories and constructions, which have sharper boundaries than semantic ones,[5] it is much harder to find overlap than in semantics, where semantic features (such as e.g. animacy) may more easily exhibit gradience and indeterminacy, as will be illustrated by the case study in Section 3 below. Aarts's restriction to a synchronic perspective is understandable as well: to be fair, whatever leads to a synchronically fuzzy state is just not Aarts's concern.

My own views on gradience differ from Aarts's (and complement them) in three important ways. First of all I argue that intersective gradience is nothing exotic at all, if we include *semantic* criteria in defining our categories and construction types. I also think that taking a diachronic look helps us to see how gradience gradually emerges over time (and how it may itself drive language change), thus viewing synchronic gradience as something historically evolving and natural – and not as something strange and exceptional. I say 'language change' rather than 'grammaticalization' since my study is more generally concerned with the emergence of a new construction (a process which we may wish to call 'constructionalization') rather than on grammaticalization in the strict sense,[6] but the phenomena I will describe in the following are well in line with the insight from the grammaticalization framework that semantically-driven gradual change may give rise to synchronically gradient constructions. Grammaticalization describes the process by which lexical elements turn into grammatical ones (or become even more grammatical), cf. e.g. Hopper and Traugott (1993/2003). That is, grammaticalization is *the* diachronic process which accounts for the gradual emergence of new categories or category members in a language. If one does not wish to subscribe to wholesale and instantaneous reanalysis, it necessarily follows that there must be synchronically 'in-between stages', where an element exhibits properties of the old(er) source element and the newly grammaticalized element, see also Haspelmath (1998, 2001), Croft (2007: 423), McClelland and Bybee (2007) or Traugott and Trousdale (this volume) for such an argument.[7] This line of reasoning can be transferred to the emergence of new construction

5. See, however, Denison (this volume) for arguing for a stepwise acquisition of grammatical properties, which suggests that morphosyntactic properties need not have sharp boundaries. For the phenomena discussed in the present paper they do, however.

6. I assume here that the emergence of new constructions need not necessarily constitute a case of grammaticalization (in the strict sense). The identifying noun modifiers discussed in the present paper do not appear to be more 'grammatical' than other noun modifiers.

7. It is in this way that the present study also touches, quite naturally, on the relation between reanalysis and analogy, addressed by the third question proposed by Traugott and Trousdale (this volume). This issue, however, is not the focus of the present paper, though it will be addressed briefly in the final Section 4 below.

types, i.e. 'constructionalization'. If we can trace the gradual emergence of a new construction out of an older source construction, then the emerging construction necessarily will synchronically exhibit properties which are compatible with both construction types, i.e. constructional gradience. Finally, a corpus-driven, quantitative approach may help us substantiate claims on the prototypicality of constructions and make explicit the gradual nature of change.

3. Gradience between constructions with determiner genitives and noun modifiers

In the following I will substantiate my views on gradience and change on the basis of my previous work on gradience between English genitive constructions and noun+noun constructions. In a first step the constructions will be introduced (§3.1) and an overview on different types of gradience between the two constructions in present-day English will be given (§3.1.1). The paper then (§3.1.2) focuses on the specific case of intersective gradience between determiner genitives and noun modifiers as outlined in more detail in Rosenbach (2007a), where I will provide an analysis of the synchronic gradience between these two nominal dependents before I finally show how this gradience gradually evolved in the history of English (§3.2).

3.1 Synchronic gradience between constructions with determiner genitives and noun modifiers: Mismatch(es) and bridging constructions

Constructions with determiner genitives (as in (1)) and noun modifiers (as in (2)) consist of a nominal dependent (the determiner genitive and the noun modifier) and a head noun (in the examples (1) and (2) below the two respective dependents are highlighted by underlining).

(1) *the woman's blue eyes*

(2) *an expensive theatre ticket*

Overtly, the dependents only differ in one small formal detail, namely the absence or presence of the possessive *'s*, though on closer inspection there appear to be some fundamental grammatical and semantic differences between the two constructions as outlined below. These differences mainly concern the properties of the two dependents (as illustrated in Table 1 below), though there are also differences resting in properties of the whole construction, i.e. the matrix noun phrase.

Table 1

	determination	**premodification**		**head**
determiner genitives	*the woman's*	*blue*		*eyes*
noun modifiers	*the / an*	*expensive*	*theatre*	*ticket*
	identifying function	characterising function	classifying function	

For the purpose of the present paper I proceed from a flat noun phrase structure, distinguishing between the grammatical functions of determination and premodification (see also Quirk et al. 1985), which have their semantic counterparts in an identifying function (for determination)[8] and a characterising function (for typical adjectival premodification) and classifying function (for premodification in prehead position), see also Teyssier (1968).

Semantically, the determiner genitive *the woman's* in (1) refers to a specific person. It can be said to have 'determiner function' because it helps to specify whose eyes they are; i.e. it establishes reference in the noun phrase and can be viewed as a referential anchor. In contrast, *theatre* in (2) does not specify whose ticket it is but what type of ticket. In other words, it has 'classifying function'. As such, it does not refer to a specific theatre but to the concept (or class) of 'theatre' in general.

This difference in function goes hand in hand with different syntactic positions: note that there is typically a rather neat form – function correspondence in the noun phrase in the sense that elements contributing to properties of the head or the denotation – that is elements having classifying function – are positioned close to the head noun, while elements contributing to the identification of the referent of the noun phrase are positioned on the left side of the premodifying string. Such a correspondence between the semantic function and the word order of elements in the premodifying string is assumed by Teyssier (1968) and Quirk et al. (1985: §17.113–114) (and see also Adamson 2000 for a particularly illuminating case study drawing on this form – function correspondence). Accordingly, the determiner genitive *the woman's* (which is a NP) is located in determiner position, while the classifying noun modifier *theatre* (which is a noun) is adjacent to the head noun. There are further semantic and grammatical differences between the two constructions (pertaining, for example, to the morphosyntactic status of the dependent and the definiteness of the matrix noun phrase), which are discussed

8. In the following I will alternatively use the notion of 'determination' and 'identification' or 'identifying function'. Note that the term 'determination' is used in linguistics to refer both to a syntactic function (Quirk et al. 1985) as well as to a semantic function (e.g. Seiler 1978), see also Koptjevskaja-Tamm & Rosenbach (2005: §1) for discussion of the (often confusingly used) notion of 'determination' and 'determiner'.

Table 2. Prototypical determiner genitives and noun modifiers: semantic feature analysis (Rosenbach 2006, 2007a)

semantic features of dependent	**determiner genitives** (***the woman's blue eyes***)	**noun modifiers** (***an expensive theatre ticket***)
restrictiveness (= anchoring function)	+	+
referentiality	+	–
animacy	+	–
semantic functions	determination	classification

in more detail in Rosenbach (2006, 2007a, 2008a) and which – as they are not directly relevant to the argument of the present paper – will not be repeated here.[9]

What is important for my further argument is that in my work on constructional gradience (Rosenbach 2006, 2007a) I distinguish the two constructions on the basis of three semantic features, i.e. the restrictiveness, the animacy and the referentiality of the dependent, as illustrated in Table 2.[10] These three features constitute – in their prototypical clustering, as illustrated below – the two semantic functions of determination and classification.

Both determiner genitives and noun modifiers share a restrictive function, but they differ in the location of this restriction, with determiner genitives

9. Note that the grammatical status of the dependent (as part of a nominal compound or a syntactic phrase, or adjectival) will be ignored here, as it is a matter of considerable theoretical debate (for some discussion see e.g. Rosenbach 2007a: 146–147). For the purpose of the present paper I focus on the position of the dependent in the prenominal string. Likewise, phonology will be ignored here. Stress is certainly one way of distinguishing between the constructions. However, there are various problems in applying stress as a factor here: most importantly, stress assignment can be rather variable for noun+noun constructions (among different speakers and dictionaries), as e.g. argued by Bauer (1998). As the corpus data used in the present paper is not annotated for phonology (and thus stress) it is impossible to deduce in any reliable way the stress contours of the constructions, so this must be left for future studies. Interestingly, however, proper-noun modifiers (e.g. *Bush administration, Boston marathon*), as discussed in more detail below, are among those modifiers that tend to have exceptional, i.e. right (= phrasal) stress in noun+noun constructions, as demonstrated in the work by Plag and colleagues (e.g. Plag 2006; Plag et al. 2008). This indicates that their phonology converges with determiner genitives and is suggestive of yet another area of overlap between the constructions.

10. In a similar vein to the present account Taylor (1996) proposes constructional gradience between constructions with determiner genitives and noun modifiers based (among other things) on the animacy and the referentiality of the dependent. The present approach mainly differs from Taylor's in giving the (assumed) prototypicality of construction types an empirical basis and in focussing on a construction not mentioned by Taylor, i.e. constructions with identifying noun modifiers.

restricting the reference of the noun phrase, while noun modifiers restrict the denotational scope of the head noun. They are distinguished from a semantic point of view by the features of animacy and referentiality: while determiner genitives are always referential (in the sense of specific) and preferably human (see e.g. Rosenbach 2002, 2007a), noun modifiers are not referential and typically inanimate (Rosenbach 2007a).[11] While the semantic feature specification in Table 2 characterises prototypical determiner genitives and noun modifiers (as well as prototypical determination and classification), we can also find constructions which show a mismatch in the mapping of their semantic features to construction type in the sense that a construction shares semantic features of the other construction type. The notion of 'mismatch' has recently come to be used in a technical sense also in more formal approaches to syntax (e.g. Yuasa and Francis 2003; Yuasa 2005). Francis and Yuasa (2008) in a recent paper refer to mismatches in the sense of mismatches between the semantics and the syntax of constructions and relate these to grammaticalization. Constructions exhibiting such mismatches will be referred to as BRIDGING CONSTRUCTIONS in this paper (see also Rosenbach 2006, 2007a). By sharing features of both constructions these bridging constructions indeed form a 'bridge' between the two construction types.[12]

3.1.1 *Mismatches within semantics (only): Inanimate determiner genitives and classifying genitives*

Various types of 'mismatches' are possible with constructions containing genitives and noun modifiers. On the one hand there can be expressions showing an 'unusual' semantic feature, as for instance inanimate determiner genitives (*the chair's frame, the museum's shop*). Here the dependent itself is still referential (refers to a specific chair or museum) and thus keeps its identifying (determiner) force, but it shares the features of [–animate] with a typical noun modifier, see

11. The postulation of prototypical [±animate] features for determiner genitives and noun modifiers is based on frequency. Determiner genitives have been found to be most frequent with [+animate] referents, while noun modifiers occur most frequently with [–animate] referents (see Rosenbach 2007a and references cited therein, and Figures 3 and 4 below for the distribution of noun modifiers according to animacy).

12. A related notion is the notion of 'bridging context' in theories of semantic change and grammaticalization (cf. Evans and Wilkins 2000; see also Heine 2002 specifically for grammaticalization). The term 'bridging construction' as used in the present paper is not restricted to cases of grammaticalization (like Heine's). Rather, it generally refers to constructions sharing semantic features of both construction types, that is, it is the aspect of 'sharing features' that matters here.

Table 3. Non-prototypical determiner genitives and noun modifiers: semantic feature analysis (Rosenbach 2006, 2007a)

semantic features of dependent	**determiner genitives** (***the chair's frame***)	**noun modifiers** (***an expensive theatre ticket***)
restrictiveness (= anchoring function)	+	+
referentiality	+	–
animacy	–	–
semantic functions	determination	classification

Table 3 for illustration.[13] Despite its inanimate dependent, however, an inanimate determiner genitive keeps the morphosyntactic properties of a typical determiner genitive. Most importantly, the dependent is a full NP (cf. (3a)) which is located in the determiner slot of the noun phrase, as evident from the fact that further modifiers of the head precede the head (and not the genitive), as illustrated in (3b).

(3) a. [*the old chair*]*'s frame,* [*the Metropolitan museum*]*'s shop*
b. *the chair's chrome frame; the museum's elegant little shop*

That is, there is no principled mismatch between the semantic function (determination) and the morphosyntactic properties of inanimate determiner genitives but only a mismatch in the way the semantic features map upon the construction type. This use of the term 'mismatch' therefore deviates from Francis and Yuasa (2008)'s in referring to a mismatch within semantics only, with no repercussions on syntax.

A similar case of 'mismatch' can be found with classifying genitives (*a* [*visitor's chair*]*, a* [*women's magazine*]). This is a type of genitive construction encoding the semantic function of classification, as the dependent does not specify the referent of the NP but restricts the denotational scope of the head noun. That is, *visitor's* in the expression *a visitor's chair* does not specify whose chair it is but

13. Notice that the semantic convergence of such inanimate determiner genitives towards noun modifiers shows, among other things, in their ability to be expressed by a corresponding noun modifier (*the chair frame, the museum shop*); see Rosenbach (2007a) for arguing that in this case the gradience between the two constructions leads to variation. This specific type of variation becomes possible if the matrix NP in which the noun modifier is embedded is definite and referring to a specific entity (i.e. a specific chair or shop), as in such cases of part/whole relations the distinction between a referential and non-referential dependent becomes neutralized (if someone buys a specific chair frame or goes to a specific museum shop then, by implication (at least in most cases), there is also a specific chair and a specific museum).

Table 4. Determiner genitives, classifying genitives and noun modifiers: semantic feature analysis (Rosenbach 2006, 2007a)

semantic features	**genitives**		**noun modifiers** (*a theatre ticket*)
	determiner genitives (*the woman's blue eyes*)	**classifying genitives** (*a women's magazine*)	
restrictiveness (i.e. anchoring function)	+	+	+
referentiality	+	–	–
animacy	+	+	–
semantic functions	determination	classification	

what type of chair, namely one for visitors. Accordingly, the dependent is not referential, a feature shared with noun modifiers. As with inanimate determiner genitives there is no clash between the semantic function of classification and the morphosyntactic properties of classifiers. Classifying genitives are (typically) adjacent to the head noun, as illustrated in (4), where the modifiers (*glossy* in (4a); *spare* in (4b)) qualify the head nouns (*magazine* in (4a); *chair* in (4b)) and not the genitive dependents.[14]

(4) a. *a glossy women's magazine*
b. *a spare visitor's chair*

Unlike typical classifiers, classifying genitives share however the preference for [+animate] dependents with determiner genitives; see particularly Rosenbach (2007b) for providing data from a quantitative study showing that classifying genitives have a preference for occurring with [+animate] referents. Table 4 specifies the semantic feature analysis for classifying genitives.

That is, the observed mismatch again rests in the constitution of a non-prototypical case of classification (with [+animate] referents) and not in a mismatch between semantics and syntax. However, in contrast to the case of inanimate determiner genitives discussed above, we also find a mismatch in the way that the semantic function of classification maps to the construction type of genitive construction. Note that classifying genitives are overtly a type of genitive construction, as they share the possessive marker *'s* with prototypical (determiner) genitives. The prototypical construction encoding classifying function is however an attributive noun modifier (or denominal adjective).

14. But see Rosenbach (2006) for some exceptions to this generalization showing that occasionally modifiers may intervene between the genitive and the head noun, but notice that the same is possible in noun+noun constructions. Rosenbach (2006) in general provides an in-depth discussion of classifying genitives as a case of 'descriptive genitives'.

Summing up the cases discussed in this section, we can conclude that the nominal dependents all show a correspondence between their overall semantic function (determination/identifying function or classification, respectively) and their morphosyntactic behaviour (determiner or prehead position, respectively).[15] Gradience is constituted by constructions showing *unusual semantic features* with respect to the overall semantic function they encode. That is, the notion of 'mismatch' is confined here to a mismatch of the mapping of semantic features to construction type, but otherwise there is no principled clash between the syntax and the semantics of the constructions. There may be 'unusual' (or non-prototypical) determiner genitives, but they still exhibit the morphosyntactic properties of determiner genitives. Likewise, classifying genitives may be 'unusual' in representing a genitive construction with classifying function and noun-modifier syntax, but their semantic function (classification) goes hand in hand with their morphosyntactic properties, which are precisely those of (classifying) noun modifiers.

The question remains whether we should regard these 'mismatches' as cases of gradience, and if so, whether they constitute a case of subsective gradience (within genitive constructions) or intersective gradience (between genitive constructions and noun+noun constructions). As the nominal dependents discussed in this section show no morphosyntactic 'in-betweenness' there is no gradience at all according to Aarts's (2007) criteria. Gradience can only be observed within the semantics of the constructions and only if we split up the semantic functions of determination and classification into further semantic features. Table 5 below contrasts the feature specifications for both inanimate determiner genitives and classifying genitives vis-à-vis prototypical (determiner) genitives and noun modifiers.

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15. This is somewhat simplifying matters. Strictly speaking, I assume that the semantic functions of determination and classification are constituted through the semantic features of restrictiveness, animacy and referentiality of the nominal dependent. The feature specification of prototypical determination and classification is given in Table 2 above. When the features of animacy and referentiality do not go together, this will result in semantically hybrid expressions in the sense that the semantic function expressed is non-prototypical determination or classification, respectively. Still, I assume that with classifying genitives and inanimate determiner genitives one core semantic function (classification and determination, respectively) prevails, as the feature of [+referential] appears to be a necessary feature for determination, while animacy is not. That is, the semantic features presented in the feature analyses above are ranked differently (thanks to Graeme Trousdale for raising this issue). Notice further that in Rosenbach (2006) genitive constructions are also distinguished from noun+noun constructions by further semantic features (i.e. the specificity and definiteness of the dependent as well as the definiteness of the matrix NP), which are ignored in the above feature specifications for the sake of exposition. What further complicates the picture is the fact that the features of animacy and referentiality are not binary features which fall neatly into [±] specifications but that they themselves are gradient; cf. also Rosenbach (2006) and see §4 for discussion.

Table 5. Inanimate determiner genitives and classifying genitives vis-à-vis prototypical (determiner) genitives and noun modifiers: semantic feature analysis

	genitives			noun modifiers
	determiner genitive (*the woman's eyes*)	**determiner genitive (*the chair's frame*)**	**classifying genitive (*a spare visitor's chair*)**	**(*a theatre ticket*)**
restrictiveness (i.e. anchoring function)	+	+	+	+
referentiality	+	+	–	–
animacy	+	–	+	–
semantic functions	determination		classification	

From a semantic point of view we can argue that inanimate determiner genitives and classifying genitives constitute a case of subsective gradience within 'genitive constructions', as they represent less prototypical members of this construction type. However, we can also see that the features contributing to the non-prototypicality of these genitive constructions are at the same time prototypical features of noun modifiers. That is, there is semantic overlap between these genitives and noun modifiers, and therefore 'intersective gradience', if we allow for semantic overlap as constituting gradience. It needs to be emphasized again (see also Note 14 above) that by having these 'untypical' semantic features, the constructions express non-prototypical determination (in the case of inanimate determiner genitives) and non-prototypical classification (in the case of classifying genitives), so that these constructions represent cases of convergence between these two semantic functions.

3.1.2 *Mismatch between semantics and syntax: Determiner noun modifiers*

In the following I will focus on yet another case of 'mismatch' in the domain of nominal dependents, which differs in one important aspect from the types of mismatches discussed in the previous section. In this case the morphosyntactic properties very clearly do *not* go together with the overall semantic function, i.e. determiner (or 'identifying') noun modifiers, as in the following examples:[16]

(5) a. The guiding political philosophy of the Bush administration has been termed neoconservative.
(en.wikipedia.org/wiki/George_W._Bush_administration)

16. Notice that throughout the paper all highlighting in the examples is mine.

b. Although most of the Obama supporters were united in the feeling that their candidate had won the debate, many conceded that it was not Obama's best showing.
(news.medill.northwestern.edu/washington/news.aspx?id=101097)
c. Neither of the Weaver cars was in the drive when Lynley pulled up to the front of the house. (E. George, *For the sake of Elena*, 413)
d. "Mr. Lindenbaum had two bags, a small one and a larger canvas duffel…" […] "The Lindenbaum bag and its contents, and these objects alone, of all the artefacts recovered from the crash" … (K. Reichs, *Fatal Voyage*, 350)
e. Jimmy's two younger brothers had become withdrawn and compliant, struggling to conform to the Aunt Zuzi view of what men should be – hard-working, God-fearing nonentities who abnegated their authority to the women who ran their homes. (M. Walters, *Acid Row*, 206)
f. Hopper and Thompson (1980) suggest a different interpretation of DOM, one which is also iconic … […] The Hopper and Thompson approach is not related to markedness reversal and therefore does not, as far as I can tell, make predictions about discriminate *subject* marking systems … (Aissen 2003: 438, Note 4)

In all these examples the noun modifier is a human proper noun, which is either culturally known, as in (5a) and (5b), or contextually known ((5c) to (5f)). So, for example, in (5c) to (5e) the noun modifier refers to names of protagonists in the novel (the Weaver family in (5c), Mr. Lindenbaum in (5d) and Aunt Zuzi in (5e)) or to well-known linguists in the linguistic community in (5f), where, additionally, Hopper and Thompson's approach also had been previously discussed in the article. What is important is that in all these cases the noun modifier helps to identify the referent of the noun phrase. So, for example, *Obama* in *the Obama supporters* (5b) or *Weaver* in *the Weaver cars* (5c) help to specify whose supporters these are and whose cars, rather than the type of supporters or the type of cars.[17] We are therefore dealing here with the rather unusual case of a noun modifier

17. This is somewhat simplifying for the sake of exposition. In some cases a classifying meaning may persist next to the identifying meaning. Note, for example, that *the Obama supporters* could, in principle, also refer to a type of supporter, an interpretation impossible in a determiner genitive (*Obama's supporters*). What is important for the purpose of the present paper is that they can (also) have identifying meaning. Notice also that the identifying meaning gets reinforced on this nominal dependent by the initial definite article. These constructions have hardly been studied yet (cf. Rosenbach 2007a, 2008a), but it appears that individual expressions with human (proper) noun modifiers can be located on a continuum between classifying and identifying (determiner) meaning and very often the expressions vacillate between the two meanings. The examples given in (5) are meant to illustrate quite clear cases of identifying noun modifiers though.

Table 6

	determination	**premodification**		**head**
determiner genitives	*the woman's*	*blue*		*eyes*
noun modifiers	*the / an*	*expensive*	*theatre*	*ticket*
	the	*cheerful*	***Obama***	*supporters*
	the	*new*	***Weaver***	*cars*
	identifying function	characterising function	classifying function	

having determiner function. Why unusual? Now, these noun modifiers certainly disturb the otherwise tidy form – function correspondence typically found in the noun phrase in that there is a noun modifier which has determiner function but which occurs in the slot typically reserved for classifiers, as illustrated in Table 6.

The fact that these noun modifiers cannot be in determiner position but must be in prehead position can easily be seen when trying to premodify the head. As the examples in (6) show (see also illustration above), any premodifier of the head will precede the noun modifier, as is to be expected if the noun modifier is in prehead position. If the noun modifier were simply a determiner genitive omitting the possessive *'s* and therefore in determiner position, we would expect any premodifier to the head to follow it (as in the corresponding examples in (7)).

(6) a. the cheerful Obama supporters
b. the new Weaver cars

(7) a. Obama's cheerful supporters
b. the Weavers' new cars

This constitutes a straightforward case of a mismatch between the semantics and the syntax of noun+noun constructions: the syntax of a classifier shows determiner semantics. Interestingly, this construction has so far not received any attention in the grammars of English. In Rosenbach (2007a, 2008a) the syntax and semantics of what is called there 'determiner noun modifiers' (Rosenbach 2007a) or 'identifying noun modifiers' (Rosenbach 2008a) is discussed in detail. As a lot of what I am going to argue in this paper rests on the assumption that these noun modifiers indeed have determiner (or identifying) function, I will recapitulate some of the major evidence for this claim here. Essentially I argue that these noun modifiers have 'possessive semantics'. Recall that if a nominal can have identifying function in the noun phrase, it should come in the shape of a determiner genitive. Now, what type of evidence do we have for the claim that the noun modifiers in (5) indeed have possessive meaning? First of all notice that the examples of noun modifiers in (5) are all human proper nouns, which in fact are the optimal context

for a determiner genitive to occur in English (cf. e.g. Rosenbach 2002 inter alia). What is more, these noun modifiers can all be expressed by a corresponding determiner genitive, as illustrated in (8).[18]

(8) a. *the Bush administration* vs. *Bush's administration*
b. *the Obama supporters* vs. *Obama's supporters*
c. *the Weaver cars* vs. *the Weavers' cars*
d. *the Lindenbaum bag* vs. *Lindenbaum's bag*
e. *the Aunt Zuzi view of what men should be* vs. *Aunt Zuzi's view of what men should be*
f. *the Hopper and Thompson approach* vs. *Hopper and Thompson's approach*

In addition, the following examples taken from novels illustrate the ability of these noun modifiers to alternate freely with determiner genitives in discourse.

(9) "Heat from the incandescent combustion in Mr. Lindenbaum's duffel aggravated the crack, allowing minute quantities of vaporized fuel to dissipate from the line into the hold." […] The Lindenbaum duffel could be seen high in the left rear of the baggage compartment, immediately below seats 23A and B. (K. Reichs, *Fatal Voyage*, 352)

(10) a. I know he don't live too far from the Steiners' crib. (P. Cornwell, *The Body Farm*, 149)
b. … you got to the church at one end and the Steiner crib at the other with about two miles in between. (P. Cornwell, *The Body Farm*, 90)

In the Kathy Reichs novel *Fatal Voyage* the duffel of the passenger Mr. Lindenbaum is first referred to as *Mr. Lindenbaum's duffel* and only a few lines later as *the Lindenbaum duffel (*cf. example (9)), while in the novel *The Body Farm* by Patrica Cornwell the crib of the Steiners (who are the main protagonists in the novel) can be either referred to as *the Steiners' crib* (determiner genitive, (10a)) or *the Steiner crib* (noun modifier, (10b)). In both cases the nominal dependents equally have identifying function. There appear to be differences in the way the dependent is fore- or backgrounded in the constructions (see also Rosenbach 2007a, 2008a), but what is important for the present argumentation is that their basic function (i.e. identifying function) and underlying semantics (possessive) is essentially the same – see further Schøsler, (this volume) who suggests paradigmatisation in this case, based on the foregrounded / backgrounded opposition).

18. One prerequisite for these noun modifiers to vary with determiner genitives is that the matrix NP in which they occur is definite (cf. also Rosenbach 2007a, 2008a), as is the case in the examples in (5).

Further evidence for the meaning equivalence of noun modifiers with determiner genitives comes from translations. The following example is taken from a CD leaflet which gives both an English and a German description.

(11) a. *Apart from the Grieg Piano Concerto, there is only one other Nordic concerto that has attained classic status and universal popularity: the Sibelius Violin Concerto.*

b. *Abgesehen von Griegs Klavierkonzert gibt es nur noch ein einziges skandinavisches Instrumentalkonzert, das den Rang eines zeitlosen Werks und allgemeine Beliebtheit erlangt hat: das Violinkonzert von Sibelius.*
(from CD *Sibelius – The Complete Works for Violin and Orchestra*, Christian Tetzlaff, Danish National Symphony Orchestra, EMI Records, Virgin Classics, 2002)

While the English version uses two noun modifiers to refer to famous composers' works, i.e. *the Grieg Piano Concerto* and *the Sibelius Violin Concerto*, these are translated in the German version by two clearly possessive constructions, i.e. a prenominal possessive construction (*Griegs Klavierkonzert*) and a postnominal, periphrastic possessive construction (*das Violinkonzert von Sibelius*). Notice further that in order to occur in a possessive construction the nominal dependent has to be referential (i.e. specific). The cases of variation between determiner genitives and noun modifiers discussed above clearly indicate that these noun modifiers must be (at least partly) referential, otherwise they could not be felt as equivalent in meaning by the translator. It seems intuitively clear that human proper nouns are inherently referential as they uniquely refer to specific persons. Further evidence for their referentiality comes from examples demonstrating that these noun modifiers can be anaphorically referred to, see the following examples taken from Ward et al. (1991: 469) used by the authors to argue against the claim that noun modifiers are 'anaphoric islands' (Postal 1969).[19]

(12) a. *Bush supporters would stay home, figuring he'd already won.*
(Julia Hirschberg in conversation: 9 November 1988)

b. *I refer you to the Schachter paper: he's very proud of it.*
(Mark Baker in response to a question at NELS: 12 November, 1988)

19. Ian Roberts (p.c.) raised the question of how one can distinguish between the position that the noun modifiers can be referred to by a pronoun because they directly refer or simply because they are salient in the non-linguistic context (i.e. by way of a kind of bridging inference). I don't think one can distinguish between these two positions, at least not empirically. What matters for the present argumentation is the fact that these proper noun modifiers are anaphorically accessible.

Table 7. Determiner genitives, identifying noun modifiers and classifying noun modifiers: semantic feature analysis (Rosenbach 2007a)

semantic features	**determiner genitives (*Obama's supporters*)**	**determiner noun modifiers (*the Obama supporters*)**	**noun modifiers (*a theatre ticket*)**
restrictiveness (= anchoring function)	+	+	+
referentiality	+	(+)	–
animacy	+	+	–
semantic functions	determination		classification

To sum up, the properties of the noun modifiers discussed in the preceding section gives rise to the feature specification given in Table 7.

It is evident that these human proper noun modifiers share features of determiner genitives in that they are high in animacy and (at least partly) referential. Sharing these features, which are typical of referential anchors, can force a determiner function on them (in specific contexts). As argued in §3.1.1 we can consider the fact of 'feature sharing' between two constructions as a case of intersective gradience (provided, again, that we allow for semantic overlap as constituting gradience). However, this case of intersective gradience is stronger than the ones observed in §3.1.1 above because the prevailing semantic function (determiner function) is not congruent with the grammatical properties of the nominal dependent, which are typical of classifiers. That is, the mismatch is not restricted to the semantics of the constructions but there is a principled mismatch between the semantic function and the grammatical properties in the sense of Francis and Yuasa's (2008) notion of mismatch. Still, on the purely grammatical level no gradience can be observed and therefore this case of mismatch would still not qualify as a case of intersective gradience in Aarts's definition of the term.

3.2 The diachronic emergence of a synchronically gradient construction: Determiner noun modifiers in the making

In the preceding section I have argued that human proper noun modifiers show a mismatch between their semantics and their syntax and that they constitute a case of intersective gradience.[20] Drawing on the case study presented in Rosenbach

20. Strictly speaking, they *may* constitute a case of constructional gradience in certain contexts, because not every human proper noun modifier necessarily has determiner function. As said in Note 18 above, one prerequisite is a definite matrix NP, but even within a definite matrix NP these noun modifiers do not necessarily need to convey an identifying meaning. See, for

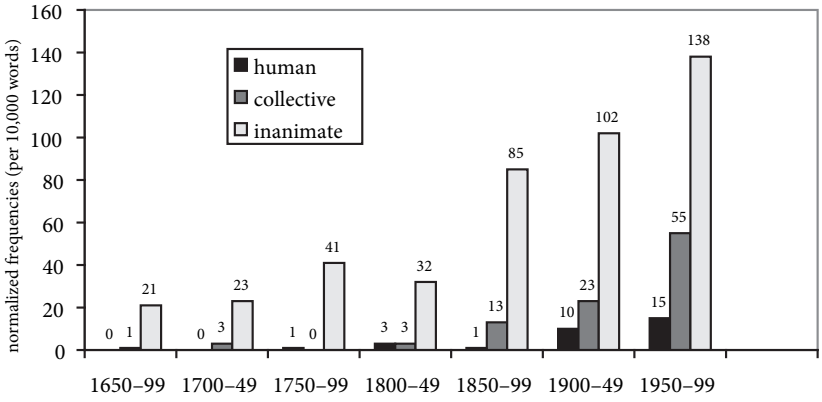

Figure 3. Distribution of noun modifiers according to animacy (normalized type frequencies) in ARCHER news (BrE), cf. Rosenbach (2007a: 163)[21]

(2007a) I will illustrate in the following how human noun modifiers (and thus the gradience they exhibit) gradually emerged in the recent history of English. Figure 3 gives the normalized frequency of noun modifiers according to the animacy of the noun modifier from the second half of the 17th century to the 20th century in the British English news section of the ARCHER corpus.

Figure 3 shows that noun modifiers preferably occur with inanimate nouns (e.g. *war history*) and that human noun modifiers (e.g. *Bush administration*) are clearly least frequent in all periods. Note that this finding justifies the specification of noun modifiers as typically inanimate in the semantic feature analyses given in §§3.1.1 and 3.1.2 above. What is interesting from a diachronic point of view is that human modifiers only start to figure in the 19th century and from then on increase in frequency (as do noun modifiers in general) mainly in the 20th century. More precisely, noun modifiers gradually extend up the animacy scale (human > collective > inanimate), from inanimate to collective to human nouns. Taking a closer look at proper-noun modifiers (Figure 4), it is striking that human proper noun modifiers do not appear before the 20th century. So, the construction of *the Obama supporters* or *the Weaver cars* evolved only in the recent history of English, in the early 20th century.[22]

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example, the expression *the Guggenheim museum*, which clearly does not translate into 'Guggenheim's museum'.

21. The category of 'collective nouns' includes nouns referring to groups of single entities (cf. Biber et al. 1999: §4.3.4).

22. The number of occurrences in Figure 4 is relatively small, but note that there is additional evidence from the whole ARCHER corpus indicating that human proper-noun modifiers with

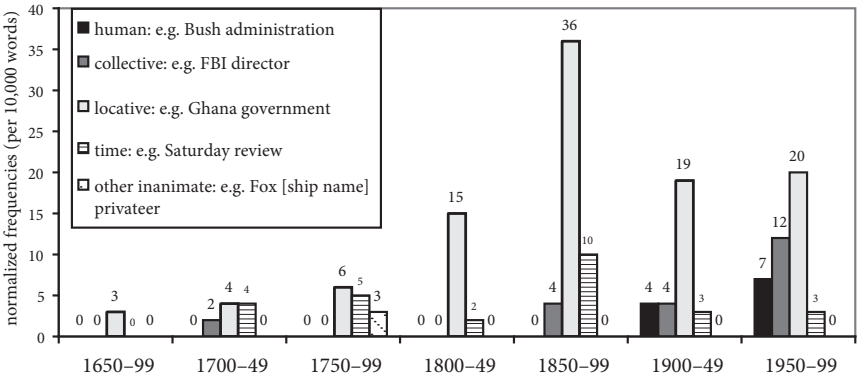

Figure 4. Distribution of proper-noun modifier according to animacy in ARCHER news (BrE); cf. Rosenbach (2007a: 166)

This extension of noun modifiers to referents high in salience further explores the potential of noun modifiers for having identifying function. Notice that among the relations that can be expressed by noun modifiers (cf. Biber et al. 1999: 590–591; see also Rosenbach 2007a: 171) are ones that are compatible with (or overlap) with relations that can be expressed by possessive constructions, e.g.

- location: *the London underground* (cf. *London's underground*)
- time: *the morning paper* (cf. *the morning's paper*)
- partitive (part/whole): *the church door* (cf. *the church's door*)
- subjective: *the eye movement* (cf. *the eye's movement*)

That is, the 'mismatch' between the function and the syntax of identifying noun modifiers described in §3.1.2 above is an option already inherent in noun+noun constructions. By extending noun modifiers to noun classes typically expressed by possessive constructions, this potential gets further explored and – presumably – conventionalized, very much in the sense discussed by Traugott (2007):

> If speakers adopt an innovative mismatch, by conventionalizing it, they are likely to creatively reanalyze it as a partial match that adds to the repertoire of the language. (Traugott 2007: 549)

The question remains of what set this extension of noun modifiers in motion in the first place. One possible explanation might be that human noun modifiers, as the most marked context, could start to surface with the general increase in the

clearly identifying function do not occur before the late 19th century, which suggests that the picture drawn in Figure 4 is quite realistic (see also Rosenbach 2007a: 165).

frequency of noun modifiers, starting in the late 19th century (cf. Biber and Clark 2002 for documenting this general increase of noun modifiers) and as such their emergence would be simply a side-effect of the general increase of noun modifiers, though of course the question remains then why noun modifiers should become more frequent at all. Note that there appears to be a general tendency in English for prenominal modifiers/variants to become more frequent (see also Rosenbach 2002: 263–264 for discussion). Like noun modifiers also determiner genitives have increased in frequency from early Modern English onwards (cf. Rosenbach and Vezzosi 2000). Similarly, premodification gets increasingly favoured vis-á-vis appositive constructions (cp. *Birmingham housewife Mrs Smith* instead of *Mrs Smith, a Birmingham housewife*), as noticed by Barber (1964: 142–143). To a certain extent this development towards increasing premodification seems to be sensitive to certain genres. Biber and Clark's (2002) study, for example, indicates that the increase of noun modifiers appears to be restricted to the genres of news and medical prose. Not surprisingly, these are genres which generally favour information-compressing devices as represented by noun modifiers. In a similar vein, Hinrichs & Szmrecsanyi (2007) interpret the increasing use of determiner genitives in journalistic language – in the spirit of Biber (2003) – in Present-day English as 'economization', a force particularly at work in newspaper language.

In the following I argue that beyond this general tendency towards more information-compressing devices the development towards human noun modifiers was presumably also facilitated by the existence of some special types of human noun modifiers in earlier English. There are, for example, human noun modifiers such as *Valentine day*, according to the OED first attested in the early 18th century, which result from the lexicalization of originally determiner genitives (*St. Valentine's day*), cf. Rosenbach (2007a: 181–182) and see also Trousdale (2008) for further examples in his constructional approach to the lexicalization of English possessive constructions. Similar lexicalized expressions (e.g. *St. Marke day*) can be found as early as in Early Modern English. As lexicalization (like grammaticalization or constructionalization) is a gradual diachronic process, in this process synchronically 'fuzzy' states must be assumed as well in the sense that at a certain point in time we may find variation within individual expressions in that some may still exhibit a less lexicalized stage and some a more lexicalized stage. This is illustrated in the examples in (13), where we find variation with nominal dependents designating certain days in that some occur as determiner genitives (13a) while others are more lexicalized and occur as noun modifiers (13b), cf. also Rosenbach (2007a: 181).[23]

23. HC = Helsinki Corpus.

(13) a. *at St. George's day* (HC, Edward VI, 353); *Seynt Margaretes Day* (HC, R. Torkington, 26)
b. *saynt Marke day* (H. Machyn, *Diary*, 34); *saynt Mathuwe day* (H. Machyn, *Diary*, 15)

Sometimes even the same author varies between using a determiner genitive and a noun modifier for the very same expression; see the following examples from *The Itinerary of John Leland in or about the Years 1535–1543*:

(14) a. *Barnard Castel* (HC, Leland, PI, 77)
b. *Barnardes Castel* (HC, Leland, PI, 76)

(15) a. *Gascoyne-tower* (HC, Leland, PI, 140)
b. *Gascoyn's-tower* (HC, Leland, PI, 140)

These examples show, on the one hand, how human noun modifiers made it into the English language through the 'back door' of lexicalized determiner genitives. Although the result is a lexicalized expression they may have served as a model for the extension to productive cases. The examples also illustrate how permeable the borderline may be between the two construction types (constructions with determiner genitive and noun modifiers) in such lexicalizing expressions. This is further illustrated by an example that Sauer (1985: 271) notes for Old English, where in *Beowulf* we both find the nominal compound *eorlgestreon* ('earl-treasure') as well as the genitive *eorla gestreon* ('the earls' treasure') with no apparent difference in meaning (cf. also Rosenbach 2007a: 274). This indicates how compatible the two construction types can be conceptually in specific contexts.

In addition to the cases of lexicalization as discussed above, in Middle and early Modern English it was also still possible to have *s*-less determiner genitives (*the bucher wyff*; *the man name*), which were particularly common in Northern English and could be found there well until the early 20th century (e.g. Klemola 1997). Although such *s*-less constructions are straightforward determiner genitives they overtly look like noun modifiers and as such may well have served as a model for further extension to noun modifiers, especially so as highly salient dependents (human proper nouns) are so much inclined to have determiner function anyway. Note that it is sometimes far from easy to distinguish *s*-less determiner genitives from noun modifiers in that period, as discussed in Rosenbach (2007a: 164).

In Rosenbach (2007a) I assume that such early bridging constructions (such as lexicalizations and *s*-less genitives) helped to pave the way for the semantic extension of noun modifiers to human (proper) noun modifiers from early Modern English onwards. They presumably represent cases of 'structural analogy' as suggested in Rosenbach (2004) in that they "make […] it possible for the properties of

one construction to 'jump' to another one" (Rosenbach 2004: 82).[24] In this sense, then, synchronic gradience (in the form of such early bridging constructions) may have led to gradual language change (in the form of the semantic extension of noun modifiers up the animacy scale).

Note that there is a general similarity between genitives and noun modifiers in that they are both (a) nominal dependents, (b) share prenominal position, and (c) both have a restrictive function (cf. Table 3 above). That is, at the surface they only differ rather minimally in the absence or presence of the *'s* (granting formal – albeit superficial – similarity) and they even share the feature of restrictiveness. This similarity has been present in earlier English, and, together with the presence of various bridging constructions (lexicalized expressions, *s*-less genitives) given rise to the type of structural analogy which lies at the bottom of the very parallel expansion of the two nominal dependents, i.e. genitives and noun modifiers, from early Modern English onwards, apart from a general trend to simply compress language in certain genres. Once set in motion, the process of expansion/extension of noun modifiers and genitives created further similarity – and thus convergence – between the two constructions.

4. On the relation between synchronic gradience and language change: Synopsis and outlook

4.1 Synopsis: Synchronic gradience and language change

In this paper I argued for intersective gradience between genitive constructions and noun modifiers, focussing in particular on the specific case of human proper noun modifiers, which have the semantic features of determiners but the morpho-syntax of typical classifiers. That is, gradience in this particular case is constituted by a clear mismatch between the semantics of noun modifiers and their morpho-syntax. This synchronic gradience in present-day English came about by the gradual semantic extension of noun modifiers along the animacy scale. Notice that it takes a quantitative analysis to detect the gradualness of the change as well as the synchronic gradience of the construction as otherwise the different preferences for certain semantic noun classes would have to be stipulated or could be easily overlooked. This type of semantically and diachronically motivated gradience

24. Elizabeth Traugott (p.c.) raised the question of how to reconcile the word 'jump' with the notion of gradience and gradualness. In the feature-sharing and mismatch approach as presented in the present paper it is the process of adopting, or coming to share, features of another construction which constitutes the 'jump', however small that step may be.

clearly goes beyond Aarts's approach to syntactic gradience, which proceeds from morphosyntactic overlap only and whose perspective is an exclusively synchronic and essentially non-empirical one.

While in the present scenario the synchronic gradience we find in present-day English, as constituted by the construction type exemplified by *the Obama supporters* or *the Weaver cars*, makes sense in the light of gradual language change, this change itself constitutes an explanandum. As part of a (possible) explanation I suggested that apart from a general potential for gradience between determiner genitives and noun modifiers (in sharing some formal and semantic properties) there have been various bridging constructions in earlier English (basically historical 'leftovers' from other processes) which helped to set the semantic extension of noun modifiers to noun classes high(er) in animacy and referentiality in motion, enforced and extended the existing similarities between the two constructions and thus contributed to the synchronic gradience to be observed in present-day English grammar. Under this view, diachronic change does not start 'out of the blue' but exploits 'weak spots' (here in the form of initial overlap between constructions and the existence of marginal bridging constructions) already there in the language. In other words, this change towards a new construction makes sense in the light of synchronic gradience so that the logical relation between synchronic gradience and gradual change must be regarded as a reciprocal one.

The view on gradience and gradualness advocated in the present paper corresponds to the one put forward by De Smet (this volume, p. 98), who – like the present author – believes that "gradience goes beyond morphosyntax" and which also relies on the idea of 'feature-sharing' and 'mismatch' as underlying gradience and analogical extensions. De Smet suggests that analogy can take place via any kind of similarity, be it formal or semantic in nature. Similarly to the present account De Smet considers formal similarity as one possible cause for the sharing of semantic features, which, in turn, will reinforce existing similarities, thus supporting the view put forward in this paper that there is a reciprocal relationship between gradience and language change.

4.2 A semantic account of gradience

Considering the subtleties of the semantics of the constructions discussed in this paper, the question arises whether we can develop a semantic account of gradience which does justice to the data and, at the same time, does not become too 'messy' (see Aarts's motivation for his idealizations for gradience as cited in §2 above). Decomposing the semantic functions of determination and classification helped us to see the subtle mismatches and resulting overlaps between determiner

genitives and noun modifiers (see also Roberts, this volume, for such a feature approach to gradience, though from a formal perspective). Providing a semantic feature specification I tried to present a systematic picture of the observed gradience. While these feature analyses quite nicely suggest an 'orderly' account (in terms of ± feature specifications), things appear to be far more subtle – and complicated. Notice that the features of animacy and referentiality are not binary features but themselves gradient (cf. Rosenbach 2006 for such an argument) and often subject to conceptualization (particularly the feature of animacy; see also Rosenbach (2008b) for discussion.[25] In this respect, the feature analyses presented in this paper proceed from a severe simplification, and the question remains of how we can possibly formalize the impact of these semantic features in all their granularity. The further we dig, the more 'messy' indeed things become – but also the more interesting.

4.3 The emergence of a new construction and the distinction between analogy and reanalysis

The diachronic rise of constructions with identifying noun modifiers (e.g. *the Obama supporters* or *the Weaver cars*) has been labelled 'constructionalization' in this paper, which raises the question of what constitutes a 'new' construction in this case. Recall that this construction still shows all morphosyntactic properties typical of constructions with noun modifiers, so there is strictly speaking no new *grammatical* construction. It is solely on the basis of the newly acquired identifying function (going together with specific semantic features) that we can consider constructions such as *the Obama supporters* as a new construction type. This presupposes a concept of 'construction' which looks at form – function mapping/correspondence (as is common in Construction Grammar approaches as e.g. advocated by Goldberg 1995) rather than at formal properties alone, as typical of structural approaches to grammar. If we consider changes in semantic function

25. Ian Roberts (p.c.) suggested that the very fact that a feature like animacy is not binary but graduated (cf. the various positions on the animacy scale, from human to animal to collective to inanimate) does not necessarily imply gradience as it is well possible that the feature of animacy simply splits up into further discrete features and that speakers show subjectively flexible (but nonetheless discrete) animacy assignments. This is well possible. But note that the gradience account in the present paper proceeds from the possibility of flexible mappings between semantic features and construction types (or morphosyntactic properties), which does not necessarily require the features themselves to be gradient in nature. One way of formalizing such flexible mappings can, for instance, be found in probabilistic approaches to grammar, as e.g. stochastic Optimality Theory (e.g. Bresnan et al. 2001).

as sufficient for constituting a new construction type, can we then consider the emergence of this new construction as a case of 'reanalysis'? Strictly speaking, no, because reanalysis is typically defined as a change in form, not a change in meaning (though see Traugott and Dasher 2002: 35 or Eckardt 2006 for considering semantic change as reanalysis). If we, however, assume constructions to be manifested by both their morphosyntax as well as their meaning, the question arises where to draw precisely the boundaries between reanalysis and analogy, i.e. where reanalysis begins and analogy stops, which touches upon another of the central questions raised by Traugott and Trousdale in their introduction to this volume.[26] For the present approach nothing depends on this distinction, what matters is that there is synchronic gradience emerging from gradual semantic change (but see Schøsler, this volume, for taking a position here).

4.4 Beyond English – a (brief) look at typology

While the present study has looked exclusively at the English language, the diachronic approach to synchronic gradience advocated here also allows for typological predictions. If constructions with genitives and noun modifiers are constituted by a specific clustering of semantic features (which, in turn, constitute typical determination and classification) which can change over time, then we would also expect to find other languages to correspond in the way they map these features/functions to these constructions. That is, diachronic variability should also be reflected in cross-linguistic variability, which is what we can indeed find. To start with, the form – function correspondence found in the English NP (as described in §3.1 above) can also be found cross-linguistically. The typological framework put forward by Seiler (1978) holds that elements having determiner function are located most far away from the head noun, while elements with classifying function are positioned closest to the head noun. However, there is also evidence that languages (other than English) may diverge from this typical correspondence. As for example shown by Koptjevskaja-Tamm (2004: §2.1) in Lithuanian, the Georgian and the Daghestanian languages genitive constructions can entail two readings, as illustrated by the examples in (16) and (17) below.

(16) Lithuanian
erelio *akys*
eagle-GEN eye-NOM.PL
'a / the eagle's eyes' or 'the eagle eyes'

26. See also Jäger and Rosenbach (2008: 107, Note 19) for briefly addressing this question in their priming approach to language change.

(17) Georgian
tevz-is kud-i
fish-GEN tail-NOM
'a / the tail of a/the fish' or 'a / the fish tail'

In (16) the Lithuanian genitive construction for 'a/the eagle's eyes' can both have the identifying (determiner) reading [*a/the eagle*]*'s eyes* or the classifying reading *a/the* [*eagle's eyes*], and the same goes for the Georgian genitive constructions illustrated in (17). This is comparable to the situation in English, which has two types of genitive constructions, i.e. determiner genitives and classifying genitives, as outlined in Section 3.1 above. Hebrew, on the other hand, constitutes a case where a noun modifier (in a so-called construct state construction, cf. 18) can have both determiner and classifying reading (cf. Strauss 2004, citing Hazout 1991).

(18) Hebrew
mo?adon studentim
club.CS students
i. 'a club belonging to some students'
ii. 'a students' club'

In a Northern Swedish dialect even nominal compounding can be used to express determiner function, as reported by Koptjevskaja-Tamm (2002: 144), see the example in (19), while usually nominal compounding in Swedish (as in the other Germanic languages) is restricted to a classifying function of the first noun. This case, in particular, resembles the case of the determiner noun modifiers in English discussed in this paper. A semantic function typically expressed by determiner genitives in Swedish is expressed morphosyntactically by a construction typical of classification.

(19) *papa- bok- a*
Daddy-book-DEF.F.SG
'Daddy's book'

These examples illustrate that the mismatches between construction type and semantic function we find in the English language are by no means idiosyncratic to English. The form – function correspondence in the noun phrase is a kind of 'ideal state' (also cross-linguistically), which however may be violated, thus indicating that the division between the semantic functions of determination and classification is not a clear-cut one cross-linguistically. The very fact that languages may differ in the way they assign determiner and classifying function to constructions with genitives or noun modifiers as well as the fact that within individual languages often one construction type may be used to express both functions further

indicates that there is no strict division of labour between the two construction types, although there are typical ways of how these functions map to construction types, with possessives favouring determiner function and noun+noun juxtaposition being more typical of classifying function (cf. e.g. Chappell and McGregor 1989). Thus, the synchronic gradience found in present-day English in the domain of genitive and noun+noun constructions makes sense also in the light of typology, and the change observed may be simply viewed as a change within the typologically possible space.[27]

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27. Notice that the semantic view on gradience advocated in the present paper makes sense also from a typological perspective. As recently argued by Croft (2007) typologists proceed from the use of functional criteria to identify equivalent forms/constructions across languages. Croft argues, *pace* Aarts's views on gradience: "Functional equivalence allows us to develop a cross-linguistically valid and empirically supportable theory of parts of speech that a 'purely' morphosyntactic account cannot" (Croft 2007: 422).

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What can synchronic gradience tell us about reanalysis?

Verb-first conditionals in written German and Swedish

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This paper discusses verb-first conditionals (*Had I known this, I would have stayed at home*) with regard to the hypothesis that the construction developed from a dialogual sequence into a hypotactic structure. While plausible, independent evidence for this scenario has been scarce. An alternative account posits that questions could have been analogized with existing conditional clause types, making it possible for speakers to use questions as conditional protases. The present study assesses these two hypotheses on the basis of present-day corpus data from German and Swedish. Crucial to this approach is the notion that a reanalyzed structure retains aspects of its original source. Put simply, if the protasis of a verb-first conditional developed out of a question, it should retain some question-like characteristics, even after reanalysis. Further, if verb-first conditionals have become grammaticalized more strongly in one language than in another, the less-grammaticalized construction should display more question-like characteristics.

1. Introduction[1]

This paper addresses the third question posed by Traugott and Trousdale in the introduction to this volume. In its most general form, the question asks how we are to understand the relation between synchronic gradience and the process of

1. I would like to thank David Denison, Jan Lindström, Amanda Patten, Elizabeth Traugott and Graeme Trousdale for their comments on an earlier version of this paper. Many thanks are also due to Daan Van den Nest, who discussed the topic of this paper with me. Henrik Rosenqvist supplied example (18a). Finally, the audience of NRG-4 (Leuven) provided helpful input. The usual disclaimers apply.

reanalysis in grammaticalization. The focus of the present discussion will be on a more specific version of that question: can synchronic gradience, i.e. co-temporal variation among the tokens of a linguistic category (*subsective gradience* in the terminology of Aarts 2007), tell us anything about how hearers reanalyzed a token of one category as a token of a different category?

A brief comment is in order to explain why this question is useful to ask. First and foremost, the question touches on the issue of how synchronic data can be fruitfully investigated in studies of grammaticalization (cf. Traugott 2008). Written records of past language use are often sparse, do not reach far back enough, or are altogether unavailable. Given such a situation, resorting to synchronic data is a common strategy. Heine and Kuteva (2002), for instance, juxtapose many grammaticalized forms with their putative lexical sources, in which correspondences between lexical and grammatical elements are inferred simply on the basis of qualitative similarities and differences in synchronic data.

The present paper argues that synchronic data is useful not only for qualitative comparisons between different forms, but crucially also because of the quantitative information that it holds. Large modern corpora can reveal gradient, quantitative differences between grammatical forms and their lexical counterparts that would elude comparisons of any two isolated examples. To illustrate, Hilpert and Koops (2008) use corpus data to differentiate between a lexical and a grammaticalized variant of the Swedish posture verb *sitta* 'sit'. In the latter, the posture verb is co-ordinated with a second verb and indicates durativity. The two variants differ, amongst other things, with regard to their typical argument structure. While lexical *sitta* is often elaborated spatially (1a), such elaboration is typically absent with co-ordinated *sitta* (1b). Nevertheless, lexical *sitta* can occur without spatial elaboration (1c), and co-ordinated *sitta* may occur with it (1d) – examples of this kind are perfectly grammatical.

(1) a. *Jag har suttit vid skrivbordet nästan hela dagen.*
I have sat at desk.the almost all day
'I've sat at the desk almost all day.'

b. *Jag har suttit och läst hela dagen.*
I have sat and read all day
'I have been reading all day.'

c. *Han satt en stund igen.*
he sat a while again
'He sat (somewhere) for a while again.'

d. *Jag har suttit vid skrivbordet och läst hela dagen.*
I have sat at desk.the and read all day
'I've sat at the desk and read all day.'

The difference in argument structure between the two variants is thus gradient, not categorical. Hilpert and Koops (2008: 254) make the case that grammaticalization can show itself in purely quantitative differences between two forms with a common source.

But what then is the link between gradience, as observed through quantitative corpus data, and reanalysis? In the case of Swedish *sitta*, there is no doubt that the posture verb represents the lexical source that was reanalyzed as an aspectual marker in the context of a co-ordinated structure. A co-ordinated structure with two verb phrases (2a) came to be re-bracketed as a single verb phrase in which the verb *sitta* acquired the status of a grammatical element (2b). Present-day evidence for this reanalysis is that direct objects of the second, lexical verb can undergo extraction (2c), which is not possible in regularly co-ordinated structures (2d).

(2) a. *Jag [satt] och [läste].*
I sat and read
'I sat and read.'
b. *Jag [satt och läste].*
I sat and read
'I was reading.'
c. *boken$_j$ jag [satt och läste Ø$_j$]*
book I sat and read
'the book I was reading'
d. **boken$_j$ jag [skrattade och läste Ø$_j$]*
book I laughed and read
intended: 'the book I was reading while laughing'

Hilpert and Koops (2008: 257) claim that the reanalysis of (2a) as (2b) was a gradual process rather than a sudden, catastrophic one. Diachronic corpus data indicate that examples such as (2c) only gradually increase in frequency over time.

The main subject of the present study is a case of grammaticalization in which the process of reanalysis is much less clear-cut than with Swedish *sitta* – namely the case of verb-first conditional clauses, a construction that occurs across several Germanic languages. The focus here is on German and Swedish verb-first conditionals, as illustrated in (3a) and (3b).

(3) a. *Ändern sie das Testament, dann tritt eine neue Rechtslage ein.*
change they the testament then sets a new legal.situation in
'If they change the testament, a new legal situation obtains.'
b. *Räknar man även barnen, blir siffran avsevärt högre.*
counts one even children becomes number much higher
'If also children are counted, that number increases substantially.'

As is explained in more detail below, there are mutually conflicting accounts of how pre-existing grammatical structures came to be reanalyzed, thus giving rise to the modern construction. The present study makes a methodological contribution, exploring how gradience in synchronic corpus data sheds light on this issue. While synchronic gradience cannot generate a full-fledged account of how a diachronic change happened, the value of synchronic gradience lies in the fact that it can be used to test the predictions of diachronic accounts with respect to synchrony. If different grammaticalization scenarios make conflicting predictions about synchronic states of affairs, large present-day corpora can be used to evaluate the relative plausibility of these accounts. To make matters more concrete, this paper compares the predictions of two grammaticalization accounts of verb-first conditionals against evidence from modern German and Swedish corpora, arguing that synchronic gradience does indeed tell us something about reanalysis.

The remainder of this paper is organized as follows. Section 2 presents the verb-first conditional construction and discusses previous work. The two conflicting grammaticalization accounts of the construction are referred to as *the dialogual account* on the one hand and *the analogical account* on the other. The section spells out the predictions that both accounts make for present-day usage of the construction. Section 3 presents the corpora that are used, explains how data is retrieved, and summarizes the results from the quantitative investigations; section 4 concludes the paper with an argument that the existing evidence provides evidence for the dialogual account.

2. Verb-first conditionals in German and Swedish

Cross-linguistically, conditional constructions that bear strong resemblances to polar interrogative constructions are fairly common (Traugott 1985). Van den Nest (Forthcoming) offers a comprehensive list of studies that address the phenomenon across genetically unrelated languages. The focus in this paper is on German and Swedish, which both have a conditional clause construction in which the protasis is formally identical to a polar question, as shown in (4) and (5). For the sake of comparison, the examples in (6) illustrate that a similar construction exists also in English, where it is restricted to *had*, *should*, and *were*. While it is possible to construct polar questions in correspondence to (6a) and (6b), a question such as *Should you need anything?* appears much less natural than the German and Swedish questions in (4b) and (5b).

(4) a. *Ändern sie das Testament, dann tritt eine neue Rechtslage ein.*
change they the testament then sets a new legal.situation in
'If they change the testament, a new legal situation obtains.'
b. *Ändern sie das Testament?*
change they the testament
'Do they change the testament?'

(5) a. *Räknar man även barnen, blir siffran avsevärt högre.*
counts one even children becomes number much higher
'If also children are counted, that number increases substantially.'
b. *Räknar man även barnen?*
counts one even children
'Are also children counted?'

(6) a. *Had he known this, he would have cancelled the trip.*
b. *Should you need anything, please call the front desk.*
c. *Were he to fail, he would be ashamed to show his face at home.*

From a functional perspective, the connection between questions and conditionals can receive a straight-forward explanation, as these constructions share the semantic traits of non-factuality or possibility. Given the synchronic evidence of the examples in (4) and (5), buttressed by the typological finding that questions and conditionals resemble each other more often than not, it is hard to resist the idea that historically, polar questions were reanalyzed as the protases of verb-first conditionals. And indeed, this hypothesis has been endorsed in several classic references (Erdmann 1886; Paul 1920; Jespersen 1940; amongst others; cf. the discussion in Van den Nest Forthcoming).

Fleshed out, a dialogual scenario that posits the reanalysis of a polar question as the protasis of a conditional clause would have the three stages outlined below (Van den Nest Forthcoming). The first stage is dyadic in nature. A speaker asks a polar question (*Is the child younger than three years?*), receives a positive answer, and proceeds with a declarative statement that is contingent on that positive answer (*Then it may ride for free*). As the pattern shown in (7a) routinizes over time, the presence of the positive answer becomes less important. One can imagine a second stage, in which it is sufficient for the hearer to provide only a non-verbal token of acknowledgment, yielding the pseudo-dyadic structure that is given in (7b). As the importance of the answer wanes, the initial question sheds much of its function as an interrogative speech act. In the third and final developmental stage represented in (7c), it merely expresses a condition on the consequence that is expressed in the apodosis. In such a monadic structure, the apodosis may occur without a linking element (*dann* 'then'), since the forefield position is represented by the conditional clause.

(7) a. Dialogual phase (dyadic)
question – positive answer – consequence
Ist das Kind jünger als drei Jahre? – Ja. – Dann fährt es gratis.
b. Sequential phase (pseudo-dyadic)
question – (acknowledgement) – consequence
Ist das Kind jünger als drei Jahre? – <nod> – *Dann fährt es gratis.*
c. Sentential phase (monadic)
conditional scenario – () – consequence
Ist das Kind jünger als drei Jahre – () – *(dann) fährt es gratis.*

The dialogual account of verb-first conditionals is intuitively appealing, since it offers a natural, discourse-based explanation of how a complex present-day construction might have come into being. Its integration of two paratactic structures into a single hypotactic structure under a single intonation curve falls squarely into the prototypical developmental scenario of complex clauses (Givón 1979, 2009; Leuschner and Van den Nest Forthcoming). Precisely because of this intuitive appeal, we should be wary and consider potential fallacies of this model along with alternative explanations that have been offered in the literature. Fischer (2007: 217) rightly cautions that for many purported developments from parataxis to hypotaxis, there is sparse or no evidence. She points out that any integrated or compressed clausal structure could theoretically be viewed as the end result of clause-combining, if only the analyst is inclined to take this view. If strict unidirectionality from parataxis to hypotaxis is assumed, this would for instance lead analysts to the erroneous conclusion that a recent example of clause elaboration represents older language use than the 'reduced' example, which in fact formed the basis for elaboration.

Harris and Campbell (1995) point out that there are viable alternatives to the hypothesis that complex sentential constructions emerge out of a development from parataxis to hypotaxis; in particular, they suggest that a productive source for the formation of complex constructions is analogy, i.e. the extension of an existing complex structure to a new context:

> It is also possible that structural marking that developed in one context was later *extended* to another. While the issue of whether the sources of markers logically imply the sources of structures is an empirical one, we shall refer here to the assumption that they do as the Marker/Structure Fallacy.
>
> (Harris and Campbell 1995: 284)

While it is undoubtedly true that the development of hypotaxis out of parataxis is not the only logical possibility for complex constructions to emerge, Harris and Campbell appear to argue a much stronger point. With regard to the relationship between questions and subordinate clauses, they explicitly reject a dialogual

explanation, arguing that "in explaining complex structures it is not necessary to go beyond the boundary of the sentence (to discourse) or to cite structures in which subordinate clauses have vague relationships to matrix clauses" (Harris and Campbell 1995: 287).

How then could verb-first conditionals be explained without recourse to a dialogual structure? Harris and Campbell (1995: 298) build their argument on the observation that questions and many types of dependent clauses, among them conditionals, are pragmatically non-assertive. Questions could therefore be analogized to conditional clauses and 'plugged into' an existing syntactic frame. If we take the example of verb-first conditionals in German, we could hypothesize that speakers were sensitive enough to the pragmatic similarity between polar questions and the conditional clauses in (8a) and (8b) such as to draw an analogy and extend the use of questions to the expression of a non-assertive condition (8c).

(8) a. *Wenn das Kind jünger als drei Jahre ist – dann fährt es gratis.*
b. *Falls das Kind jünger als drei Jahre ist – dann fährt es gratis.*
c. *Ist das Kind jünger als drei Jahre – dann fährt es gratis.*

Harris and Campbell argue that the formal similarity between actual dialogue and hypotactic structures is a secondary effect that should not be interpreted as supporting evidence for a dialogual account (1995: 308). If a phenomenon can be explained through well-understood mechanisms that are known to operate within smaller syntactic units, such explanations are preferable.

The analogical account is, however, less straight-forward than it may initially appear. First, analogy is not in fact as well-understood as Harris and Campbell suggest (cf. Itkonen 2005: Chapter 1). Second, the available evidence does not warrant the categorical, across-the-board rejection of dialogual explanations that Harris and Campbell advocate. As they point out themselves in the longer quote above, the relation between source and target is an empirical issue that would have to be settled on a case by case basis. Third, there are structural differences between the conditional protasis in (7c) and the corresponding subordinate clauses in (7a) and (7b) that make the idea of analogy for this particular example quite implausible. Further pertinent criticisms are given in Van den Nest (Forthcoming). But regardless of these considerations, the general point made by Harris and Campbell – simpler explanations being preferable – is of course valid.

At this point, it needs to be acknowledged that there are alternatives to both the dialogual account and the analogical account. In both Old High German and Old Swedish, verb-initial structures with declarative and other functions were commonly used (Hopper 1975). Verb-first conditionals may have emerged historically as juxtapositions of two verb-initial declarative clauses. If this were the case, they would in fact not have anything to do with questions, despite their

synchronic similarity to polar interrogatives. With this important acknowledgment in mind, this paper nevertheless focuses on the two accounts outlined above, using present-day corpus data to evaluate them.

Different as the dialogual and the analogical account may seem, they do share the assumption that questions and conditional protases were semantically close enough for one to stand in for the other at some point. The major difference between them concerns the mechanism of this change. Whereas the dialogual account posits that verb-first conditionals exemplify the well-known development from parataxis to hypotaxis, which is a standard account of how reanalysis proceeds, the analogical account holds that verb-first conditionals exemplify a construction that developed through parasitic use of an existing hypotactic structure. The general pattern of a protasis followed by an apodosis was already available, affording the development of new conditional constructions by means of an equally well-known mechanism, namely analogy.

While both accounts merit consideration, neither presents a case that would make it inherently and conclusively preferable. At this point, choosing one over the other is a matter of theoretical inclination. An empirical assessment of the question is needed, and it is what this paper aims to provide. But what is the most appropriate source of empirical data? Historical data come to mind as the best possible testing ground, but verb-first conditionals are attested from very early stages of German and Swedish respectively. In German, verb-first conditionals have been in use since Old High German times (Harris and Campbell 1995: 296); in Swedish, examples from the 15th century such as (9) are attested in corpus data.

(9) *Haffwer hon onth effter barn byrdh tha siwde grabo i watn.*
has she pain after child birth then boil mugwort in water
'If she has pain after childbirth, boil mugwort in water.'

Even if historical corpus data can shed light on the constructional development, historical examples cannot yield conclusive evidence about the ultimate origins of verb-first conditionals. Due to the written nature of the historical records, dyadic structures of the kind that would lend credence to the dialogual account are simply not preserved. The analogical account predicts an unmediated onset of verb-first conditionals at some point, but this is what we expect from a patchy written record anyway.

A crucial question to ask is whether the two accounts make different predictions with regard to the structures that are found in current language use. Ideally, different scenarios of how a process of grammaticalization took place would make conflicting predictions that could be tested through the quantitative analysis of corpus data. If we contrast the dialogual account of verb-first conditionals with the analogical account, the following characterizations emerge.

The dialogual account claims that the grammaticalization of verb-first conditionals represents a case of clause union from parataxis to hypotaxis. From this, we can derive a first prediction, namely that the clausal integration of the construction will tighten over time. Even if there is no necessity for protasis and apodosis to fuse completely, they should gradually become more cohesive. Second, the dialogual account claims that the protasis, which originates as an independent polar question, gradually loses its interrogative illocutionary force. From this it follows that the protases of verb-first conditionals should, over time, retain some semantic and pragmatic properties of questions that eventually disappear. For instance, we would expect that the apodoses of early verb-first conditionals would resemble polar questions in expressing real possibilities that may or may not be the case, rather than counterfactual scenarios. Third, the dialogual account would predict that the protasis, as an erstwhile question, generally continues to precede the apodosis. While this is usually the case, there are modern German examples such as (10), in which the order is reversed.

(10) *Ich bin im Büro, solltest du mich brauchen.*
I am in.the office should you me need
'I'm in the office, should you need me.'

In example (10), the apodosis follows the matrix clause as a mere afterthought, not as a full-fledged condition. On the dialogual account, the reversed order of condition and consequence should become available only after the original dyadic structure has been completely reanalyzed as a monadic, hypotactic structure that can be rearranged to fit different information-structural needs. It is hence expected that this particular order is only seen at a late stage of grammaticalization, and even then as a relatively rare exception.

These predictions of the dialogual account cannot be derived from the analogical account. First, if we claim that questions came to be used as conditional protases by means of analogy, there is no reason to think that clausal integration between protasis and apodosis should have become tighter over time. Since no such change is expected from the conditional constructions serving as the basis for the analogy, there is no change to be expected from verb-first conditionals. Second, there is no reason to predict that the protases of verb-first conditionals should become less question-like over time. The very precondition for their appearance in a hypotactic conditional frame would be that speakers could take them to be conditional protases, not questions. Third, on the analogical account, postposed verb-first conditionals should appear at the same rate as other postposed conditionals. The postposition of conditional protases is of course quite rare, both cross-linguistically and across different conditional markers (Diessel

2001), but to the extent that it occurs, verb-first conditionals should not behave any different from other members of this grammatical category.

We thus conclude that the two accounts make different predictions, even for language use after the original inception of the construction. But are these predictions falsifiable? Whatever conclusions we hope to draw from a corpus analysis, they will only be as strong as the predictions at the basis of the investigation. In fact, the predictions that can be derived from the analogy account are so weak as to make the theory resistant to almost any empirical criticism. This does not prove it wrong, but in general scientific progress is only possible if theories hold the potential to be falsified. The dialogual account does make a number of falsifiable predictions, and so the present study will examine the evidence that speaks to these predictions. In the case that the dialogual account can be proven wrong, the analogy account might be a good candidate to retain until the means to disprove it become available.

Questions such as the ones outlined above can be fruitfully investigated through the use of diachronic corpora, which allow the researcher to study a given phenomenon across different historical stages. Van den Nest (Forthcoming) takes this route and studies English and German verb-first conditionals on the basis of diachronic corpus data. Three findings emerge that are crucial to the present discussion. First, with respect to German, it is established that verb-first conditionals show less clausal integration in Old High German (OHG) than is observed in Present-day German (PDG). Fully integrated examples, in which there is no linking element and in which the apodosis begins with the inflected verb, do not occur in OHG at all. This finding is fully consistent with the dialogual account. Second, Van den Nest observes a variety of linking elements between protasis and apodosis in OHG, whereas in PDG there are only the elements *so* 'so' and *dann* 'then'. The specialization process of *so* and *dann* suggests that verb-first conditionals gradually lost their question-like properties and narrowed pragmatically into the function of conditional protases. Again, this is consonant with the predictions of the dialogual account. Lastly, Van den Nest shows that in both OHG and Old English, verb-first conditionals predominantly expressed real possibilities, which stands in contrast to the synchronic state of affairs. In Present-Day English, one of the three verb forms found in verb-first conditionals is the form *had*, which exclusively expresses counterfactuals. In PDG, the expression of actual possibilities is more frequent than in English, but still the cognate form *hätte* accounts for substantially more counterfactual examples in PDG as compared to OHG. The rise of counterfactual verb-first conditionals receives a straight-forward explanation in the dialogual account as a corollary of weakening interrogative illocutionary force; on the analogical account this development would have to be seen as a mere coincidence. Overall then, the comparison of historical and modern data

yields evidence for the dialogual account, even though Van den Nest is careful to point to the scenario that verb-first conditionals may have emerged historically from juxtaposed verb-initial declarative clauses.

The present paper takes a similar approach, but instead of comparing historical stages of the same language against each other, it compares modern verb-first conditionals across two different languages, namely present-day German and Swedish. Like historical comparisons, synchronic comparisons can also be used to investigate language change, if only indirectly so. For instance, it is a common practice in sociolinguistic studies of language change to record subjects of different ages and to establish whether the parameter of age correlates with a given phonological change. Similarly, it is possible to learn something about language change by sampling a grammatical construction from two contemporary languages. If we can determine that the construction is 'developmentally older' in one language, we can draw a number of comparisons and check whether the differences between the constructions match our predictions of how these constructions developed in the two languages. If there are conflicting theories, the theory that aligns best with the observed differences should be favoured.

Regarding the question whether verb-first conditionals are more strongly grammaticalized in German or in Swedish, we could take relative text frequency as an index. Provided that there is a difference, the dialogual account makes the following predictions for the cross-linguistic data: First, the construction with higher text frequency will also display greater clausal integration, as measured by the presence of linking elements between protasis and apodosis. Second, the more frequent construction will retain fewer question-like features than its counterpart. These features could be operationalized in a number of ways, but the semantic feature of counterfactuality stands out as a candidate. Third, the more frequent construction will display greater independence from the erstwhile dialogual form and hence show a higher rate of protasis postposition (cf. example (9)). If these predictions prove to be wrong, the dialogual account would appear questionable. If, on the other hand, they hold up, this would serve as a rebuttal to Harris and Campbell (1995: 308), who state that there is no empirical evidence to support a dyadic origin of complex sentential constructions.

3. Data and analysis

The present study draws on several corpora of contemporary written German and Swedish, each with a bias towards newspaper texts. All corpora used are freely accessible over the World Wide Web. The German corpora used in this study were accessed through the IDS Mannheim (http://www.ids-mannheim.

de/cosmas2). The German LIMAS corpus, which is modelled on the BROWN corpus of American English (Francis and Kucera 1964), holds one million words of running texts from various written genres. The Mannheimer Morgen corpus holds approximately 20 million words of newspaper text. The corresponding Swedish corpora were accessed through the Språkbanken resource (http://spraakbanken.gu.se/) at Gothenburg University. The Stockholm-Umeå corpus is a one-million word corpus that was constructed to match the BROWN corpus; the PAROLE corpus consists of 19.4 million words of mainly newspaper texts, but also some narrative prose and some internet-based texts. It is assumed that the German and Swedish resources are broadly comparable.

Since the construction under investigation does not have any lexically specified parts, the search procedure had to cast a wide net in order to exhaustively retrieve all tokens from the corpora. The strategy taken here was to search all corpora for sentence-final punctuation followed by a sentence-initial verb. This search procedure yielded a large number of false positives that had to be removed manually from the database. Verb-initial constructions to be removed included questions (11a), exclamatives (11b), topicalized passives (11c), imperatives (11d), truncations (11e), and several other structures. For an overview of Swedish verb-initial constructions, see Lindström and Karlsson (2005).

(11) a. *Sind unsere Kinder weniger intelligent als früher?*
are our children less intelligent than earlier
'Are our children less intelligent than they used to be?'

b. *Ist das ärgerlich!*
is that annoying
'How annoying is that!'

c. *Entlassen wird vorerst niemand.*
layed.off is for.now no-one
'There will be no layoffs for now.'

d. *Kom in!*
come in
'Come in!'

e. *Kunde man säga.*
could one say
'One could say that.'

It is necessary to point out that the search procedure can be faulted for disregarding certain examples of verb-initial conditionals. Example (12a) would not be retrieved because the sequence of sentence-final punctuation and the initial verb is interrupted by the presence of a conjunction. Example (12b) would not be found because a comma is not recognized as sentence-final punctuation. Spot checks

in the corpora used indicated that such examples occur in negligible quantities. It is assumed that the omission of such examples in the interest of a manageable retrieval procedure does not invalidate the results.

(12) a. *Und fragt man drei Experten, erhält man drei Meinungen.*
and asks one three experts gets one three opinions
'And if you ask three experts you get three different opinions.'
b. *Also, hätte ich das gewusst, wäre ich nicht hingegangen.*
well had I that known were I not gone.there
'Well, had I known that, I wouldn't have gone there.'

After the exclusion of non-target examples, the search yielded 2,859 German examples and 4,001 Swedish examples. Given that the Swedish corpus is somewhat smaller, this discrepancy in raw frequencies equals an even larger, statistically significant discrepancy in expected frequencies ($\chi^2 = 224.6$, df = 1, $p < .001$). Figure 1 presents the difference in terms of tokens per million words. The analysis thus proceeds on the working assumption that in written Swedish, verb-first conditionals have grammaticalized to a stronger degree than their German counterparts. Based on this assumption, the dialogual account predicts that Swedish verb-first conditionals display tighter clausal integration, fewer question-like features, and greater syntactic independence from the original dyadic structure. The following paragraphs present several corpus-linguistic operationalizations of these predictions and discuss the findings from synchronic corpus data.

The degree of clausal integration between protasis and apodosis of a verb-first conditional can be measured by assessing the relative frequency of linking elements between the two. In German, verb-first conditionals may occur with *so* or *dann*, the corresponding Swedish elements are *så* and *då*. Alternatively, protasis and apodosis can simply be adjoined without an overt linking element. The examples in (13) illustrate these alternatives.

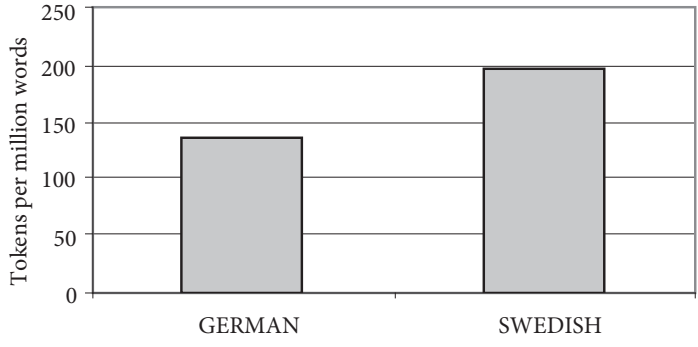

Figure 1. Frequency of verb-first conditionals in German and Swedish

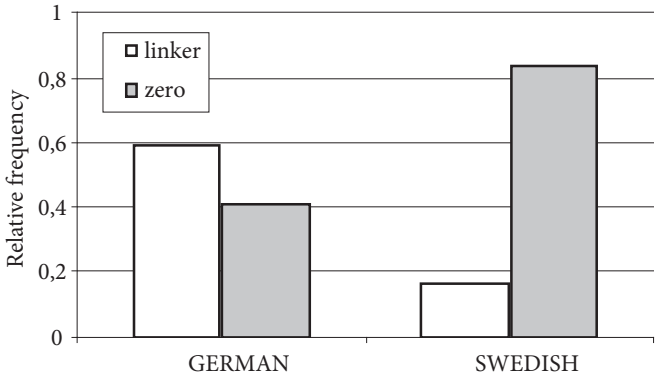

Figure 2. Relative frequency of linking elements in German and Swedish

(13) a. *Ändern sie das Testament, dann / Ø tritt eine neue Rechtslage ein.*
change they the testament then sets a new situation in
'If they change the testament, then / Ø a new legal situation obtains.'

b. *Räknar man även barnen, så / Ø blir siffran avsevärt högre.*
counts one even children then becomes number substantially higher
'If also children are counted, then / Ø that number increases substantially.'

In the data retrieved from the German and Swedish corpora, a linking element occurs in 1,690 German verb-first conditionals, but only in 650 Swedish examples ($\chi^2 = 1063.2$, df = 1, $p < .001$). Figure 2 illustrates that linkage represents the default case in German, but a fraction of less than 20% in Swedish. This finding is in line with the dialogual account, which would predict tighter clausal integration for Swedish.

Given the assumption that Swedish verb-first conditionals are more grammaticalized than their German counterparts, the dialogual account would predict that the protasis of German verb-first conditionals should retain more semantic and pragmatic properties of questions.

As a first approximation, let us consider the choice of subject pronouns. Both questions and the protases of verb-first conditionals can occur with any type of pronominal subject. Since one basic function of polar questions is to elicit information that is not introspectively available, questions with first-person singular pronouns, as in (14a) and (14b), should be relatively rare.

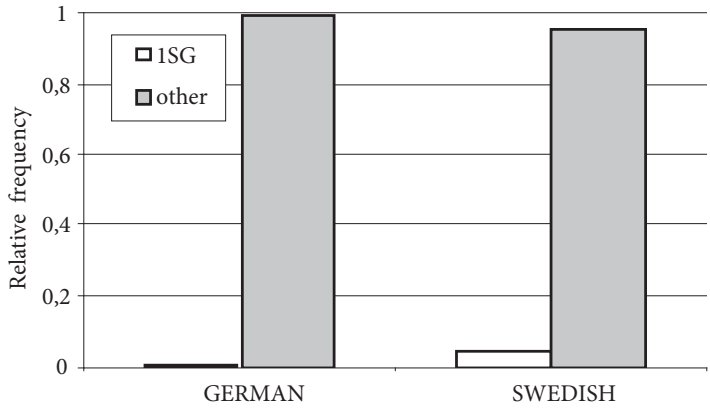

Figure 3. Relative frequency of 1SG pronouns in German and Swedish

(14) a. *Habe ich mich falsch verhalten?*
have I myself wrongly conducted
'Did I do something wrong?'

b. *Är jag så förargelseväckande?*
am I so annoying
'Am I so annoying?'

c. *Vergesse ich es zu reinigen, verstopfen die Späne den Abfluss.*
forget I it to clean clog the shavings the drain
'If I forget to clean it, the shavings will clog the drain.'

d. *Skulle jag vara utan kött en hel vecka skulle jag säkert dö.*
should I be without meat a whole week should I certainly die
'If I were to go without meat for a week, I would surely die.'

We can formulate the hypothesis that if verb-first conditionals evolved out of questions, and Swedish ones are grammaticalized to a relatively stronger degree, German verb-first conditionals will retain more of an aversion against first person singular subjects. Examples such as (14c) should therefore be relatively less frequent than examples such as (14d). The quantitative data shown in Figure 3 support this position. While there are only 10 examples with German *ich* 'I' in the database, there are 198 examples with Swedish *jag* 'I'. The relative frequency of first-person singular examples is thus very low in both languages, but the difference between the languages is significant ($\chi^2 = 118.3$, df = 1, $p < .001$).

As was already discussed above, another approach to the relative similarity of questions and verb-first conditionals above concerns the distinction of realis and irrealis mood and more specifically the relative frequency of counterfactuals. The dialogual account assumes that verb-first conditionals emerged in a scenario of real possibilities. Asking one's interlocutor about something known to be not

the case would be poor pragmatics. It can therefore be hypothesized that counterfactual verb-first conditionals represent a relatively late developmental stage, which in turn leads us to expect relatively fewer counterfactuals in the German data. In order to measure the relative frequency of counterfactuals, we can rely on the Swedish verb forms *hade* 'had' and *vore* 'were' and their respective German cognates. The examples in (15) illustrate how these forms are used to express counterfactual conditions.

(15) a. *Hätte ich das gewusst, wäre ich nicht hingegangen.*
had I that known were I not gone.there
'Had I known that, I wouldn't have gone there.'

b. *Hade de frågat mig hade jag säkert svarat ja.*
had they asked me had I surely answered yes
'If they had asked me, I surely would have said yes.'

c. *Men vore det nu jag, så sökte jag nåd hos Gud.*
but were that now I so searched I mercy with god
'But if it were me, I would be looking for God's mercy.'

d. *Wäre der Wagen nicht gepanzert gewesen, hätte es ein Unglück gegeben.*
were the car not armored been had it a disaster given
'If the car had not been armored, there would have been a disaster.'

The dialogual account predicts that such examples will account for a relatively smaller proportion of the German data, as compared to the Swedish data. Figure 4 shows that this prediction is borne out. There are 116 German counterfactual examples as opposed to 445 Swedish counterfactuals ($\chi^2 = 109.1$, df = 1, $p < .001$).

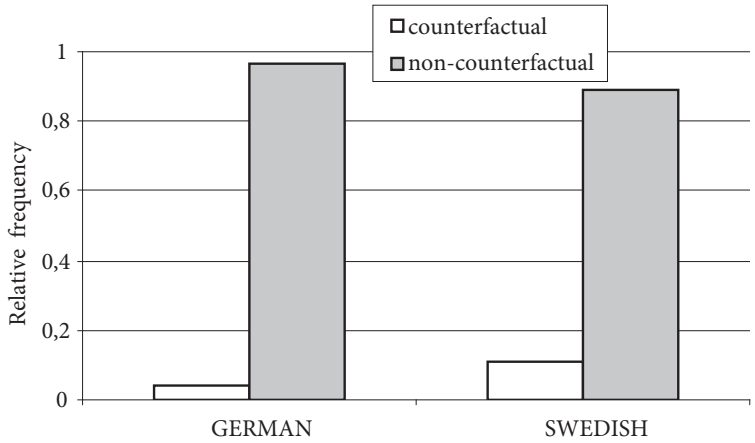

Figure 4. Relative frequency of counterfactuals in German and Swedish

As a third assessment of the relative similarity of questions and verb-first conditionals, we now turn to collocational overlap. This step is motivated by the reasoning that if verb-first conditionals develop in such a way that they become less and less question-like over time, then German verb-first conditionals and polar questions should occur with a roughly similar set of verbs, while Swedish verb-first conditionals and polar questions should show less collocational overlap. Again, this measure turns to the inflected verb of the conditional protasis. The examples in (16) show that the same verb may occur both in a question and a conditional.

(16) a. *Gibt es keine Suppe mehr?*
gives it no soup anymore
'Is there no soup left?'
b. *Gibt es keine Suppe mehr, essen wir eben belegte Brote.*
gives it no soup anymore eat we just sandwiches
'If there is no soup left, we'll just have sandwiches.'

There are different ways to measure collocational overlap. For the present purposes, both the German and the Swedish corpora were searched for polar questions, which are of course much more frequent than verb-first conditionals. An exhaustive collocational analysis of polar question was therefore not attempted. Instead, random samples of 1,000 questions were generated from the results, and these were subsequently compared to random samples of 1,000 verb-first conditionals from German and Swedish. Collocational overlap was measured by counting the raw frequencies of matches. To illustrate, the German sample of questions included 23 examples with the verb form *gibt* 'gives'. The corresponding sample of verb-first conditionals holds seven examples with *gibt*. This results in a count of seven matches. Counts are tallied for all matching forms. The results of these counts stand in contradiction to the prediction of the dialogual account. Swedish verb-first conditionals actually show greater collocational overlap with polar questions than their German counterparts. Whereas there are 414 matching examples for Swedish, there are only 368 for German. The proportional difference is not significant ($\chi^2 = 2.59$, df = 1, n.s.). This particular measure of collocational overlap does therefore not distinguish between the two accounts.

The last measure to be discussed here concerns the relative positions of protasis and apodosis in verb-first conditionals. In German and English, the protasis may appear postposed, as an afterthought to the apodosis. Alternatively, it may be parenthetically inserted into the apodosis.

(17) a. *Ich bin im Büro, solltest du mich brauchen.*
I am in.the office should you me need
'I'm in the office, if you should need me.'

b. *Er wird, sollte es nötig sein, eine zweite Chance erhalten.*
he will should it necessary be a second chance receive
'If it will become necessary, he will get a second chance.'

c. *Nurse, I shall leave instructions for Anna's treatment, should it be necessary.*

d. *She would, were it to be successful, be more in need of his favours than Harvey's.*

If we assume a dyadic structure as the ultimate source of verb-first conditionals, the examples in (17) require some explanation, since they violate the normal sequence of question and answer. On the dialogual account, it would have to be reasoned that these examples represent a late developmental stage in which verb-first conditionals have become completely emancipated from their erstwhile source. Displaced protases should only become an option with an advanced degree of grammaticalization, after which they may gradually increase in frequency. With regard to the contrast of German and Swedish, the dialogual account predicts that displaced protases are relatively more frequent in Swedish.

In order to test this prediction, the corpora were searched for German *sollte/sollten* 'should' and its Swedish cognate *skulle*, each preceded by a comma. The resulting concordances were inspected manually to identify postposed and parenthetically inserted protases. The inspection reveals that the prediction of the dialogual account is not borne out. In the German data, there are 40 displaced protases with *sollte* and *sollten*; in the Swedish data there are none at all. This is consistent with the standard reference grammar of Swedish (Teleman et al. 1999: 647), which describes the initial position of the protasis as near-obligatory. Still, postposed protases are not altogether ungrammatical, as the following examples suggest.

(18) a. *Jag gör det gärna, får jag bara tid.* (Henrik Rosenkvist, p.c.)
I do that gladly get I only time
'I'll do that gladly, if I can find the time.'

b. *Vi har mer mandelmassa, skulle det behövas.* (internet forum)
we have more almond paste should it be.needed
'There is more almond paste, should we need it.'

c. *Det klarar han inte, håller han så på i tio år.*
that manages he not keeps he so on for ten years
'He won't manage, if he keeps going like that for ten years.'
(Teleman et al. 1999: 467)

Example (18b) is gathered from an internet forum in which the grammaticality of the sentence is debated in a folk-linguistic way. The author of the example discusses a situation in which she uttered the example at the kitchen table, only to be criticized by her father for using what he perceived as normatively incorrect grammar. While this reaction lends support to the observations of Teleman et al., showing that some speakers of Swedish do not consider the sentence to be part of their grammar, the three examples evidence that this pattern does surface in usage from time to time. At any rate, the low frequency of displaced protases in Swedish verb-first conditionals runs counter to predictions of the dialogual account and hence does not corroborate it.

4. Conclusions

In the introduction of this paper, it was asked whether synchronic gradience could tell us anything about the reanalysis of one grammatical structure as a different one. In view of the analyses presented in the previous section, the short answer to that would be a tentative yes. If there are conflicting accounts of how a given process of reanalysis happened, we can turn towards gradience in present-day corpus data and investigate whether the predictions of these accounts are consistent with quantitative tendencies that we observe.

In the ideal case, the results of different measures will harmonically align and thus distinguish reliably between the alternative scenarios. Many corpus linguists will agree that this rarely happens in practice. Messy data are the rule, rather than the exception. In the present study, six measures were applied to the cross-linguistic analysis of verb-first conditionals: besides the text frequency of the constructions these measures probed the relative frequency of linking elements, first-person singular subject pronouns, and counterfactuals, the relative degree of collocational overlap, and the presence of displaced protases. Out of these six, the first four align in a way that is consistent with the classic dialogual account of verb-first conditionals. Higher text frequency points towards a relatively higher degree of grammaticalization of the Swedish construction, fewer linking elements, more first-person subjects, and more counterfactuals corroborate this assumption. In combination with the diachronic evidence that is available (Van den Nest Forthcoming), this means that the dialogual account is actually doing quite well – several strong predictions turn out to be correct. That said, greater collocational overlap with questions and the complete absence of displaced protases in Swedish remain in need of an adequate explanation. Also, these findings do not falsify the analogy account by Harris and Campbell (1995), much less the alternative account of two juxtaposed declarative clauses (Van den Nest Forthcoming).

What an analysis of synchronic gradience primarily provides is an assessment of relative plausibility, given two alternatives. In addition, the results reported in this paper challenge alternative analyses of the same topic to provide explanations why we see this particular constellation of structures and frequencies.

Another remaining question with regard to verb-first conditionals is the question of genre and modality differences. Verb-first conditionals remain a widely applicable construction in written and spoken Swedish (Auer and Lindström 2008), whereas in German the construction tends to occur in formal written contexts of stating regularities or law-like procedures, as illustrated in (19) below.

(19) *Ist ein Betrieb zahlungsunfähig, stehen drei Möglichkeiten*
is a company bankrupt stand three options
zur Verfügung.
at disposal
'If a company is bankrupt, then there are three options.'

Genre-dependency would account for the higher frequency of displaced protases in German, since this phenomenon is quite rare except in the genre of elevated journalese, which permits the use of markedly complex structures more freely than other genres do.

Another important question concerns the issue how English fits into the overall picture. Whereas verb-first conditionals are productive in Swedish and German, the English construction is restricted to *had*, *should*, and *were*. Do the three languages represent different developmental stages of similar processes, or are we in fact looking at different phenomena?

On a more general level, the results of this study suggest that the process of reanalysis is gradual; a reanalyzed structure retains aspects of its original source, and it does so for considerable time. This means that synchronic, cross-linguistic comparisons of cognate constructions can be used to evaluate theories about the development of these constructions. Given a proposed development from A to B, it can be investigated whether a construction in modern usage of one language is, in several respects, closer to the hypothesized source than a corresponding construction in another language. One lesson to be learned from the present study is that constructions may not behave uniformly across the chosen measures. Still, quantitative information from modern corpora is useful, as it can provide fine-grained comparisons of constructions which can ultimately be used to decide between theories.

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A paradigmatic approach to language and language change

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The present contribution develops responses to the papers of Rosenbach, Hilpert, and Traugott and Trousdale found in this volume, with focus on the following topics: synchronic gradience and gradual language change, reanalysis and analogy, both especially with respect to the grammaticalization of constructions. The paper provides additional data concerning the emergence and reorganisation of paradigmatically organised constructions – mainly from modern Danish and French. Constructions have been defined as symbolic combinations of a syntactic element and a semantic component. If expanded too far, the term 'construction' loses its explanatory power, but it is useful to distinguish between the level of the individual lexical verb and the level of grammar. The term 'construction' will be employed here only in the latter sense.

1. Introduction[1]

The central aim of the present contribution is to develop a response to the papers of Rosenbach, Hilpert, and Traugott and Trousdale found in this volume. Initially, focus will be on synchronic gradience and gradual language change (Section 2), following which emphasis will be on re-analysis and analogy (Section 3), both especially with respect to grammaticalization of *constructions*. I will discuss these questions in this order and provide additional data concerning the emergence and reorganisation of paradigmatically organised constructions – mainly from modern Danish and French. The relationship between constructional paradigms will be touched on in Section 4.

1. I want to thank the editors of this volume for interesting comments on previous versions of this paper. The conception of *constructions* and of the paradigmatic organisation of grammar presented here is developped in close collaboration with Heltoft and Nørgård-Sørensen, see Heltoft, Nørgård-Sørensen and Schøsler (Forthcoming). The terminology of this paper is that of the Danish Functional Grammar, see Engberg-Pedersen et al. (1996).

Constructions have been defined as symbolic combinations of a syntactic element and a semantic component, organised in grammar in a taxonomic hierarchy. Put differently: "… a construction is any linguistic expression, no matter how concrete or abstract, that is directly associated with a particular meaning or function, and whose form or meaning cannot be compositionally derived" (Stefanowitsch and Gries 2003: 212; see also Goldberg 1995 and Croft 2001: 60). Construction Grammar (CG) considers morphemes, words, idioms and grammatical categories to be *constructions*. However, it is my opinion that it is not useful to extend the term *construction* to simple or complex words (labelled *atomic* and *complex constructions* respectively, Croft and Cruse 2004: 255). If expanded too far, the term *construction* will lose its explanatory power. On the other hand, it is certainly useful to distinguish between the level of the individual lexical verb (labelled *substantive constructions* by Croft and Cruse) and the level of grammar, corresponding to the level of sentences in CG. The term *construction* will be employed here only in the latter sense.

2. Synchronic gradience and gradual language change

The papers of this volume referred to above provide convincing theoretical and empirical evidence against Aarts's claim that synchronic gradience should be described solely in terms of morphosyntactic distribution and that intersective gradience between categories is exceptional. They argue in favour of including semantic factors in understanding gradience. One can only agree with these positions, however it could be useful to introduce another aspect into the discussion, namely the relevance of a paradigmatic approach to grammar and language change. This will be attempted in this paper.

Rosenbach (this volume) examines constructions with determiner genitives, see (1a) and noun modifiers, see (1b):

(1) a. *the woman's blue eyes*
b. *an expensive theatre ticket*

The semantic function of the genitive construction is *determination / identification*, the semantic function of the noun modifier construction is *classification*. The author analyses the semantic features of each construction, prototypical and non-prototypical cases, and shows the increase of use over time of non-prototypical cases like the ones quoted below (corresponding to Rosenbach examples (6a–b) and (7a–b)), which apparently are equivalent and fulfil both functions (determination / identification and classification):

(2) a. *the cheerful Obama supporters*
b. *the new Weaver cars*

(3) a. *Obama's cheerful supporters*
b. *the Weavers' new cars*

The point of interest here, is that Rosenbach shows how gradience "in present-day English came about by the gradual semantic extension of noun modifiers along the animacy scale" (p. 171), resulting in examples such as (2a–b).

This is a very clear example of intersective gradience (between categories). It illustrates the importance of semantics and function in gradience, but also the usefulness of a diachronic corpus perspective. To this it must be added that this is also a clear example of paradigmatisation of a construction. At the outset, the opposition between (1a) and (1b) is a straightforward case of complementary distribution, each construction having its specific set of features, (1a): animacy, referentiality, determination / identification and (1b): non-animacy, non-referentiality, classification. They only shared the feature restrictiveness, which probably provided the bridge between the two constructions. As far as can be determined here, present-day English tends to establish a new, different, paradigmatic opposition between forgrounded determination / identification (*Obama's supporters*) and backgrounded determination / identification (*the Obama supporters*). Change of expression (±genitive) implies change of content (forgrounded / backgrounded), the other features being stable. If this interpretation is correct, this opposition – in terms of a paradigm – provides a better understanding of the synchronic variation, which again reveals the emergence of a new paradigm. Paradigms are, in this sense, a way of describing the structure of grammar. Thus, grammar is organised in closed sets of alternations of forms (here ±genitive) expressing the semantic opposition of a category (here determination and salience) and the traditional concept of an inflexional paradigm should be generalised as a structuring principle also of constructional systems.[2] Paradigms must be understood as packages of content and expression. Language change can be described in terms of modifications of paradigmatic oppositions. I therefore accept the label gradience, as proposed by Traugott and Trousdale, to describe the synchronic variation, whereas gradualness is the study of the small steps leading from one stage, i.e. from one paradigmatic structure to the following one.

2. It should be clear that the extension of the concept *paradigm* to constructions as proposed here implies that some of Lehmann's parameters of grammaticalization (e.g. obligatorification and paradigmatic cohesion, Lehmann 1995), are relevant for my approach.

In addition to Rosenbach's examples, I will provide a short illustration of changes in paradigmatically organised constructions based on French data. I will return to this case in Section 3 concerning the "how" of change. My illustration concerns the formation of the two-argument experiencer-constructions in French, e.g. *le chocolat me plaît* (DET-MASC-SG chocolate-MASC-SG me-DAT-SG please-PST-3-SG), 'chocolate pleases me' and *il me plairait de partir* (DUMMY SUBJ me-DAT-SG please-COND-3-SG INF-MARKER leave-INF) 'I would like to leave'. This case is also intended to demonstrate the usefulness of *constructions* in my use of the term.[3]

The two-argument experiencer-constructions in French constitute a continuation and a specialisation of classical Latin tendencies found e.g. with verbs such as *contingo*. There is a personal construction with *contingo*, meaning 'I meet', 'I oppose', and a mainly impersonal construction, *contingit*, meaning 'it happens'. The personal construction has a first argument (A1) which refers to an entity with the feature +concrete. It has a second argument (A2) referring to an entity with the features ±human, in the dative or in the accusative case (Acc/Dat). The dative is used with a locative meaning, the accusative has both an allative and a locative meaning, labelled *patient* in Figure 1; see examples (4a–b), both from Caesar, both indicating closeness of location of A1 and A2. The mainly impersonal construction differs from the personal one in three respects: it is found only in the 3rd person sg., A1 is impersonal, represented for example by an infinitive construction or an expression of occurrences happening (labelled –concrete, +predicational (Pred) in Figure 1), and A2, exclusively in the dative, indicates the person concerned or *experiencer*; see (4c–d).

(4) a. *ut radices montis ex*
so feet-NOM-FEM-PL mountain-GEN-MASC-SG from
utraque parte ripae fluminis
both-ABL-FEM-SG side-bank-DAT-FEM-SG river-GEN-NEUT-SG
contingant (*Caesar* BG 1,38)
reach-PST-SUBJ-3-PL
'so that the feet of the mountain are adjacent to the riverbank from both sides'

b. *Helvi, qui fines*
Helvi-NOM-MASC-PL who-NOM-MASC-PL border-ACC-MASC-PL
Arvernorum contingunt (*Caesar* BG 7,7)
Arverni-GEN-MASC-PL reach-PST-3-PL
'The Helvi, who border upon to the territory of the Arverni'

3. The presentation of the two-argument experiencer-construction draws upon Schøsler (2007) and (2008).

c. *non cuivis homini contingit*
not anyone-DAT-MASC-SG man-DAT-MASC-SG happen-PRS-3-SG
adire Corinthum (*Horace Ep*. 1,17,36)
go-INF Corinth-ACC-MASC-SG
'It does not happen to just anyone that they can go to Corinth'

d. *quod isti contigit*
which NOM-NEUT-SG him-DAT-MASC-SG happen-PST-3-SG
uni (Cicero, *de Or.*2,56,228)
alone-DAT-MASC-SG
'Which happened to him alone'

The point here is that the interpretation of the dative as an experiencer results from its being part of a two-argument construction and the construction is part of a complex paradigmatic opposition. The paradigm of the two-argument constructions illustrated by *contingo* is presented in Figure 1. We must specify the *domain* of the paradigm, i.e., the set of forms involved. Here, the domain of the paradigm is constituted by the two argument pattern: a verb (V), and the first and second arguments (A1 and A2). The paradigm has a semantic *frame* within which the content of the specific members of the paradigm is defined. Here, the frame of the paradigm can be identified in broad terms as the relation between A1 and A2. The choice between the members of the paradigm is obligatory in the sense that speakers cannot avoid picking one or the other when they produce an utterance activating the domain and thus the frame of the paradigm. This choice may be free or bound, but will ultimately be determined by the content of the forms constituting the paradigm. The choice between the two forms is determined by what the speaker intends to express concerning the relation between A1 and A2.

In classical Latin, the dative was widely used in a number of different case roles: experiencer, recipient, patient, etc. From Latin to modern French we witness a number of changes in the function of the dative for the case roles *experiencer* and *recipient*.[4] These changes can be described as instances of re-paradigmatisation, resulting in the grammaticalization of the two-argument dative construction with Modern French psych-verbs. Below, the default direct object construction with an accusative A2 is illustrated by the Modern French verbs *chanter* 'sing' and *prendre* 'take' (5a–b). In Old and Middle French, the divalent A2 pattern was not yet grammaticalized, since no precise difference of content could be ascribed

4. The recipient role is going to become the default case role of the dative form as third argument (A3), typically in *give*-constructions. Due to lack of space I cannot include the function of the dative of three-argument constructions here.

Domain: V A1 A2 Frame: the relation between A1 and A2					
±personal	**example**	**expression of A1**	**content of A1**	**expression of A2**	**content of A2**
personal	(4a–b)	NP + Nom	±Hum	NP + Acc / Dat	±Hum Patient
impersonal	(4c–d)	INF / Neut Prn / abstract NP	non-Concrete + Pred	NP + Dat	+Hum Experiencer

Figure 1. Paradigm of the two-argument constructions illustrated by *contingo* (Latin), examples (4a–d)

to the choice between the dative and the accusative form[5] of A2 with verbs expressing the notion of 'help' such as *aider, assister, endoctriner, servir,* and *secourir*. Indeed, with these verbs, both an accusative and a dative A2 take the case role *patient*. But with a specific series of verbs, i.e. psych-verbs, we witness the grammaticalization of the dative A2 in the role of experiencer in the two-argument impersonal pattern. In Modern French, the two-argument dative construction of psych-verbs is represented in a relatively transparent paradigm, opposed to the default two-argument construction with A2 in the accusative form,[6] see Figure 2. As suggested by Elizabeth Traugott in her comment to an earlier version of this paper, Figures 1 and 2 should be considered as the beginning and the end-points of (macro-) changes. As in Latin, we find a personal and an impersonal construction, with a number of verbs instantiating both. The expression and the content of A1 show the opposition between a personal and a sentential argument represented by a neutral pronoun, most frequently the dummy *il*. The differences from the previous periods are that the dative A2 has become restricted to the case-role of the *experiencer*, and that new verbs adopt this paradigm, which shows its productivity. I will illustrate the experiencer construction in Modern French with the verb *plaire* 'to please'. This verb is found both in the personal (5c) and in the impersonal (5d) construction.

5. After the Middle French period, the case forms *dative* and *accusative* are only found in the personal pronouns. Nouns no longer display case in Modern French. In the following, the term *dative* is short for the dative form of the personal pronoun and a corresponding A + PP, and the term *accusative* is short for the accusative form of the personal pronoun and a corresponding NP.

6. This way of presenting things implies that in the default pattern A2 of the personal pronoun in the case role *patient* takes the accusative form.

Domain: V A1 A2
Frame: the relation between A1 and A2

±personal	example	expression of A1	content of A1	expression of A2	content of A2
personal	(5a–b)	NP	±Hum Agent	direct object Pron + Acc	±Hum Patient
personal	(5c)	NP	±Human	Pron + Dat / A + PP	+Hum Experiencer
impersonal	(5d)	INF / Neut Pron / abstract NP	non-Concrete, + Pred		

Figure 2. Paradigm of the two-argument constructions in Modern French, illustrated by the verbs *chanter* 'to sing', *prendre* 'to take', examples (5a–b), and by *plaire* 'to please', examples (5c–d)

(5) a. *Luc chante la chanson* (ACC-FEM-SG)
'Luc sings the song'
b. *Luc prend le livre* (ACC-MASC-SG)
'Luc takes the book'
c. *Luc / le chocolat / la musique classique plaît à Marie* (A + PP = DATIVE)
'Luc / chocolate / classical music pleases Mary'
d. *Faites ce qu'il lui plaira* (DAT-MASC-SG)
'Do what pleases him'

A series of verbs instantiate both the personal and the impersonal experiencer-constructions; for example verbs meaning that the subject is or is not suitable for the experiencer, such as *agréer, aller, convenir, profiter, servir, suffire; déplaire, nuire, peser, répugner*, i.e. synonyms or antonyms of *plaire*; verbs meaning that something happens to somebody: *advenir, apparaître, arriver, échapper, parvenir, revenir, survenir*; verbs indicating belonging or lacking, such as *falloir, manquer, importer, incomber, appartenir*. Other verbs show only the personal construction; e.g. moral predicates: (*dés*)*obéir, être fidèle, loyal*; verbs of intransitive communication: *mentir, sourire*; new verbs: *téléphoner, causer* ('to talk'); verbs meaning equivalence: *ressembler, succéder*, and *survivre*. In both standard and advanced French,[7] new verbs have joined this construction, especially two types expressing that something is happening to an experiencer: (a) verbs (frequently verbs of movement) + a particle representing an activity most often to the harm of A2, *il lui court après* 'he is following her', *ils lui tirent dessus* 'they are shooting at him', *l'evidence lui est tombée dessus* 'he was struck by the evidence', and (b) expressions meaning that A1 is suitable for or appreciated by A2: *ça* (*lui*)

7. Advanced French is non-standard Modern French. Examples of experiencer constructions in advanced French are mentioned in Krötsch and Oesterreicher (2002: 118).

parle, (*lui*) *chante,* (*lui*) *prend,* (*lui*) *dit*, *chanter* taking the meaning of *plaire*, and *prendre* that of *arriver* 'to happen'. Interestingly, verbs are found both in the experiencer-construction and in the default direct object construction, with a clear difference of meaning, just as *contingere* in classical Latin (see Figure 1). Examples are e.g.: *chanter* and *prendre*, see accusative A2 = *patient* in (5a–b) and dative A2 = *experiencer* in (6a–b):

(6) a. *cela lui chante*
'this pleases him'
b. *qu'est-ce qui lui prend ?*
'what comes over him'

Let me sum up: the development of the French divalent dative pattern has been presented here to show the emergence and grammaticalization of the two-argument dative construction that corresponds to one of several constructions illustrated by *contingit* in classical Latin (see (4a–d)). From the outset the divalent dative pattern was not linked to a specific content. During the 16th and the 17th centuries the pattern was instantiated by a number of verbs sharing more or less comparable features, representing not any type of relation between two entities but more specifically the relation between an A1 referring to an entity with the features ±human having an impact on an experiencer (i.e. psych-verbs). After a series of paradigmatic reorganisations, i.e. of micro-changes, a specialised construction emerged, presented in Figure 2. These reorganisations can be identified by means of successive synchronic corpus analyses. This is another illustration of 'intersective gradience' and the importance of semantic factors in the study of gradience (cf. Rosenbach, this volume). As stated above, the dative form of the A2 of a number of divalent verbs in Old and Middle French was linked to two case roles: *patient* and *experiencer*. Moreover, in Middle and Renaissance French, a few verbs, e.g. trivalent verbs of communication, are still found with a choice between the accusative and the dative form expressing the addressee (*recipient*), without any difference, as far as we can tell: see examples (7a–b), showing the intersection of the following categories: argument type: A2 / A3, morphological form: accusative or dative, and case roles: *patient*, *experiencer*, *addressee* or *recipient*.

(7) a. *Oliuier requist* *au* *roy*
Olivier ask-PST-3-SG to-DET-ACC-MASC-SG king-DET-ACC-MASC-SG
dangliterre *qui* [=qu'il] *luy* *baillast* *gens*
of England that he him-DAT-MASC-SG give-PST-SUBJ-3-SG men
'Olivier asked the King of England to provide him with men'

b. *Elle la pria tresinstamment de demeurer*
she her-ACC-FEM-SG ask-PST-3-SG insistently to stay
en la court
at DET-FEM-SG Court
'she implored her to stay at Court'

I have proposed here that what might look like individual, verbal polysemy should be analysed as paradigmatically organised oppositions. The examples (7a–b)[8] illustrate a stage of indetermination preceding the stabilisation of the oppositions into the paradigm of Figure 2. This stabilisation, i.e. grammaticalization of the construction, is the present end-point of the changes studied so far. It corresponds to the grammaticalization type *b* in the classification proposed by Vincent and Börjars (this volume, Section 4), i.e. constructions involving slots and categories. I will come back to the experiencer construction in French and to a number of interesting consequences of the reorganisation of this construction at the end of Section 3.

3. Reanalysis and analogy

In this section, I will draw upon analyses presented in Rosenbach's paper in order to discuss the notions *reanalysis* and *analogy*. Rosenbach briefly discusses the important questions of the 'how' and in more detail the 'why' of the changes she describes.[9] Rosenbach links the question of 'how' the change came about, to the question of the new construction being a case of reanalysis or a case of analogy, without taking a clear position. Let me at this point briefly consider language change in more general terms and specify a perspective upon a number of fundamental concepts. That language change is a complex event has been emphasised by Andersen (2008: 32):

> The normal course of events through which a new expression originates, gains currency, and becomes established as part of a tradition of speaking is the

8. Examples (7a–b) from 15th–16th century French are discussed in Lüdi (1978: 161, 164) who fails to find a difference of meaning corresponding to the difference of form.

9. The 'why'-question should of course be linked to the additional question: 'why at this specific moment'? I do not have enough space here to discuss this very important, but difficult, issue, but I believe that Rosenbach's diachronic corpus investigation clearly shows that the increasing use of noun modifiers and in particular the emergence of the construction in (2a–b) is linked to an information-compressing style ('economization'). This style is found in the genres of news and medical prose. As I understand it, the increase of examples thus corresponds to the period of the increase of journalistic genres.

> following: one or more speakers (i) make a (primary) innovation and (ii) actualize it in usage; other speakers (iii) adopt the new expression and (iv) actualize it in their usage; if the new expression is used widely and long enough, new cohorts of speakers (v) will acquire it as an integral part of their competence, and (vi) actualize it in their usage; the new expression becomes generalized in the community through repeated cycles of (iii)–(vi). One can speak of such series of overlapping kinds of innovation as a 'change scenario' and of the constituent innovation types (i)–(vi) as 'subchanges'.

The quotation makes clear that innovations must be made by individual speakers. This is so because language structure is part of the individual speaker's competence. Andersen lists four basic types of innovation: neologism, extension, adoption and reanalysis. *Reanalysis* (Andersen 2008: 32) is a change in language structure, for instance in grammar, by abduction (Andersen 1973). Reanalyses are involved in the subchanges (i), (iii) and (v) in the quotation above, i.e. the events in which the grammar of one or more speakers undergoes a structural innovation. Only as consequences of such a series of reanalyses can the grammar of the language as such, i.e. as a collective phenomenon, be said to have undergone a change. A reanalysis is followed by actualisation. As stated in the quotation, the sub-changes (ii), (iv) and (vi), i.e. all sub-changes following directly after reanalyses, are actualisations. An actualisation process is a spread in usage by a reanalysed expression element, or by a set of structurally related elements. In order to grasp a presumed reanalysis of an item, one must analyse the grammatical system before and after the reanalysis (i.e. the starting and the end point of the (macro-) change) in order to reveal the paradigmatic relations the item in question enters at each of the two stages. This is what Rosenbach has done: her analysis of the semantic features of the constructions shows that this is a case of reanalysis linked to changes in the information structure. If my interpretation of her findings in terms of the emergence of a paradigm based on the opposition forgrounded / backgrounded information is correct, then we here have a reanalysis, which takes place first at the semantic level, without any clear model. Afterwards, we understand that a reanalysis has taken place, because we find a different distribution of forms, in Rosenbach's case: the emergence and spread of the type illustrated in (2a–b). Put differently: this is not just an analogical change.

In the following, I will focus on the possible role of analogy in constructional changes. I will first turn to a few cases concerning the integration of newly coined verbs that will provide us with relatively simple examples, before I return to more complex processes of reanalysis and, possibly, analogy, in relation to the two-argument constructions discussed above.

The introduction of new verbs is, of course, language change, and my point here is that what might appear as simple lexical analogical processes should, however, be analysed differently. Let us consider the new Danish verb *brainstorme*, in American English: 'to have a brainstorm'.[10] This verb does not have a clear Danish model of the construction and speakers test different constructions by means of different prepositions (8a-b), very frequently the preposition *på* 'at' (8a). The following examples are all found on google.dk.

(8) a. *vi brainstormer på egne og andres ideer*
we b. on our own and others' ideas
'we are having a brainstorm on our own and others' ideas'
b. *vi forsøgte at brainstorme over emnet*
we tried to b. upon the topic
'we tried to have a brainstorm concerning the topic'

The direct object construction is found, too, although less frequently (8c):

c. *lederen beder deltagerne om at "brainstorme" et emne*
the chairman asks the participants about to b. a topic
'the chairman asks the participants to have a brainstorm on a topic'

What is interesting here is that this new Danish coinage is integrated into an existing system of paradigmatic oppositions between a prepositional construction denoting an atelic activity with no denotation of a result achieved (8a), and a direct object construction denoting an action leading to a specific goal. In the case of (8c) the direct object construction denotes a complete action including an accomplished state of result. We find this opposition with a standard Danish verb like *skyde*, 'to shoot', see (9a–b):

(9) a. *Peter skød Frederik*
'Peter shot Frederick'
b. *Peter skød på Frederik*
'Peter shot at Frederick'

Many Danish verbs are construed in these two ways: they can follow a simple transitive pattern with a direct object (9a) or a prepositional pattern with the preposition *på* 'at', (9b). The difference between these constructions can be described in terms of telicity, as the direct construction denotes an action and the

10. According to Graeme Trousdale (p.c.) there is constructional variation between American and British English concerning the possible use of the verb *to brainstorm*. This urges me to underline that my paper does not include diasystematic variation, i.e. variation linked to a difference of register, style or medium. In (8a–c) this verb is abbreviated as *b.* in the translations.

Domain: V A2 Frame: Telicity	
expression	**content**
Ø + NP	telic
prep + NP	atelic

Figure 3. The paradigmatic structure of telicity illustrated by (9a–b)

prepositional construction an activity. Actions are activities leading to completion, i.e. to a new state. Atelic constructions simply denote an activity and are neutral with respect to the question of completion. Thus, the atelic construction (9b) denotes an activity without including a result of this activity.

The use of the preposition *på* 'at' in (9b), must have originated in the local use of the preposition and only with verbs matching the local sense of the preposition. Later, this use extended to other verbs, as the preposition was reanalysed and acquired a more abstract meaning. Here, just as in the case studied by Rosenbach, we see grammaticalization, not of the individual parts, e.g. of the preposition alone, but of the entire construction, which is reanalysed as a member of a paradigmatic opposition ((9a) vs. (9b), see Figure 3).

When we see newly coined verbs adopting existing constructional patterns, is this a result of analogy? If analogy is interpreted in its traditional, narrow, sense as form matching without change of content, these are definitely not cases of analogy. If we accept a broader interpretation, as proposed by Elizabeth Traugott (p.c.),[11] we might describe examples like (8a–c) as analogical mappings of expression and content to existing constructions.

Let me now turn from Danish to the construction possibilities of newly coined verbs of electronic communication in English and French, which can be interpreted in a similar way. These verbs display both old and new construction patterns, and the construction possibilities in English and French cannot be explained as cases of simple lexical analogy with the traditional use of English or French verbs of communication, which do not present these construction possibilities, nor can the French constructions be explained as cases of analogy with English models, because there is no direct match. My interpretation of this synchronic variation is that these are cases of integration of the verbs into different construction paradigms. In each case the lexical meaning of the verb takes a specific colouring from the construction, as we saw in the case of *brainstorme*. Thus, in English, *to skype*

11. See also the paper by Traugott and Trousdale (this volume, Section 4), and Hopper and Traugott (2003: Sections 3.6–3.7).

with, see (10a),[12] instead of the expected construction *to skype to*, and, in French *skyper avec*, instead of *skyper à* (10b), underlines that this is conceived as a shared activity and that accordingly a construction expressing shared activities is chosen, i.e. the one found with e.g. *to cooperate with, travailler avec*:

(10) a. *I Skyped with James last night*
b. *j'ai skypé avec mes petits chéris à Paris*
'I skyped with my little darlings in Paris'

If another construction is chosen, the verbs take a different coloration, e.g. the direct object-construction in (10c–d), turning the verb into the synonym of the verb *contacter*, 'get in touch with':

c. *Bonjour, je pars à l'étranger et je souhaiterai msné et skypé ma copine en france*
'Hello, I am going abroad and I would like to msn and to skype my girl friend in France'
d. *j'ai mailé Thomas pour qui'il réduise « l'agressivité » du deep,*
'I mailed Thomas so that he reduces the aggressiveness of the deep'

The conclusion to be drawn from examples (8)–(10) is that new verbs are integrated into the construction possibilities of grammar: my claim is that no verb can exist in a language without being integrated into at least one of the possible constructions of that language, just like any new adjective or noun will be integrated into the nominal system, i.e. into the paradigmatic structure of the language, in other words: we have *obligatorification* of constructions.[13] The case of the new Danish verb *brainstorme* is different from the verbs of electronic communication, as there is no other verb that offers itself as a lexical model. But clearly, simple analogy to a lexical model is not what matters here; this is a question of integrating a new item into grammatical structures. This is why this case is relevant for a discussion of grammaticalization and construction grammar; this is not just a trivial extension of the lexicon. In the case of *brainstorme*, the choice between the two constructional possibilities implies that the abstract content of

12. The examples in (10) – including their original typos – are found on the www. They are quoted from a paper presented by the CONTAGRAM research team at 'Verb Typologies revisited: A Cross-Linguistic Reflection on Verbs and Verb Classes', Ghent, 5th–7th February 2009.

13. The obligatory integration into paradigmatically organised constructions meets some of the the critical remarks concerning grammaticalization of Janda, for example (2001: 270) that grammaticalization "may involve certain typical "path(way)s", but the latter seem to be built out of separate stepping-stones which can often be seen in isolation and whose individual outlines are always distinctly recognizable".

that construction (±telicity) is "added" to the lexical semantics of the particular verb, see Figure 3. Similar paradigms could be established for the verbs quoted in (10). If we accept the "broad" interpretation of the term analogy, both (8) and (10) provide examples of analogical mappings of expression and content to existing constructions. This suggests that constructions are primitives and lexical categories epiphenomenal.[14]

These modern, ongoing, changes may help us better understand the process of change when verbs like *aider*, 'to help', are transferred from the divalent dative construction to the direct object construction and, conversely, when verbs like *chanter* and *prendre* are used not only in the default direct object construction, see (5a–b), but also in the divalent dative construction as shown in Section 2, see (6a–b). Let us first consider the verbs meaning 'to help'. From the very first texts and during the middle ages, such verbs mainly governed the dative, and the case role of this dative is best labelled *patient*. From the 17th century we find the accusative form instead of the dative form with these verbs, and from the 19th century the accusative is generalised in standard French. The spread of the accusative form instead of the dative follows an implicational, referential hierarchy implying that the accusative is first introduced with pronouns before nouns, with nouns referring to individual definite humans [+def, +propr, +pers, +hum] and only later to non-individual non-human indefinite entities [–def, –propr, –pers, –hum; +anim, +discr, +concr].[15] Thus, this actualisation process confirms the assumption that changes are always manifested in synchronic variation (i.e. in gradience). Moreover, it is a case of synchronic gradience intersecting with the reconfiguration of a construction.

The data suggest that important reanalyses took place during the period from Latin to Old and Middle French in a series of three steps: firstly, the dative A2 was reanalysed as *experiencer* in the divalent pattern of psych-verbs; secondly, the accusative A2 was generalised as the default two-argument construction. Thirdly *aider* and its synonyms, as well as other verbs that did not really fit into the two-argument dative pattern, were reanalysed as belonging to the default direct object pattern because their A2 had the form, but not the content (i.e. they did not have the case role *experiencer*) of the divalent dative construction. Now, let us consider the case of *prendre*, 'to take'. The verb *prendre* normally follows the default direct object construction, illustrated in (5b). But the divalent dative construction is productive in the sense that the divalent dative construction is possible even for

14. I want to thank Graeme Trousdale for having raised this question in his comments to an earlier version of this paper.

15. Compare the semantic extension of noun modifiers along the animacy scale shown by Rosenbach as referred to in Section 2 above.

verbs like *prendre*. The result is that such an A2, in the dative form, is reanalysed as an *experiencer*, see (6b), and thus enters the divalent dative construction. If we again accept the "broad" interpretation of the term analogy as outlined above, then (6b) is an example of analogical mapping of *prendre* into the divalent *experiencer* construction.

4. The relation between constructional paradigms

In the preceding sections I have presented three constructional paradigms, two of which are diachronically linked (Figures 1–2). This urges me to consider in more general terms the relationship between different paradigms. I have described paradigms as packages of content and expression; they apply to a syntactic domain, which in the case of Figures 1–2 concerns the string V, A1, A2. Their semantic frame concerns the relation between the arguments A1 and A2.

The paradigm of Modern Danish presented in Figure 3 differs from the preceding ones, as the semantic frame is *telicity*, i.e. an aspectual opposition, where ±telicity is expressed by means of the particular form of A2: Ø + NP vs. prep + NP. In other words, the syntactic domain of Figure 3 involves the string V, A2. So, on the one hand, the paradigm presented in Figure 3 is part of the onomasiological field of grammar that we might label tense, aspect and mood; on the other hand it is part of another onomasiological field expressing the relation between arguments. This implies that grammar is organised in overlapping semantic fields.

Modern Danish has a number of different ways of expressing aspectual distinctions. We have just seen the distinction ±telicity being expressed by choice between two types of A2. A different way of expressing telicity in Danish is by means of particles, e.g. the atelic construction *Peter løber inde i huset*, 'Peter is running inside the house', opposed to the telic one *Peter løber ind i huset*, 'Peter runs into the house'.[16] Still another aspectual distinction in Modern Danish corresponds to the one described for Modern Swedish by Martin Hilpert (this volume, examples (1)–(2)). Just like in Swedish, Danish has a number of verbs of posture, verbs meaning 'to sit', 'to stand' and 'to lie', which were originally only full lexical verbs and which now also function as auxiliaries of durativity in coordinated constructions. Thus, we have a full lexical construction in (11a), normally accompanied by one or more adverbs indicating time, place, or manner:

16. This use of particles connects nicely to De Smet's remarks (De Smet, this volume, Section 3) on the modification of the *Aktionsart* by means of English spatial adverbs. De Smet's analysis of the particle *out* offers itself as a case of paradigmatisation in my use of this term, I believe.

(11) a. *Peter sidder bekvemt i stolen i dag*,
'today Peter sits comfortably in the chair' (±durativity)

When coordinated with a second verb, the construction V1 + V2 normally indicates durativity, and need not to be accompanied by specifications of time, place, or manner, although these are absolutely possible, see (11b):

b. *Peter sidder og læser* (*bekvemt i stolen i dag*)
'Peter is reading'/ 'today Peter is reading comfortably in the chair'
(+durativity)

Crucially, (11a) is a form of the Danish verb meaning 'to sit', whereas (11b) is an analytical aspectual form of the Danish verb meaning 'to read'. Just like in the case of Swedish described by Hilpert, there is no doubt that posture verbs represent the lexical source that was reanalysed as aspectual marker in the coordinated construction, represented by Hilpert as a simple case of re-bracketing. It should be mentioned that coordination with an explicit subject is possible without turning the lexical verb into an aspectual auxiliary, whereas this is excluded for the aspectual construction, because it turns the sentence into a coordination of two full lexical verbs (11b'):

b'. *Peter sidder og han læser* (*bekvemt i stolen i dag*)
'Peter sits and he reads (comfortably in the chair)' (±durativity)

I fully accept Hilpert's view that the reanalysis from (11a) to (11b) is a gradual process. In the present terminology, Hilpert presents a case of emergence and grammaticalization of an aspectual construction. We here see a paradigmatic opposition between the coordinated verbs, V1 + V2, opposed to the simple verb, V, with predictible change of aspect, +durativity, vs. ±durativity, see Figure 4.

In sum, the examples from Modern Danish quoted here constitute three different, paradigmatically organised, constructions of the onomasiological field of aspectual distinctions. It is outside the scope of this paper to describe how exactly one should analyse the relationship between these constructions. I refer to Heltoft, Nørgård-Sørensen and Schøsler (Forthcoming) for further clarification.

Domain: V **Frame: Durativity**	
expression	**content**
V1 + V2	+durativity
V	±durativity

Figure 4. The paradigmatic structure of durativity illustrated by (11a–b)

5. Conclusion

Grammar comprises morphology, syntax, including word order systems, and constructions. I do not think that e.g. constructional systems and word order systems are generally less grammaticalized than morphological systems. Strikingly, not even the often quoted Meillet seems to have held such views of grammar. Grammar is a complex sign system, and grammatical change will normally comprise semantic change. I see no point in claiming modular organisation of grammar, neither an autonomous syntactic module nor an isolated morphological component, and I see no point in binding up syntax with linearity from the outset. I consider construction syntax a sign system in its own right. I believe that extending the concept of paradigm from morphology to syntax, has at least the following advantages:

- It permits analysis of different parts of grammar according to the same principles, based on oppositions between expression and content
- It permits a clear presentation of emergence and modifications of grammaticalised constructions as a succession of (synchronic) paradigms
- A paradigmatically based constructional approach permits description of the cooperation between different parts of grammar. In Section 4 I have shown how aspectual oppositions in Modern Danish are grammaticalised by means of different expressions of A2 (Figure 3), by means of particles and by means of verb coordination (Figure 4). The advantage of the paradigmatic approach is firstly, that it considers these three paradigms (and other ones not mentioned here) to collaborate at the same level of grammar; secondly that they form a cluster of paradigms inside the onomasiological field of aspect.[17]

Above, I classified the constructions to be studied in my paper as cases of grammaticalization of type *b* (constructions involving slots and categories) according to the classification of Vincent and Börjars (this volume). Normally directionality of grammaticalization is only discussed in relation to type *a* (grammaticalization of a lexical item). In their paper, the authors raise the question concerning the directionality of constructions. Is it relevant to discuss directionality in the case of type *b*? And is it possible to predict further stages following the ones presented in my Figures? I believe that we need further research into the nature of construction paradigms and into clusters of paradigms before being able to answer these two questions.

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17. I believe that De Smet's conception of "networks of connection" is related to the paradigmatic approach of my paper. Like me, De Smet underlines the interconnection of the different parts of grammar, in his terminology: "cross-categorial connections implied by grammatical interference" (p. 100).

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Grammaticalization and the *it*-cleft construction

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This paper reexamines the development of the *it*-cleft construction from the perspective of grammaticalization theory. In a previous study, Ball (1991, 1994) finds that the *it*-cleft was initially restricted to NP foci, with the relative clause expressing presupposed information that is already known to the hearer/reader. However, it is well known that the modern day *it*-cleft also permits a range of non-NP foci and that the relative clause is no longer restricted to presenting information that is necessarily known to the intended audience. Using data from the Penn Parsed Corpora of Historical English, I argue that synchronic variation in the *it*-cleft can be understood as a consequence of gradual constructional emergence. Non-NP focus *it*-clefts and 'informative-presupposition' (IP) *it*-clefts are shown to originate by extension from existing *it*-cleft constructs, overriding more general patterns of correspondence. The upshot is that the overarching *it*-cleft construction becomes increasingly schematic and productive over time. Discussing the implications for the present day *it*-cleft, this paper provides insight into how the gradual grammaticalization of constructions, and mismatch in particular, intersects with synchronic gradience (as understood by Croft 2007).

1. Introduction[1]

The English *it*-cleft is often said to have a fixed information structure, in which the postcopular element is foregrounded while the remaining semantic content is backgrounded into a sentence-final relative clause. Most frequently, the focal element is a noun phrase, as in example (1). However, the modern day *it*-cleft allows

1. I would like to thank Nikolas Gisborne, Martin Hilpert, Anette Rosenbach, Elizabeth Traugott and Graeme Trousdale for their valuable comments on an earlier version of the written paper. I would also like to thank the AHRC for funding this project.

a range of categories to occur as the complement of *be*. For instance, prepositional phrases are also common in the postcopular position, as in (2). In addition, *it*-clefts can occur with adverb phrase focal elements, plus some clauses and occasionally adjectives.

(1) A: Is he the murderer?
B: No. It was the therapist that killed her. [NP-focus *it*-cleft]

(2) A: When is she getting here?
B: It's in December that she's coming. [PP-focus *it*-cleft]

(3) A: Can you show me where you saw him?
B: It was just here that we met. [AdvP-focus *it*-cleft]

In all of the above examples, the relative clause of the *it*-cleft expresses discourse-old information. For instance, in example (1) repeated here as (4), we know from the prior text that a woman has been murdered by someone, so the open proposition *someone killed her* is 'given' information. However, in her 1978 paper, Prince called attention to a different kind of example, where the information in the relative clause is not given by the previous discourse and does not even have to be known to the intended audience. So, for instance, example (5) could be uttered at the start of a lecture without there being any assumptions that the audience already knows that *someone once said 'laws are silent at times of war'*. Prince (1978) therefore recognizes two types of *it*-cleft: the 'stressed-focus' (SF) *it*-cleft, in which only the focal element provides new information, and the 'informative-presupposition' (IP) *it*-cleft.

(4) A: Is he the murderer?
B: No. It was the therapist that killed her. [SF *it*-cleft]

(5) (Start of lecture)
It was Cicero who once said, 'Laws are silent at times of war'. [IP *it*-cleft]

A historical investigation into the origins of these different types of *it*-cleft was undertaken by Ball in her 1991 thesis and a follow-up paper in 1994. By manually searching a selection of texts from Old English to Late Middle English, she finds that the most common type of *it*-cleft in Present Day English (those with nominal focal elements and given information in the relative clause) are also the oldest, and that *it*-clefts with non-NP focal elements and *it*-clefts which permit new information in the relative clause are later developments, having their origins in the Late Middle English period.

Ball attempts to answer the question of how these different varieties of *it*-cleft arose. In this paper, I present a number of problems with Ball's account and go on

to reexamine the development of the *it*-cleft construction from the perspective of grammaticalization theory. According to Himmelmann (2004), the grammaticalization process applies to constructions rather than individual elements and involves gradual context-expansion. Using data from the Late Middle English and Early Modern components of the Penn Parsed Corpora of Historical English, extracted using the specially designed CorpusSearch 2 program, I provide evidence that the non-prototypical *it*-cleft variants emerge by extension from the existing *it*-cleft structure, in a series of incremental stages. As a result of this development, the *it*-cleft construction becomes increasingly schematic and productive.

I suggest that by allowing a wider range of focal elements, the postcopular position changes from being strictly nominal into an open slot with a referentiality requirement. This analysis is supported by the synchronic accounts of Kiss (1998) and Davidse (2000), who argue that non-NP items take on referential characteristics when placed in the postcopular position. Since some phrasal elements are better suited than others to performing a referential function, the increased schematicity of the *it*-cleft construction therefore leads to synchronic gradience amongst its members. In addition, I provide evidence that new information is accommodated into the relative clause via coercion. A similar proposal is provided by Lambrecht (1994). However, this hypothesis has until now not been investigated empirically.

These emerging cleft-types are mismatch constructions and are not predictable from more general patterns of correspondence (see Francis and Michaelis 2003). In the case of the *it*-cleft then, language change results in subsective constructional gradience, that is, gradience between the members of a constructional category (see Aarts 2004, 2007). However, while for Aarts, gradience is primarily morphosyntactic, here, my understanding of gradience is in respect to prototypical associations between the meaning of formatives and the function encoded by the construction, and is therefore more in keeping with Croft's (2007) constructional account.

The structure of this paper is as follows. In Sections 2 and 3, I present a diachronic account of the development of non-NP focus *it*-clefts and 'informative-presupposition' (IP) *it*-clefts, respectively. For each of these studies, I show how a grammaticalization story is better supported by the Penn Parsed Corpora of Historical English data than Ball's (1991, 1994) analyses. In Section 4, I go on to discuss the theoretical implications behind the *it*-cleft case study, addressing the question as to how grammaticalization, or constructionalization, intersects with synchronic gradience. My conclusions are presented in Section 5.

2. The development of non-NP focus *it*-clefts

2.1 Ball (1991, 1994) and the AdvP/PP *it*-cleft

Ball (1991, 1994) treats *it*-clefts with prepositional phrase and adverb phrase foci together, as representing a construction (the AdvP/PP *it*-cleft) which is separate from the NP-focus *it*-cleft. She suggests that this kind of *it*-cleft evolved from an Old English sentence-type with *beon/wesan*, which is traditionally classified as an impersonal construction. Ball notes that these impersonals could sometimes occur with adjuncts. For instance, in (6), the string *not long afterward* is not an obligatory component of the sentence. Such examples show a superficial similarity to modern day *it*-clefts with adverb phrase and prepositional phrase focal elements, which often express relations such as time or place, as in (7). However, in the impersonal construction, the verb is not the copular *be* that we find in cleft sentences; instead it has a full meaning, which can be glossed as something like 'happen' or 'come to pass' (Ball 1994: 611). So, for example, the meaning of Ball's example presented here as (6), is something like 'Not long after, *it happened that* he fell into a grave sickness'.

(6) *Was hyt nat long aftyrward,*
He fyll yn a sykenes hard. (c1400, Mannyng, *HS(B)*, 5459)
'Not long after that, he fell into a grave sickness.' (Ball 1994: 612)

(7) A: How long has he been feeling this way?
B: Well, he lost his job six months ago and it was shortly after that that we noticed a distinct change in his temperament.

That Late Middle English examples such as (6) are impersonals and not clefts is supported by the fact that they have variants with other *happen*-class verbs, such as *fallen*. For example, (8) can be glossed as 'At the end of twelve months, *it befell that* his companions went to the mountain'.

(8) *Fyl hyt at þe twelue moneþ ende,*
Hys felaus to þe mounteyne gun wende. (c1400, Mannyng, *HS(B)*, 10765)
'At the end of twelve months, his companions went to the mountain.'
(Ball 1994: 612)

Ball recognizes that these impersonals do not require a cleft analysis, but suggests that during the Late Middle English period they underwent a partial merger with the existing NP-focus *it*-cleft, resulting in a new and separate construction, the AdvP/PP *it*-cleft. At this point, we begin to get examples with non-NP focal elements which are clearly clefts rather than impersonals, such as (9).

(9) *Of hym is all, for he is creatour,*
Be hym it is þat all þing is susteyned,
In hym is all þing kyndely conteyned. (e15th, Walton tr., *Bo*, 4.preface.2.5)
'Everything is from him, for he is creator; it is by him that all things are sustained; all things are naturally contained in him.'
(Ball 1994: 613; my translation)

In support of a cleft analysis for this example, Ball (1994: 613) notes that the prepositional phrase *by him* is not quite as optional as the adjuncts found in impersonals. She argues that if we remove this element, the remaining sentence in (10) does not really express a well formed proposition. The reason for this is that in (9), the prepositional phrase focal element is much more important to the understanding of the sentence, since it expresses agency rather than time or location.

(10) ??All things are sustained (Ball 1994: 613)

Ball's (1991, 1994) explanation of how the AdvP/PP *it*-cleft originated is not unreasonable, since, as we have seen, the impersonal construction shows a strong superficial similarity to the *it*-cleft. However, a much more straightforward hypothesis is that *it*-clefts with non-nominal foci simply represent an extension of the existing NP-focus *it*-cleft and were not directly influenced by the Late Middle English impersonals. Nevertheless, as a result of her particular assumptions about the present day *it*-cleft construction, Ball does not even consider this as a possibility.

Although Ball's focus is exclusively diachronic, she subscribes to a particular synchronic analysis of the modern day *it*-cleft. Ball (1994) assumes a non-derivational cleaving analysis, in which the *it*-cleft represents an information structure variant, but is nonetheless equivalent in meaning to its non-copular counterpart, which is obtained by inserting the focal element into the gap of the relative clause. It falls out from this analysis that the constituents *it* and *be* are semantically empty. Consequently, as the only elements that contribute to sentence meaning, the relative clause must be related in some way to the complement of *be*.[2]

(11) It was [[the therapist]$_i$ [that ____$_i$ killed her]] [NP-focus *it*-cleft]

(12) The therapist killed her [canonical counterpart]

As Ball (1994: 604f.) comments, "A relative clause analysis for the complement of the NP-focus *it*-cleft is not uncontroversial" since the focal NP in *it*-clefts can be

2. Similar analyses are provided by Jespersen (1937), Delin (1989) and Lambrecht (2001), among others. Although the details differ, for all of these authors, the primary structural relationship in the *it*-cleft construction is between the *that*-clause and the focal element.

a proper name or pronoun, elements which cannot normally be modified by a restrictive relative clause, as shown in (14).

(13) It was Sally that killed her [NP-focus *it*-cleft]

(14) *They arrested Sally that killed her [restrictive relative]

Nevertheless, Ball maintains that where the focus is nominal, the sentence-final clause is a restrictive relative. However, for *it*-clefts with non-NP elements, Ball (1994: 605) claims that "there is little support for a restrictive relative analysis of the subordinate clause". As a result, Ball (1994: 605) has to assume that *it*-clefts with prepositional phrase and adverb phrase foci have a different syntactic structure from NP-focus *it*-clefts. Ball follows Delin (1989) in suggesting that these examples contain a "sentential complement" rather than a relative clause. This analysis is supported by the fact that the *that*-clause in AdvP/PP *it*-clefts often expresses a complete sentence, without a perceptible gap, as in (15). From this, it follows that the present day *it*-cleft is not a unified construction for Ball and that *it*-clefts with non-nominal focal elements make up a separate construction from the NP-focus *it*-cleft.

(15) It's in December that she's coming [PP-focus *it*-cleft]

By adopting this synchronic perspective, Ball is forced to find a historical explanation for examples with non-NP focal elements that goes beyond the simple extension of a single *it*-cleft construction. By incorporating impersonals into her analysis, Ball can argue that adverb phrase and prepositional phrase focus *it*-clefts were, from the very beginning, a separate construction. Since impersonals have the function of presenting a complete sentence, with or without an optional adjunct, this can explain why the *that*-clause of non-NP focus *it*-clefts should be analyzed as a sentential complement rather than as a relative clause.

Ball's historical explanation is therefore in some way dependent upon, or is at least motivated by, a particular synchronic analysis. However, a more important criticism is that Ball's account of the development of the AdvP/PP *it*-cleft also suffers from a lack of plausibility. A problem with Ball's story is that it is not immediately clear why the impersonal construction and the Late Middle English *it*-cleft would merge in the first place. It is true that these impersonals show a superficial similarity to modern day adverbial and prepositional clefts. However, before this particular type of *it*-cleft existed, it is difficult to see what the two constructions share.

The impersonal construction and the NP-focus *it*-cleft are very different, both in terms of structure and meaning. In the superficial relationship that Ball exploits, the focal noun phrase of the *it*-cleft corresponds to the adjunct in the

impersonal examples. However, these adjuncts are made up of non-nominal word classes. Furthermore, they are purely optional, are not focal elements, and indeed have very little bearing on the sentence. As indicated above, although both constructions involve forms of *be*, that found in impersonals is not the copula of cleft sentences, but is a verb of full meaning. Likewise, the sentence-final relative clause of the NP-focus *it*-cleft, containing a gap, is structurally distinct from the syntactically complete sentential component present in the impersonal construction.

These elements also differ in information status. The relative clause of all types of *it*-cleft is presupposed and, for NP *it*-clefts in the pre-modern period in particular, is largely restricted to expressing given information. In contrast, the sentential component in impersonals is not presupposed and in fact makes up the main informational content of the construction. These two sentence types therefore differ in function: while clefts are well known for packaging information in a marked way, impersonals represent a neutral way of presenting information. Consequently, for Ball, the only similarity that NP-focus *it*-clefts share in terms of function with impersonals, is an expletive *it*. However, as we will see in Section 2.2, this property of clefts is peculiar to the particular present day analysis that Ball subscribes to.

2.2 A grammaticalization story for the development of non-NP *it*-clefts

In contrast to Ball, I do not assume that modern day *it*-clefts with adverb phrase and prepositional phrase foci make up a separate construction from those with noun phrases in the focal position. Like Ball's, my analysis is non-derivational but, rather than relating clefts to non-copular subject predicate sentences, I assume that *it*-clefts correspond closely to other specificational copular constructions, such as the *th*-cleft (or 'pseudocleft') in (17) and the non-cleft *NP be NP* sentence in (18).[3] In each of these examples, the postcopular focal element identifies (or specifies), rather than describes, the referent.

(16) [It] was Sally [that killed her] [*it*-cleft]

3. I use the term '*th*-cleft' in the sense of Collins (1991) to depict cleft sentences introduced by one of a small number of semantically general nouns in a definite noun phrase, such as *the one* or *the thing*. This term is used in a different sense in Hedberg (1990, 2000) and Ball (1977) to refer to cleft sentences introduced by demonstratives, such as *this* or *that*. *Th*-clefts (as defined in this paper) are often grouped together with *wh*-clefts, such as (i), under the heading 'pseudocleft'.

(i) What Sally needs is an alibi

(17) [The one/person [that killed her]] was Sally [*th*-cleft]

(18) [The murderer] was Sally [non-cleft specificational]

From this perspective, there is less reason to assume that the relative clause in *it*-clefts is connected to the focal element, since this is not the case for other specificational copular constructions containing relative clauses, such as (17). Instead, I suggest that the relative clause restrictively modifies the constituent *it*. Rather than being an empty dummy element, I assume that the pronoun *it* in this construction provides definite-like quantification and a semantically underspecified head noun (see Patten Forthcoming). Similar analyses have been proposed by Percus (1997), Hedberg (2000) and Han and Hedberg (2008) on the basis that *it*-clefts, like definite descriptions, exhibit exhaustiveness and existential presuppositions, and display the same connectivity effects as specificational copular sentences containing definite noun phrase subjects.[4] In this analysis then, the *it*-cleft in (16) is akin to the *th*-cleft in (17), with the constituent *it* corresponding in function to *the one* or *the person*.

An important advantage to this account of the present day *it*-cleft is that, since the relative clause always modifies the constituent *it*, there is no problem with incorporating a relative clause structure into clefts with focal elements that resist restrictive modification in other constructions. *It*-clefts with proper name and pronominal foci, such as (16), and *it*-clefts with non-NP focal elements can therefore be accommodated neatly into this analysis. Regardless of whether there is a perceptible gap in the relative clause or not, all types of specificational *it*-cleft can be analyzed in the same way. For instance, the prepositional phrase focus *it*-cleft in (19) likewise corresponds to the *th*-cleft in (20).[5] From this, it follows that all *it*-clefts, regardless of focus category, form part of a single construction.

(19) [It] is in December [that she's coming] [PP-focus *it*-cleft]

(20) [The time/date [that she's coming]] is in December [*th*-cleft]

This unified account of the modern day *it*-cleft supports a historical analysis whereby the increase of non-nominal focal elements is a consequence of gradual

4. However, unlike these authors, Patten (Forthcoming) offers a different treatment of specificational sentences. In this account, specificational meaning is the result of a special type of predication relationship involving definite noun phrases. This explains why a discontinuous definite description analysis of *it*-clefts is crucial for recognizing this construction as a member of the family of specificational copular sentences.

5. The example in (20) has both a specificational reading, such that *the time* is/equals *in December*, and a predicational reading, such that *the time* is located *in December*. I come back to this distinction later in the section. The specificational reading is what is relevant here.

Table 1. The frequency of *it*-clefts with a range of foci throughout LME and EME

	NP	PP	AdvP	CL (*because*)	Total
M2 (1300–1350)	3 (10.5)				3 (10.5)
M3 (1350–1420)	11 (11.3)	1 (1.0)			12 (12.3)
M4 (1420–1500)	16 (30.2)				16 (30.2)
E1 (1500–1569)	24 (20.8)	1 (0.9)		1 (0.9)	26 (22.6)
E2 (1570–1639)	37 (28.3)	2 (1.5)			39 (29.8)
E3 (1640–1710)	73 (64.6)	18 (15.9)	8 (7.1)	1 (0.9)	100 (88.5)

constructional emergence. I provide evidence for a grammaticalization story using data from the Late Middle English texts in the Penn-Helsinki Parsed Corpus of Middle English, second edition, (PPCME2) and from the complete Penn-Helsinki Parsed Corpus of Early Modern English (PPCEME).[6] Frequency counts of *it*-clefts with different categories of focal element are given in Table 1. The data is separated into time periods recognized by the Penn-Helsinki Parsed Corpus and is based upon composition dates (where known).[7] This table indicates both raw numbers and frequencies normalized to a corpus of 500000 words (shown in parentheses). The numbers given here are quite conservative; I have only included clear cases of specificational *it*-clefts.[8]

There are several characteristics of this data that suggest that non-NP *it*-clefts are extensions of the existing NP-focus *it*-cleft rather than the result of a merger between the *it*-cleft and the impersonal construction. Firstly, the earliest examples of *it*-clefts with prepositional focal elements do not contain temporal or spatial adjuncts, but express relations such as agency, as in Ball's example given in (9) above, or cause, such as the PPCME2 example in (21). Tellingly, these relations can also be expressed by NP-focus *it*-clefts during the Late Middle English period, shown in example (22).

6. The data was retrieved by searching for the syntactically annotated *it*-cleft structure using the CorpusSearch 2 program.

7. The PPCEME is separated into 3 time periods (E1, E2 and E3), which are represented in Table 1. For the PPCME2, the corpus is divided into subcorpora indicating both composition and manuscript date. In table 1, I conflate these subcorpora to indicate only the time of composition. However, while for the PPCME2 directory the period M2 ranges from 1250–1350, I only include texts during the LME period from 1300–1350.

8. For example, predicational clefts, existential clefts and instances which prefer an impersonal reading are not included in these frequency counts. These examples require a separate analysis (see Ball 1991).

(21) *Me troweþ þat by þe prayers of þis holy mayde it is þat þat*
Me believes that by the prayers of this holy maid it is that that
place was never 3it detstroyed. (John of Trevisa's Polychronicon, a1387)
place was never yet destroyed
'I think that it was by the prayers of this holy maiden that that place was never destroyed.'

(22) *It es pride in þaim þat hyes þaim.* (Rule of St Benet, a1425)
it is pride in them that highs them
'It is pride that elevates them.'

Like (9), (21) cannot be given an impersonal interpretation because the phrasal element (underlined) contributes the most important information; it cannot be removed from the sentence and still leave the essential meaning intact. For instance, in (21), the writer expresses his thoughts that Ethelberga's prayers prevented the destruction of the abbey. If (21) was interpreted as an impersonal, with an optional adjunct, we would be left with something like (23), which expresses a doubt about whether it is a fact that the abbey was never destroyed. This is a far less intuitive gloss of (21), which seems instead to presuppose the fact that the abbey was never destroyed.

(23) I think it happened that that place was never destroyed.

This suggests that examples such as (9) and (21) are more likely to have developed as extensions of the NP-focus *it*-cleft and were not directly influenced by the impersonal construction.

Examples which contain temporal and spatial foci and which are clearly non-NP *it*-clefts, despite allowing an impersonal reading, do not appear until the second half of the Early Modern period. In such cases, exemplified by (24), it is the context that reveals that they are clearly presuppositional clefts. This prevents an impersonal reading for (24), such as the possible paraphrase in (25). If impersonals really were the driving force behind the appearance of non-NP *it*-clefts, we would expect examples such as (24), which are ambiguous in form, but disambiguated by context, to be the very earliest to occur. However, as indicated above, this is not the case.

(24) Lee. and Mr. Ireland upon Saturday Night came to my Master's House …
L.C.J. What time and what Year was it?
Lee. It was in 78; but I am not certain of the Day of the Month: It was on a Saturday he came. (Oates, 1685)

(25) It happened, on a Saturday, that he came to my master's house.

Furthermore, we find NP-focus *it*-clefts expressing temporal and spatial relationships during this same time period, shown in (26). This suggests that NP-focus *it*-clefts and non-NP *it*-clefts are instances of a single construction.

(26) It was, as near as I can remember, the 3d of August, that he went out of Town. (Oates, 1685)

I argue that by gradually allowing a wider range of elements into what was previously a strictly nominal position, the *it*-cleft construction shows increasing schematicity. Tellingly, in both Ball's data and my own, the only clear cases of non-nominal *it*-cleft in the Late Middle English period involve prepositional phrases. As shown in Table 1 above, the adverb phrase focus *it*-cleft seems to be a later development and can only be placed, with empirical support, as originating at the end of the Early Modern era. The fact that prepositional phrases are amongst the earliest to be permitted into this position is unsurprising, since they are also the most frequent non-nominal category among present day *it*-clefts. As Borkin (1984: 136) comments, there is a semantic overlap between the phrasal categories of NP and PP; although prepositional phrases typically express relations, such as location and quality, they nonetheless relate to nominal concepts such as time, place and manner.

When occurring as the focal element of an *it*-cleft, Bolinger (1972) notes that prepositional phrases lose their relational properties. For instance, in (27), the meaning is not that *the time* is located *in the winter*, but that *the time* is/equals '*in the winter*'.

(27) If it bee in the winter that your Hawke batheth, when no sunne shineth, you may then drie her as well by the gentle aire of the fire as otherwise. (Markham, 1615)
'If it is in the winter that your hawk bathes, when no sun shines, you may then dry her as well by the gentle air of the fire as otherwise.'

This is consistent with Davidse's (2000: 1116) suggestion that in Present Day English, non-NP focal elements are "rankshifted" into the nominal slot. She notes that they become like proper names, being "'cited' in their entirety", and are given definite identification without being formally marked as such. Consequently, these kinds of *it*-cleft have little difference in meaning from those with NP-focus, as in the example given in (28).

(28) and if this be done in November, it will preserve the Trees for that whole year, with that once doing, it being the winter time only that they will feed upon the bark. (Langford, 1696)

An important advantage to this diachronic account is that it is able to explain the continuing development of the *it*-cleft, which allows an increasing range of focal elements, as a case of gradual constructional emergence. In contrast, Ball's analysis is very much restricted to the Late Middle English period, and she has to invoke an increasing number of outside pressures to speculate about the subsequent history of the AdvP/PP-focus *it*-cleft. For example, Ball (1994: 614) notes that, "From the LME period onwards, the *it*-cleft construction has taken in a greater variety of non-NP foci, possibly in response to the decline of some alternatives and functional change in others (e.g. preposing)".

A grammaticalization story for the *it*-cleft is also compatible with, and explains, ongoing coercion effects in Present Day English. For instance, as Kiss (1998: 262) notes, non-referring expressions, such as adjectives, can be 'individualized' and made into more discrete entities via listing. She provides the example presented here as (29), "where a two-member set of properties (including *tired* and *sick*) is established as a domain of exhaustive identification" (Kiss 1998: 262; italic original). This technique allows the adjective *sick* to be accommodated into the referential focal position, creating a much more acceptable *it*-cleft than its counterpart in (30).

(29) It's not sick that he was but tired (Kiss 1998: 262)

(30) *It's sick that he was (Kiss 1998: 262)

Likewise, Borkin (1984: 127) comments that focusing adverbs, such as *just* and *alone* can be used to "underscore the correctness of the identification" and "make explicit the reason for focusing". This explains why the inclusion of *just* improves the acceptability of the clausal-focus cleft in (31).

(31) It's [just] that he's so annoying that bothers me

Furthermore, a grammaticalization account is supported by the historical development of *it*-clefts with nominal foci. In the Late Middle English data of the PPCME2, 24 out of the 30 examples of NP-focus *it*-clefts involve proper names and pronouns. This suggests that the *it*-cleft originally showed a preference for focusing the most referential and discrete of entities. When more abstract nouns, which do not denote discrete physical objects, begin to appear with more frequency in the Early Modern period, we find that listing and focusing adverbs are used to accommodate these foci in the same way as they are in modern day clausal and adjectival clefts. For instance, 7 out of the 22 examples of Early Modern *it*-clefts focusing abstract nouns involve listing, such as (32), while a further 8 examples, including (33) below, contain focusing adverbs.

(32) … that it was not the pure knowledg of nature and vniuersality … which gave the occasion to the fall; but it was the proude knowledge of good and euill … which was the fourme of the temptation. (Bacon, 1605)

(33) 'Tis use alone hardens it and makes it more able to endure the cold. (Locke, 1685)

From this evidence, we can therefore conclude that by allowing a wider range of elements into the focal position, the *it*-cleft undergoes gradual, and perhaps continual, grammaticalization, showing increased schematicity. Originally limited to noun phrases, the referentiality requirement was supplied by the noun phrases themselves. That this requirement continues despite permitting non-NP elements into this position suggests that this has become a property of the construction itself. In accordance with Michaelis' (2003, 2004) work on mismatch phenomena, as non-NP and less discrete elements are accommodated into the *it*-cleft construction via coercion, their nominal characteristics are emphasized and relational or situational properties are lost.

3. The development of the 'informative-presupposition' (IP) *it*-cleft

3.1 Ball (1991, 1994) and the IP *it*-cleft

According to Ball (1991, 1994), the development of the informative-presupposition *it*-cleft, in which new information is presented in the relative clause, is also influenced by the Late Middle English impersonal construction. Ball assumes that since the sentential complement of impersonals contains new information, this property is carried into the new AdvP/PP *it*-cleft. This construction then merges with the existing NP-focus *it*-cleft, resulting in another new and separate construction: the NP-focus IP *it*-cleft. However, Ball recognizes an important problem with this analysis: the frequency of the new AdvP/PP *it*-cleft is way too small during the LME period to influence the already established NP-focus *it*-cleft. As a result, Ball concludes that other constructions must also have played a role in this development, likely candidates being the impersonals again as well as perhaps the reverse pseudocleft.[9]

9. Ball (1991, 1994) uses the term 'pseudocleft' to cover *wh*-clefts as well as *th*-clefts introduced by *the one that…* In Late Middle English, the language had not yet developed these constructions. Nevertheless, Ball uses this same term to refer to their precursors, which include specificational copular sentences introduced by restrictively modified determinative pronouns, such as *he that…* 'Reverse pseudoclefts' show the opposite alignment, with the restrictively modified NP occurring in postcopular position.

Ball's analysis of this development seems to be greatly influenced by Prince's (1978) article, which identifies two separate types of modern day *it*-cleft: the stressed-focus *it*-cleft, with given information in the relative clause, and the often overlooked informative-presupposition *it*-cleft. Ball (1994) emphasizes the functional contrast between these two types of cleft and consequently suggests that the IP *it*-cleft originated as a distinct construction from the SF *it*-cleft. That is, she assumes that the IP *it*-cleft is the result of multiple constructions conspiring together and is not a simple extension of the existing *it*-cleft construction. Tellingly, Ball acknowledges that her analysis is somewhat *ad hoc*. She notes that, "It is unlikely that we shall ever be able to pinpoint the cause of the appearance of the IP NP-focus *it*-cleft, but the two constructions together [the cleft/impersonals and the reverse pseudocleft] will have provided a sufficient condition for this development" (Ball 1994: 621).

However, the main problem with Ball's theory is that it cannot explain the 'known-fact' effect. Even when the information in the relative clause of *it*-clefts is not known to the intended audience, there is still a sense that this information is presupposed and is assumed to be true, as shown in example (5), repeated here as (34). As Prince (1978: 899–900) comments, these IP *it*-clefts "MARK A PIECE OF INFORMATION AS FACT, known to some people although not yet known to the intended hearer" (emphasis original).

(34) (Start of lecture)
It was Cicero who once said, 'Laws are silent at times of war'. [IP *it*-cleft]

If impersonals really were the driving force behind this change, it is difficult to see why the information in the relative clause would be marked in this way. In Section 2, I presented a number of arguments that the impersonal construction did not directly influence the development of the AdvP/PP *it*-cleft. In particular, unlike the relative clause of *it*-clefts, the sentential complement of the impersonal construction is not presuppositional. Consequently, it is unlikely that impersonals could have played an important role in enabling the *it*-cleft to occur with new, but presupposed information in the relative clause.

In contrast, Ball's speculation that the reverse pseudocleft may have influenced the development of the IP *it*-cleft is much more plausible, since these are both specificational copular constructions containing a presupposed relative clause. However, as Ball (1994: 618) comments, it is difficult to find a "motivation in LME for a transfer of functions, since the cleft and the pseudo-cleft co-existed for hundreds of years before the first IP clefts appear". Furthermore, on closer inspection, Ball's examples of reverse pseudoclefts containing discourse-new information may not even be specificational. For instance, Ball (1994: 616) notes that

"Where the subject NP is not contrastive, the inverted pseudo-cleft has long been used to present information that is not Old or Inferrable from the context". However, if the subject NP is not contrastive and presents an individual that is already the topic of conversation, it is difficult to separate these examples from ordinary subject predicate (topic comment) sentences, as shown in (35).

(35) a. This is John. He is a doctor.
b. This is John. He is my best friend.
c. This is John. He is the person/one that mends my shoes.

For copular sentences with a definite noun phrase predicate, the example will only be interpreted as having a specificational (or identifying) meaning when the subject is marked as the focus, as in (36).

(36) a. A: Who is your best friend? B: JOHN is my best friend.
b. A: Who stole the money? B: JOHN was the one that took it.

In the absence of prosodic clues, Ball's comment that the subject NP of her examples is not contrastive suggests that this element may be the topic rather than the focus of the sentence. For instance, Ball provides the following Old English example, in which the propositions expressed by the relative clauses are not given by the previous discourse but are nonetheless known information.

(37) *Hlyst nu placida. Ic eom hælende crist … and ic eom se ðe gesette dagas. and tida. and gear. and ic eom se ðe man of eorðan gehiwode. and for manncynnes hælo. ic com to eorðan …* (*LS* 8, St. Eustace, 59)
'Listen now, Placidas. I am Jesus Christ … and I am the one who set days and seasons and years. And I am the one who formed man out of the earth, and for mankind's salvation I came to earth …' (Ball 1994: 617)

As Ball (1994: 616) comments, in this example "Christ appears to Placidas and uses inverted pseudo-clefts to identify himself". However, identifying, or providing more information about, a topical referent is not a specificational function. In specificational sentences we have the reverse situation, with the focal entity serving to identify the unknown referent described by the definite noun phrase. The pseudoclefts given in (37) therefore have much in common with the examples given in (35). Consequently, Ball's examples of reverse pseudoclefts with new information in the relative clause may not share the same function as the specificational *it*-cleft. Furthermore, as I will go on to show in Section 4, the modern day IP *it*-cleft exhibits distributional characteristics that are not shared by other copular constructions. This suggests that the development of the IP *it*-cleft cannot have been completely based on analogy with reverse pseudoclefts.

3.2 A grammaticalization story for the development of the IP *it*-cleft

I agree with Lambrecht's (1994) proposal rather than Ball's (1991, 1994). Lambrecht argues that IP *it*-clefts do not form a separate construction from *it*-clefts with given information in the relative clause. Instead, he assumes that these examples represent "an extension" of the *it*-cleft construction "via conventionalized pragmatic accommodation" (Lambrecht 1994: 71). Lambrecht explains that by using an expression requiring a presupposition, such as an *it*-cleft, to present information that is not shared knowledge, the expression itself forces that presupposition and the hearer accommodates it as such. As Lehmann (2008: §3.1.2) comments, "To the extent that pragmatic accommodation of the proposition presupposed by the extrafocal clause is conventionalized in the cleft sentence, this construction becomes more grammaticalized".

Lambrecht's (1994) hypothesis ties in well with my synchronic analysis of the present day *it*-cleft construction, given in Section 2.2. Since I assume that the relative clause and the constituent *it* function together like a discontinuous definite description, for me the *it*-cleft construction, like definite noun phrases, must be inherently presuppositional. However, definite noun phrases are also associated with expressing given information. The reason for this is that in order to successfully presuppose the existence of some entity, the speaker typically has to assume that the hearer is familiar with the description given. I suggest that in *it*-clefts, this general pattern of correspondence between presupposed and familiar information is overridden, allowing non-familiar information to be expressed in the relative clause.

Historical data from the PPCME2 and the PPCEME can also be used to support this hypothesis. These corpora provided several examples of *it*-clefts in which the information in the relative clause is not discourse-old. In particular, I found 2 examples in the Late Middle English corpus where the information in the relative clause is not given by the previous discourse, but is nonetheless shared knowledge, such as (38). In this example, the proposition that *someone leant against Christ's chest* has not been mentioned before but is in the context of a discourse about the part of the Bible that this event is from. The purpose of this extract is to remind us of this scene (and so assumes that we know it), even though this particular event is not given by the previous discourse.

(38) *Abid a while, I prey þe, and taak good kep ho it is þat leneþ*
Abide.IMP a while, I pray thee, and take good keep who it is that leans
hym so boldely to Cristes brest and slepþ so sauerly in his lappe.
him so boldly to Christ.GEN breast and sleeps so surely in his lap.
(Ælred of Rievaulx's De Insititutione Inclusarum, Vernon ms. c1400)

'Stay a while, I pray you, and take good note of who it is that leans so boldly against Christ's chest and sleeps so confidently in his lap.'

In addition, 3 examples of *it*-clefts from the LME corpus can properly be called informative-presupposition *it*-clefts. For instance, the relative clause in (39) contains discourse-new information which is not necessarily shared knowledge. However, such examples are still presuppositional, giving the impression that they express facts known to a third party. Consequently, it is perhaps unsurprising that they all belong to the genre 'history'.

(39) *It was he þat graunted Kyng Herri þe Secunde to go into Yrlond and*
It was he that granted King Henry the Second to go into Ireland and
turne hem to þe feith. (Capgrave's Chronicle, a1464)
turn them to the faith.

By the end of the Early Modern period, we begin to see examples where the constraints are even freer. In (40), the information in the relative clause is only partly new. Here, it is given that Dunne is baulked and confused, and therefore that something *baulks thy Understanding*, but the rest of the proposition, that something *baulks thy Honesty*, is new to the discourse. In this example, the Lord Chief Justice manipulates the sense of presupposition in this construction to include his own personal opinion that Dunne is deliberately being dishonest. In this way, the use of the cleft structure allows the speaker's opinion to be presented as uncontroversial fact.

(40) Dunne. My Lord, I am so baulked, I do not know what I say myself; tell me what you would have me to say, for I am cluttered out of my Senses.
L.C.J. Why, prithee Man, there's no body baulks thee but thy own self; thou art asked Questions that are as plain as any thing in World can be: it is only thy own depraved naughty Heart that baulks both thy Honesty and Understanding, if thou hast any. (Lisle, 1685)

Although the data is quite small, these examples would seem to indicate a gradual progression in the *it*-cleft construction from expressing only given information in the relative clause, to expressing shared but non-salient information, to the inclusion of information that is factual or is assumed to be factual in some sense, before finally permitting creative uses where even opinion can be accommodated into the construction. This suggests that the *it*-cleft construction has become increasingly schematic over time, overriding the general pattern of correspondence between presupposed and familiar information. The upshot is that particular requirements regarding the discourse status, saliency, or familiarity

of the information that is accepted into the relative clause are now almost non-existent. As Borkin (1984: 125) notes for present day *it*-clefts, "'Presupposed', when used with respect to cleft sentences, then, means 'non-asserted' or 'assumed to be true', and no more than that".

4. Grammaticalization, mismatch and synchronic gradience/variation

This study has made use of the synchronic variation found in the present day *it*-cleft to formulate testable and plausible hypotheses about the development of this construction and is therefore consistent with the methods Traugott (2008) recommends. Supported by empirical diachronic evidence from the PPCME2 and the PPCEME, I have shown that constructional variants exhibiting coercion effects have emerged gradually, through a series of incremental stages, via extension from a more prototypical *it*-cleft structure. In this section, I examine the extent to which the constructionalization of the *it*-cleft, involving mismatch, can account for synchronic gradience and variation in categories at three different levels: the constructional category of the *it*-cleft, the more schematic constructional taxonomy of specificational copular sentences of which the *it*-cleft is a member, and finally the phrasal category that fills the open slot in the focal position.

Grammatical constructionalization leads to variation within the *it*-cleft as a constructional category, producing instances with a range of different focal elements and with different information structures. By gradually accommodating an increasingly wide range of focal elements, the constructional schema is extended, with the postcopular position changing from being strictly nominal to an open slot that accepts any element that can be given a referential interpretation.[10] Since noun phrases typically denote objects, they are most suited to performing a referring function (see Croft 1991). Consequently, *it*-clefts with NP foci remain the most prototypical cleft structure. Gradience in this category is revealed by the presence of coercion effects required to individuate elements whose use in this construction is not conventionalized. For example, as shown in Section 2.2, abstract nouns in the Early Modern period tend to occur either with focusing adverbs or with a list of contrasting foci. In Present Day English, such coercion effects are common with adjective phrase focus *it*-clefts. For instance, example (29)

10. Not all elements can be coerced into performing a referential function in the postcopular position. For instance, *it*-clefts focusing verb phrases and non-factive clauses are usually deemed ungrammatical.

repeated here as (41), may be more acceptable to some speakers than others and is certainly less prototypical than examples with nominal foci.[11]

(41) It's not sick that he was but tired (Kiss 1998: 262)

As a presuppositional construction, the *it*-cleft exhibits the discourse-functional property of indicating that the object described is known to both the speaker and the hearer. As a result, *it*-clefts with discourse-old information in the relative clause are recognized as more prototypical instances. The constructional emergence of informative-presupposition *it*-clefts, which arise by extension from this prototype, therefore leads to subsective gradience in the synchronic category. Such extension is likely to be initiated by creative use. For example, as shown in Section 3.2, as new information is accommodated into the *it*-cleft construction with more frequency, novel examples begin to occur in which the sense of presupposition in the relative clause is manipulated to include the speaker's opinion as uncontroversial fact. For instance, in the Early Modern example shown in (40) above, the speaker creatively exploits the presuppositional *it*-cleft construction for stylistic effect.

While this example strikes us as an exceptional use, the stating of opinion under the guise of presupposition appears to have become a more conventionalized function for the *it*-cleft construction, as shown by the following examples from the British component of the International Corpus of English (ICE-GB). Example (42) functions in many ways like a factual IP *it*-cleft, since we are told that *it was Reyner Bannon* who made a particular comment in the press. However, in this case, the factual information is presented as a follow-up to the *it*-cleft, with the relative clause expressing the speaker's approval of it.

(42) And it was Reyner Bannon who got it absolutely spot on; he commented in the press … that the architect has been driving architectural journalists mad by steadfastly refusing to release any pictures of what the Fun Palace will actually look like. (S2A-040 094, 095)

Likewise, in the adverb phrase focus *it*-cleft in (43), the relative clause presents opinion as established fact. This example is particularly interesting, since *I fear*

11. According to Ross (1987: 310), cited in Aarts (2004), *wh*-clefts with NP-foci represent more prototypical instances of this category than those with focused prepositional phrases, which are in turn more prototypical than those with adjective phrases. To support this conclusion, Ross argues that non-NP *wh*-clefts have a limited distributional potential and can only occur in interrogative structures with reduced grammatical acceptability. However, *it*-clefts do not share these differences in distributional potential.

does not qualify the assertion that *others are led astray* ***here***, but the presupposition that *she risks leading others astray*.

(43) And it is here, I fear, that my right honourable friend increasingly risks leading herself and others astray in matters of substance as well as of style (S2B-050 036)

As Lambrecht (1994:70) comments, "It can happen that the presuppositional structure of a frequently used construction is exploited so regularly that it loses some of its force, sometimes resulting in a new meaning for the construction". From a synchronic perspective, while the gradual extension of the *it*-cleft construction initially leads to creative and perhaps peripheral uses, continued grammaticalization changes the membership of this category, resulting in a more schematic and productive construction.

The diachronic development of the *it*-cleft construction also has implications for the taxonomy of specificational copular sentences (see Section 2.2). While all types of cleft sentence are compositionally and functionally similar, as the *it*-cleft construction grammaticalizes it develops constructional properties and specialized functions that are not shared by other members of this category. For instance, other specificational constructions do not have the same potential as *it*-clefts to occur discourse-initially and simultaneously express totally new, but factually presupposed information.[12] Consequently, example (45) seems strange and suggests that we should already know that *someone once said 'laws are silent at times of war'*. Changes to the *it*-cleft therefore lead to variation among the members of the family of specificational constructions.

(44) (Start of lecture)
It was Cicero who once said, 'Laws are silent at times of war'.

(45) (Start of lecture)
#Cicero was the one who once said, 'Laws are silent at times of war'.

The development of the *it*-cleft construction exhibits a number of properties consistent with the definition of grammaticalization provided by Himmelmann (2004). He suggests that the grammaticalization process applies to constructions, which undergo context expansion. As the *it*-cleft construction incorporates a

12. Although *wh*-clefts can occur discourse-initially, in such cases, the information in the *wh*-clause is not new, but is inferable from the speech situation (see Prince 1978). For example, in (ii), the fact that the lecture is on some topic is inferable from our existing knowledge of how lectures work and is therefore present in the hearer's consciousness.

(ii) (Start of lecture)
What I'm going to be talking about today is how focus can be marked in English

wider variety of focal elements, it can be said to undergo 'host-class expansion'; by accommodating new information in the relative clause, the *it*-cleft develops additional discourse-functions and therefore undergoes 'semantic-pragmatic expansion'. In accordance with grammaticalization theory, such changes are gradual, and proceed in incremental stages. However, in the case of the *it*-cleft, it is difficult to say that any individual item has grammaticalized. As a result, changes to the *it*-cleft, involving the emergence of constructional variants, might be better labeled as 'constructionalization' (see also Rosenbach, this volume).

Nevertheless, such changes to the *it*-cleft construction do have repercussions for the phrasal elements that fill the focal slot. As noted above, noun phrases, which typically denote objects, are suited to performing a referential function. As the construction becomes more schematic, non-nominal phrases enter into the postcopular position. This process makes use of existing semantic overlap between phrasal categories. For instance, although prepositional phrases typically express relations, they can often be paired with nominal concepts such as time, place and manner. As a wider range of elements are accommodated into this position, prototypical associations between syntactic category, semantic denotation and discourse function are 'mismatched', in the sense of Francis and Michaelis (2003). For instance, while adjective phrases denote properties rather than objects, they too perform a referential function in the *it*-cleft construction. In this way, constructionalization, creating mismatch, can lead to synchronic intersective gradience between categories, or, according to Croft's (2007: 424) perspective, between semantic classes and discourse functions. Consequently, it may be possible to claim that the constructional emergence of non-NP *it*-clefts has led to the incipient decategorialization of the elements in the postcopular position.

In the case of the *it*-cleft then, extension from the prototype leads to subsective constructional gradience as well as intersective gradience at the element-level. However, these phenomena cannot be accounted for by Aarts's (2004, 2007) model, in which gradience is purely morphosyntactic and is understood from an exclusively synchronic perspective. Instead we need a model that can account for the synchronic consequences of gradual changes to both form and function. In light of this, a constructional approach, in which both constructions and individual elements are understood as symbolic form-meaning pairs, is preferred.

5. Conclusions

This paper has reexamined the development of the *it*-cleft construction from the perspective of grammaticalization theory. In accordance with Ball's (1991, 1994) study, I have focused on two aspects of variation within the *it*-cleft: the range of

phrasal categories permitted into the postcopular position and the information status of the relative clause. After presenting a number of arguments against the existing historical analysis presented by Ball (1991, 1994), I have suggested that the development of the *it*-cleft represents a case of gradual constructional emergence.

By allowing a wider range of focal elements, the *it*-cleft construction shows increasing schematicity, imposing referential characteristics onto non-nominal elements via coercion. Likewise, the development of the IP *it*-cleft provides an example of the grammaticalization of information structure (see Lehmann 2008), whereby the pragmatic accommodation of new information into this inherently presuppositional construction is gradually conventionalized. These conclusions are supported both by historical data from the PPCME2 and the PPCEME and synchronic accounts of the present day *it*-cleft construction.

Using the development of the *it*-cleft as a case study, I have shown that gradual constructional change, which may involve mismatch, affects the membership of categories. From a synchronic perspective, this can mean that the category may display different degrees of prototypicality. Consequently, examining the *it*-cleft construction from the perspective of grammaticalization theory can help us to understand its present day distributional and functional properties.

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Grammaticalization in Chinese

A construction-based account

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The present paper shows that constructions are the driving force of grammaticalization in Chinese. It will be argued that this is due to two typological properties: the relative freedom with which a lexical item can be assigned to different grammatical functions (precategoriality in Late Archaic Chinese) and the ease with which one and the same surface structure can be subject to different syntactic analyses (Bisang 2009 on "hidden complexity"). The constructions that are relevant for grammaticalization in Chinese consist of slots that are associated with certain grammatical categories. Processes of reanalysis take place within these slots – a given lexical item is assigned the function associated with the syntactic slot in which it occurs. Such a construction-based account excludes continuity because the occurrence in a particular slot always leads to a discrete interpretation that is determined by the function associated with that slot. Continuity is only possible if two or more constructions are combined into a larger structure or if a new construction emerges. The former case will be illustrated by verbs in adpositional functions (coverbs), the latter by the resultative construction as it emerged in the 1st centuries AD. Finally, the constructional approach will also show that Aarts's (2004, 2007) distinction between subsective and intersective gradience cannot be maintained.

1. Setting the stage: A constructional approach to grammaticalization

Continuity across grammatical categories and its synchronic and diachronic realization is one of the central topics of grammaticalization. Another one is the question of whether grammaticalization needs reanalysis and analogy or whether it can be accounted for in terms of drift and loss of autonomy alone. Both topics will be addressed in this paper from the perspective of Chinese as it developed between Late Archaic Chinese (5th–3rd centuries BC) and Modern Standard Chinese.

As will be argued in this paper, Chinese has two typological properties which fundamentally drive processes of grammaticalization. One of them is the relative freedom with which one and the same lexical item can be assigned to different grammatical functions. The other one is that one and the same surface structure is open to different syntactic analyses. Both properties are most prominent in Late Archaic Chinese. As I tried to show in Bisang (2008a, b), the categorial freedom of lexical items was developed to the extent that basically any lexical item was able to function as a noun or as a verb with no differences of marking. I discussed this phenomenon under the term of "precategoriality". The possibility of multiple syntactic analyses is presented under the heading of "hidden complexity" in Bisang (2009) for Late Archaic Chinese and other East and Southeast Asian languages. Even though Modern Standard Chinese is no longer a precategorial language and hidden complexity is comparatively reduced, both of the above properties are still recurrent.

The two typological properties of Chinese are crucially related to the concept of the construction as a pair of form and meaning (Goldberg 1995, 2006; Croft 2001). Of particular importance for the understanding of grammaticalization in Chinese and other East and Southeast Asian languages is the concept of functional slots within constructions. These positions operate as scaffolding devices (Croft 2001) for interpreting strings of linguistic units and they coerce lexical items into new grammatical functions (on coercion, cf. Michaelis 2004). An account of grammaticalization in terms of syntactic slots within constructions has its consequences for cross-categorial continuity. If a lexical item occurs in a slot that is associated with a certain function (e.g. verb, noun or adposition) that lexical item will be interpreted as belonging to that function. There is thus no continuity even if the same lexical item may also be compatible with other functional slots – the occurrence in a particular slot leads to a discrete interpretation. This is also what Croft (2007: 421) means when he states that "construction-specific categories will have sharp boundaries to the extent that there are sharp acceptability judgements of what can and cannot occur in the relevant constructional role". Effects of continuity show up only if two or more constructions are combined. If existing constructions are combined synchronically into larger units, this will produce effects of gradience in which one lexical item has more properties associated with a given functional slot than others (Section 5). If constructions emerge that have not been attested in previous stages of a language this creates gradualness. The emerging construction adopts its defining properties gradually and the elegibility of lexical items to its functional slots takes place within a continuum of changing criteria until it is definitely established (Section 6).

The paper will be organized as follows. It starts with a short definition of constructions in terms of Construction Grammar and with a presentation of the

mechanisms of scaffolding (Langacker 1987; Croft 2001) and coercion (Michaelis 2004) in Section 2. The typological properties of categorial freedom in the lexicon and hidden complexity will be the topic of Section 3. Based on these properties, Section 4 will critically comment on Aarts's (2004, 2007) distinction between subsective and intersective gradience. The freedom of lexical items to take different syntactic slots without any concomitant morphological distinction will turn out to be problematic for maintaining Aarts's (2004, 2007) distinction between subsective and intersective gradience. The fact that a lexical item L can occur in a non-grammaticalized word-class slot W and in a more grammaticalized slot G can be interpreted either in terms of less prototypical membership of L in G (subsective gradience) or of properties of L that are associated with both W and G (intersective gradience). The findings of this paper are thus in line with the results of many other papers in this volume (Traugott and Trousdale, this volume). The case of precategoriality additionally shows that the distinction between subsective and intersective gradience is even problematic beyond the context of grammaticalization.

Sections 5 and 6 will concentrate on data from Chinese. Section 5 will describe the grammaticalization of verbs into adpositions in Modern Standard Chinese. It will show how the combination of two or more constructions creates effects of continuity. As a corollary, it will also show that reanalysis is the driving force of grammaticalization that guarantees the association of a lexical item with a certain functional slot to which it was not associated before. Thus, Chinese does not provide much evidence for the independence of reanalysis and analogy from grammaticalization (pace Haspelmath 1998). While Section 5 concentrates on the synchronic side of gradualness within a constructional approach, Section 6 will focus on the diachronic perspective and the emergence of the resultative construction. It will show how a sequence of two verbs, V_1 and V_2, gradually develops into a new construction through the interaction of various factors. Within that new construction, V_1 is an action verb, while V_2 is an intransitive verb that contributes a terminal temporal boundary to the construction as a whole. Finally, the paper will end with a short conclusion in Section 7.

2. Basic assumptions about constructions

Inventories of constructions form an integrative part of the knowledge of language-users and the application of that knowledge is an important factor that drives grammaticalization. The implementation of this rather general statement on grammaticalization needs a more precise definition of what is understood by

constructions and an explanation of how their properties promote processes of grammaticalization.

Most linguists working in the framework of Construction Grammar define a construction as a pairing of form and meaning which, as a whole, has its own meaning that cannot be described exclusively from its components (Fillmore et al. 1988; Goldberg 1995, 2006; Michaelis and Lambrecht 1996; Croft 2001). Goldberg (2006) first points out that "All levels of grammatical analysis involve constructions" and then goes on with a definition that includes independent meaning and also accepts frequency:

> [constructions are] LEARNED PAIRINGS OF FORM WITH SEMANTIC OR DISCOURSE FUNCTION, including morphemes or words, idioms, partially lexically filled and fully general phrasal patterns. …
> Any linguistic pattern is recognized as a construction as long as some aspect of its form or function is not strictly predictable from its component parts or from other constructions recognized to exist. In addition, patterns are stored as constructions even if they are fully predictable as long as they occur with sufficient frequency. (Goldberg 2006: 5)

Croft's (2001) definition looks similar to that of Goldberg (2006). He defines constructions in terms of pairings of form and meaning and understands independent meaning in terms of at least partial arbitrariness:

> Grammatical constructions in construction grammar, like the lexicon in other syntactic theories, consist of pairings of form and meaning that are at least partially arbitrary. Even the most general syntactic constructions have corresponding general rules of semantic interpretation. Thus, constructions are fundamentally SYMBOLIC units … (Croft 2001: 18)

Processes of grammaticalization crucially depend on the interaction between the syntactic and the semantic properties of constructions. In Croft's (2001) account, this interaction is captured by the "symbolic relations of a construction", which he defines as follows:

> [T]he relation between the construction as a whole and the complex semantic structure it symbolizes, and the relation between the elements of the syntactic structure and the corresponding components of the semantic structure.
> (Croft 2001: 238)

Croft's (2001) symbolic relations provide an excellent framework for describing the role of syntax in determining the meaning of elements within a complex linguistic construction. The basic notion that underlies this framework is Langacker's scaffolding metaphor, in which "component structures are seen as scaffolding

erected for the construction of a complex expression" (Langacker 1987: 461). In Croft's own words, "what appears to be the coding of syntactic relations is in fact scaffolding to help the hearer to identify which element of the construction symbolizes which component in the semantic structure of the construction" (Croft 2001: 238). As will be seen in this paper, syntactic positions or slots are of crucial importance for understanding processes of grammaticalization in Chinese because they often provide the only instrument for determining the grammatical function of a lexical item. As soon as a surface structure is associated with a certain construction, its syntactic components will get their function from taking specific syntactic slots within that construction. It is needless to say that these slots are crucial for processes of analogy and reanalysis.

Croft's (2001: 238) idea that the syntactic structure of a construction is a "scaffolding" for identifying the semantic components of a construction also serves as a link to the concept of coercion in terms of Michaelis (2004). In her account, the syntactic structure provides the pattern that has the power to coerce a lexical item into a particular function. Transferred to the situation in Late Archaic Chinese, this means that a lexical item occurring in a certain slot of a given construction is "coerced" into a particular semantic interpretation associated with that slot. The notion of coercion is no doubt adequate in the sense that a certain syntactic slot leads to a particular interpretation of a lexical item and thus excludes other potential interpretations. If it is used in a more strict sense that implies that a lexical item acquires a new function which is not foreseen in its lexicon, coercion is problematic in some instances. In the case of precategoriality, the occurrence of a lexical item in a certain slot only highlights or specifies a particular function that is underspecified in the lexicon – the lexical item is not forced into a new function. This is different with processes of grammaticalization in which a lexical item gets a new function as in the case of verbs that are reanalysed as prepositions (cf. Section 5 on coverbs, i.e., lexical items that can take the functions of verbs and adpositions synchronically). For the understanding of grammaticalization in Chinese, both concepts are important. The more general mechanism of scaffolding is important for understanding how a clear analysis of linguistic structures is possible in spite of hidden complexity and the high syntactic flexibility of lexical items. The more specific mechanism of coercion is necessary for understanding processes by which a lexical item is reanalysed in terms of a grammatical function it did not mark before, a process to which lexical items seemed to have been more open in Late Archaic Chinese than in languages of the English type.

3. Two basic typological properties of Late Archaic Chinese: Precategoriality and hidden complexity

Late Archaic Chinese (LAC) is the language of the classical texts of Confucius, Mencius, Laozi and other authors between the 5th and the 3rd centuries BC. This period, which represents the final part of Old Chinese (OC; 11th to 3rd centuries BC), is characterized by two properties that are crucial for processes of grammaticalization: (i) the loss of morphology and the high relevance of constructions for defining the grammatical functions of lexical items (scaffolding) and (ii) the lack of obligatory categories and thus the potential absence of construction-indicating markers.

3.1 Precategoriality and the argument structure construction

Old Chinese was characterized by a morphology that was continuously reduced towards the end of that period. Since the Chinese writing system does not give direct access to how Chinese was pronounced in earlier times, our knowledge about that morphology is the result of reconstruction. To give an impression of how it worked, let's briefly look at two morphemes. The first morpheme is the prefix **s-*, which was used to derive verbs from object-denoting lexemes, nouns from action-denoting lexemes, causatives, inchoatives and directives (Sagart 1999: 71). Another one is the suffix **-s* which was also used to derive nouns from action-denoting lexemes with certain roots. In addition, it marked orientation toward and away from speaker (e.g. *wén* 'hear' vs. *wèn* 'ask', reconstructed for Old Chinese as **[b]mun* 'hear' vs. **[b]mun-**s*** 'ask'; cf. Sagart 1999: 132–133). As I argued in Bisang (2008a, b), the loss of this morphology leads to a situation in which the only reliable indicator of the grammatical function of lexical items is the construction with its syntactic slots. Thus, Late Archaic Chinese has a productive mechanism of expressing causativity by inserting lexical items into the V-slot of the transitive argument structure construction. The constraint that governs the causative interpretation depends on whether the single argument of the verb in its intransitive use has control [±con] over the event expressed by the verb (for details, cf. Bisang 2008a: 576, 2008b: 65–69):

(1) Meaning contribution of the transitive argument structure construction (Notation from Role & Reference Grammar, Van Valin and LaPolla 1997):
   a. $\mathbf{V}_{\mathbf{intr[-con]}}'(NP_S) \rightarrow NP_A$ [CAUSE [BECOME $\mathbf{V}_{\mathbf{intr[-con]}}'(NP_{U(S)})$]]
   b. $\mathbf{V}_{\mathbf{intr[+con]}}'(NP_S) \rightarrow NP_A$ [CAUSE $\mathbf{V}_{\mathbf{intr[+con]}}'(NP_{U(S)})$]

The constraints in (1) are fully productive, i.e., any intransitive verb can be integrated into the transitive argument structure construction and thus become a transitive verb (as will be shown in Section 6.3, the process of using transitive verbs in the intransitive argument structure construction is also productive). This is illustrated by the following example, in which the verbs *lái* 'come' [+con] and *ān* 'be content' [–con] take the V-slot of the transitive construction [NP_{Actor}-V-$NP_{Undergoer}$]:

(2) A [+con] and a [–con] verb in causative interpretation (Lunyu 16.1):
是故，遠人不服，則修文德以來之， 既來之，則安之。
shì gù yuǎn rén bù fú, zé xiū wén dé
this reason far people NEG submit then cultivate civil.culture virtue
yǐ lái zhī, jì lái zhī, zé ān zhī.
in.order.to come OBJ:3 PFV come OBJ:3 then be.content OBJ:3
'If people of far-off [cultures] do not submit, then [the ruler must] cultivate civil culture and virtue to make them come [= attract them] and when he has attracted them, he [must] content them.'

But this is not the whole story. The same V-slot is also an indicator of verbhood and thus of word class in Late Archaic Chinese. The loss of morphology generates a situation in which there is no function-indicating morphology for the whole conceptual space for parts of speech as defined by Croft (2001: 92). Thus, none of the nine word-class indicating constructions produced by the combination of the three semantic functions of objects, properties and actions with the three pragmatic functions of reference, modification and predication produces any distinctive morphological differences (also cf. Section 4 for a description of Croft's 1991, 2000, 2001 approach to parts of speech). As a consequence, an object-denoting lexeme can as easily be used to express the function of predication associated with verbhood as it can occur in the function of reference associated with nouniness – there is simply no difference of marking. The only indicator of word class is the slot in which the lexical item occurs. As I pointed out in Bisang (2008a, b), the meaning of the lexical item in the V-slot can be predicted from the meaning of the transitive argument structure construction together with the meaning of the lexical item itself. In (1) and (2), I showed how an action-denoting lexeme is interpreted in that construction. The following formula describes the interpretation of a lexeme that denotes a person in the V-slot (S = single argument of intransitive verb, U = undergoer):

(3) Interpretation of person-denoting lexemes (PDL) in the V-slot (Bisang 2008a: 577):
   a. in intransitive argument structure constructions:
      (i) NP_S behaves like a PDL, NP_S is a PDL
      (ii) NP_S becomes a PDL
   b. in transitive argument structure constructions:
      (i) NP_A CAUSE NP_U to be/behave like a PDL
      (ii) NP_A CONSIDER NP_U to be/behave like a PDL

The following example with the lexical item *yǒu* 'friend' instantiates interpretation (3b) with the actor *wú* 'I' considering/treating the undergoer *zhī* 'he' (= Yan Ban) as 'a friend':

(4) *yǒu* 'friend': make someone one's friend (Meng 5B.8):
吾於顏般也，則友之矣。
wú yú Yàn Bǎn yě, zé yǒu zhī yǐ.
I PREP Yan Ban be thus V:friend OBJ:3 PF
'What I am to Yan Ban, I consider him/treat him as a friend.'

Given the versatility with which lexical items can take the V-slot (and the N-slot) and given the regularity with which their meaning can be predicted, I described Late Archaic Chinese as a precategorial language, i.e., a language in which the word-class status of lexical items and their occurrence in the V-slot or the N-slot is not determined in the lexicon (Bisang 2008a, b). The assignment of lexical items to the syntactic positions of N and V is not based on lexical features but on a pragmatic implicature that determines the relative likelihood of a lexical item to occur in one of the two slots. This implicature is based on the following version of the animacy hierarchy ('>' means 'implies stronger N-inference than'):

(5) 1ST/2ND PERSON > PROPER NAMES > HUMAN > NONHUMAN > ABSTRACTS[1]

This hierarchy is understood as the basis of I-implicatures (Inference of stereotype) as defined by Levinson (2000), who states that "stereotypes are connotations associated with meanings, but not part of them, which nevertheless play a role in interpretation". The higher the position of a lexeme is in hierarchy (5), the more likely is the stereotypical implicature that it belongs to the cognitive category of object and has to fit into an N-slot. If a lexeme situated in a high position of the animacy hierarchy is used in the V-position, this produces a flouting effect (Grice 1975), which can be used for rhetorical purposes. The following example

1. There are no 3rd person pronouns for actors in Old Chinese. Sometimes, we find demonstratives in this function.

illustrates the flouting of the implicature in (5) by putting the proper name *Wú wáng* 'King of Wu' into the V-slot:

(6) Rhetorically marked use of a proper name in the V-slot (*Zuozhuan*, *Ding* 10):
公若曰，爾欲吳王我乎。
Gōng Ruò yuē: ěr yù Wú wáng wǒ hū?
Gong Ruo say you want Wu king I QUEST
'Gong Ruo said: "Do you want to deal with me as the King of Wu was dealt with?" [The king of Wu was murdered. Pragmatic inference: 'Do you want to kill me?']

A large proportion of the meaning of that name can be derived directly from constraint (3) on person-denoting lexemes in the transitive argument structure construction. Thus, the formula 'NP_A CONSIDER NP_U to be/behave like a PDL' yields the more concrete interpretation of 'you CONSIDER me to be like the king of Wu'/'You treat me like the king of Wu'. The part of mutual knowledge which is necessary to understand the concrete meaning of (6) is that the king of Wu was murdered. With this historical background in mind, the highly dramatic situational meaning of 'Do you want to kill me?' can easily be inferred.

3.2 Hidden complexity and the lack of obligatory grammatical markers

Late Archaic Chinese is characterized by its vast number of grammatical markers that are not obligatory. Even though it has a considerable number of markers that are used for expressing grammatical categories these markers are not obligatory, i.e., they can be omitted if they are inferrable from context. Many of them are associated with certain constructions and if they are absent from a given utterance it may be impossible to clearly assign that utterance to a single construction. Thus, one and the same surface structure may stand for a number of different constructions and is thus open to more than one interpretation. I will illustrate this by the following constructed example with a very simple surface structure (Bisang 2009: 44–46; the same paper also presents examples from real texts whose explanation would take too much space in this paper).[2] In this seemingly simple structure, the word *bìng* 'be ill' has four different analyses, i.e., it can be assigned to four different (7a–d) constructions:

2. Example (7d) differs from the version in Bisang (2009: 44, 46).

(7) 病不幸
bìng bú xìng.
be.ill NEG be.fortunate
a. Simple noun: 'Illness is unfortunate.'
b. Headless relative clause: 'The one who is ill is unfortunate.'
c. Subject clause: 'That he is ill is unfortunate.'
d. Adverbial clause: 'Because s/he is ill s/he is unfortunate.'

Interpretation (7a) is straightforward, no additional marking of *bìng* is necessary. It is a property-denoting lexeme occurring in the N-slot and is thus interpreted as a noun, translated by 'illness'. Headless relative clauses are formed by the marker *zhě*, which terminates them. If necessary, the headless interpretation in (7b) can thus be specified as follows:

(7) b'. 病者不幸
bìng zhě bú xìng.
be.ill NMLZ NEG be.fortunate
'The one who is ill is unfortunate.'

The marker *zhě* has the more general function of a nominalizer. If *bìng* has to be marked explicitly as a subject clause it is possible to express its subject by the possessive form of the 3rd person *qí*, which marks the subject in embedded clauses. In the following utterance, *bìng* can thus only be analysed as the stative verb of a subject clause:

(7) c'. 其病者不幸
qí bìng zhě bú xìng.
POSS.3 be.ill NMLZ NEG be.fortunate
'That he is ill is unfortunate.'

Finally, there are overt markers of adverbial clauses. One marker of causal adverbiality is *wèi* later followed by *ér* 'thus, and'. Thus, interpretation (7d) is specified as follows:

(7) d'. 為其病而不幸
wèi qí bìng ér bú xìng.
because POSS.3 be.ill thus NEG be.fortunate
'Because s/he is ill s/he is unfortunate.'

Approaches to complexity (McWhorter 2001, 2005; Dahl 2004; Miestamo et al. 2007) only look at complexity as it is manifested by obligatory and overtly marked categories. In Bisang (2009), I call this type of complexity "overt complexity", contrasting it to another type of complexity which is based on pragmatic inference.

This second type, which I call "hidden complexity", is an areal characteristic of East and mainland Southeast Asian languages. Hidden complexity enhances the analysis of one and the same lexical item in terms of different constructions and thus increases the potential of its reanalysis and grammaticalization.

4. Problems with subsective gradience vs. intersective gradience (Aarts 2004, 2007)

Aarts's (2004, 2007) approach to gradience takes a midway position between the Aristotelian all-or-none conception of categorisation and the functional/cognitivist conception of categorial vagueness or gradience. He develops a model in which "grammatical form classes can be strictly kept apart while allowing for them to 'converge' on each other" (Aarts 2004: 3). Crucial for this approach is the distinction between two types of gradience, i.e., subsective gradience (SG) and intersective gradience (IG). The former type refers to gradience within single categories and allows for lexical elements which belong more prototypically to that category than others. The latter type obtains between two categories if there exist lexical elements which display some properties of both categories.

As is pointed out by various contributors to this volume (Traugott and Trousdale, Rosenbach), Aarts's (2004, 2007) definition of category membership is based exclusively on morphosyntactic criteria and this is a problem from the diachronic perspective of grammaticalization. I fully agree with this criticism but I think one does not even have to take the diachronic perspective to show that this approach is problematic. My first argument has to do with the definition of word class itself. The definition of word classes always involves a combination of morphosyntactic form with meaning, at least as soon as one moves into cross-linguistic comparison (Schachter 1985; Croft 1991, 2000, 2001; Bisang Forthcoming). As Croft points out, the combinations of semantic class and propositional act listed in (8) provide a typological prototype that is cross-linguistically reflected in morphosyntactic patterns:

(8) a. reference to an object
b. modification by a property
c. predication of an action

The correlation between this prototype and its morphophonological encoding yields markedness patterns that are characteristic of parts of speech. The three combinations in (8) will be no less marked than the combinations not listed in it (Croft 2007: 424). Thus, the lexical items that denote objects and are unmarked in object reference constructions belong to the syntactic category

labelled "noun" in English. The syntactic categories of adjectives and verbs can be defined analogously.

My second argument will be developed from Aarts's (2004: 18) methodological premise that "the well-motivated setting up of discrete categories of form classes is logically prior to claiming that gradience obtains between them". It can be separated into two parts. The first part will follow from Croft (2007), the second will be a consequence of precategoriality in Late Archaic Chinese. Aarts's (2004) methodological premise is founded on the distributional properties of lexical elements within a certain construction that provides the relevant category boundaries. The problem with this approach is that individual lexical items tend to behave differently in different constructions and that it is hard to determine which construction is crucial for defining a certain grammatical category (Croft 2007: 413). Aarts (2004) does not seem to be aware of that problem and takes the selection of an individual construction as a test for category membership for granted. From a constructionalist perspective that takes cross-constructional difference of behavior of individual lexical items seriously, the concept of gradience is simply unnecessary – "it is epiphenomenal" (Croft 2007: 420), i.e., the natural outcome of distributional differences across individual constructions.

The second part of my second argument is based on Aarts's (2004) assumption that words always have certain morphophonological properties that are clearly associated with certain discrete categories. Such a view thus excludes the existence of linguistic systems in which word-class membership (or category membership, to be more general) is in no way related to anything like form classes. As I have tried to show in Section 3.1 and in Bisang (2008a, b), Late Archaic Chinese is such a language in the case of the noun/verb-distinction. This does not imply that there are no discrete criteria for defining word classes. In fact, the occurrence in the V-slot or the N-slot clearly is a discrete criterion for deciding whether a word X is a noun or a verb within a word-class indicating construction (Croft 2000, 2001) like the argument structure construction. The problem is that the form of the word itself does not provide any clue. In the case of Late Archaic Chinese, the only factor that determines the assignment of a lexical item to the V-slot is its semantics. But this is only a pragmatic rule that follows the animacy hierarchy in (5) and can be flouted. As a consequence, basically any word having its own lexical content can take both positions and can thus be assigned to both categories of noun and verb. In such a situation, the difference between category-internal subsective gradience and cross-categorial intersective gradience cannot be maintained. The problem gets worse if one takes "hidden complexity" into account. In principle, a certain lexical item can always be assigned to different categories depending on the construction to which the utterance in which it occurs is associated with. But this again does not mean vagueness or fuzziness. No matter what interpretation

will be chosen, it will always be clear to what category a given lexical item belongs within the construction related to that interpretation.

As was pointed out by Croft (2007:416), Aarts (2004) takes identity of form as an implicit reason for ignoring cross-constructional differences of distribution. If a given lexical item does not differ in its form in two different constructions he concludes that it belongs to the same category. Thus, the word *that* in *that house* and *What is that?* is a pronoun "which may, or may not, take a complement" (Aarts 2004:29; also cf. Croft 2007:415). The consistent application of that argument to a word like *pipe* in (9) leads to the conclusion that there is no noun/verb-distinction at least for that word in English.

(9) Croft (2007:416):
   a. This pipe is six inches thick.
   b. They will pipe natural gas across Daghestan.

The lesson from precategoriality is that identity of form does not prove much. What matters is the systematicity with which the meaning of a certain lexical item is determined by a given syntactic slot. In the case of Late Archaic Chinese, the meaning of a lexical item in the V-slot can be predicted from the constraint stated in (3). For that reason, it is possible to claim that lexical items are not rigidly determined for their occurrence in the V-slot or the N-slot (cf. the pragmatic inference based on the animacy hierarchy in (5)). They will get their part-of-speech specification from the syntactic slot in which they occur and their semantic specification from constraint (3). In the case of English, it is not possible to find a general semantic definition or a pragmatic rule which derives the semantics of *pipe* in its verbal use (9b) from its more frequent nominal use (9a) (cf. Croft 2001:71). For that reason, it is necessary to assume two different lexical entries for *pipe* in its nominal and its verbal function. Thus, English is not precategorial, while Late Archaic Chinese is. The question of whether there is a difference of form is irrelevant, what is relevant is the way in which a lexical item interacts with a construction and the regularities that operate on that interaction.

The problem that category-indicating morphology cannot be taken for granted also arises in the case of grammaticalization if one adopts the idea that there is a correlation between reanalysis and grammaticalization. If for instance a lexical item X that used to be limited to the V-slot can also take the position of the P-slot and thus also behaves like a preposition without any concomitant morphophonological change this can either be analysed as a case of subsective gradience (the verb X is a less prototypical member of P) or in terms of intersective gradience (X shares certain properties with V and P). Since reanalysis (and analogy) are centrally involved in grammaticalization, Aarts's (2004, 2007) distinction between subsective and intersective gradience seems to be irrelevant

to grammaticalization. This is particularly true in languages in which hidden complexity implies that one and the same utterance may be analysed within the framework of different constructions.

5. Continuity in synchrony: Reanalysis, analogy, gradience and gradualness

Haspelmath (1998) argues that grammaticalization is independent of reanalysis. He describes grammaticalization as a gradual process in which individual markers successively lose their autonomy. Grammaticalization is thus a process that can be measured in terms of Lehmann's (1995) parameters of weight, cohesion and variability. From such a perspective, reanalysis has nothing to contribute to this process. To take the example of word-class changes, Haspelmath claims that the reanalysis of a verb as a preposition only involves a change of category labels, while "[t]he constituent structure and the morphosyntactic properties of the construction usually remain intact" (Haspelmath 1998: 327). What this approach fails to notice is that there is more behind the reanalysis of V as P because the relabelling of a linguistic unit also implies its different morphosyntactic properties. If a verb like Modern Standard Chinese *gěi* 'give' is used in the V-slot of a ditransitive argument structure construction (10a) it can have all the properties of a verb, i.e., it can take aspect markers such as *-le* 'perfective', *-zhe* 'durative' or *-guo* 'experiential' and it can have its own arguments, etc. If it occurs in the P-slot of a verb-adjunct construction (10b–c) it has none of these properties – aspect markers are impossible and the argument structure of *gěi* is that of a preposition. The following example illustrates *gěi* in its function as a verb (10a) and in its function of a preverbal (10b) or a postverbal (10c) preposition:

(10) a. *gěi* as a full verb in a ditransitive argument structure construction:
我给他香烟。
Wǒ gěi tā xiāngyān.
I give s/he cigarettes
'I give her/him a cigarette.'

b. *gěi* as a preverbal preposition in a V-adjunct structure:
我给他写信。
Wǒ gěi tā xiě xìn.
I COV:give s/he write letter
'I write her/him a letter.' / 'I write a letter for her/him.'

c. *gěi* as a postverbal preposition in a V-adjunct structure:
我写给他信。
Wǒ xiě gěi tā xìn.
I write COV:give s/he letter
'I write her/him a letter.'

Thus, *gěi* is much less autonomous in the P-slot of a verb-adjunct construction than it is in the V-slot of a ditransitive argument structure construction and this is a consequence which is mainly due to reanalysis. Haspelmath's (1998) view that the development from autonomy to dependency is an independent mechanism is therefore inappropriate (cf. also Traugott and Trousdale, this volume).

Since words like *gěi* 'give; to' can express both functions synchronically, linguists may be tempted to establish a continuum between the verbal and the prepositional function. In my view, the constructional approach offers a different solution. From the perspective of an individual construction, there is no gradualness, a lexical item is either interpreted as a verb if it occurs in the V-slot or as a preposition if it takes the P-slot. The V-slot and the P-slot have thus a coercive function (Michaelis 2004) that discretely clarifies the concrete functions of lexical items in a given utterance. Effects of continuity can only arise if two or more constructions are combined. This can be illustrated by the combination of the prepositional construction in (10b) with the V-not-V question, a type of question in which the affirmative and the negative forms of the verb are juxtaposted:

(11) V-not-V question:
你写不写信
nǐ xiě bù xiě xìn?
you write NEG write letter
'Do you write a letter?'

The question is what happens if the verb-adjunct construction in (10b) is combined with the V-not-V question in (11). Can the element that takes the P-slot in the verb-adjunct construction be integrated into the V-not-V structure of (11)? The answer is yes:

(12) Combination of [V-not-V question] and [verb-adjunct construction]:
你给不给他写信。
nǐ gěi bù gěi tā xiě xìn?
you give NEG give s/he write letter
'Do you write a letter for her/him?'

In the resulting combination, *gěi* is still interpreted as a preposition but it takes a position that is otherwise associated with verbs. Why is it that *gěi* occurs in a

V-slot even though it is interpreted as a preposition? The first part of the answer is that the formation of a yes/no-question does not imply the introduction of an additional verb. Thus, the question as a whole does not include more verbs than the assertion on which it is based. In the case of (12), we thus have one main verb, which is *xiě* 'write'. The second part of the answer has to do with the syntactic flexibility of lexical items. Even though Modern Standard Chinese is no longer a precategorial language (cf. Section 3.1), processes of grammaticalization are very often only possible because one and the same lexical item can be assigned to different slots, a word-class slot such as V or N and a slot reserved to closed-class items that express grammatical functions. If the verb-adjunct construction is combined with the V-not-V question the word *gěi* can take the V-slot of the V-not-V-question construction because it is at the same time a very prominent full verb in Modern Standard Chinese. There are other verbs/prepositions such as *yòng* 'use; instrumental marker' and *zài* 'be at; at', which have exactly the same distribution. These markers can again be used as prepositions and as normal full verbs. Even the word *gēn* 'follow', which is used as a comitative marker, can be used as an independent verb (*wǒ gēn bú shàng* [I-follow-NEG-go.up/can] 'I cannot follow you [i.e., 'I don't understand what you mean']). Other markers such as *bǎ* are different. This marker is among other things used to move definite object nouns from their postverbal position into the preverbal position (cf. the classic discussion of Li and Thompson 1974a, b and many others). Since its verbal use is very restricted – it only occurs in a few compounds like *bǎ-mén* [keep-door] 'keep the door', *bǎ-chí* [take-hold] 'dominate, monopolize', *bǎ-shǒu* [hold-defend/guard] 'to guard' or *bǎ-wò* [hold-grasp] 'grasp' – it cannot take the V-slot if the verb-adjunct construction is combined with the V-not-V question. In this case, only the main verb can form that type of question. Differences of this type lead to different degrees of verbiness in the lexicon. If the above two constructions are combined lexical units such as *gěi*, *yòng*, *zài* or *gēn* are more verb-like than *bǎ*.

If *gěi* takes the postverbal P-slot it cannot take the V-position of the V-not-V question. Only structures like (13a) and (13b) are grammatical, structures like (13c) and (13d) are ungrammatical:

(13) Postverbal *gěi* combined with V-not-V question:

a. 他写不写给我。
tā xiě bù xiě gěi wǒ?
s/he write NEG write COV:give I
'Does s/he write to me?'

b. 他写给我不写给我。
tā xiě gěi wǒ bù xiě gěi wǒ?
s/he write COV:give I NEG write COV:give I
'Does s/he write to me?'

c. *他写给不写给我。
**tā xiě gěi bù xiě gěi wǒ?*
s/he write COV:give NEG write COV:give I
'Does s/he write to me?'

d. *他写给不给我。
**tā xiě gěi bù gěi wǒ?*
s/he write COV:give NEG COV:give I
'Does s/he write to me?'

This fact must be seen in the light of the functional difference between the two adjunct positions. First of all, it is necessary to say that the preverbal P-slot is the default position. There are only a few markers such as *gěi* 'give; to' and *zài* 'be at; at' which can also occur in the postverbal P-slot. The markers *bǎ* 'hold; object marker', *gēn* 'follow; comitative marker' and *yòng* 'use; instrumental marker' cannot. The postverbal function of the markers *gěi* 'give; to' and *zài* 'be at; at' is more restricted and there is a tighter semantic correlation between them and the main verb. In the case of postverbal *zài*, the quality of the location expressed by that marker is related to the meaning of the main verb, while preverbal *zài* expresses location in a more general way. Thus, postverbal *zài* is limited to certain verbs (displacement, posture, appearing, placement; Li and Thompson 1981: 397–406), while preverbal *zài* can occur with basically any state of affairs that needs to be localized in space. Similarly, postverbal *gěi* is used for expressing goal, while preverbal *gěi* can also be used for benefactives. Given the stronger dependence of postverbal *gěi* and *zài*, the P-slot does not seem to be available for the V-not-V question.

To conclude the discussion of synchronic gradience, let's look at the question of tense-aspect marking in the verb-adjunct construction. In the case of the preverbal P-slot, *gěi* cannot take an aspect marker. In the case of the postverbal P-slot, the tense-aspect marker must be attached to the V-P-sequence as a whole (14a), i.e., it cannot be suffixed to the main verb (14b):

(14) a. 他写给了我。
tā xiě gěi-le wǒ.
s/he write give-PFV I
's/he wrote to me.'

b. *他写了给我。
**tā xiě-le gěi wǒ.*
s/he write-PFV give I

The reason why only the V-P sequence as a whole can be aspect/tense-marked is an iconic one. The relatively strong conceptual correlation between the verb and its adjunct does not allow interruption by a tense-aspect marker.

Finally, it may look as if some markers in the preverbal P-slot can also take their own tense-aspect marker. A closer look reveals that structures of this type belong to a different construction in which two verbs or verb phrases are juxtaposed, as in (15). The semantic relation between the two state of affairs has to be inferred from context and world knowledge:

(15) Modern Standard Chinese (Li and Thompson 1981: 595):
他买票进去。
wǒ mǎi piào jìn-qu.
I buy ticket enter-Vd:go
a. 'I bought a ticket and went in.'
b. 'I bought a ticket to go in.'

Thus, the word *yòng* marked by the experiential marker *-guo* is interpreted as a full verb, not as an instrumental marker:

(16) Modern Standard Chinese:
他用过筷子吃饭。
tā yòng-guo kuàizi chīfàn.
s/he use-TAM chopsticks eat
a. 'S/He once used chopsticks and ate.'
b. 'S/He once used chopsticks to eat.'

There are a few prepositions such as *yán(zhe)* 'along' or *shùn(zhe)* 'along' that can occur with a tense-aspect marker. But in this case, the tense-aspect marker is a fossilized element which has lost its grammatical function.

6. Continuity in diachrony: The emergence of the resultative construction

6.1 Preliminaries

The resultative construction consists of a sequence of two adjacent verbs, V_1 and V_2, in which the second verb "signals some *result* of the action or process conveyed by the first element" (Li and Thompson 1981: 54; also cf. Cartier 1972; Xu et al. 2008). At the same time, V_2 makes a dynamic event expressed by V_1 telic and aspectually bounded. In examples (17) and (18), V_2 is a stative verb (*gānjìng* 'be clean', *lèi* 'be tired'). In (19), V_2 is an ambitransitive verb that can be dynamic as well as static (*duàn* 'cut something long into two or more sections; be cut off, broken'):

(17) 他洗干净衣服了。
tā xǐ-gānjìng yīfu le.
s/he wash-clean clothes PF
'S/He washed the clothes clean.'

(18) 他骑累了那匹马。
tā qí-lèi-le nà pǐ mǎ.
s/he ride-tired-PFV that CL horse
a. 'S/He rode the horse and as a result s/he got tired.'
b. 'S/He rode the horse and as a result the horse got tired.'

(19) Xu et al. (2008: 55):
他滑雪时摔了个跤，把腿摔断了。
tā huáxuě shí shuāi-le ge jiāo, bǎ tuǐ
s/he ski while lose.balance-PFV CL tumble take leg
shuāi-duàn le.
lose.balance-cut PF
'While skiing s/he tumbled and as a result of her/his tumbling her/his leg was cut.'

In (17), the action of washing the clothes (V_1) ends in the result of the clothes being clean (V_2). In (18), the state of being tired expressed by V_2 is interpreted as the result of V_1 'ride'. In addition, example (18) can have two different interpretations depending on whether the argument of V_2 is coreferential with the actor-argument of V_1 (18a) or with its undergoer-argument (18b). Finally, the verb *dùan* 'cut, be cut' adds its terminal boundary to the whole construction of *shuāi-duàn* in (19) 's/he loses her/his balance with the result that her/his leg is cut'.

While the resultative construction is fully developed in Modern Standard Chinese, there is no equivalent construction in Late Archaic Chinese. There are some V-V sequences attested in Old Chinese that became more frequent in early premedieval Chinese but they have nothing to do with the resultative construction. Given the prominence of hidden complexity (cf. Section 3.2), a sequence of two or more juxtaposed verbs can be associated with at least two different constructions. Example (20) from the *Shijing* 'Book of Songs' (11th to 6th centuries BC) and example (21) from the *Shiji* 'Historical Records' (1st century BC) represent the sequential construction in which the juxtaposed verbs are analysed as individual actions that take place in the temporal order in which they are arranged. As was pointed out by Sun (2009), verbs occurring in this construction have to share a common argument structure. Thus, the verbs in (20) are all intransitive, while the verbs in (21) are all transitive. Example (22) stands for a different construction. There are three V-V sequences. Each of these sequences is a modification construction in which the first verb is a modifier of the second verb:

(20) V-V-V sequence expressing temporal succession (*Shijing* I.5.2, 11th–6th centuries BC):
碩人之寬，獨寐寤言。
shí rén zhī kuān, dú mèi wù yán.
great/eminent man ATTR broad(ness) alone sleep wake talk
'The broadness of [that] eminent man, alone he sleeps, and wakes, and talks.'

(21) V-V-V sequence expressing temporal succession (*Shiji* 109, about 100 BC):
射殺追騎。
shè shā zhuī jì.
shoot[arrows] kill pursue cavalrymen
'He [= Li Guang] shot [arrows], pursued and killed the cavalrymen.'

(22) V-V sequences in a modifier-modified relation (Mencius 3A4, 4th century BC):
人之有道也，飽食暖衣逸居而無教，則近於禽獸。
rén zhī yǒu dào yě, bǎo shí nuǎn yì
man/people ATTR have way EQ/TOP be.full eat warm wear/be.clad
yì jū ér wú jiào, zé jìn yú
easy/comfortable dwell and not.have teach, then close/similar to
qínshòu.
animals
'People have their moral ways, and if they have eaten to their fill, are warmly clad and comfortably lodged but have no teaching, they [will be] similar to animals.'

The resultative construction is a good example of how a new construction emerged from the possibility of assigning one and the same lexical item to different syntactic slots and from the overall potential of analysing one and the same surface structure in terms of different constructions (hidden complexity). At the initial stage, there must have been a lot of variance across dialects and maybe even across individual speakers in the production and the analysis of V-V sequences. In the course of time, that variance was smoothed into a more integrated construction consisting of two verbs, in which the first (V_1) is dynamic and the second (V_2) is intransitive and denotes a terminal temporal boundary. The factors that contributed to that development were the following:

– The association of the V-V sequence as a whole with a negative meaning of war and catastrophe (He 1992; Cheng 1992; Xu 2006: 167). This general meaning must have been important for the emergence of a new construction even though the resultative construction lost that negative connotation once it was fully established.

– Verbs in Late Archaic Chinese are ambitransitive, i.e., one and the same verb can be used transitively and intransitively depending on the type of argument structure construction in which it occurs (cf. (1)–(2) for the transitive use of intransitive verbs and (28)–(29) for the intransitive use of transitive verbs). Thus, the selectional constraints on V_1 and V_2 do not lead to the incompatibility of a verb with these positions but its occurrence in V_1 or V_2 has consequences for its interpretation in terms of transitivity (cf. the discussion of scaffolding and coercion in Section 2). For that reason, verbs may shift their default transitive or intransitive interpretation.
– The interpretation of verbs in V_2 as intransitive crucially depends on the animacy of the subject. Inanimate subjects supported the reanalysis of preferentially transitive verbs as intransitive verbs in V_2 (Sun 2009).

The interaction of these factors naturally leads to a lot of gradualness in which one and the same surface structure may be subject to different analyses. In the remainder of this section, I will first try to show in 6.2 to what extent the resultative construction of Modern Standard Chinese has become a coherent construction whose properties cannot be derived exclusively from its components. After that, it will be illustrated in 6.3 how the resultative construction emerged since the beginning of the first millennium. The same subsection will also provide some idea of the philological methods that are necessary to avoid anachronistic conclusions from transferring structural properties of Modern Standard Chinese onto examples from earlier periods of Chinese.

6.2 How to account for the resultative construction in Modern Standard Chinese

The resultative construction has been subject to many different theoretical analyses. One of the most promising analyses is Li's (1990) account in terms of lexical compounding. He starts out from examples like (18), in which the verbs involved have three theta roles, two of them coming from *qí* 'ride' and one of them from *lèi* 'be tired'. Given that the resultative construction as a whole only has two theta roles in (18), an explanation in terms of lexical compounding needs to account for how the theta-grids of two verbs are integrated into a single argument structure consisting of fewer theta-roles than the sum of the argument structures of the individual verbs. Li (1990) manages to explain the possible combinations by a number of constraints. One of them is the assumption that V_1 is always the head of the construction. Another one assigns greater prominence to the external theta role than to the internal theta role and shows that theta identification follows a strict "prominence sensitive" order.

Alternative analyses take the syntactic perspective. Zou (1994) argues that there is a semantic relation between V_1 and V_2 in the sense that V_1 implicates V_2. Thus, V_1 selects a second VP headed by V_2 with that VP being in a complementation relation to V_1. Sybesma's (1999) analysis is based on Hoekstra's (1992) cross-linguistic account of resultatives in which V_2 provides an endpoint to the activity expressed by V_1. It is this aspectual function which licenses a selection relation between V_1 and a small clause in which V_2 represents a result state with its subject NP. Since it cannot be the purpose of this paper to provide a detailed analysis of the properties of the resultative construction, it will be sufficient to point out briefly two of Wu's (2004: 173–180) five arguments against the syntactic analysis. One of them is based on the fact that the aspectual marker *-le* cannot take the position between V_1 and V_2. As Wu (2004: 174) argues, this leads Zou (1994) to suggest that V_2 first raises up to V_1 and that the resulting V_1-V_2 sequence then moves higher up to Infl where *-le* is attached. However, if V_1-V_2-*le* is moved overtly to Infl, VP adverbs should follow that sequence – and this is not the case. In (23), the adverb *mànmàn-de* 'slowly' must precede the V_1-V_2-*le* sequence:

(23) Modern Standard Chinese (Wu 2004: 174):
他慢慢地洗干净了衣服。
tā *mànmàn-de* *xǐ-gānjìng-le* *yīfu.*
s/he slow-ADV wash-clean-PFV clothes
'S/He slowly washed clean the clothes.'

The second argument is against the small-clause analysis (Sybesma 1999), which presupposes that there is an isolated predication relation between V_2 and the NP in the object position of transitive resultative constructions. Thus, the V_2 *zhù* 'live, fix' in (24) does neither imply the presence of a separate predication with *tā* 's/he' with the meaning of 's/he lived/was fixed' nor does it entail a result relation between V_1 and the detaining event realised by *wǒ* 'I':

(24) Modern Standard Chinese (Wu 2004: 177):
我留住了他。
wǒ *liú-zhù-le* *tā.*
I keep.somebody.where.s/he.is-live/fix-PFV s/he
'I stopped him (I made him stay).'

Similarly with intransitive resultative constructions, there is no isolated predication relation between V_2 and the subject position of the resultative construction. Thus, the V_2 *sǐ* 'die' in (25) does again not imply that there is a separate predication with *wǒmen* 'we' with the meaning of 'we died' nor does it presuppose that that small clause is the result of a state of fearing with *wǒmen* 'we' in its subject position:

(25) Modern Standard Chinese (Wu 2004: 177):
我们都怕死了。
wǒmen dōu pà-sǐ-le.
we all fear-die-PFV
'We were all scared to death.'

No matter what may be the exact definition of the resultative construction, the purpose of the above presentation was to show that it represents an integrated construction in which the argument structure and the meaning of the two verbs involved form a consistent whole. What is uncontroversial across all theoretical approaches to the resultative construction is that V_1 is a dynamic verb and that V_2 contributes a terminal boundary that is either part of its meaning or is established by the state expressed by stative verbs occurring in that position.

6.3 The historical development of the resultative construction

For a long period of time from Old Chinese up to the beginning of the premedieval period, sequences of verbs can have different syntactic analyses that can often be derived only from context (cf. Section 6.1 on the sequential and the modificational constructions; also cf. Section 3.2 on hidden complexity). The only change that took place in that long period is that verb sequences were relatively rare until the end of Old Chinese and became significantly more frequent in premedieval Chinese. Based on the statistics from He (1992) and Cheng (1992), Xu (2006: 167) creates the following table that lists verbs occurring in the second position after another verb in two texts from the premedieval period, i.e., the *Shiji* 'Historical Records' (1st century BC) and the *Lun Heng* 'Discourses Weighed in the Balance' (1st century AD):

(26) List of possible V_2 in the premedieval period (Xu 2006: 167):

(敗) *bài* 'defeat'	(破) *pò* 'damage/break'	(得) *dé* 'obtain'
(斷) *duàn* 'break'	(殺) *shā* 'kill'	(定) *dìng* 'establish, fix'
(絕) *jué* 'cut off'	(傷) *shāng* 'hurt'	(取) *qǔ* 'obtain'
(滅) *miè* 'destroy'	(死) *sǐ* 'die'	(為) *wéi* 'be'

A look at the semantics of these verbs reveals that two thirds of them (the first two columns in (26)) have negative meaning. It is for that reason that He (1992) concludes that the resultative construction developed from verbs having to do with war and catastrophes. These findings are corroborated by Xu (2006), who presents a detailed discussion of V-V sequences consisting of the verb *zhàn* 'battle' followed by the verbs *shèng* 'win' and *bài* 'defeat' (other famous pairs consist of a first verb followed by the verbs *sǐ* 'die' or *shā* 'kill', cf. Mei 1991). This process of

associating V-V sequences with an independent meaning that cannot be derived from its components is a very important first step in the development of a new construction.

Increasing frequency within a text corpus of an extinct language alone is no proof of the emergence of a new construction. It is necessary to find criteria for deciding at what time a V-V sequence stopped consisting of two separate verbs and became an independent construction with its own properties. One solution is presented by Mei (1991), who is looking for a clear-cut syntactic solution that does not depend on mere semantic interpretations of individual Chinese characters. For that reason, he argues that the resultative construction was fully established when the object of V_1 in a V_1-V_2 sequence was able to follow the whole sequence (V_1-V_2-Obj). This change, which can be observed in data from the 5th century AD, is a clear indicator that the V_1-V_2 sequence has become a compound which controls the object as an integrated whole. In a second approach, Wei (2000) rejects Mei's (1991) criterion. He starts from the idea that the V_1-V_2 sequence was initially a modifier-head construction with V_2 being the head and V_1 the modifier (cf. example (22)). Later, the resultative construction was initiated by a process of reanalysis in which V_1 became the main verb and V_2 expressed a result. Mei's (1991) approach certainly presents an important syntactic criterion but it does not provide a framework for describing how a new construction emerges from the interaction of syntax and semantics. The second approach of Wei (2000) starts off from the modificational construction whose semantics do not make it a very likely source for the resultative construction.

In the remainder of this section, I will show how the factors presented in Section 6.1 produced a new construction in which V_1 is a dynamic verb and V_2 is a stative verb that denotes a terminative boundary. For that purpose, I will combine the approaches of Sun (2009) and Xu (2006). The former provides a good outline of the emergence of the resultative construction that can be refined and specified by the account of the latter.

Sun (2009) points out that the basic change that characterizes resultative constructions is the constraint that V_1 is transitive and V_2 is intransitive. Since verbs are ambitransitive at the initial stage of this development, this constraint is unproblematic – even if a verb is preferentially used intransitively, it can take on a transitive function in V_2 and *vice versa* for V_1. From such a perspective, the analysis of a verb in V_1 or V_2 was merely the result of scaffolding. Later, when the resultative construction was fully established and when verbs were associated more rigidly with transitivity or intransitivity in the lexicon, the V_1- and the V_2-slots also acquired coercive power.

The transitive use of intransitive verbs has been described in (1) and (2). The intransitive use of transitive verbs is associated with several constructions. Two

of them will be briefly discussed in this paper. As will be seen, both of them are associated with the active/passive distinction. The first one is based on the opposition between the V-$NP_{undergoer}$ construction and the $NP_{undergoer}$-V construction. In a V-$NP_{undergoer}$ construction, the verb is used transitively and is interpreted as a transitive action (27). In fact, (27) is an instance of the transitive argument structure construction with no overt NP in the subject position. If $NP_{undergoer}$ takes the preverbal subject position and if there is no NP following it the verb indicates a result or an accomplishment of an action (28).

(27) *shí* 'eat' in the V-$NP_{undergoer}$ construction (Mencius 1A7):
聞其聲，不忍食其肉。
wén qí shēng, bù rěn shí qí ròu.
hear POSS:3.SG sound/cry NEG endure eat POSS:3.SG meat
'When he hears their [dying] cries he cannot bear to eat their meat.'

(28) *shí* 'eat' in the $NP_{undergoer}$-V construction (Mencius 1B4):
今也不然，師行而糧食。
jīn yě bù rán, shī xíng ér liáng shí.
now TOP NEG be.so army march and grain/provisions eat
'Nowadays things are different, the army is on the march and the provisions are consumed.'

Another construction that is involved with the active/passive distinction and the presence or the absence of a terminal boundary that leads to the realization of an action is the modal construction with *kě* 'be able, be allowed'. The following example is based on the verb *shā* 'kill'. In its first use in (29), it is active and the action of killing must have been successful (otherwise, there is no point in going on with the discussion). In its second use with the modal verb *kě*, it is used passively and the action of killing is only hypothetical:

(29) The verb *shā* 'kill' in its active and its passive functions (Mencius, 2B8):
今有殺人者，或問之曰，"人可殺與？"
jīn yǒu shā rén zhě, huò wèn zhī yuē "rén kě shā yú?"
today there.is kill man NMLZ someone ask OBJ.3 QUOT man can kill Q
'Suppose there is someone who killed a man and someone asks: "Is it possible that he'll be killed?"'

Given the ambitransitivity of verbs in Late Archaic Chinese, the question is how the particular arrangement of transitive verbs in V_1 and intransitive verbs in V_2 in the resultative construction came about. As Sun (2009) argues, the semantics of the participants involved and the degree of control the actor-argument has

over the verbs in a V-V sequence are of considerable importance. In his example (30), the actor is a willow, i.e. an object whose control over V_2 *shā* 'kill' is limited because it is non-human. Such a context of low transitivity enhances the interpretation of V_2 *shā* 'kill' as an intransitive verb with the meaning of 'die'. However, the potential for using *shā* 'kill' intransitively does not depend on the reduced control properties of the actor. In example (31), the actor is human and the verb *shā* 'kill' is used with the same meaning as *sǐ* 'die'.

(30) Eastern Han Period (*Gushi 19 shou*; 2nd century AD) (Sun 2009: 12):[3]
白楊多悲風，瀟瀟愁殺人。
bái yáng duō bēi fēng, xiāo xiāo chóu shā rén.
white willow much sad wind gentle worry kill man
'White willow with much sorrow, gently worried the people to death.'

(31) Western Han Period (*Zhanguo zonghengjiasu;* about 195 BC) (Sun 2009: 12):
秦孝王死，公孫鞅殺。
Qín Xiào Wáng sǐ Gōngsūn Yāng shā.
Qin Xiao king die Gongsun Yang kill
'King Xiao of Qin died, Gongsun Yang (also) died.'

Xu's (2006) approach is based on the distinction between action and result. While V_1 denotes an action and is thus dynamic, V_2 is not simply an intransitive verb but it is a stative verb that can express a result of V_1. What is crucial for Xu's (2006) account is the fact that a single verb in Old Chinese cannot only express an action but also a result, i.e., an achievement of an action. This was due to the ambitransitive character of verbs and in particular to the use of transitive verbs in the $NP_{undergoer}$-V construction illustrated in (28) and in the modal construction with *kě* 'be able, be allowed' illustrated in (29). While these constructions were productive in Late Archaic Chinese, they disappeared and were no longer available when the resultative construction was fully established. Xu (2006) also associates the emergence of the resultative construction with the loss of verbal morphology. As is well known, the distinction between action and result shows up in the morphology of some verbs in Old Chinese that is reflected in voicing alternations. The active voice is characterized by unvoiced initial consonants, while voiced initials mark passive voice. Thus, one and the same verb makes a clear morphological distinction between a passive voice which implies a result of an action and an active voice which does not necessarily express a result and thus does not entail an end point. As a consequence, "a single verb with a voicing alternation can alone indicate the (non-)achievement of an action" (Xu 2006: 157). The following list in

3. The *Gushi shijiu shou* 古詩十九首 '19 Classical Poems' is a selection of 19 poems of exemplary character from the Later Han period (25–220 AD) that was compiled in the 7th century.

(32) presents three pairs of unvoiced (active) and voiced (passive) verbs with their reconstructed pronunciations of Old Chinese (OC) and Medieval Chinese (MC):

(32) List of verbs with morphophonological alternations (Xu 2006: 157):

折 *zhé*	'to cut off'	OC: *^{b}*tet*	MC: **tsyet*
折 *shé*	'to be cut off'	OC: *^{b}*N-tet*	MC: **dzyet*
見 *jiàn*	'to see'	OC: *^{a}*kens*	MC: **kenH*
見 / 現 *xiàn*	'to appear'	OC: *^{a}*N-kens*	MC: **henH*
敗 *bài*	'to defeat'	OC: *^{a}*prats*	MC: **pœjH*
敗 *bài*	'to be defeated'	OC: *^{a}*N-prats*	MC: **bœjH*

While voice distinctions through morphophonological processes seem to have been available only for some verbs, the loss of constructions which allowed a single verb to express an action and a result was productive. It is for that reason that I cannot see a necessary correlation between the loss of morphology and the emergence of the resultative construction. Another problem is the fact that the loss of morphological distinctions started off earlier than the development of the resultative construction. In my view, the crucial change is thus the disappearence of constructions such as the $NP_{undergoer}$-V construction and the modal construction with *kě* 'be able, be allowed' – the role of morphological loss in that process is an open question.

Xu (2006: 174–187) illustrates the development of the resultative construction by looking at the verb *pò* 破 'break, be broken'. In Late Archaic Chinese, *pò* is a transitive verb with the meaning 'break'. As is typical of transitive verbs (cf. the verb *shí* 'eat' in examples (27) and (28)), it occurs either in the active V-$NP_{undergoer}$ construction or in the passive $NP_{undergoer}$-V construction. The former construction is significantly more frequent and earlier than the latter. In V_1-V_2 constructions, *pò* is attested more frequently in V_1 than in V_2.

In the premedieval period (2nd century BC to 2nd century AD), the intransitive use of *pò* increases and it is also attested in the prenominal position in the function of a stative verb. This function seems to be limited to structures that start with the verbs *wéi* 'be', *yǒu* 'have' or *wú* 'not have' and are followed by the sequence [*pò* 'be broken/defeated'-N]:

(33) *pò* as a stative verb (*Huainanzi*: *Binglüexun*; 2nd century BC) (Xu 2006: 181):
是以無破軍敗兵。
Shìyǐ wú pò jūn bài bīng.
hence not.have broken army defeated soldier
'Hence, [the best general] does not have a broken army and defeated soldiers.'

In the first two centuries of the premedieval period, *pò* was able to take both positions in V_1-V_2 sequences. If it occurred in the second position (V_1-*pò*), the construction as a whole was clearly active and transitive as in the following example:

(34) *pò* in the V_2-position of a V_1-V_2 sequence (*Shiji*, 8; 1st century BC) (Xu 2006: 183):
李牧擊破秦軍。
Lǐ Mù jī pò Qín jūn.
Li Mu attack broken Qin army
'Li Mu defeated the army of Qin.'

What is crucial for the establishment of the resultative construction is that the position of V_1 needs to be filled by an active dynamic verb with a starting point, while the verb in the position of V_2 requires an end point that marks an accomplishment or a result. Both of these conditions are met by V-*pò* sequences in premedieval Chinese. With its development to a stative verb, *pò* was able to mark an end point of an action in V_2. As for the position of V_1, Xu (2006: 185) was able to show that the verbs that occur in that position in the *Shiji* are all dynamic. Thus, *pò* in V_2 is attested with several V_1 that mean 'attack' (襲破 *xí-pò* 'attack and be broken', 攻破 *gōngpò* 'attack and be broken', 擊破 *jī-pò* 'attack and be broken', 伐破 *fá-pò* 'attack and be broken') and with the verb 'go in' (入破 *rù-pò* 'go in and be broken'). The clearly defined assignment of two different verb classes with their different temporal properties to the positions of V_1 and V_2 is a very convincing indicator that the resultative construction was established as a new construction at the time when the *Shiji* was written, i.e., in the 1st century BC.[4] As will be shown below, there is additional philological evidence for that conclusion from the comparison of texts that underwent redactional control with texts that did not (cf. (36) and (37)).

A number of V-V constructions from Late Archaic Chinese and premedieval Chinese may look like resultative constructions from the perspective of Modern Standard Chinese. But such an analysis would be anachronistic. The following example in Late Archaic Chinese (5th century BC) has been analysed by several scholars as the first instance of the resultative construction in the history of Chinese:

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4. In the case of *pò*-V_2, there is no clear-cut division between the classes of verbs and their temporal properties. The verb *pò* in V_1 must be interpreted as a transitive dynamic verb with the meaning 'break' and the verbs in V_2 oscillate between an active or a passive meaning and can thus either express a starting point or an end point (Xu 2006: 185 mentions the following V_2: 敗 *bài* 'defeat/be defeated', 碎 *suì* 'smash/be smashed', 滅 *miè* 'extinguish/be extuinguished', 殺 *shā* 'kill/be killed' and 逐 *zhú* 'chase/be chased').

(35) Sequence of verbs (*Zuozhuan*, *Zhuang* 28; from Xu 2006: 160):
齊候伐衛戰敗衛師。
Qí hóu fá Wèi zhàn bài Wèi shī.
Qi lord attack Wei battle defeat Wei army
'The lord of Qi attacked the state of Wei, he battled [the army of Wei] and defeated it.'

Apart from the fact that example (35) would be very early because other resultative constructions are attested several centuries later, Xu (2006: 160) rightly points out that that example is from a time in which a single verb was able to express the successful accomplishment of an action. For that reason, it is very plausible to understand *zhàn bài* [battle defeat] as a sequence of two independent verbs, each with its own end point 'he battled … and defeated it'.

Of particular interest for the understanding of when grammatical changes took place is the comparison of near identical passages in traditional texts that underwent redactional changes with texts that did not. Xu (2006: 163–164) quotes a very interesting case in which the younger text of the norm-abiding *Zhanguoce* 'Politics of the Warring States Period' (1st century BC) in (36) only uses the single verb *bài* 'beat, defeat', while a recently excavated text written on silk about a century earlier (about 195 BC) has two verbs, i.e., *zhàn* 'battle' and *shèng* 'win' (37):

(36) Example from the *Zhanguoce*, 1st century BC (Xu 2006: 164):
秦敗魏於華，走芒卯。
Qín bài Wèi yú Huà, zǒu Máng Mǎo.
Qin defeat Wei at Hua expel Mang Mao
'The state of Qin beat the state of Wei at Hua and expelled Mang Mao.'

(37) Example from the *Zhanguo zonghengjiashu*, about 195 BC (Xu 2006: 163):
秦戰勝魏，走孟卯。
Qín zhàn shèng Wèi, zǒu Mèng Mǎo.
Qin battle win Wei expel Meng Mao
'The state of Qin (battled and) defeated the state of Wei and expelled Meng Mao.'

While *bài* 'battle' in (36) is analysed as a single verb consisting of an action plus its accomplishment, (37) may be understood in terms of a V_1-V_2 sequence, in which V_1 denotes an action with its starting point and V_2 indicates its end point. If this analysis is correct, the use of a single verb in the chronologically younger text that was subject to redactional work can be taken as an indicator that the resultative construction already existed at the time of 195 BC but that it still did not show up in texts that were based on the written norm even a century later. Thus, the coexistence of examples such as (36) and (37) "shows perhaps the beginning of

the shift from a single verb pattern to a V_1V_2 construction pattern in Chinese to express an action plus a result" (Xu 2006: 165). Since (37) is from a text that can be dated back to about 195 BC, this further corroborates that the resultative construction emerged at the beginning of the premedieval period in the initial years of the Western Han dynasty (206 BC – 23 AD).

7. Conclusion

The present paper has been dealing with continuity across grammatical categories in processes of grammaticalization. It showed that a consistent construction-based approach excludes continuity at the synchronic level of individual constructions. Even if an individual lexical item can occur in different syntactic slots associated with different grammatical functions it instantiates only one single function if it is used in a particular construction. If it occurs in the V-slot of the argument structure construction it is a verb, if it takes the N-slot it is a noun. Synchronically, continuity is thus only possible if two or more constructions are combined (cf. Sections 1 and 5). In diachronic processes, continuity is due to the fact that one and the same surface structure may be associated with different constructions simultaneously and that the criteria on which its analysis is based are gradual (cf. transitivity and the animacy of the subject in the case of the resultative construction, Sections 6.1 and 6.3).

The present paper has also shown that Aarts's (2004, 2007) approach to gradience and his distinction between subsective and intersective gradience is problematic. Aarts's midway position between an all-or-none conception of categorisation and the functional conception of categorial gradience is based exclusively on morphosyntactic criteria and disregards semantics. In addition, category-membership is based on the morphosyntactic behavior of a lexical item within one single construction. As Croft (2007) rightly points out, testing the properties of lexical items with only one construction ignores the fact that one and the same lexical item may behave differently in different consructions. In addition, the selection of the construction that is crucial for determining the category to which a lexical item belongs is arbitrary – grammarians are usually unable to explain why one construction is favored over another.

The above problems with Aarts's (2004, 2007) approach have been mentioned by various linguists. What has not been pointed out so far is that morphophonological form is not necessarily a reliable indicator of category-membership. If a given lexical item does not differ in its form in two different constructions this cannot necessarily be taken as evidence for its categorial identity. The data from Late Archaic Chinese show that identity of form does not indicate identity of

word class. One and the same lexical item can occur in the V-slot or in the N-slot with no morphophonological distinctions.

Aarts (2004, 2007) only discusses data from English. The above discussion of the relevance of formal identity reveals the necessity of integrating data from cross-linguistic typological research. This also applies in a more general way to processes of grammaticalization. As I argued in Bisang (2008c), grammaticalization in East and mainland Southeast Asian languages is characterized by the prominent role of constructions with their syntactic slots. This is directly related to the relatively high degree of hidden complexity (Section 3.2) and to precategoriality in Late Archaic Chinese (Section 3.1). In both cases, constructions with their syntactic slot-structure are the driving force of reanalysis and anology. This may be different in other languages. For that reason, the construction grammar approach must integrate data from typologically divergent languages for a more deeply grounded empirical basis of its generalizations. A look at the case of Chinese in this paper showed that constructions seem to be even more important for grammaticalization than in English and other languages summarized under the heading of Standard Average European.

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Grammaticalization and models of language

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The focus of this paper is the role of theory for the understanding of linguistic change. We argue that 'formal' and 'functional' should not be seen as two incompatible ways of viewing linguistic data, but as necessary aspects of any linguistic theory. We consider how theories which are formal, but which incorporate functional information can advance our understanding of linguistic change, for instance Dynamic Syntax and Lexical-Functional Grammar, especially when combined with Stochastic OT. We consider analyses which show that formal semantics can provide more insightful accounts of certain changes than purely syntactic analyses such as those proposed in some papers in this volume. We compare approaches particularly with respect to analyses of gradience and the directionality of grammaticalization.

1. Scene setting[1]

The present paper addresses the question of what kind of theory, formal or otherwise, is required to model the data thrown up by research into grammaticalization, understood here as what appears to be gradual and directed change leading to new pairings of linguistic form and function or content. Scientific enquiry takes for granted that data requires theory and theory requires data: the relations between the two are mutual and self-sustaining. There are nonetheless issues about where one starts; hence Denison's dictum in his chapter: WYSIWYTCH ("What you see is what your theory can handle"). Compare too the exchange, frequently cited in this volume, between Bas Aarts and Bill Croft in *Studies in Language* (Aarts 2004, 2007; Croft 2007) on gradience in categories, where the choice of inductive vs. deductive methods is one of the issues at stake (e.g. in particular Aarts 2007: 432–433). In this connection it is instructive to reflect on how questions

1. We are grateful to Elizabeth Traugott and Graeme Trousdale for the invitation to contribute to this volume and for their comments on earlier drafts of this chapter.

relating to grammatical change have emerged in the history of linguistics over the last quarter of a century or so. Two broad approaches can be identified:

a. Theory driven: an interest in the diachronic axis emerged within the Chomskyan tradition because of concerns about how to accommodate the data of morphosyntactic change.[2] In relation to grammaticalization, and in particular to its apparent directionality, one reaction has been to avoid the issue by seeking to discredit the data (Newmeyer 2001). More recently and more subtly, proponents of Minimalism have sought to model this data in terms of the innate asymmetries of Universal Grammar (UG) (Roberts and Roussou 2003) and in particular the hierarchical arrangement within the 'cartographic' model of categorial structure – see Roberts (this volume) and van Gelderen (this volume).
b. Data driven: the rediscovery of grammaticalization as a type of change in work since the 1970's has led to the compilation of a large body of data and then to the formulation of what is sometimes called grammaticalization theory, which by and large seeks to explain these diachronic patterns with reference to discourse and interpersonal communication strategies rather than in terms of an innate UG.

Crucial to any discussion of these issues is a clear understanding of what we mean by the key term 'theory'. Does it have the same sense for example in the expression 'grammaticalization theory' as when we talk of Government and Binding (GB) theory? Is grammaticalization theory even a theory in the technical sense of the term? Newmeyer (1998: 240) for example is categorical that it is not. We begin therefore by briefly considering the nature of theory and theories in a little more detail.

2. Theory and pre-theory

We will understand a theory to be an explanatory model in the sense that is usual in the philosophy of science rather than in the more general and relativist sense

2. Issues of diachrony in relation to generative grammar are already present in Kiparsky's 1965 MIT dissertation but in syntax it was largely due to David Lightfoot – see Lightfoot (1979) and much subsequent work – that these questions gained prominence. Compare in this connection Matthews's (2001: Chap 6.3) perceptive parallel with the way diachronic data emerged and required to be accommodated in the context of structuralism.

that has come to be favoured by many humanities disciplines. The following quotation encapsulates the essentials:[3]

> Theories are usually introduced when previous study of a class of phenomena has revealed a system of uniformities that can be expressed in the form of empirical laws. Theories then seek to explain those regularities and, generally, to afford a deeper and more accurate understanding of the phenomena in question. To this end, a theory construes those phenomena as manifestations of entities that lie behind or beneath them, as it were. (Hempel 1966: 70)

Note that this formulation implies an inductivist stance in which prior research has provided a body of empirical observations or explananda. However, once a theory has been developed it will in turn shape the search for further data.

In any case there will always be a need for what is sometimes called a pre-theoretical stage (Lyons 1977: Chapter 1.6), that is to say a vocabulary and a conceptual framework to organise our data, even if such terms/concepts do not necessarily carry over to the theoretical modelling of that data. For instance, the notion 'subject', inherited from traditional grammar, is widely used as an informal way of characterising a particular grammatical relation and in sorting out intra- and cross-linguistic distributions. It does not however translate directly into a single theoretical construct in Chomskyan approaches like GB or Minimalism (McClosky 1997) or in Role and Reference Grammar (RRG). By contrast, the relation labelled '1' in Relational Grammar (RG) or the function SUBJ in Lexical-Functional Grammar (LFG) are more or less direct reconstructions within the respective theories of the traditional notion of subject.

There is a similar diversity in respect of the notion 'construction' among the authors in the present volume. At the theoretical level, some (Roberts, van Gelderen) eschew it altogether, while for others it is a key construct.[4] Indeed, the majority of contributors operate with some version of Construction Grammar (CG), though there is still considerable diversity. Hilpert and Patten, for example, use the term 'construction' in a largely pre-theoretical sense, while Schøsler refers to a variant of CG labelled 'paradigmatic' which she and other colleagues have developed in Copenhagen. Bisang helpfully tries to distinguish different approaches within the CG community, contrasting Goldberg's (1995) model with that proposed by Croft (2001) under the banner 'Radical Construction Grammar', and explicitly aligning

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3. In the context of linguistic research, at least, it might be better to talk of generalizations or tendencies rather than laws, but nothing crucial hangs on that here.

4. Note that here and elsewhere in this chapter we use the term 'construct' in its philosophical sense to mean a theoretical entity or notion postulated in order to explain empirical patterns, and not in the sense of a token of a construction.

himself with the latter. Interestingly, all contributors seem to assume that CG is functional and (therefore?) non-formal, and no references are made for example to the fully formalised version of CG incorporated by Ivan Sag and colleagues into HPSG and dubbed Sign-Based Construction Grammar (Sag 2007). This in turn raises the issue of the relation between theoretical constructs at various levels of abstraction (gradience, subjectification, Merge and Move, etc.) and the theoretical notations/labels in terms of which statements pertaining to these constructs are made (trees, formal logic, ordinary language, etc.).

Our argument so far implies that theories such as GB, RRG or the different models that go under the name CG are on a par, and constitute alternatives that individuals sign up to on the basis of a complex (and rarely explicated) mix of scientific experience, individual intellectual preference and professional environment. Another view, expressed for example by Hornstein (2009: 6, Note 4 and 155, Note 1), is that while this may be true of say the status of GB, LFG and HPSG, a theory like Minimalism operates at a hierarchically different level, taking as its input the characterizations of data that other systems have yielded and seeking to provide a more encompassing and explanatory account of them, very much in the natural science tradition of theory reduction (McCauley 1996).

> The novelty of minimalism … is to take GB's success as posing a *theoretical* challenge; to solidify these results by grounding them in deeper and more natural principles. (Hornstein 2009: 155, italics in the original)

In that sense, for Hornstein, the move from GB to Minimalism is of a piece with the move from pre-theory to theory: in both cases there is a sharpening and deepening of our understanding which goes hand-in-hand with a discarding or subsuming of some previously used terms and concepts. Explanation is achieved by formulating more encompassing theoretical concepts within the formal system whereas for functionalists explanation requires a move to the external context of language use.[5] We will suggest however that the two are not, as is commonly assumed, incompatible.

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5. A disputed territory for the two approaches is language acquisition. Where acquisition is assumed to be driven by an innate universal grammar, it forms a core ingredient of the account of change developed by Lightfoot, Roberts and others within the generative framework. Where acquisition is instead taken to be the product of frequency-based generalizations defined over construction-like templates, as in Tomasello (2003), it is integral to the functionalist strand of thinking. The work of Joan Bybee represents a classic attempt to bring acquisition and change together within a usage-based approach (see the papers collected in Bybee 2007).

3. Formal vs. functional

Too often the opposition between formalist and functionalist is treated as if the two terms were on a par and in contrast in the same way that say voiced is opposed to voiceless. As an instance in point from the literature pertinent to the present volume, consider the following quotation from Bill Croft's response to Aarts (2004):

> I hope that Aarts will succeed in bringing this fact [that there is variation in grammatical categorization: NV/KEB] to greater prominence in the formalist research tradition. However, the audience of this journal [*Studies in Language*: NV/KEB] is largely functionalist … (Croft 2007: 411)

The clear implication is that there are formalist and functionalist research communities and that they are distinct both in terms of the ideas they espouse and the journals they read. We prefer, however, to understand the labels to apply to different types of entity: formal is a property of a theoretical system and functional is a dimension that relates internal aspects of language to the external context of language use (cf. Vincent 2001: 4–7). There can thus in principle be theories which are both worked out in formal terms and are functionalist (Dynamic Syntax, discussed in Section 8, is a case in point) and theories which are neither formally explicit nor overtly functionalist, as for example traditional grammar or the set of concepts and categories which informs *The Cambridge Grammar of the English Language* (Huddleston and Pullum 2002). The reason to adopt a formal system is in the first instance essentially methodological (Chomsky 1957: 5; Pollard and Sag 1994: 7–8).

Once it is understood in this way the issue is not an either-or question of which approach to choose but a question of how the two sets of considerations interact. It is possible to exclude either but the reasons are different. Thus one may believe, although we do not, that languages are the kinds of things that are not reducible to formal models. Equally one may believe that functionalism is not a helpful explanatory paradigm, although again this is not our belief. Rather, if theories are formal systems they have an internal logic which will rule out certain options or cause certain connections to be made. Compare here the paper by De Smet, who argues for the interaction of specific properties of individual systems with the general patterns of grammaticalization, which is reminiscent of the notion of system properties in morphology or so-called *Systemzwang* (Wurzel 1989: Chap. 4). This allows a place for analogy as an expression of the logic of the system but not an alternative to the general theory that defines possible systems (*pace* Fischer 2007 and in accord with the concerns about analogy as a mode of explanation expressed in this volume by Hilpert).

The theories that figure in the papers in the volume include Minimalism, Construction Grammar of various kinds and Aarts's theory of categories, though this last is perhaps better thought of as a sub-theory of categories that can fit into a number of models, replacing for example X-bar or traditional discrete categories. We will instead discuss the claims of three other approaches not mentioned or only tangentially mentioned by the contributors, namely:

a. Lexical-Functional Grammar (LFG), a non-derivational formal model characterised by a parallel correspondence architecture and which also encodes some of the claims of dependency syntax (this last is mentioned here in the chapter by Denison).
b. Dynamic Syntax (DS) (Cann and Kempson 2008; Bouzouita 2008), which is also non-derivational but does not involve parallel correspondence. DS is category- and semantics-driven rather than built on grammatical relations (or 'functions', in another sense of the term), and quite explicitly functionalist in its desire to explain linguistic properties in terms of language processing.
c. Formal Semantics: as explored in the seminal paper by von Fintel (1995), which is referred to but not developed by Roberts, and in the important book by Eckardt (2006) cited but not discussed by Rosenbach.

There will not be the space here to go into detail with any of these approaches, but by mentioning them in this context we hope to broaden discussion away from the strong focus on two models, CG and Minimalism, which otherwise characterises the papers in this volume. Just because grammaticalization involves constructions does not mean it is best modelled by Construction Grammar and just because it involves categorial changes does not mean it requires a model in which all aspects of linguistic structure are reduced to an ever-increasing inventory of functional (in yet a third use of this term!) and semi-functional categories.

4. Directionality and degrammaticalization

Early work in grammaticalization, with due acknowledgement to Meillet (1912), focussed on the long-term historical movement whereby autonomous lexical items come to be markers of grammatical meaning. This leads to the directionality paradox: why should a language at a later stage apparently keep moving towards a goal initiated decades or even centuries earlier? More recent work has emphasised that grammaticalization applies to constructions (Traugott 2003, 2008 and several papers in this volume), but it is still useful to distinguish:

a. constructions hinged around a particular lexical item such as an auxiliary or an article;
b. constructions involving templates made up of slots and categories.

Compare in the present volume Hilpert's distinction between the Swedish *sitta* periphrasis, which is type (a) and the varieties of the Germanic verb-first conditional construction, which are type (b).[6]

The classic issues of directionality (such as the emergence of the French future ending *-ai* from Latin *habeo* 'I have') and the possible instances of degrammaticalization (such as a complementizer being used as an adjectival base in English *iffy*) then refer to type (a) constructions. We discuss these issues in relation to the marking of possessives in a range of Germanic languages. We also discuss whether there is a similar directionality in the case of type (b) constructions. The usual account involves their extension to new contexts, which in turn invites the question of whether over time there can also be constructional contraction or restriction, which would be the constructional equivalent of degrammaticalization.

When considering gradualness, we need to keep in mind that the categories we choose to divide linguistic elements into provide the discrete steps for the grammaticalization and hence determine whether we see the change as gradual or not. Had the categories been defined differently, or had there been a more fine-grained set of categories, an apparently gradual change may instead have appeared to go through discrete steps. In fact, the categories assumed can also influence what conclusions we draw around the directionality of grammaticalization. We can illustrate this with the development of the English and Swedish possessive *s* from an original genitive case marker *(e)s*, which has been claimed as an example of degrammaticalization (Janda 1980, 1981, 2001; Norde 1997, 2001; Tabor and Traugott 1998). The underlying assumption is that there are two categories of bound elements: affixes and clitics. In line with the standardly assumed grammaticalization cline (e.g. Hopper and Traugott 1993: 7) a change from an affix to a clitic would constitute degrammaticalization. And, if these were the only two categories, then there would indeed be consensus that the original case marker is an affix and the modern possessive *s* is a clitic. However, it is also possible to view the two categories as particular constellations of a number of properties, such as degree of boundedness (do irregularities arise?),

6. As Elizabeth Traugott points out to us, there are potential intermediate candidates such as the *way*-construction which seem to involve properties of both types. It is probably best to think of the types (a) and (b) as defining a pair of parameters (not in the Chomskyan sense!) which can be used to develop a more refined characterization of possible changes. We hope to return to this topic in future work.

type of positioning (does it attach to the head or at a certain position within a phrase?) or type of distribution (is it agreeing or does it occur once only?). This yields a multidimensional space within which the properties of an element can vary rather than a one dimensional affix-clitic distinction (compare here the approach developed in Kiparsky 2005). Under this view, more or less typical combinations are expected to occur. We may for example find elements which behave like a prototypical clitic with respect to some property and like an affix with respect to another, but if we do, we do not need to argue about whether an element is a clitic, only slightly unusual, or whether it is instead on balance an atypical affix. The question was wrongly framed in the first place. In short, the one dimensional grammaticalization cline disappears. Let us consider some of the relevant data (see Börjars 2003 for further data and discussion).

In earlier stages of English and Swedish, (*e*)*s* was one of the markers of genitive case within a paradigm of other forms. There was noun phrase internal agreement, so that determiners and adjectives would also have been marked for case. In the modern languages, there is only one marker, *s*, and it occurs only once. In earlier forms of the two languages, *(e)s* appeared only on the head noun, whereas the modern *s* generally appears on the right edge, typical clitic-like behaviour. It is this distribution that leads to the *s* appearing on a non-head constituent, as in (1), known as 'group genitives' in English.

(1) a. mannen på gatans åsikt
man.DEF on street.DEF.S view
b. the man in the street's view

If *s* had all the properties normally associated with clitic status, we would expect examples such as those in (1) to be as frequent as noun phrases with postmodification in general. However, as Börjars et al. (2008) and Denison et al. (2008) show, across the ICE-GB corpus as a whole just over a quarter of all noun phrases contain postmodification, whereas only around one percent of all *s*-possessors do. In the vast majority of *s*-possessors, there is no problem; the *s* is placed simultaneously on the right edge and on the head, but speakers use avoidance strategies when the *s* would appear on a non-head constituent, as in (1). For instance, in English, an *of*-construction is used for possessors containing postmodification even when the possessor's animacy would normally mean that an *s*-construction was favoured, as in (2a). Furthermore, the so-called 'split genitive', in which postmodification in postposed to leave the *s* on the head and on the right edge, are almost as common as 'group genitive' in a spoken corpus like the spoken BNC. Examples from both languages are provided in (2b) and (2c). In some formal varieties of Swedish, the *s* can even appear on the head noun when there is noun phrase internal postmodification, as in (2d).

(2) a. the car of the woman he has killed
b. We don't know the gentleman's name with the tape recorder.
c. dom anställdas synpunkt som ska jobba med djuren
the employed.s view who shall work with animal.DEF.PL
'the view of the employees who will be working with the animals'
d. enskilda individers vid Operan yrkesskicklighet och heder
individual individual.PL.S at Opera.DEF professional skill and honour
'the professional skill and honour of separate individuals at the Opera'

Even though the degree of boundedness has been reduced, for instance in that there are no irregular forms, Zwicky (1987) provides evidence of some affix-like behaviour of the English *s* in this respect and Börjars (2003) advances similar arguments for Swedish.

If we consider the changes *s* has undergone in terms of a number of separate dimensions, rather than in terms of two categories only, we can summarise the changes as follows: (i) part of a paradigm > one form; (ii) agreement > once only marking; (iii) degree of boundedness reduced; (iv) head marking > head and right edge marking. Which one of these would define it as degrammaticalization? Maybe, and somewhat disingenuously, one could use Lehmann's (1995) criterion of paradigmatisation and say that because there has been a reduction in the number of forms, grammaticalization has in fact taken place. But would we want to argue that a change from agreement to once-only marking constitutes degrammaticalization in itself? Is the change from marking on the head to a competition between head and edge marking usually resolved by having the two coincide? No, we would argue rather that when the categories are disaggregated into more detailed properties, there is no evidence of degrammaticalization but a shifting of alignment between the properties.

Another example of how a model that can distinguish different dimensions of linguistic information better accounts for grammaticalization is one of the constructions discussed by De Smet (this volume). De Smet considers the historical development of *for* in English. In particular, he argues that the 'subject marker' *for* is only distantly related to the preposition *for* and that contrary to claims by Harris and Campbell (1995) and Haspelmath (1998), it develops from 'reinforcing' *for*. We prefer to be more specific about the meanings of the two. The preposition *for* has a benefactive meaning. We will refer to the reinforcing meaning as purposive *for*. We will return to a discussion of its syntactic category below. Using these terms, we agree with De Smet's analysis that the *for* in *for…to* is unlikely to have developed directly from the benefactive; it developed from the purposive (his 'reinforcing' *for*). However, the connection between benefactive *for* and the

for in *for…to* is not as accidental as De Smet implies.[7] Instead it is an example of 'persistence' (Hopper 1991) as mentioned by De Smet; a display of remnant properties of an original source: the purposive *for* developed from the benefactive *for*. The development from a benefactive to a purposive and from there to that semantically weak element which we generally describe as an infinitive marker is a typologically common one, as Haspelmath (1989) shows. Indeed, Poutsma (1923) and more recently Miller (2002: 188) argue that the Old English bare infinitive ending in *-an* originally had a purposive meaning, which was weakened and then reinforced by *to*, which in turn was semantically weakened and reinforced in purposive environments by *for*.

In order to illustrate our point about the need to distinguish dimensions of information, we turn now to a language which has been going through a similar change more recently (Börjars and Burridge, in press). In Pennsylvania German (PG), as in a number of other varieties of German, it was the benefactive *fer*, rather than *um*, that became used as a purposive.[8] Example is provided in (3). A more recent development is a loss of *zu*, illustrated by (3b). Young PG speakers do not use *zu* at all.

(3) a. Se ben ien nunner hewe misse fer ien zu beruiche.
they be him down hold must PURP him INF calm down
'They had to hold him down in order to pacify him.'

b. Sie hot duch g'kaaft fer en frack mache.
she has cloth bought FER a dress make
'She has bought cloth in order to make a dress.'

In a parallel change, *fer* is used not just in purposive clauses, but also in subject and complement clauses, as in (4):

(4) a. Fer datt anner laafe waer sadde dumm.
for there towards walk would-be sort-of stupid
'To walk there would be sort of stupid.'

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7. We thus share van Gelderen's doubts about the etymological separation of preposition and intensifier. And in this connection we may also note that in many Germanic languages there is a formal overlap between the two functions though the etymon is not necessarily the same. Thus, German has *zu* as preposition and intensifier while Danish has *for* in both functions. The problem with van Gelderen's approach, however, is that her model only allows her to resolve the problem by multiplying (sub-)categories, whereas we argue below that the best account would keep the category constant but map it onto a changing function.

8. The data used here is from PG as spoken in Waterloo County Canada, but as far as we are aware, the same change has taken place in the variety of PG spoken in the United States. The data was collected through fieldwork carried out by Kate Burridge and Kersti Börjars.

b. Ich glaab er deed gleiche fer boggy-fahre.
I think he did like FER ride horse and buggy
'I think he would like to go for a ride with a horse and buggy.'

In terms of the semantic development sketched by Haspelmath (1989), PG *fer* can be shown to have gone through every step of this development and can now occur in all environments, much like a traditional infinitival marker (for data see Börjars and Burridge, in press):

benefactive	> purposive	> irrealis directive	> irrealis potential	> realis non-factive	> realis factive

Semantically, then, it has gone from benefactive to purposive to not being associated with any specific meaning. In terms of category, the element appears not to have changed to the same extent, however. The original benefactive element was a preposition, taking a noun phrase complement. The purposive *fer* is usually referred to as a complementizer, combining with a clause (see for instance van Ness 1994), though there are arguments in favour of referring to it as a preposition that can take a clausal argument (Louden, p.c.). The crucial thing for our argument here is that even though there has been a radical change in semantics, from purposive to the weak meaning of an infinitival marker, there appears to have been no associated change in category or structural position. Infinitival markers are usually analysed as C(omplementizers), I(inflection) or as part of the verbal complex (Pullum 1981 argues that the English infinitival 'to' is of category P). Arguments for analysing the infinitival marker as part of a verbal complex can be found for German and Dutch, where it can occur inside a separable verb as in *abzuholen*. Such examples do not exist in PG. An infinitival marker is usually assumed to be in I if it can be preceded by negation, as in *not to go*. As (5) illustrates, the negative marker follows *fer* in PG.

(5) Es waer dumm fir's net kaufe.
it would be stupid for. it not buy
'It would be stupid not to buy it.'

The difference in structure between the original *fer…zu* construction and the modern *fer* construction can then be sketched as in (6a) and (6b). By contrast, there is no evidence for a structure such as (6c).[9]

(6) a. $[_{CP}\ [_{C}\ \textit{fer}]\ [_{IP}\ \textit{zu}\ \ldots]]$
b. $[_{CP}\ [_{C}\ \textit{fer}]\ [_{IP}\ \ldots]]$
c. $[_{CP}\ [_{IP}\ [_{I}\ \textit{fer}\ \ldots]]]$

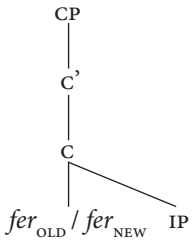
9. We avoid here a discussion of whether *zu* was in I or in VP.

This structural stability is accompanied by a radical change of semantics. In a model that associates certain functional categories with certain semantic properties, this would be difficult to capture. However, in a model such as LFG – which separates function (f-structure) and constituency (c-structure) – the change can be captured as in (7) to (9).

(7) *fer*$_{\text{OLD}}$ $\uparrow$PRED= 'purposive < $\uparrow$XCOMP>'
$\downarrow \in (\uparrow$ADJUNCT)
zu $\uparrow = \downarrow$

(8) *fer*$_{\text{NEW}}$ $\uparrow = \downarrow$

(9)



Here the functional equation in (7) says that in the earlier stage *fer* takes a clausal complement and expresses purpose whereas the $\uparrow = \downarrow$ annotation on *zu* simply ensures that it is a head which passes information to the next level of clause structure without adding any further content of its own. That neutral head status passes to *fer* with the new annotation in (8) and therein lies the grammatical change. (9) on the other hand is the constituent structure of the clause and that undergoes no change at all.

Once we adopt a parallel correspondence model like LFG, therefore, the directionality question needs to be formulated differently. What are the dimensions and what directions of change are possible? We cannot address this question in detail here, but it is important to see that the logic of this type of theory works differently from both CG and GB/Minimalism, both of which assume form and content are structurally tied together. In CG, a construction is a form-meaning correspondence (Goldberg 1995: 1), so changes in form signal changes in construction. In Minimalism on the other hand, particularly in its cartographic variant espoused by Roberts and van Gelderen in this volume, the formal spine of categories (V, I, C and all the splits thereof) is kept constant and universal, so changes in meaning must involve changes in syntactic form. We return to Minimalism in the next section but let us conclude this part of the discussion by mentioning the issue of directionality in relation to the slot-and-filler type of construction exemplified by Hilpert's work on the auxiliary-first pattern in

Germanic (as in English *should you see him, tell him to call me*).[10] Hilpert tracks the way the pattern emerges from its original function in questions into various types of conditional clause and concludes that its wider distribution in Swedish compared to German is evidence of its greater grammaticalization in the Scandinavian languages. If, as this account suggests, grammaticalization equals constructional spread even when there is no pivotal lexical item *à la* Meillet, it is natural to ask what we should say about the same construction in English, where it is used with only a subset of auxiliaries (*were you able, had she seen him,* etc. but not **can you help me* in the sense of 'if you can help me'). Is this evidence of degrammaticalization or truncated growth?

5. Reanalysis and the generative enterprise

In this section we return to Roberts' proposal to model the directionality of grammaticalization within Minimalism as a function of the UG principle that only allows for upward movement within a syntactic tree. This idea is developed in extenso in Roberts and Roussou (2003) with case studies drawn from a range of languages. In his contribution to the present volume, Roberts takes the argument a stage further by seeking to show that grammaticalization changes follow a path through the hierarchical clause structure as postulated in the 'cartographic' approach outlined in Cinque (1999) and much subsequent work. He does not provide arguments against the gradient view but simply assumes non-gradience and works out the implications within the head-and-feature model, as does van Gelderen in her chapter here. Thus, the Latin demonstrative *ille* 'that' is the head of a DemP which sits within a DP. The historical development into the Romance articles *il, le, el,* etc. is then the result of *ille* being re-analysed as a D head instead of a Dem head. There are no observed instances of articles becoming demonstratives because UG would not permit a 'downward' reanalysis of a D as a Dem.

However, elegant though this assimilation of an asymmetry in the observed historical data to a single universal synchronic principle undoubtedly is, it requires a number of special assumptions which undermine its explanatory force. Note first that there is in principle no limit to the number of functional heads the system makes available. Indeed there could be no upper limit since grammaticalization (of type (a) at least) involves the incorporation of a lexical item into the grammatical system and there is no upper bound on the class of possible lexical items. If for instance we need functional heads for verbs of deictic origin such as

10. See Sag (2007) for a fully formalised account of this construction. Formal though it is, the intent behind Sag's account is avowedly functionalist (Ivan Sag, p.c.).

'go' and 'come', we can postulate itive (or andative) and ventive aspect (cf. Bybee et al. 1994). But given that in origin French *aller* and English *go* both mean walk (cf. Latin *ambulare* and Danish *gå*) what is to stop the postulation in the early stages of grammaticalization of a hierarchically low head for 'caminative' aspect? Where, in other words, does the search for functional heads or features stop?

Second, the hierarchical ranking of heads does not always seem to be universal. In his chapter, Roberts discusses the development of Latin *habere* 'have' via the modal notion 'have to' into a future marker in Romance. This would logically require the future head to be ranked higher that the relevant modal head. However he also mentions the attested development in a number of languages of futures into modals, in turn requiring modal to be higher than future in the hierarchy of heads. Of course the problem can be solved by postulating two or more modal heads and two or more tense heads and interleaving them in the structure of the clause, but then we are back with the head proliferation problem. Without a constrained theory of what counts as a head the cartographic approach is in danger of becoming a taxonomy of possible grammatical meanings rebadged as syntactic categories. By the same token its application in the historical domain risks becoming a convenient notation for writing down possible diachronic connections rather than a genuinely explanatory theory of why the attested connections hold. A similar difficulty would seem to attend van Gelderen's account (2008, this volume) of the development of negatives, which relies on cross-linguistic differences in the hierarchical position of Neg vis-à-vis Tense and Mood, though without attendant scopal differences in the semantics.

A third difficulty for a UG-based approach is presented by the phenomenon which Simpson and Wu (2002: 170) dub 'lateral grammaticalization', and which they characterise as "a process in which a functional head from one type of syntactic domain may under appropriate circumstances undergo re-interpretation as an equivalent functional head in a second domain". An example is the shift from determiner to copula attested in a number of languages (Mandarin, Hebrew, Panare, etc.). The examples in (10) and (11) are from Mandarin:

(10) wo shi zuotian mai piao de.
I BE yesterday buy ticket DE
'It was yesterday that I bought the ticket.'

(11) wo shi zuotian mai de piao.
I BE yesterday buy DE ticket
'It was yesterday that I bought the ticket.'

Simpson and Wu distinguish three stages in this development:

Stage 1: optional positioning of *de* due to different prosodic options for cliticization
Stage 2: in Northern dialects, when *de* is next to the verb, it forces a past tense interpretation
Stage 3: this effect, which is in origin pragmatic, is grammaticalized through a shift from D to T

Of this last stage in the change they observe:

> D° and T° are both heads which host deictic elements providing (relative) reference to their respective complement constituents. Because of this basic equivalence relation and similarity in role, in D-to-T reanalysis it can therefore be suggested that the definite reference-fixing property of a D° element simply comes to be reinterpreted in the locus of temporal reference and definiteness in the clause, the T°-position, and that such a categorial reanalysis is consequently quite natural as a change, a functional element with a basic deictic orientation from one domain effectively just re-applying its underlying deictic/referential function in/to a new second type of domain. (Simpson and Wu 2002: 199)

As far as it goes this statement is true, but there is nothing in the Minimalist architecture which makes the change necessary. In particular, it does not follow from the principles and mechanisms established by Roberts and Roussou (2003), nor from the cartographic approach adopted by Roberts in this volume. This is problematic, since, if both 'upward' and 'sideways' types of grammaticalization exist, then we still need to seek the generalization that accounts for them, or else conclude that there is not after all a unified phenomenon from the point of view of UG.

6. Formal semantics

An issue that receives very little attention amongst the papers in this volume is the place of formal semantic techniques in the study of grammaticalization, despite the fact that most of the contributors declare their conviction that categories and constructions are at bottom semantically motivated (e.g. Denison, this volume: §4). Roberts (this volume) does, it is true, make passing reference to the programmatic paper by von Fintel (1995), but the theme is not developed, presumably because the Chomskyan tradition prefers to look for syntactic explanations. The book-length study by Eckardt (2006) is referenced but not discussed by Rosenbach in connection with the issue of reanalysis.

We suggest that formal semantics has great potential value in enforcing precision of analysis and argumentation, while at the same time not coming encumbered by an accompanying innatist ontology of language or a particular theory of universal syntax. There is not room here to go into much detail, but Eckardt (2006: 28–30) also emphasises the unhelpfulness of the formalist vs. functionalist dichotomy, and shows how careful formulation of the context-dependent and context-independent parts of linguistic meaning can lead to a model of semantic reanalysis in which what changes in the first instance is not the semantic representations themselves but the way they interact (2006: 236–237). A good case in point is her account of the development of the English *be going to* construction. In modelling such changes both Eckardt and Roberts have recourse to a Reichenbach-inspired decomposition of the traditional notion of tense into two sub-relations between event-time and reference-time on the one hand and reference-time and speech-time on the other. The difference is that Roberts, following Cinque, adds these to the syntactic ontology whereas Eckardt's account incorporates them directly into the semantics, where they will in any case have to be even on a Minimalist story. She then builds the bridge between the motion and the futurate interpretations of *be going to* via a pragmatically interpretable concept of IMMINENCE. All the work is done in the semantics and the pragmatics and the syntactic structure can in consequence be pared to the minimum. Interestingly, her analysis also leads to the conclusion, which we share and which is also shared here explicitly by Traugott and Trousdale, Roberts and van Gelderen and implicitly perhaps by other contributors, that gradualness in change is apparent rather than real. More problematic is her recognition of a clear dichotomy between logical and non-logical meaning (cf. von Fintel 1995 and Roberts, this volume), where in all probability intermediate types of semantic category will need to be recognised and modelled. However, before we can be sure, we need more studies such as that of the change of German *selbst* from 'self' to 'even', which Eckardt claims occurs 'without any intermediate stages' (Eckardt 2006: 241).

7. LFG, gradience and stochastic OT

In Section 4 we suggested that an approach such as LFG, in which function and constituency are separately and independently represented, is best suited to modelling the data of grammaticalization whether of our types (a) or (b) (cf. already Vincent 2001). We also note that LFG comes equipped with its own version of formal semantics, based on so-called resource logics, which will allow the insights of Eckardt and von Fintel to be incorporated. In the classic variant of LFG f-structure and c-structure are linked via a system of annotations on phrase-structure

nodes as briefly evidenced in (7)–(9) above. More recent refinements which allow greater responsiveness to diachronic variation in the data are the use of OT-style constraints to model change (see Vincent 2000 and references there), and in particular the development of stochastic OT, where frequency of use of different constructions can be directly incorporated. This allows the issue of gradience to be addressed in ways that move beyond Aarts' distinction between subsective and intersective gradience (called into question in the chapter by Denison). See Bresnan et al. (2007), Bresnan and Hay (2008), and Sharma et al. (2008) for some discussion and exemplification.

8. Dynamic syntax

This theory, developed by Ruth Kempson and a number of colleagues and students, is formal in the sense of relying on the tools of mathematical logic in order to define a system which models the properties of linguistic systems starting from the perspective of the hearer/parser (see Kempson et al. 2001 and the papers in Cooper and Kempson 2008). In this sense it represents a more radical departure than any of the other approaches discussed here from the traditional assumption of a theory of grammar as an account of linguistic knowledge ('competence' in the Chomskyan sense) which is neutral between speakers and hearers. It has been applied to linguistic change (see Cann and Kempson 2008 and Bouzouita 2008) exploiting the mechanism of 'routinization'.[11] Thus, in the case of the emergence of the Spanish clitic system, Bouzouita shows how in the Latin phase syntax and pragmatics combine to build a structure, which cannot be completed until the relevant pronoun is encountered in the left to right parse of the sentence. In the Mediaeval Spanish phase, by contrast, the same information has been built directly into the lexical entry for the clitic pronoun. In effect, therefore, the change takes part of the syntactic representation of a clause and pre-compiles it as lexical information, thus facilitating the parsing and interpretation of the sentence. This offers a striking new perspective since it reverses the traditional idea of grammaticalization as lexis becoming syntax and instead sees it as syntax being incorporated into the lexical entry. Studies framed within this model are as yet few in number but explorations of models of this kind hold out attractive prospects for a future convergence of syntactic theorising and the understanding of the mechanisms, both formal and functional, that underly grammaticalization.

11. For discussion of these issues and a comparison of LFG and DS, see Vincent (2009).

9. Conclusions

In this chapter we have not argued for any one approach to modelling grammaticalization but, in reviewing (some of) the arguments developed in (some of) the contributions to the volume, we have been led to the following general conclusions.

- The theoretical net can usefully be cast more widely and there are more theories to be taken into account than CG and Minimalism.
- Different theoretical approaches lead one to look for explanations in particular places, so that awareness of a plurality of approaches means a better appreciation of potential explanations, however these are ultimately modelled.
- There are good methodological grounds not to exclude formal approaches.
- Formal methods do not in and of themselves exclude functionalist explanations.
- Linguistic form and function do not necessarily change together, and this argues in favour of a parallel correspondence type of architecture rather than the intrinsic linking of form and function which, in different ways, is characteristic of both GB/Minimalism and Construction Grammar.

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