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*Kasper Boye,
Elisabeth Engberg-Pedersen (Eds.)*

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Language Usage and Language Structure

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Language Usage and Language Structure

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Introduction

During most of the 20th century, the classical Saussurean distinction between language use and language structure remained untranscendable in much linguistic theory. The dominant view, propagated in particular by generative grammar, was that there are structural facts and usage facts, and that in principle the former are independent of, and can be described in complete isolation from, the latter. With the appearance of functional-cognitive approaches on the scene, this view has been challenged. Language must be understood basically as a communicative and cognitive phenomenon, it is argued, and language structure can thus only be understood in terms of cognitive and social-communicative restrictions on language use. That is, structure can only be understood as usage-based.

For two reasons time is ripe for a focused study of the interaction between usage and structure. Within the generative camp the view of structure as usage based has inspired a more explicit and precise description of the status of usage (Newmeyer 1998, 2003, this volume). Within the functional-cognitive camp it has blurred the status of structure. Perhaps because functionalists and cognitivists have had to position themselves in relation to generative grammar, some have emphasized the role of usage facts to the extent that structure is largely ignored. They have favoured attested instances of actual linguistic communication as their empirical source, and they have paid special attention to phenomena in which the role of language use cannot so easily be dismissed. But more importantly, a group of scholars, with P. J. Hopper and S. A. Thompson as central figures, have stressed on a theoretical level the ontological primacy of usage to a degree where at least under one interpretation it seems that structure is discarded as an epiphenomenon (e.g. Hopper 1998, Thompson 2002; cf. Langacker, this volume, for detailed discussion). Structure, they claim, is not a prerequisite for linguistic communication, but rather a constantly emerging by-product of the negotiation of form and meaning in communicative interaction.

However, accounts of language use, language acquisition and language change are impossible without an assumption about what it is that is being used, acquired, or subjected to change. And more moderate functionalists and cognitive functionalists recognize both structural facts and usage facts as genuine facts central to the understanding of language. Still, the linguistic literature that shares this position does not abound with explicit, precise characterizations of the relationship between usage and structure. Indeed, it seems fair to say that the visibility of Hopper and Thompson's extreme position in the linguistics landscape is a result of the fact that most functionally and cognitively oriented

linguists have prioritized other issues over and beyond the relationship between usage and structure.

Peter Harder is among the few who have placed the issue high on the agenda (e.g. Harder 1996, 2003, 2008). While he takes a usage-based approach to the study of language, he does not do so in the sense that he conceives of usage facts as the only important facts. He conceives of usage facts as the ontologically and hence theoretically, methodologically and analytically basic level. But he also emphasizes that linguistic structure is a phenomenon in its own right. In his view, structure is usage-based in the sense that it is distilled out of previous acts of usage, but unlike epiphenomena it has causal force in that it constrains subsequent acts of usage.

The present volume is dedicated to Peter Harder on the occasion of his 60th birthday. It brings scholars together from different theoretical positions to address theoretical and methodological aspects of the relation between language use and linguistic structure. The contributors differ with respect to how they conceive of this relation and, more basically, with respect to how they conceive of linguistic structure. What they have in common, however, is that they recognize structure and usage as non-reducible linguistic phenomena and take seriously the challenge to describe the relation between them.

The first part of the volume is concerned with one of the central topics in the recent discussion of the relationship between usage and structure: clausal complementation.

Two papers deal with the use and structural properties of complement-taking predicates such as *think*. F.J. Newmeyer addresses S.A. Thompson's 2002 analysis according to which complement-taking predicates are not subordinating predicates but rather part of epistemic/evidential/evaluative fragments that must be understood as combining with main clauses rather than with subordinate clauses. In a study of conversational data comparable to those on which Thompson bases her analysis, Newmeyer first criticizes Thompson's analysis and argues that such data in fact strongly support the conception of complement clauses as subordinate. Subsequently, he presents arguments against Thompson's and others' view of grammar as consisting entirely of formulas and fragments. Newmeyer endorses the analysis proposed in Boye and Harder 2007 that complement-taking predicates like *think* have two structurally distinguishable variants: a lexical and a grammatical one. He also agrees with Boye and Harder that the diachronic relation between the two variants can only be understood if the discourse prominence of *I think* in actual communication is taken into account. But he maintains that while grammatical structure is shaped by usage

phenomena, usage-based generalizations cannot play any direct role in grammatical analysis.

A. Verhagen in turn addresses Newmeyer's study in the present volume. After giving an overview of recent contributions to the study of complementation, Verhagen sets out to demonstrate that full commitment to some form of grammatical autonomy is compatible with a view of usage as ontologically basic. In a critique of Newmeyer's position, he argues that distributional tests cannot stand alone in grammatical analysis, and that Newmeyer in his critique of Thompson (2002), as well as in his argumentation in support of the analysis of complement-taking predicates as subordinating, jumps to unwarranted abstractions. Rather than an analysis in terms of shared abstract structures, Verhagen emphasises, the facts pertaining to complementation suggest a usage-based analysis in terms of a hierarchically organized network of structures in which some cases of complementation figure on levels of relatively concrete, idiosyncratic constructs. Whether or not different concrete constructs give rise to an abstraction in terms of a shared structural template is conditioned by usage. While structure is autonomous in the sense that it has properties that are not found in usage, these structures must still ultimately be explained in terms of usage.

K. Boye's contribution is related to both Newmeyer's and Verhagen's. Boye deals with the usage and structural properties of raising verbs and auxiliaries. He first points out that the distinction between raising verbs and auxiliaries is not clear in the literature, and then presents evidence that there is a structural similarity between the constructions in which the two classes of expressions occur. He then goes on to show, however, that this similarity notwithstanding, a distinction can be made which mirrors the distinction between lexical and grammatical complement-taking predicates proposed in Boye and Harder 2007. Both distributional facts and facts pertaining to discourse prominence support a distinction between raising verbs as lexical expressions and auxiliaries as grammatical expressions. In an analysis intended to capture both sets of facts Boye argues that while raising verbs are coded as potentially discursively primary, auxiliaries are coded as necessarily secondary. The analysis goes with a functional theory of grammatical status which manifests the view that structure is distilled out of usage, but still, as soon as it has appeared, is a linguistic phenomenon in its own right.

The chapters in the second part of the volume are all concerned with the rise of structure.

R.W. Langacker takes his point of departure in pervasive conceptions of usage and structure. These conceptions lead to a conflict between approaches to language which focus on usage and approaches which focus on structure – roughly, the conflict between functional and formal approaches. From a usage-

based perspective Langacker suggests an account that reconciles usage with structure, as well as cognitive with social aspects of language. A central point is that structure is conceived of as a dynamic phenomenon. It consists in patterns of processing activity that are established and maintained through abstraction from instances of linguistic activity occurring in social interactions. Langacker characterizes his account as steering a middle course between generative grammar's view of structure as a stable, enduring and discretely bounded object, and the full rejection of this view. It allows him to describe in a precise way in which sense one can appropriately talk about 'the structure of linguistic expressions', 'a language', 'the structure of a language', and 'the emergence of structure through usage'.

L. Heltoft deals with language change as reanalyses. He emphasizes that linguistic usage presupposes the existence of an organised sign inventory shared by those participating in using the language. Hence usage-based grammars must include levels of structure to account for what a linguistic community has in common. Language changes are initiated in usage as (faulty) hypotheses that become adopted by (parts of) a linguistic community as hypotheses about what the actual utterance is an instance of, i.e. structure. Heltoft claims that grammatical structure is organised according to similar principles across the traditional divisions of morphology, syntax and semantics, and he suggests a revival of the concept of a paradigm on a semantic basis. Not only morphology, but also word order and constructional syntax can be approached in terms of content-based paradigms. Many instances of changes in the distribution and range of constructions: extensions, restrictions and even their withering away, can be understood as adaptations to content changes at the structural level.

In his contribution T. Givón focuses on the ontogenetic and possibly phylogenetic transition from single-word utterances to multi-word clauses. He investigates what he calls verb-less – or scattered – clauses, i.e. nominal constructions outside the intonation contour of a verb. Such constructions are as well-governed as nominal zero anaphora. The phenomenon is shown to be frequent in oral narrative, second language pidgin, Broca's aphasic speech and early child language. Analysis of these types of language use gives rise to the claim that languages have two processing modes, one – the grammatical mode corresponding to Chomsky's competence – with nominal's under the same intonation contour as the licensing verb, and one – the pre-grammatical mode – with the nominal arguments placed under their own separate intonation contour. In the course of childhood the latter turns into the former by combination or synthesis in a process of transferring information from the adjacent context to an explicitly coded verbal clause, possibly reflecting the development from single-word utterances to multi-word clauses in phylogeny.

The third part of the volume deals with structure and usage in relation to variation and language comprehension and production.

E. Engberg-Pedersen and M. Poulsen discuss whether deviations induced by the context in the production process are a possible source of structural change. They analyse a case of non-standard agreement in Danish, i.e. predicative adjectives apparently agreeing in number with their prepositional object rather than the subject. So-called trigger-happy agreement has been seen in various languages where the verb may agree with different arguments depending on their topicality or topicworthiness. Corpus analysis shows, however, that the frequency of the non-standard agreement pattern in Danish is within the range of induced production errors in psycholinguistic experiments focusing on number agreement in English. Moreover, a reading-time experiment demonstrated prolonged reading time with deviations from standard agreement. But clauses where the predicative adjective agreed with the prepositional object and not the subject were faster to read than clauses where no constituent matched the adjective in number. That is, deviations from standard agreement rules are less likely to disrupt the comprehension process when alternative controllers are present. Engberg-Pedersen and Poulsen suggest that the prospect of a usage phenomenon such as variable predicative agreement in Danish developing into trigger-happy agreement proper depends on the language users' interpretation of it as a sociolinguistic variable, a slip, or a feature with potential functional value.

D. Geeraerts' point of departure is Harder's social interactionist conception of usage-based linguistics: 'Like all social facts, [...] the state of a language has no precise location in the community. Social facts are sustained by individual mental states without being reducible to them, existing within boundaries of variation that are continually created and modified as a result of feedback mechanisms in networks of interactive practices' (Harder 2003: 69). Geeraerts finds that Harder's formulation does not pay due attention to two consequences of the social turn in the conception of a usage-based language system. First, a social view of linguistic structure entails a variationist conception of the linguistic system. Instead of one homogeneous system, a language takes the form of a cluster of lectal systems, each of them fragmentary with regard to what we would traditionally consider to be 'the' language. Second, we have to take into account a further degree of heterogeneity; lects have prototype structure. Drawing a parallel with Johannes Schmidt's wave theory of dialects and linguistic change from 1872, Geeraerts demonstrates his points by an analysis of a spoken language corpus of Belgian Dutch and Netherlandic Dutch, including sociolinguistic and geographic variables such as register, gender, and age.

J. L. Mackenzie investigates the consequences of the *rapprochement* in recent years between linguistic theory and psycholinguistic work on usage as

linear incremental processes of language comprehension and production. In two papers Harder (2007a, 2007b) has criticized grammatical models such as Functional Discourse Grammar (FDG) for too hasty an import of notions of incrementalism from language processing into the model. Harder insists on the distinction between pattern and process and the specific functional contribution of grammar as a socially recognized procedure for encoding and decoding. Mackenzie contrasts Harder's view of grammar as a set of instructions with his own view of grammar as a declarative set of constraints that act as a brake on incremental 'first come, first served' production. He further points out that Harder's instructionalist view 'cannot withdraw entirely from the arena of actual, time-consuming interaction'. MacKenzie's own incrementalist perspective with the implication that each discourse act contains only one focus and that more complex utterances will involve non-focal elements relates to Givón's paper on the rise of complex clauses from verbless clauses and on Boye's examination of grammatical elements as obligatorily discursively secondary.

In her paper M.-B. Mosegaard Hansen explores the possibility of reconciling linguistic structure and usage through a conception of the linguistic sign as triadic rather than dyadic. She proposes to replace the traditional structuralist view of the sign as involving two – necessary and sufficient – components, a formal manifestation (in French, *le signifiant*) and a content (in French, *le signifié*), with the pragmatist conception found in the works of C.S. Peirce. The Peircean sign function operates with an irreducible union of three elements, a *representamen*, an *object* and an *interpretant*, the latter of which is the pragmatic linchpin that provides for the interface between structure and usage. She further develops Peirce's notion of *ground*, pointing to its relevance for contemporary theories such as frame semantics and the Theory of Language-Inherent Argumentation. She argues that the proposed model is in a better position to account for linguistic variation and change, both of which are phenomena that have their origin in usage, but which have structural repercussions.

In the final part of the volume, W. Croft focuses on methods of syntactic argumentation – that is, the link between language use as the empirical input to linguistic analysis and claims about language structure as the output of it. He describes and illustrates ten assumptions found in the arguments of linguists, some being characteristic of Chomskyan syntacticians, others of functional, cognitive, typological or theory-neutral descriptive linguists. The ten assumptions, he argues, are all unwarranted. In fact, some of the assumptions are probably fallacies. Croft emphasizes that rigorous syntactic argumentation does not presuppose any of the ten assumptions. What links usage to claims about structure is the distributional method, understood as an examination of the range of occurrences of linguistic expressions in all constructions, an examination which takes

into consideration both meaning and morphosyntactic form. Distributional analysis, Croft argues, provides the soundest and most important basis for syntactic argumentation.

References

- Boye, Kasper and Peter Harder
2007 Complement-taking predicates: Usage and linguistic structure. *Studies in Language* 31.3: 569–606.
- Harder, Peter
1996 *Functional Semantics: A Theory of Meaning, Structure and Tense in English*. (Trends in Linguistics: Studies and Monographs 87.) Berlin/New York: Mouton de Gruyter.
- Harder, Peter
2003 The status of linguistic facts: Rethinking the relation between cognition, social institution and utterance from a functional point of view. *Mind and Language* 18.1: 52–76.
- Harder, Peter
2007a Grammar, flow and procedural knowledge: Structure and function at the interface between grammar and discourse. In Mike Hannay and Gerard J. Steen (eds.), *Structural-Functional Studies in English Grammar: In Honour of Lachlan Mackenzie*. (Studies in Language Companion Series 83.), 309–335. Amsterdam/Philadelphia: John Benjamins.
- Harder, Peter
2007b Shaping the interactive flow: Meaning as input, process and product. In: Kasper Boye, Michael Fortescue and Peter Harder (eds), *Language and Comprehension: Input, Process, Product*. (Acta Linguistica Hafniensia 39), 7–36. Copenhagen: Linguistic Circle of Copenhagen.
- Harder, Peter
2008 Determiners and definiteness: Functional semantics and structural differentiation. In: Henrik H. Müller and Alex Klinge (eds.), *Essays on Nominal Determination: From Morphology to Discourse Management*, 1–25. Amsterdam/Philadelphia: John Benjamins.
- Hopper, Paul J.
1998 Emergent grammar. In: Michael Tomasello (ed.), *The New Psychology of Language: Cognitive and Functional Approaches to Language Structure*, 155–175. Mahwah, NJ/London: Erlbaum.
- Newmeyer, Frederick J.
1998 *Language Form and Language Function*. Cambridge, MA: MIT Press.
- Newmeyer, Frederick J.
2003 Grammar is grammar and usage is usage. *Language* 79: 682–707.

Thompson, Sandra A.

2002 'Object Complements' and conversation: Towards a realistic account.
Studies in Language 26.1:125-64.

Usage and structure:
The case of clausal complementation

What conversational English tells us about the nature of grammar: A critique of Thompson's analysis of object complements

Frederick J. Newmeyer

1. Introduction¹

A belief unifying the majority of those who consider themselves to be “cognitive linguists” or “functional linguists” is that the mainstream trend in syntactic theory, namely formal approaches in their various manifestations, has led the field in a profoundly retrograde direction. A sizeable percentage of these individuals pinpoint the source of this half-century of aberrance to the nature of the data that formal linguists appeal to in theory construction, that is, “disembodied sentences that analysts have made up ad hoc, . . . rather than utterances produced by real people in real discourse situations” (Tomasello 1998: xiii). The consensus is that only the focus on “naturally occurring discourse” has the potential to lead to “descriptions and explanations of linguistic phenomena that are psychologically plausible” (xiii), namely those descriptions and explanations that “are basically cognitive schemas of the same type that exist in other domains of cognition” (xvi).

Sandra A. Thompson is an undisputed pioneer in the attempt to steer syntactic theory away from reliance on introspective data and towards naturally occurring discourse. For several decades her research papers have stressed the idea that grammar emerges from discourse and can be understood only in terms of the discourse strategies employed in everyday conversation. To illustrate:

[W]e claim that the discourse distinction between foregrounding and backgrounding provides the key to understanding the grammatical and semantic facts [about transitivity] we have been discussing. (Hopper and Thompson 1980: 295)

I have attempted to characterize the discourse function of the detached participle in English and to show how its use as a local backgrounding device explains its distribution across discourse types as well as some of its grammatical properties. In doing so, I hope to have demonstrated the heavy reliance of grammar on the

goals of the communicative event. That is, understanding grammar is inseparable from understanding the principles by which language users decide how to package an entire discourse. (Thompson 1983: 64)

[L]inguistic forms are in principle to be considered as *lacking categoriality* completely unless nounhood or verbhood is forced on them by their discourse function. (Hopper and Thompson 1984: 747; emphasis in original)

One of Thompson's most ambitious articles, "Object complements' and conversation: Towards a realistic account" (Thompson 2002; henceforth "*OCC*"), argues that "the facts of everyday language" (*OCC*: 155) do not support the mainstream view that sentential complements are grammatically subordinate to a complement-taking predicate. Rather, "the great majority" (*OCC*: 136) of what have traditionally been analyzed as complement-taking predicates are better analyzed as epistemic/evidential/evaluative ("e/e/e") fragments, taking complements that are not grammatically subordinate at all.² Among the sentence types that are claimed by Thompson to require such a reanalysis are those containing *that*-clauses (1a), complements headed by *if* and *whether* (1b), and embedded questions:

- (1) a. *I thought she might pull it out of the garbage.* [= *OCC* (1)]
- b. *I don't know if they did.* [= *OCC* (2)]
- c. *I don't give a shit what she thinks.* [= *OCC* (3)]

Indeed, *OCC* appears to reject tout court the idea of structural subordination. Even the "5% of the complements in [her] database that are not so readily analyzable as formulas" (*OCC*: 150) "are still best analyzed as e/e/e fragments, but that, on a continuum of formulaicity, they are less formulaic than those we have been considering so far" (*OCC*: 151). Thompson suggests "that analyses that recognize these points hold the greatest promise of contributing to our understanding of the social and cognitive foundations of what we think of as grammar" and "provide support for the view that grammar emerges from, and can only be understood in terms of, language use" (*OCC*: 126). As a matter of fact, nowhere in *OCC* do we find a precise characterization of the structural properties of complement-taking predicates or their complements. The reader is left with the sense that structure is so beholden to discourse that providing such a characterization would serve no purpose.

OCC has been subject to a rigorous and compelling critique by Boye and Harder (2007) (henceforth "B&H"). B&H approach the question of complement-taking predicates wholly from the point of view of usage-based linguistics. They demonstrate that in order to account for the full range of facts pertaining to

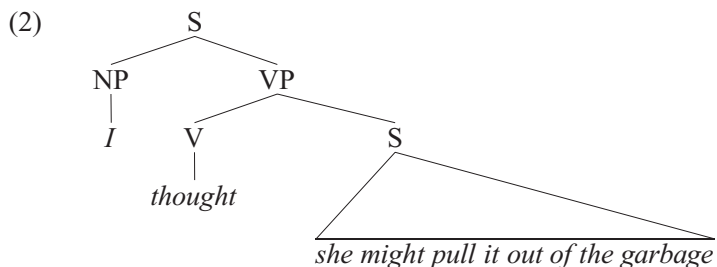
object complementation, it is necessary to posit the existence of structural subordination. Indeed, more broadly it is necessary to appeal both to morphosyntactic generalizations and to semantic/pragmatic ones. B&H show that only such an approach is capable of accounting for the diachronic grammaticalization-based facts pertaining to complements and of explaining why structure and function are not always in lockstep. I outline and comment upon B&H in section 4 below.

The present paper endorses the essential elements of B&H, but goes considerably farther in its critique of *OCC*. To be specific, it argues that *conversational data* give no credence to the idea that English speakers fail to represent as structurally subordinate what have traditionally been considered to be subordinate clauses.³ In fact, when we look at such data, we are impressed with the degree that they support two leading ideas of formal linguistics: first, that our mental grammars are of high complexity and abstractness; and second, that while usage-based generalizations interact in subtle ways with purely grammatical generalizations, the latter cannot be derived from the former.

The paper is organized as follows. Section 2 defends the classical position that finite clausal complements (with or without the *that*-complementizer) are structurally subordinate to the clause containing a complement-taking predicate. In section 3 I argue against the view, advocated by Thompson and others, that grammar might be productively viewed in terms of collections of “fragments” and/or “formulas.” Section 4, as noted above, outlines and endorses the critique of *OCC* in Boye and Harder (2007). Section 5 concludes the paper with a discussion of some general issues regarding the interaction of structure and usage.

2. In defense of structural subordination

In this section I demonstrate that conversational data support the classic analysis of complement-taking predicates (henceforth, “CTP”), in which such predicates are structurally main verbs and their complements are structurally subordinate to them. That is, a sentence like (1a) has a structure schematically representable as (2):



2.1. On the notions “complement” and “object”

OCC begins by attempting to debunk two ideas: first, that “complement” is a unitary category and, second, that complements should be analyzed as arguments. As far as the former point is concerned, *OCC* is completely correct. No formal syntacticians, to my knowledge, consider “Complement” to be a category at all. “Complement” is no more than a cover term for “an XP that is a sister to a head” (Carnie 2007: 164), useful for informal description perhaps, but of no broader significance. The subordinate clause depicted in (2) is a complement, but nothing follows from that fact per se.

As the context of *OCC* makes clear, the claim that complements should not be analyzed as arguments should be taken to apply to the syntactic sense of the term “argument,” not the semantic sense. To be specific, *OCC* argues that complements should not be analyzed as subjects or objects of their predicates. One piece of evidence cited in support of such an idea is the putative impossibility of many CTPs, including some of the more frequent ones, to occur with bare NP objects. Among these are said to be the verbs *think*, *realize*, *decide*, *wonder*, *figure*, *hope*, and *wish*, which “can’t in fact occur with an NP object” (*OCC*: 129). However, conversational data do not bear out such a claim, as is evidenced by the following naturally-occurring examples taken from the Fisher English Training Transcript Data, Parts 1 and 2.⁴

- (3) a. *B: you know leave town on a date or you know things like you know that like i think **they always thought the worst** you know and it never happened so you know but*
 b. *B: and i guess **i realized the seriousness of it** 'cause*
 c. *A: and how **you decide the difference** and what you do*
 d. *A: **i wonder that** myself*
 e. *B: my family's jewish so we don't celebrate Christmas*
*A: **i figured that** but that's okay*
 f. *A: yeah i'm i'm the same as you **i hope the same thing** too*
 g. *A: you know and and the spirit of giving and love is there and **i just wish a lot of time** that is why i said i would like to have to have a make a friend day and will like*

Many CTPs, of course, occur quite productively and uncontroversially with both sentential complements and NP complements, among which are *know*, *see*, and *hear*:

- (4) a. *A: i undercooked some eggs and **i knew that i probably shouldn't eat them** but i did anyway and i paid for it the next day*

- b. *B: when iraq contra broke i'd already knew the story but i didn't believe it [laughter]*
- (5) a. *A: and i was real concerned when i saw that i had to put my social security number down me neither [laughter]*
b. *A: and i think it was there that i i actually saw the second plane*
- (6) a. *A: yeah i've heard that [mn] switzerland's a beautiful country*
b. *A: but living here in quebec i i've also heard the other side*

Applying the logic of *OCC*, then, one would be forced to conclude that these three CTPs do take structural subordinate clause complements. But in any event, the logic strikes me as flawed. What principle of grammar, formal or functional, would require a CTP to take a bare NP complement as a precondition for its taking a clausal one?

OCC also claims that no tests exist that serve to isolate the category “object.” For example, it claims that the passivization test fails in two directions: objects of “low-transitive verbs such as *resemble*, *have*, and *mean*” (*OCC*: 130) do not passivize, while certain objects of prepositions do passivize, as in *This house has never been stepped into*. With respect to the former point, a long tradition in syntactic theory denies object status to the complements of such verbs, thereby explaining their resistance to passivization. Such complements, for example, have been analyzed as locations (Jackendoff 1972), predicate nominatives (Bresnan 1978), and quasi-arguments (Adger 1992). But suppose that such complements are in fact correctly analyzed as objects. If that were the case, then the passivization process would simply be formulated in such a way as to prevent “low-transitive verbs” from undergoing it. And with respect to the latter point, it has long been known that, subject to certain discourse-pragmatic conditions, PP complements allow their objects to be fronted under passivization (Takami 1988; Newmeyer 1998b). What relevance does that fact have for the question of whether a certain class of verbs takes sentential direct objects or not?

OCC is certainly correct in claiming that object complements rarely (if ever) occur as subjects of passivized verbs in conversation. Sentences like the following do not occur in the Fisher corpora and are deemed by the *Longman Grammar of Spoken and Written English* (“*LGSWE*”; Biber et al. 1999) to be “virtually non-existent in conversation” (p. 676):

- (7) a. *That veterinary medicine was playing a major factor was often thought.* [constructed example]
- b. *That guys want commitment is not generally believed.* [constructed example]

- c. *That terrorism will not work to take over a country is often said.*
[constructed example]
- d. *That they are efficient in what they do has long been known.* [constructed example]

Does the lack of attestation of such examples support the idea that sentential complements are not objects? Not at all, and in part for reasons that are actually acknowledged in *OCC*, which points out that "... for a host of pragmatic reasons" (*OCC*: 129) sentential complements are disfavored as subjects of passives. A possibly stronger reason involves the difficulty of parsing heavy structures in subject position. Hawkins (1994; 2004) has demonstrated that when speakers have two alternative means of expressing the same propositional content, they will generally choose the more readily parsed of the two. Hence, one predicts that sentences like (7a–d) should occur in conversation with the passive subject extraposed. Such sentences do occur (see 8a–d), thereby providing dramatic confirmation of the idea that sentential complements can be objects of main clause verbs:

- (8) a. *A: of veterinary medicine it was thought that that was playing a major factor in that i mean but they're still every bit as much professional having to meet every dead- as many you know goals and and steps as as the males*
- b. *A: i guess it depends on the girl n- also because i like i've said [sigh] um for guys it's tends to be tha- i mean it's believed that they're they want commitment but when after the years go by*
- c. *B: well it's said that terrorism will not work to take over a country because it's not organized*
- d. *B: you know so i mean you would think there would be a bigger target there it's just you know it's known that they're so efficient in what they do and we need to incorporate their*

2.2. Complements are subordinate

The centerpiece of *OCC* is the claim that sentential complements are not subordinate clauses. The primary argument in support of this claim, which is supported by numerous examples, is that:

... the CTP-phrases [the CTP and its subject – FJN] do not constitute the speakers' interactional agenda, but are instead functioning to convey the speaker's epistemic, evidential, or evaluative stance towards the issue or claim at hand. ... I take these data to provide strong evidence against the idea that finite indicative

complements are “subordinate” in Langacker’s sense of a “clause whose profile is overridden by that of the main clause.” (*OCC*: 134)

For example, in the following excerpt, “the speakers are engaged in an assessment activity . . . Terry offers an epistemic stance on an assessment of her friend’s collage, and Abbie and Maureen each offer congruent assessments” (*OCC*: 132).

- (9) (talking about a photo collage on the wall) [= *OCC* (11)]
TERRY: *I think it’s cool.*
ABBIE: *it i=s cool.*
MAUREEN: *it i=s great.*

Put in simple terms, the “agenda” of the three speakers is to assert the coolness and the greatness of the photo collage, not to assert that they happen to be thinking about something. Thus there is no sense in which, according to *OCC*, *it’s cool* should be regarded as subordinate to *I think*.

Let’s assume for the time being that *OCC* is correct that (9) is representative in the sense that the CTP-phrase does no more than express an e/e/e stance. What would follow from that about the grammatical analysis of sentences like *I think it’s cool*? The answer is “Nothing at all.” All that would have been accomplished is the demonstration that the complement phrases are not *conversationally* subordinate. Nothing would have been provided to argue that they are not *syntactically* subordinate. In fact, it is easy to show on the basis of naturally-occurring examples that an analysis like (2), embodying the structural subordination of the complement phrase, is on the right track. For example, consider utterances like (10) with an explicit *that*-complementizer:

- (10) *A*: *well i well i think that when we went we had places reserved so it wasn’t a problem*

The complementizer *that* is uncontroversially a marker of subordination. *OCC* would predict, then, that it should be all but absent from conversational speech. Such is not the case, however. In the Fisher corpora there are 92,392 occurrences of the sequence *I think* and 14,969 of *I think that*. In other words, where there is a first-person singular subject for *think* and the verb is in the present tense, speakers use the complementizer about 16% of the time.⁵ That suggests that they have a mental representation of the complement clause as grammatically subordinate, whatever its role in discourse might be.

From the fact that speakers clearly manifest a structurally subordinate position for complements 16% of the time, it does not of course logically follow that they do so 100% of the time. But surely that is the default hypothesis. Why would

the presence or absence of the complementizer be expected to have dramatic implication for syntactic structure? Importantly, there is little or no discourse-based evidence that the structures should differ. Consider, for example, the following utterance:

- (11) *B: exactly yeah that that's pretty clever yes it could be done certainly i think that the the thing the thing about the japanese versions i think there there's a deliberate you know measure of sadism in it*

Speaker B has used *I think* and *I think that* virtually interchangeably.⁶ In other words, utterance (11) provides no evidence that sentences containing a *that*-complementizer and those lacking one should have radically different structures.

Another test for structural subordination in English is the occurrence of *each other* as the subject of a tensed verb. *Each other* never occurs as the subject of a main clause verb. The following is impossible:

- (12) **Each other went to the store together.*

However *each other* does occur as the subject of a tensed verb if the clause is subordinate:

- (13) a. *A: [noise] uh joking that that each other are homosexual and then saying oh no i don't like guys how do you know ha ha ha you know and [laughter]*
 b. *A: and they're they're they're they're all thinking about what each other is thinking about them and they have no time to concentrate on anything else an'they're all insecure because they're constantly thinking*
 c. *A: because we have so much things we can find out about each other and do things together and always have something to talk about because we we don't like anything that each other likes so we're never we're d- we're never*

In other words, the clause *that each other are homosexual* in (13a) must be grammatically subordinate to the main verb *joking*. And despite its subordinate status, that clause conveys the main point of the message, since the guys' homosexuality had not been mentioned up to that point. In other words, grammatical status and usage status need to be distinguished.

Let us turn now to negative polarity items (NPIs). An NPI is a word or phrase that can occur only in the scope of a negative element in the same clause or in a higher clause if the higher verb is what is called a "Neg-raising predicate." *Any* and *ever* are two NPIs that are much used in conversation. The (a) sentences of

(14–15) illustrate with a negative in the same clause; the (b) sentences with the Neg-raising predicate *think* in a higher clause:

- (14) a. *B: yeah **it doesn't have any deep meaning.***
 b. *A: and and i don't know **i don't think the cat has any shots***
- (15) a. *A **it won't ever go back to being the way it used to be***
 b. *B: and i think even **i don't think he's ever going to capture saddam***

Note that without the negative element the sentences would be impossible:

- (16) a. **It has any deep meaning.*
 b. **I think the cat has any shots.*
- (17) a. **It will ever go back to being the way it used to be.*
 b. **Even I think he's ever going to capture Saddam.*

And further note that NPIs are impossible if they occur in the second of two paratactically-linked clauses, even if there is a Neg-raising predicate in the first clause:

- (18) a. **Do you know what I don't think?: the cat has any shots.*
 b. **Here's what I don't think: he's ever going to capture Saddam.*

In other words, to explain the possibility of *the cat has any shots* in (14b) and of *he's ever going to capture Saddam* in (15b) one needs to posit that these clauses are in a subordinate relationship to the CTP *think*.

Finally, consider the mandative subjunctive, that is, the use of uninflected verb forms after predicates such as *suggest*, *recommend*, *insist*, *demand*, and *require*. This construction appears in conversational speech:

- (19) a. *B: maybe **we should suggest that on these topics they be a little bit broader** on them as far as uh speci- more specifications or maybe that's the whole idea no specifications*
 b. *A: yeah well it's great fun **i recommend that everyone everyone take at least one one dance class once** [noise] [laughter]*
 c. *B **my wife's always insisted that somebody else do it***
 d. *A: yeah it it's really i mean i understand why **all of those employees demanded that he resign** and he did he just did that yesterday but*
 e. *A: i don't know what kind of training they went through i mean how do i know i mean they didn't really seem to have it **they just required that you be you know eighteen years or older** and i'm just like [sigh] okay they don't require a whole lot for this well how how good is the training you know*

However, in Modern English (whether conversational or literary), we do not find the mandative subjunctive in main clauses:⁷

(20) **He be punished for his transgressions.*

Thus the only reasonable analysis of the phrase containing the mandative subjunctive is that it is grammatically subordinate.

OCC does provide one syntactic argument against complement clauses being analyzed as subordinate. It points to the claim in that “only subordinate clauses can be focused” (Haspelmath 1996: 15). Examples of focused subordinates like (21b), the focused version of (21a), are not uncommon in the Fisher corpora:

- (21) a. *I think we really don't have any business over there.* [constructed example]
 b. *A: what i think is that we really don't have any business over there*

OCC provides two examples, however, of where the focus test seems to fail to apply to clauses that are generally taken to be subordinate. It concludes on that basis that the test does not provide any support for the idea that *in general* complements are subordinate. The examples are the following:

- (22) a. *Let's find out if it works.* [= *OCC* (19a)]
 b. **What let's find out is if it works.* [= *OCC* (19b)]
- (23) a. *I'm convinced that it's okay.* [= *OCC* (20a)]
 b. **What I'm convinced is that it's okay.* [= *OCC* (20b)]

There is an obvious discourse-based reason, however, for the impossibility of sentences like (22b). As Prince (1978) pointed out, in pseudo-clefts the clause in which the *wh*-phrase is fronted represents information that the speaker can assume that the hearer is thinking about. Such a discourse role is incompatible with the hortativity of the *let's*-clause.⁸ And as far as (23b) is concerned, to focus a complement to an adjective it is necessary to add its lexically-associated preposition or to insert the default preposition *of*, as the following naturally occurring examples attest:

- (24) a. *A: see see i'm **what i'm afraid of** is just on general principle that the more freedoms and privacy that we give up the more they're gonna take*
 b. *B: the issue and **what i'm rather disappointed in right now** is that the u..n. hasn't give out the a full*

- c. *B: but **what i'm torn about is** if bush s doing this because he really feels like this is what needs to be done or if he's doing this as a vendetta for his daddy*

In any event, the claim that only subordinates can be focused is simply false. One universally accepted test for focus is that an element is in focus if it can be the answer to a *wh*-question (Lambrecht 1994). By that test, the main clauses in (25b), (26b), and (27b) are all in focus:⁹

- (25) a. *A: what happened*
 b. *B: ah a car came and banged me on the intersection*
- (26) a. *B: where is it*
 b. *A: saint paul Minnesota*
- (27) a. *A: why did you move*
 b. *B: my parents didn't like it there*

As a final point, Thompson explicitly excludes from her database complements with the CTP *say* and other verbs of communication, “since reported speech raises special issues beyond the scope of the grammar of complementation” (*OCC*: 156). But complement-taking verbs of communication are anything but rare in conversation. *Say that* is second only to *think that* in its frequency of occurrence in conversation: 1200 occurrences per million words versus 1900 occurrences, according to the *LGSWE* (Biber et al. 1999: 668). This latter work provides no statistics on the frequency of CTPs with the *that* omitted, but notes that “the omission of *that* is favored by . . . [t]he use of *think* or *say* as a main clause verb” (Biber et al. 1999: 681). Since *say* and other verbs of communication do not express an *e/e/e* stance, there is no argument even in Thompson’s own terms that their complements are not structurally subordinate.¹⁰

In a nutshell, whatever the discourse status of sentential complements may be, the evidence is that they are structurally subordinate to their CTP.

3. The “non-fragmentary” nature of grammar

This section provides a more comprehensive critique of the theoretical underpinnings of *OCC*. Section 3.1 rejects the idea of grammars as “combinations of reusable fragments.” In section 3.2 I contrast “fragments” vs. “constructions,” while section 3.3 stresses the complexity of the syntax that is called up in everyday conversation. Section 3.4 suggests that the underestimation of the syntactic resources of conversationalists derives in part from the use of insufficiently large corpora.

3.1. On epistemic/evidential/evaluative “fragments”

OCC finds that in its database “there is a strong tendency for CTP-phrases towards epistemic/evidential/evaluative meanings” (*OCC*: 137), with “an overwhelming skewing in favor of epistemic meanings” (*OCC*: 137). Furthermore, the great majority of these epistemic CTP’s occur with 1st person subjects. These facts suggest to Thompson “that a primary function of CTP-phrases in adult conversation is to frame a clause in subjective epistemic terms . . .” (*OCC*: 138).

Let’s say that *OCC* is correct in its above assessment of the role of CTP-phrases. It is hard for me to understand what relevance that fact would have for a synchronic grammar of English, given that the role of a grammar is to capture one’s grammatical competence. Most CTP-phrases might well have e/e/e meanings, but not all do. Those that do not occur throughout the Fisher corpora:

- (28) a. *A: exactly well we had flights for september fourteenth and i had actually cancelled it until **my daughter convinced me that it was probably the safest time to fly** and and we ended up rescheduling*
 b. *B: you know **he promised me that he would do something** and then he couldn’t but that was sort of*
 c. *A: but **my friends have told me that their daughters started menstruating like in fourth grade***

And most epistemic CTP-phrases might occur with 1st person subjects, but certainly nowhere near all of them do:¹¹

- (29) a. *A: and then **she thought about that one day** that she said there was no food here*
 b. *B: **they believed that it was very very very bad to gossip** [laughter]*
 c. *A: well maybe you know that’s not exactly a scientific experiment i mean **you know maybe she gets less sick than she would if she didn’t get the shot** [mn]*

In other words, whatever speakers are *most likely* to do in conversation, their grammars provide them with the resources to do what is *less likely*. That is, they have the resources to mentally represent CTP-phrases without e/e/e meanings as well as CTP-phrases in the 2nd and 3rd person, even if the nature of discourse interaction makes it more likely that they will choose those in the 1st person with e/e/e meanings.

As far as most CTP-phrases framing a clause in subjective epistemic terms is concerned, the relevance of that idea for a syntactic analysis of English is

even less clear. *OCC* gives the impression that because CTP-phrases tend to be subjectively epistemic, they are less important or central to the conversation than their complements. And therefore, *OCC* goes on to reason, they should not be analyzed as main clauses. But as B&H point out, an e/e/e phrase can easily express the main point of an utterance in discourse. They defend their claim by pointing to utterances that Thompson herself provides, among which are the following:

- (30) [...]

MELISSA: *it's erasable, and I am not marking on it.* [= *OCC* (13)]

BRETT: ... *I don't care if it's erasable.*

[...]
- (31) W: *I wanted to make sure it was okay.* [= *OCC* (26)]
- (32) M: *why didn't you guys tell me I had a big glop of lettuce on my tooth?*

[= *OCC* (27)]

B&H write:

Contrary to what Thompson suggests, in our understanding of [(30)-(32)] the CTP clauses clearly express the main point of the utterance of which they are a part. In [(30)], the assertion *I don't care* is the main point – the assertion of *it's erasable* contributes nothing new to the discourse (the same proposition has been asserted in the previous utterance.) In [(31)], the (joking) justification of the utterance, likewise, resides in the proposition expressed by the CTP clause *I wanted to make sure* – not in the proposition *it was okay*. And in [(32)] ... the main point of the utterance is exactly the question *why didn't you guys tell me* and not the assertion of the proposition (which is known by everybody) that *I had a big glop of lettuce on my tooth*. Thus, even in Thompson's own corpus, the CTP clauses may express the main point of an utterance more often than she suggests. (Boye and Harder 2007: 576)

There is a tremendous amount of subjectivity involved in determining which clause in a biclausal utterance is more important to the discourse than the other. But I would hazard a guess that in at least half of all utterances with an e/e/e CTP-phrase, that phrase is more important to moving along the discourse than the complement is.

We read throughout *OCC* that “CTP-phrases are stored and retrieved as schematic epistemic/evidential/evaluative (e/e/e) fragments” (*OCC*: 146) and that the most frequent are “formulaic” (*OCC*: 139). Such is in keeping with a position that Thompson has argued for over a number of years, namely, “that what we think of as grammar may be best understood as combinations of reusable fragments” (*OCC*: 141). Recall that *OCC* analyzes as “fragments” even those

CTP-phrases (5% of Thompson's database) which do not occur with 1st person subjects, which are not complementizer-less, and which do not exhibit other hallmarks of formulas: "... these instances are still best analyzed as e/e/e fragments, but that, on a continuum of formulaicity, they are less formulaic than those we have been considering so far" (*OCC*: 151).

I simply do not understand what it might mean to describe grammars as "combinations of reusable fragments." I have no problem with the idea that many of the more commonly-used phrases are stored in memory, but the idea that *a grammar* might be a stock of fragments strikes me as utterly implausible. How many such "fragments" would it take to characterize the syntactic competence of a speaker of English? Hundreds of thousands? Millions? More likely, I would say, tens of millions, if fragments are lexically specified, as is implied, if not stated overtly, in *OCC*. Consider the following 20 lines from a small part of one of the conversations in the Fisher corpora (Fisher 2 trans/064/fe_03_06400.txt:12: 8.61 10.89):

4.58 5.46 A: hi

5.81 9.13 B: hi so did you hear what the topic is

8.61 10.89 A: yes it's about terrorism right

10.18 11.59 B: yeah

11.91 12.95 B: um

13.52 16.71 A: so what are your feelings on that [laughter]

15.44 20.00 B: i have [laughter] i personally can't imagine anyone staying calm [laughter]

19.20 21.21 A: yeah nor can i yeah

20.87 26.07 B: um you would even i- though if you're panicked i would assume you would try and

26.38 31.45 B: keep your head clear enough to to act to protect yourself but

29.29 30.42 A: right

31.31 39.34 A: yeah i don't know if there was an explosion or something i don't it it's a shock so i don't know that anybody can really think about it and control themselves

31.65 32.40 B: um

39.02 41.91 B: right even with all the um

42.74 43.80 B: (([sigh] the))

43.93 50.33 B: the publicity and media coverage you know that's been on that topic in the last

47.24 48.58 A: (([mn] right))

50.51 53.01 B: twenty months it's still um

53.16 55.95 B: is something that you wouldn't be

56.15 59.81 B: prepared for and be able to take in stride i don't think

There are certainly formulaic expressions here: *hi*, *right*, *take in stride*, *I don't think*, and possibly a few others. But in other respects the transcript reveals a sophisticated knowledge of syntax that defies any meaningful analysis in terms of "fragments." The speakers know how to handle purpose clauses, *wh*-inversion, relative clause attachment, participial complements, and much more. If these are somehow to be subsumed under the rubric of "fragments," then I would say that this infinitesimally small sample of natural speech would have to contain at least two dozen fragments. How many more would be needed to describe a typical speaker's daily output?

OCC does provide two pieces of evidence for a fragment account of the grammar of complementation. The first is derived from the idea that the most frequent CTP-phrases can appear as parentheticals (Thompson and Mulac 1991). Note the following two examples from Thompson's corpus:

(33) C: *because she uh= has had enough I guess.* [= *OCC* (16)]

(34) L: . . . *this is=,* [= *OCC* (30)]
 . . . *pepsin,*
I think,
 . . . *I'm not sure.*

But whatever is going on here, it is not clear that frequency has much to do with it. It is true that high frequency collocations like *I guess* and *I think* can appear parenthetically. But so can low frequency *I suspect* (*I think* occurs in the Fisher corpora 92,391 times, and *I suspect* only 70):

(35) B: *but it is better i suspect believe me to have the children than to have the uh than to have the quote on quote uh flexibility that that i have i uh the children are just that much more important in the long run*

The phrase *I'd be willing to bet* does not occur in the Fisher corpora at all, yet the following sounds like perfectly natural conversational English to me:¹²

(36) *Harry's gonna let us down one more time, I'd be willing to bet.* [constructed example]

Interestingly, *I regret* occurs in the corpora about as frequently as *I suspect* (77 times vs. 70), yet nothing like the following is found:

(37) **Harry's gonna let us down one more time, I regret.*

Nor is the formulaic status of a CTP a guarantee of its use as a parenthetical. Nothing could be more formulaic than the collocation *I don't give a shit*:

(38) *B: activities it wasn't you're you're going to do piano lessons and play the violin after school* ***i don't give a shit what you want to do this is what we want you to do***

And yet the following appears to be quite impossible:

(39) **The weather, I don't give a shit, is rainy.*

What is going on here then? The semantic status of a CTP seems like a much better guide to its possible use as a parenthetical than its frequency. Subject to further refinement, predicates asserting belief or knowledge can be used parenthetically (Chafe 1986; Thompson and Mulac 1991), while factive predicates cannot be.¹³

The second argument in *OCC* for a fragment analysis of CTP-phrases comes from the fact that many such phrases can occur with no associated clause, as is the case for *I'm not sure*, *I know*, and *it's hard to tell* in the following examples:

(40) *L: ... this is=, [= OCC (32)]*
... pepsin,
I think,
.. I'm not sure.

(41) *W: ... I've been sleeping about ten hours. [= OCC (33)]*
K: ... I know=,

(42) *B: and I suppose they're busy, [= OCC (34)]*
... but it's hard to tell,

But it does not follow logically that because in these three examples *I'm not sure*, *I know*, and *it's hard to tell* occur without complement clauses, they are necessarily analyzable as fragments when they occur *with* overt complements. Indeed, the most common CTP, *think*, is quite rare with a first-person subject as a bare response. In response to a question like *Are you planning to take the car today?*, one is much more likely to get a response like (43b) than like (43a):

(43) a. *I think.*
 b. *I think so.*

I think did not occur as a bare response in the first thousand instances of that word sequence in my corpus. However, there were several examples of *I think so*. The *OCC* analysis predicts that a response like (43a) should be common.

OCC argues against a complement-deletion analysis of *it's hard to tell* in (42) based on the fact that such a complement would have to include an *if* or *whether*, the deletion of which would seem to be problematic for a constrained syntactic theory.¹⁴ Yet there is abundant evidence that speakers and hearers mentally represent fragments with fully specified grammatical representations (see Newmeyer 2003 for an overview of earlier work and Merchant 2004 for additional evidence). Since Thompson does not provide even a rough sketch of the inferential mechanisms that relate the complement clause in the first part of (42) to the understood material in the second part, thereby allowing for successful comprehension, we have no way of evaluating if her “pure fragment” analysis is simpler or more complex than one involving the syntactic representation of a full complement structure.

3.2. Fragments versus constructions

The idea that “grammar may be best understood as combinations of reusable fragments” is a more extreme approach to grammar than Thompson had taken in earlier work. At one point Thompson seems to have positioned herself within the framework of (what is now called) Cognitive Construction Grammar, whose most recent full exposition can be found in Goldberg (2006). As she and a collaborator had written:

Specifically, we have proposed that at least some of the syntax of conversation can be accounted for in terms of something like the “constructional schemas” proposed by Langacker (1987; 1991), abstract template-like entities distilled from large numbers of speech events specifying, among other things, the syntactic positioning and relationships among the morphemes and words ... (Ono and Thompson 1995: 258)

Ono and Thompson (1995) not only makes reference to the complexity of these constructional schemas, but even abstracts away from individual formulas to propose “... alternative constructional schemas for producing clauses in English: NP V NP; NP V NP PP; NP V NP PP PP “ (pp. 229–230). And Ono and Thompson remark that syntax “cannot be *fully* understood only by appealing to these types of abstract patterns” (p. 259; emphasis added). But *OCC* appears to represent Thompson’s break with the last vestiges of structuralism, even as represented by a structuralist outlier like Cognitive Construction Grammar. The word “construction” does not appear in *OCC* in any technical sense, nor do any

specific categories of grammar, such as “NP” or “VP.” The word “abstract” does not appear in the paper at all.¹⁵

In putting all of her eggs in the basket of “fragmentation,” Thompson falls prey to the converse of what Ronald Langacker has aptly termed the “rule/list fallacy”: “the assumption, on grounds of simplicity, that particular statements (i.e. lists) must be excised from the grammar of a language if general statements (i.e. rules) that subsume them can be established” (Langacker 1987: 29). For example, the fact that one has learned to multiply does not entail that one might not have committed to memory the fact that twelve times twelve equals 144. But Thompson seems to adopt the position that rules should be excised from the grammar if one can establish the need for listing the items in question. Rules (or their notional equivalents) play no role whatsoever in *OCC*. It is interesting to note that Joan Bybee, who in many respects takes the same position on grammatical analysis as Thompson, has always been careful to stress that lists do not exclude rule-like mechanisms, nor vice-versa. For example, she has argued (citing Nunberg, Sag and Wasow 1994) that even idioms like *pull strings* are not frozen and unanalyzed (Bybee 1998: 425) and that high frequency phrases “are nonetheless analyzable into their morphosyntactic components” (p. 425). We find no comparable statement in *OCC*.

Any open-ended system where users have the ability to interpret novel strings has no alternative but to posit rule-like mechanisms alongside lists. And those who place formulaic language on center-stage tend to focus almost exclusively on language production, all but ignoring comprehension, and show no interest at all in language users’ ability to make judgments of the well-formedness of sentences that they have never heard. Interpreting novel strings and making judgments of well-formedness require computational ability – that is, they require a grammar.¹⁶

There are, to be sure, some superficially startling statistics in the literature about the formulaicity of spoken language. For example, Altenberg (1998) found no less than 80% of the words in the London-Lund corpus to form part of a recurrent word combination.¹⁷ But he counted “any continuous string of words occurring more than once in identical form” (Altenberg 1998: 101). After limiting himself to word combinations consisting of at least three words occurring at least ten times in the corpus and eliminating unintentional repetitions (*the the the, I was I was*, etc.), the resulting material consisted of only 6,692 tokens representing 470 different types of word combinations. Those 6,692 tokens represent only 1.3% of the entire corpus.

In a later study, Erman and Warren (2000) estimated that 58.6% of spoken texts are filled with what they call “prefabs,” where a prefab is “a [memorized – FJN] combination of at least two words favored by native speakers in prefer-

ence to an alternative combination which could have been equivalent had there been no conventionalization” (Erman and Warren 2000: 31). But consider the criterion for identifying prefabs that they appeal to the most, namely “restricted exchangeability”:

By restricted exchangeability is meant that at least one member of the prefab cannot be replaced with a synonymous item without causing a change of meaning or function and/or idiomaticity. For instance *good friends* in *they are good friends* cannot be changed into *nice friends* without losing the implication of reciprocity; *not bad* (meaning ‘good’) cannot be changed into **not lousy* without a change of meaning and loss of idiomaticity. *I can’t see a thing* cannot be **I can’t see an object* without loss of the non-literal hyperbolic meaning; *I’m afraid* – a pragmatic prefab used to soften a piece of bad news cannot be **I’m scared* or *frightened*. (Erman and Warren 2000: 32)

If we take their strategy for identifying prefabs literally, then none of their examples are prefabs, since none of the contrasting words are truly synonymous. *Good* and *nice* almost always have different meanings, as do *bad* and *lousy*, *thing* and *object*, and *afraid* and *scared* / *frightened*.¹⁸ Are any two words true synonyms? I doubt it. In fact, it was Dwight Bolinger, whom they cite as a precursor, who wrote: “The natural condition of language is to preserve one form for one meaning” (Bolinger 1977: x). As far as I can see, the only workable criterion that they have for prefab status is the intuitive idea that some combinations of words (e.g. *not bad* vs. *not lousy*) are produced more frequently than others. (I write “intuitive idea” since they provide no text counts for individual prefabs.) And that takes us back to the converse of the rule/list fallacy. The fact that *not bad* might well be a memorized fragment does not entail that language users cannot and do not compute its meaning and structure by means of principles of grammar.

3.3. English is not a pidgin language

In my Presidential Address to the Linguistic Society of America, I half-jokingly remarked that to read some of the more extreme approaches to usage-based grammar, “one would think normal human languages are not any different from trade pidgins like Chinook Jargon, where there are hardly any rules and communication is largely based on world-knowledge and context” (Newmeyer 2003: 698). If I had read *OCC* beforehand (it had been published shortly before my address), I am not sure that I would have given a humorous spin to my comment. The similarities between the *OCC* view of grammar and some of the core properties that have been attributed to pidgins is striking. For example, *OCC* endorses the idea that grammar is “constituted of actual bits of texts which are

remembered, more or less, and then retrieved to be reshaped to new contexts” (Becker 1984: 435) and that “everyday language is built up out of combinations of ... prefabricated parts. ... a kind of pastiche, pasted together in an improvised way out of ready-made elements” (Hopper 1987: 144). *OCC* goes on to claim that “Another way of thinking of these fragments is as practices for turn construction; different fragment types may be used to implement different actions” (*OCC*: 141). How do these positions differ from the standard view of pidgins that their grammar is not rule-governed, but rather adapts itself to the exigencies of conversation by employing memorized fragments of prior discourses?

The complexity and abstractness of syntactic knowledge that is revealed by conversational speech is stunning. Consider, for example, the following examples of long-distance *wh*-movement:

- (44) a. *B: so **what do you think that um we should do um as far as w-** we’re standing right now with our position*
 b. *B: **what did she say that we’re supposed to do after ten minutes i didn’t catch that***
 c. *B: **when do you think that er it’s in good taste huh***

Along the same lines, conversationalists are able to link deeply embedded gaps in relative clause constructions to their antecedents:

- (45) a. *B: you know **when i move away and get the things that i want to have and retire early and enjoy you know what i mean***
 b. *A: **actually following the rules that they need to be following they are doing things that they shouldn’t be doing***
 c. *B: that right **if i had time to cook the things that i like to cook then it would be in home***

To produce and comprehend utterances such as the above, it is necessary to hold in mental storage a place for an unexpressed direct object in a different clause and to link a fronted *wh*-element or lexical antecedent to that place. We are not talking about “fragments” or “formulas” here, but a sophisticated engine for representing and accessing grammatical knowledge. In fact, it was examples such as these (and many others of analogous complexity) that led the *LGSWE* to note that “speakers in conversation use a number of relatively complex and sophisticated grammatical constructions, contradicting the widely held belief that conversation is grammatically simple” (Biber et al. 1999: 7).

As we have already seen, conversationalists utter and interpret extraposed subjects of passivized verbs (46a) and know to restrict reciprocal subjects (46b)

and mandative subjunctives to subordinate clauses (46c):

- (46) a. *A: of veterinary medicine **it was thought that that was playing a major factor in that***
 b. *A: [noise] uh **joking that that each other are homosexual** and then saying oh no i don't like guys how do you know ha ha ha you know and [laughter]*
 c. *B: **my wife's always insisted that somebody else do it***

I would very interested in seeing a Thompsonian analysis of (46a-c).

Anaphoric relations are among the most recalcitrant syntactic phenomena to pull out of corpora of conversation, given the difficulty of formulating the appropriate search criteria. Nevertheless, persistence provides some interesting (and perhaps surprising) results. For example, cataphors (i.e. backwards anaphors) are sometimes dismissed as occurring only in educated speech or writing, but in fact they are attested in conversation, and both in pronominal and elliptical form:¹⁹

- (47) a. *A: **when their sons die with with money he rewards the parents** and and the parents are quite happy about it*
 b. *A: um overseas we **i don't know why we don't but everybody has flags here** we have huge flags on the street*

Whether one takes a purely configurational approach to explaining where cataphors can or cannot occur (Ross 1969b) or one employing conceptual notions (Van Hoek 1997), no one doubts that the relevant conditions are very complex.

We also find examples of both forward and backward sluicing in conversation, as the following examples illustrate.

- (48) a. *A: i know i know i'm going to get married some time **but i don't know when***
 b. *B: well it's my second time so basically we're supposed to just give one another's opinion about uh if you like eating at home or if you like eating out more and **i guess why***
- (49) a. *A: **i just i don't know why but** i don't usually get sick in the winter time*
 b. *B: oh man and there's this outdoor cat who lives in our apartment complex and **i don't know why but** for whatever reason every night the cat comes and like meow outside out door so we've got our three cats inside and that one cat outside and they're like singing at each other like we're trying to sleep*

After several decades of research on the phenomenon of sluicing (Ross 1969a; Merchant 2001), the conditions governing appropriate sluices are still not fully known. But conversationalists handle the relevant structures without effort.

One might make the (completely correct) observation that the constructions discussed in this section are not often used in spoken English. Completely correct, but also completely irrelevant to the task of characterizing linguistic competence. To that point, it is worth closing this section with a quote from William Croft. Croft noted that in a large corpus of English narratives, he found only 28 examples of multiclausal constructions such as pseudoclefts, clefts, and conditionals. Nevertheless, he astutely remarked that, even given their small number, they “are indubitably part of our conventional grammatical knowledge” (Croft 1995: 870).

3.4. Corpus size matters

It is more than a little puzzling why there appears to be a consistent denigration of the linguistic resources of ordinary speakers among some practitioners of corpus-based linguistics. I suspect that a big part of the problem is a simple artifact of the small size of many of the corpora that are used. For example, *OCC* bases its conclusions on a mere 13 conversations (of unspecified length) and one cooking class lecture, containing in total only 425 finite indicative complements. Even more telling, one of the major book-length studies of spontaneous spoken language, Miller and Weinert (1998), limits itself to an English corpus of only 50,000 words (produced by speakers of Scottish English from Lothian).²⁰ One is hardly surprised, then, that all of the following constructions are absent from its corpus: adverbial clauses of concession introduced by *although*; adverbial clauses of reason introduced by *since*; gapping; conditional clauses signaled by subject-auxiliary inversion; accusative-infinitive sequences (“exceptional case marking”); gerunds with possessive subjects; gerunds with an auxiliary; initial participial clauses preceding a main clause; infinitives in subject position; and infinitives with auxiliaries. Yet all of these occur in the Fisher corpora:

- (50) a. [adverbial clauses of concession introduced by *although*]
*B: **although they may not agree with war** then they are going to support the u.s. government and they're going to support the u.s. soldiers*
- b. [adverbial clauses of reason introduced by *since*]
*A: **since i've never been much of a power grabber myself** i don't really understand people that that are*

- c. [gapping]²¹
*A: but at the same time you might not have not being in that situation might have had gave you a different outlook on the world on the world and life and such and **and me the same** so you know while we might feel like um you know we wish we had done things differently if we had things we might not feel the same way that we do now*
- d. [conditional clauses signaled by subject-auxiliary inversion]
*A: **had i known then what i know now***
- e. [accusative-infinitive sequences (“exceptional case marking”)]
*A: um **i consider myself to be a pretty open minded person** and you know i’m friends with all kinds of different people*
- f. [gerunds with possessive subjects]
*A: you know going back to **his firing of his economic advisors** you know he knows this isn’t going to be*
- g. [gerunds with an auxiliary]
*B: i was kinda surprised they’d i could i could fit in **because of my having been born in england** i i i thought it would just be americans*
- h. [initial participial clauses preceding a main clause]
*A: **hoping i never get that far** i just wanna make sure that i don’t end up on every committee and directing the choir and [laughter] you know organizing the bake sales and whatever*
- i. [infinitives in subject position]
*A: to yeah to **to get to where they need to do so sunday** would kinda be like the first day of the festivities or saturday night sunday and then monday maybe a goodbye breakfast and all the family members are going back to*
- j. [infinitives with auxiliaries]
*A: yeah you know **i wouldn’t have wanted to to have brought -em up in a in a Christian controlled***

What I do find surprising is the conclusion that “the classic indirect speech constructions occur very infrequently in spontaneous spoken English” (Miller and Weinert 1998: 83). I would be tempted to hypothesize a hitherto unnoticed difference between Scottish and American English, since the Fisher corpora are teeming with indirect questions like the following:

- (51) a. *A: and **i wonder who was responsible for that***

- b. *B: yes **they asked what what's your favorite first they asked what is your favorite team** i guess on to wa- or what's your favorite sport to watch on t.v.*
- c. *B: yeah **i've always kind of wondered whether they have like a psychologist working behind the scenes** like oh let's let's try to get personalities that just really are not gonna work and then we'll just get the two that are just absolutely like the love match*

The absence of a host of ordinary English constructions from Miller and Weinert's small database would be inconsequential if they did not draw from that absence the inevitable conclusions about the bankruptcy of formal linguistic theory. In their view, "[t]he properties and constraints established over the past thirty years by Chomskyans [are based on sentences that] occur neither in speech nor in writing [or only] occur in writing" (Miller and Weinert 1998: 379). And on the basis of that mistaken hypothesis, they go on to question whether such "properties and constraints" could form part of the internalized competence of the average native speaker of English. But when one considers that the average speaker utters about 16,000 words *per day* (Mehl et al. 2007), it is clear that nothing at all should be concluded about grammatical knowledge from a corpus of 50,000 words.

The differences between the grammatical structures found in spontaneous conversation and those in more literary genres are almost entirely quantitative, rather than qualitative. Confirmation of that claim can be found in Biber (1988). Biber looks at 67 grammatical features of English, some of them rather exotic, and calculates their frequency of occurrence in 23 different genres, some spoken and some written. Only three of these features occurred in face-to-face conversations at a frequency of less than 0.1 times per thousand words: present participial clauses (e.g. *stuffing his mouth with cookies, Joe ran out the door*), past participial clauses (e.g. *built in a single week, the house would stand for fifty years*), and (surprisingly) split infinitives (e.g. *he wants to convincingly prove that*). And all three features were rare in academic prose as well: 1.3, 0.4, and 0.0 times per thousand words respectively in that genre. Actually, it was not difficult to find examples of all three in the Fisher Corpora:

- (52)
- a. *B: **having angst** i don't have any like firsthand experience with separations or anything cause i mean*
 - b. *A: but **compared to the comedies now** it it's tame*
 - c. *B: right and **they tried they tried to really make it so people wouldn't get a long***

Consider the ten most frequent grammatical features in the two genres, as reported in Biber (1988):

Table 1. The most frequent grammatical features in two English genres

RANK	FACE-TO-FACE CONVERSATIONS	ACADEMIC PROSE
1	nouns	nouns
2	present tense	prepositions
3	adverbs	attributive adjectives
4	prepositions	present tense
5	first person pronouns	adverbs
6	contractions	type-token ratio ²²
7	type-token ratio	nominalizations
8	attributive adjectives	BE as main verb
9	BE as main verb	past tense
10	past tense	agentless passive

The only features that made the top ten in face-to-face conversations, but not in academic prose, were (unsurprisingly) first person pronouns and contractions. Facts such as these give the lie to the idea that there is something inherently unreliable about appealing to non-conversational sources, when it comes to probing native speakers' grammatical competence.

4. On Boye and Harder's "Complement-taking predicates: Usage and linguistic structure"

The aim of B&H is "to show how a picture that is fully committed to maintaining the role of structural (including structural semantic) subordination can simultaneously remain fully faithful to principles of usage-based linguistics" (B&H: 569). After pointing to a number of cases that show that it is incorrect to conclude that a CTP-phrase has a secondary status in discourse from the fact that it is stance-marking (see above, §3.1), B&H discuss "a second set of facts, which Thompson does not address, [that] can only be dealt with if we assume a more complex relationship between usage and grammar than Thompson does" (B&H: 577). Rather than uncritically take for granted the idea that discourse facts are reliably a direct representation of structural facts, they argue that some CTPs have two structurally distinguishable variants. These they refer to as the "lexical" and the "grammatical." Five morphosyntactic properties distinguish the two:

A. Only the grammatical variants of CTP allow Neg-raising. If (53) is read with negation semantically associated with the complement, then we have a grammatical CTP:²³

(53) *I don't think that I love her.*

B. Grammatical variants of CTPs have adverbial distribution. For example, they can occur in the same position as epistemic adverbs such as *probably*:

- (54) a. *The weather is getting better, I think.*
 b. *The weather, I think, is getting better.*

C. Only grammatical variants of CTPs allow the addition of a tag-question that relates to the complement clause:

(55) *I think he fits in very well, doesn't he?*

D. Grammatical variants of CTPs do not in general allow adverbial modification:

- (56) a. **The country is going to the dogs, I never think.*
 b. **The country, I never think, is going to the dogs.*

E. Grammatical variants of CTPs exhibit a more limited range of morphological distinctions and possibilities of syntactic combinations than lexical variants.

By these criteria, the verb *think* can occur both as a lexical and a grammatical variant, while *regret* is always lexical. In other words, the properties of the grammatical structure-level variants are symptomatic of the (partial) grammaticalization of the predicate. B&H write that it “do[es] not conceive of NEG raising, adverbial distribution, etc. as defining criteria for grammatical as opposed to lexical status. Rather, [they] conceive of these phenomena as symptoms of grammaticalization” (B&H: 583).

Alongside the structure-level lexical-grammatical distinction is the usage-level distinction between primary and secondary CTPs. The primary CTP (along with the rest of the CTP-phrase) expresses the main point of an utterance. A secondary CTP “has only a concomitant function in relation to the rest of the utterance (which expresses its main point)” (B&H: 584).

The double dichotomy (lexical vs. grammatical; primary vs. secondary) gives B&H the armament that is needed to explain the historical process of the gram-

matalization from lexical to grammatical. If grammar were as subservient to discourse as *OCC* suggests, then one would have no explanation for morphosyntactic change. However, if it is assumed that “fully emerged structural options have a life of their own in relation to current actual usage” (B&H: 597), then an explanation becomes possible. Discourse exerts a pressure upon codified structure that results in syntactic change. But this does not happen all at once, given the resilience of structural patterns. Rather, what we find is a time lag in the diachronic development of grammatical CTPs, which is felicitously represented by the following diagram (B&H: 590):

- (57) A: **lexical** and primary CTP
↓ usage reanalysis
B: **lexical** but secondary CTP
↓ structure reanalysis, grammaticalization of CTP
C: **grammatical** and secondary CTP

Hence this model predicts correctly that a CTP might not make the main point of an utterance, yet still embed a structural subordinate clause. Note that the model has no place for grammatical primary CTPs. B&H do not rule out such a possibility in principle, but remarks that such a combination of properties “would require the presence of something to overrule the grammatical status. Intonational prominence would be an obvious candidate . . .” (B&H: 602).

B&H conclude with the observation – a correct one in my opinion – that:

The theory of the relation between grammar and usage that we have outlined above is a version of what we take to be the majority view in functional linguistics: there are grammatical facts and usage facts, and there is a relationship between them but they are not identical. To mention a few authors, we assume that our position would be in conformity with views held by Langacker (1991; 2000), Lambrecht (cf. Lambrecht 1994), Givón (cf. Givón 1995) and Haiman (1994). (B&H: 599)

I daresay that most formal linguists as well would take the position that “there are grammatical facts and usage facts, and there is a relationship between them but they are not identical.” To that extent mainstream functionalism and mainstream formalism stand united in opposition to the views expressed in *OCC*.

5. Conclusion: the many-many relation between structure and usage

A consistent theme throughout the present paper has been to emphasize the grammatical complexity of conversational speech. Speakers have the resources

to call upon complex principles of grammatical organization not only in writing and other formal discourses, but in everyday speech as well. The need to appeal to such resources casts grave doubt on the idea that speakers do no more than manipulate “fragments” and “formulas” in speaking. It is worth pointing out that it is not difficult to find the converse as well, that is, syntactic phenomena in formal speech or writing that are characteristic of (or said to be characteristic of) informal conversation. For example, *OCC* makes much of the idea that CTP-phrases occur as parentheticals, in its attempt to establish that they should be analyzed as fragments. But in fact it is not hard to find the same phenomenon occurring in writing:

- (58) a. *The last natural blondes will die out within 200 years, **scientists believe***. [BBC News World Edition, 27 September 2002]
 b. *Election will be a turning point, **commentators say*** [Taipei Times, 10 January 2006]
 c. *'09 Afghan pullout too soon, **experts say*** [National Post, 10 January 2008]
 d. *Facts prove no match for gossip, **it seems*** [New York Times, 16 October 2007]

Would *OCC* thereby conclude that there is no structural subordination in writing either?

As noted above, *OCC* stresses that “the most frequent, and therefore the great majority, of the CTPs in the data are epistemic/evidential/evaluative formulas, performing stance work” (*OCC*: 141) and draws rather dramatic conclusions about the nature of grammar from this claim. As both B&H and the present paper have emphasized, there is reason to doubt that “the great majority” of the CTPs in Thompson’s data do in fact play this role. However, if *OCC* had written instead that *in formal writing* most CTPs performed e/e/e functions, it might have been closer to the mark. This point can be appreciated by a look at the elegant academic prose in *OCC* itself. There are several dozen *that*-clauses in the running text of *OCC*. As I interpret them, in the great majority the complement makes the main point, while the CTP-phrase plays a purely epistemic or evaluative role. Consider, for example, the following:

- (59) a. *I will suggest that analyses that recognize these points hold the greatest promise of contributing to our understanding of the social and cognitive foundations of what we think of as grammar.* [*OCC*: 126]

- b. *I conclude that there is little to be gained by considering complements to be (subjects or) objects of their predicates. [OCC: 130]*
- c. *It appears that it will not be able to provide any support for the idea that complements are subordinate. [OCC: 136]*
- d. *I have shown that interrogative complements behave similarly to declarative complements. [OCC: 150]*

Do I conclude thereby that there should be a special grammar of academic writing in which the *that*-clauses in examples like (59a-d) are not syntactically subordinate? Certainly not. The same arguments apply to establish their subordinate status as do for the sentences in Thompson's database. It is just that in academic writing, it is more important to stress the claim being made than the scholar making the claim (which is usually obvious from the context), while conversationalists seem to be more egocentric when it comes to stressing that they themselves are putting forward or are defending a particular point.

The *LGSWE* stresses that our preconceived notions about what is common in conversation and what is common in formal academic writing tend to be quite unreliable. For example, it notes that "when using a relative clause with the head noun *way*, academic writers might be expected to use a combination of preposition + relative pronoun – *in which* – since this form explicitly marks how *way* integrates with the relative clause" (Biber et al. 1999: 7), as in:

- (60) *The way in which this happens gives important information on the inner organization* (Biber et al. 1999: 7)

However, the *LGSWE* reports that writers of formal prose commonly leave out both the relative pronoun and the preposition, as in:

- (61) *Silicates are classified and named according to the way the tetrahedra are linked.* (Biber et al. 1999: 7)

Interestingly, the full combination of preposition and relative pronoun is not rare in conversation:

- (62) a. *A: the result of september eleventh one of the things that i kind of consciously did was change the way in which i approach language teaching*
 b. *B: the way in which i was able to get tickets uh is pretty much no longer don't have my uh in anymore*
 c. *B: you know now with less of these stock options that was a problem i think the way in which executives get paid [noise]*

In other words, what we have is a many-many relation between structure and usage. It is the relative independence of these two constructs that provides the greatest support for the leading idea of formal linguistics, namely, that structure demands a characterization in its own terms, not in terms of being a stepdaughter to usage. Since the idea of grammatical autonomy is often misunderstood, let me stress two important points (for greater elaboration, see Newmeyer 1998a; 2005b). The first is that the autonomy of grammar does not imply that the same structures appear with equal frequency from genre to genre. Of course they don't. In both informal conversation and in formal writing, we find CTPs like *think*, *know*, and *believe* both with and without a following *that*-complementizer. However, omitting the *that* is far more common in conversation than in writing. What is important is that our mental grammars provide the possibility of the *that*-complementizer and we can choose to employ it or omit it as we wish (even though the choice we make depends in part of the level of speech).

The second point is more important, namely that the autonomy of grammar does not challenge the leading idea of functionalist (usage-based) linguistics: Structure is to a considerable degree shaped by usage. As I have stressed repeatedly, the autonomy of grammar is no more incompatible with its functional shaping than the "autonomy of chess" is incompatible with functional factors having shaped the nature of the game. And just as usage continues to shape and reshape structure, the International Chess Authority has the power to revise the rules of chess to make it a more "functional" pastime (however unlikely that might happen in reality). And usage-based linguists are right on target when they stress that frequency of use is a crucial factor in directing grammatical change. Frequency drives the grammaticalization of locative nouns to adpositions, pronouns to person markers, auxiliaries to tense and aspect particles, and much much more.

Still, a word of caution is necessary. Much has been written, for example, by Joan Bybee and others about the effect of frequent use on constituent structure and its consequent role in grammaticalization. We know that elements that are frequently found next to each other show a tighter constituent bond than those that are less frequently in proximity. To that effect, Bybee and Scheibman (1999) argue that in frequent phrases like *I don't know*, the subject and the auxiliary form a constituent, rather than the auxiliary and the verb.²⁴ They remark:

Traditional methods of determining constituent structure in competence-based models tend to consider distributional properties without considering type and token frequency. Thus pronouns are considered NPs because they occur in the same position as full NPs . . . *I* is a pronoun because it shares properties with other pronouns . . . Our approach aims for a model of usage and performance, where constituents are processing units. (Bybee and Scheibman 1999: 592–593)

Bybee and Scheibman do indeed demonstrate that at the most surface level of grammar, *I don't* forms a constituent. But not just distributional evidence, but a host of other tests (e.g. binding relations) support the traditional analysis. In other words, they have provided an example of a “bracketing paradox,” that is, a situation where one string would seem to require different analyses at different levels of grammar. Two well-known examples of such “paradoxes” are the following:

- (63) a. *transformational grammarian* (lexically [*transformational*] [*grammarian*], but semantically [*transformational grammar*] [*ian*])
 b. *this is the cat that ate the rat* (syntactically [*this is*] [*the cat that ate the rat*], but phonologically [*this is the cat*] [*that ate the rat*])

Bracketing paradoxes have been handled in derivational theories by positing different representations for the item in question at different stages in the derivation (e.g., Pesetsky 1985) and in non-derivational theories by means of principles interfacing different grammatical components (e.g., Sadock 1991). Presumably *I don't know* should be handled analogously. At least I see nothing in its analysis that would pose a challenge to standard models of grammar.

Nor is frequent use of a construction type in one language necessarily a reliable guide to what one might expect to find crosslinguistically. For example, most English speakers have no problems with both “preposition stranding” (64a) and “pied-piped” PPs (64b):

- (64) a. *B: this is joe pinatouski who am i speaking to*
 b. *A: to whom am i speaking*

Yet the former is employed vastly more often than the latter. In the Fisher corpora, the PP *to whom* occurs only 8 times, while the full sentences *Who am I speaking to?* and *Who am I talking to?* occur 24 times and 26 times respectively.²⁵ One might predict on this basis that stranding would be more common than pied-piping crosslinguistically. However, this prediction is not fulfilled. Stranding is attested only in Germanic (but not in German and only marginally in Dutch) and marginally in French.

To give another example of how frequency (in one language) fails to predict typological distribution, consider relative clauses. Keenan and Comrie (1977) showed that if a language can form relative clauses at all, then it can form them on subjects. One might predict then that subject relatives are *used more often* than object or oblique relatives. Apparently this is not consistently the case. Fox

and Thompson (1990) found that with nonhuman referents and the head NP a matrix subject, 77% of English relative clauses are object relatives.

In short, frequency is an important factor leading to the shaping and reshaping of grammar, but appeals to frequency should never be used as a substitute for careful grammatical analysis.

Not many years ago, in a paper entitled “What can conversation tell us about syntax?,” Ono and Thompson (1995) lamented that “there have been relatively few studies of syntax based on conversational language” (p. 214), but promised to show, based on their ensuing discussion, that the correct answer to the question posed in the title is “Quite a lot” (p. 215). In fact, I agree 100% with Ono and Thompson that there is indeed quite a lot to be learned about grammar from conversation. I hope to have demonstrated, however, that the lessons to be learned differ dramatically from what they took to be the correct ones. Conversational data tell us that the classic picture painted by formal linguistics, that of a syntactic system interacting with usage, but not beholden to usage, is the correct one.

Appendix

Sources for the examples taken from the Fisher English Training Transcripts

- (3) a. Fisher 2 trans/110/fe_03_11026.txt:352: 374.95 384.00
- b. Fisher 2 trans/067/fe_03_06783.txt:68: 78.61 81.80
- c. Fisher 1 trans/038/fe_03_03885.txt:20: 17.49 21.22
- d. Fisher 1 trans/000/fe_03_00047.txt:180: 263.06 264.26
- e. Fisher 1 trans/001/fe_03_00164.txt:176: 276.27 280.58
- f. Fisher 1 trans/054/fe_03_05407.txt:78: 146.96 150.33
- g. Fisher 1 trans/009/fe_03_00941.txt:206: 377.99 387.55
- (4) a. Fisher 1 trans/000/fe_03_00026.txt:30: 48.27 56.44
- b. Fisher 1 trans/009/fe_03_00921.txt:380: 580.37 585.13
- (5) a. Fisher 1 trans/003/fe_03_00368.txt:240: 359.56 366.18
- b. Fisher 1 trans/002/fe_03_00252.txt:80: 122.50 126.86
- (6) a. Fisher 1 trans/001/fe_03_00147.txt:440: 694.83 698.45
- b. Fisher 1 trans/000/fe_03_00074.txt:194: 261.66 265.59
- (8) a. Fisher 1 trans/008/fe_03_00871.txt:256: 502.84 507.82
- b. Fisher 2 trans/102/fe_03_10240.txt:232: 561.18 572.40
- c. Fisher 2 trans/105/fe_03_10566.txt:168: 309.77 318.49
- d. Fisher 1 trans/006/fe_03_00674.txt:52: 80.92 92.23
- (10) Fisher 1 trans/000/fe_03_00008.txt:378: 447.92 455.61
- (11) Fisher 1 trans/000/fe_03_00073.txt:228: 406.78 416.68
- (13) a. Fisher 1 trans/038/fe_03_03877.txt:274: 504.07 512.46

- b. Fisher 2 trans/092/fe_03_09200.txt:384: 552.30 564.82
- c. Fisher 1 trans/032/fe_03_03253.txt:276: 456.73 468.72
- (14) a. Fisher 1 trans/001/fe_03_00169.txt:190: 198.40 199.72
- b. Fisher 1 trans/053/fe_03_05328.txt:90: 104.55 108.04
- (15) a. Fisher 1 trans/015/fe_03_01579.txt:216: 401.86 405.29
- b. Fisher 1 trans/006/fe_03_00643.txt:178: 255.63 258.65
- (19) a. Fisher 2 trans/058/fe_03_05855.txt:196.20 201.95
- b. Fisher 1 trans/055/fe_03_05528.txt:236.15 239.91
- c. Fisher 1 trans/020/fe_03_02030.txt:500.18 504.60
- d. Fisher 1 trans/020/fe_03_02002.txt:220.21 230.93
- e. Fisher 2 trans/085/fe_03_08539.txt:239.92 254.55
- (21) b. Fisher 2 trans/068/fe_03_06895.txt:30: 32.20 36.73
- (24) a. Fisher 2 trans/081/fe_03_08142.txt:214: 451.21 461.59
- b. Fisher 1 trans/001/fe_03_00133.txt:316: 491.31 499.63
- c. Fisher 1 trans/009/fe_03_00994.txt:420: 442.58 445.29
- (25) Fisher 2 trans/115/fe_03_11537.txt:304: 234.24 234.79
- (26) Fisher 2 trans/068/fe_03_06879.txt:198: 263.54 264.56
- (27) Fisher 2 trans/095/fe_03_09560.txt:246: 358.09 359.17
- (28) a. Fisher 1 trans/017/fe_03_01762.txt:86: 153.44 163.52
- b. Fisher 1 trans/005/fe_03_00532.txt:140: 177.68 181.40
- c. Fisher 1 trans/002/fe_03_00214.txt:200: 310.07 317.05
- (29) a. Fisher 1 trans/001/fe_03_00100.txt:544: 511.36 514.76
- b. Fisher 1 trans/023/fe_03_02398.txt:240: 333.50 339.23
- c. Fisher 1 trans/000/fe_03_00017.txt:66: 119.58 127.86
- (35) Fisher 1 trans/007/fe_03_00777.txt:386: 505.78 511.35
- (38) Fisher 1 trans/058/fe_03_05804.txt:104: 195.10 203.02
- (44) a. Fisher 1 trans/025/fe_03_02572.txt:108: 223.04 229.51
- b. Fisher 2 trans/069/fe_03_06985.txt:194: 326.23 331.07
- c. Fisher 2 trans/107/fe_03_10792.txt:14: 6.01 14.93
- (45) a. Fisher 1 trans/008/fe_03_00839.txt:182: 211.59 217.81
- b. Fisher 1 trans/007/fe_03_00707.txt:218: 456.46 461.27
- c. Fisher 1 trans/021/fe_03_02181.txt:120: 208.28 214.85
- (46) a. Fisher 1 trans/008/fe_03_00871.txt:256: 502.84 507.82
- b. Fisher 1 trans/038/fe_03_03877.txt:274: 504.07 512.46
- c. Fisher 1 trans/020/fe_03_02030.txt:500.18 504.60
- (47) a. Fisher 1 trans/005/fe_03_00582.txt:97: 197.57 199.74
- b. Fisher 1 trans/016/fe_03_01693.txt:294: 402.04 408.53
- (48) a. Fisher 1 trans/013/fe_03_01339.txt:26: 29.28 33.68
- b. Fisher2 trans/090/fe_03_09093.txt:16: 11.95 17.68
- (49) a. Fisher1 trans/000/fe_03_00044.txt:188: 194.00 197.56
- b. Fisher1 trans/031/fe_03_03199.txt:228: 419.10 425.77
- (50) a. Fisher 1 trans/001/fe_03_00136.txt:230: 314.22 316.33
- b. Fisher 1 trans/001/fe_03_00126.txt:206: 237.95 243.11

- c. Fisher 2 trans/098/fe_03_09849.txt:300: 471.04 479.80
- d. Fisher 1 trans/011/fe_03_01152.txt:134: 169.86 171.90
- e. Fisher 1 trans/002/fe_03_00263.txt:428: 598.79 605.49
- f. Fisher 1 trans/001/fe_03_00114.txt:432: 686.55 695.37
- g. Fisher 1 trans/048/fe_03_04802.txt:450: 549.02 557.11
- h. Fisher 1 trans/001/fe_03_00166.txt:498: 692.80 702.30
- i. Fisher 1 trans/009/fe_03_00937.txt:230: 348.03 362.52
- j. Fisher 1 trans/008/fe_03_00824.txt:172: 238.69 239.56
- (51) a. Fisher 1 trans/017/fe_03_01737.txt:254: 393.69 396.86
- b. Fisher 1 trans/028/fe_03_02887.txt:76: 48.93 56.21
- c. Fisher 1 trans/000/fe_03_00049.txt:260: 526.15 540.80
- (52) a. Fisher 1 trans/002/fe_03_00240.txt:304: 414.54 419.97
- b. Fisher 1 trans/010/fe_03_01059.txt:207: 250.60 252.91
- c. Fisher 1 trans/001/fe_03_00100.txt:136: 129.95 132.89
- (62) a. Fisher 1 trans/002/fe_03_00271.txt:28: 83.37 87.39
- b. Fisher 1 trans/041/fe_03_04171.txt:136: 145.15 152.20
- c. Fisher 1 trans/058/fe_03_05817.txt:90: 158.79 163.84
- (64) a. Fisher 1 trans/013/fe_03_01345.txt:8: 3.69 6.55
- b. Fisher 1 trans/022/fe_03_02239.txt:12: 5.17 6.80

Notes

1. My greatest debt is to Douglas Biber, Kasper Boye, Joan Bybee, Elisabeth Engberg-Pedersen, Tom Givón, Edith Moravcsik, and Carl Polley, all of whom provided me with page-by-page comments on the prefinal version of this paper. I would also like to thank Emily Bender, Betty Birner, Guy Carden, Jeanette Gundel, Nancy Hedberg, Jason Merchant, and Maite Taboada for their guidance on the use of corpora and/or their input on issues discussed here. Peter Harder, the Festschriftedee, (unwittingly) provided me with input as well. It goes without saying that none of these individuals bears any responsibility for the final content, nor should there be any implication that they agree with its conclusions.
2. Thompson's conclusions were arrived at earlier in Hunston and Francis (2000), where it is noted that what looks like the clausal complement of a verb "encodes what is often the main information of the sentence" (p. 155). They propose, following a suggestion of John Sinclair's, that it is "in a sense the 'main clause' of the sentence," with the preceding subject and verb being "a contextualizing 'preface'" (p. 156). For discussion of the Hunston and Francis book, see Borsley (2002).
3. In this paper I ignore what I consider to be two serious limitations of an over-reliance on corpus-derived data. The first is based on the fact that nothing can necessarily be concluded about the linguistic competence of an individual speaker on the basis of corpora including utterances from a multiplicity of speakers, not all of who are members of the same speech community (see Newmeyer 2003; 2005a; 2006 for

discussion). The second is the fact that no corpus can provide sentences that *do not occur*. Yet ungrammatical sentences have played a key role in the development of grammatical theory. It is instructive to note that even *OCC* appeals to ungrammatical sentences in several places to help underscore its points.

4. The transcripts represent a 170MB corpus of 11699 complete telephone conversations, each lasting up to 10 minutes and containing over 6,700,000 words. For the precise sources for each conversational fragment, see the Appendix to this paper. All conversational data cited here are taken from the Fisher transcripts, unless otherwise noted.
5. The “16%” is only approximate, since not all instances of *I think* and *I think that* occur with sentential complements (cf. *I think the world of Mary* and *Why do I think that? I'm not sure*).
6. The *LGSWE* notes that the use of or the omission of the *that*-complementizer “ha[s] no effect on meaning” (Biber et al. 1999: 680). Pages 680–683 of that work present a nice discussion of the grammatical and discourse factors influencing its omission or retention.
7. As I was reminded by Carl Polley (personal communication), we do get the bare verb form in main clauses in the presence of modal auxiliaries:
 - (i) a. *May he be punished for his transgressions!*
b. *He should be punished for his transgressions.*But (i)a–b are not mandative subjunctives.
8. One might also point out that in purely structural terms (22b) is not formed like other pseudo-clefts.
9. I owe this point and the above argument concerning negative polarity items to Jason Merchant (personal communication).
10. In support of its claims, *OCC* provides copious references to Diessel and Tomasello (2000; 2001), where it argued that in the utterances of young children, the complement clause generally expresses the main point, rather than the CTP-phrase. But Diessel and Tomasello note that this generalization does not hold for children’s early use of sentences containing *say*, *tell*, *pretend*, and *show*, a fact that is not mentioned in *OCC*.
11. There are 9168 occurrences of the string *you know that* in the Fisher corpora.
12. The less formulaic *I would be willing to bet* does occur, but only once.
13. Thompson and Mulac demonstrate that there is a robust correlation between omission of the *that*-complementizer of a subordinate clause and its use as a parenthetical, but they do not explain why high frequency factive predicates allow neither.
14. At least that is how I interpret Thompson’s point here. My interpretation might be mistaken.
15. Thompson breaks definitively with construction grammar in Fox and Thompson (2007), where she and Fox suggest that “the concept of grammatical organization underlying the notion ‘Relative Clause Construction’ might be usefully replaced by a view of grammatical organization that has small-domain, even sometimes lexically

- specific, formats which exist in a dynamic family-resemblance relationship to one another that can be modeled in terms of a continuum” (p. 318).
16. For psycholinguistic evidence that language users have recourse both to rules and lists, see MacWhinney (1978) and Coltheart, Curtis and Atkins (1993).
 17. The London-Lund corpus, which contains several different kinds of spontaneous and prepared speech, totals 500,000 words. I owe the Altenberg reference to Wray (2002). A “central contention of [Wray’s] book [is] that formulaic sequences are not rare, but extremely common” (Wray 2002: 100), though she gives no percentage estimates as to their commonness. Importantly, she adopts a “dual-systems” approach, which does not deny the existence of a set of grammatical rules and principles of the traditional sort.
 18. *Thing* is almost always broader in meaning than *object*. For example, an idea can be the “thing that one hates,” but not “the object that one hates.” And being “afraid” is generally a milder emotion than being “scared” or “frightened.”
 19. Karen Van Hoek collected 500 examples of cataphors, all from written texts, but “from almost every imaginable source: magazines, novels, newspapers, placards at museums, signs on buses, and the inscriptions on the wall of the Lincoln Memorial” (Van Hoek 1997: 109). Her cognitive grammar-based account crucially embodies the notion “prominence”: A cataphor must be less prominent than its antecedent. Since *OCC* ascribes a lower degree of prominence to a CTP-clause than to its (traditionally labeled) “complement clause,” it would presumably predict the grammaticality of **She_i thinks that Mary_i is very clever.*
 20. By way of contrast, recall that the London-Lund Corpus contains 500,000 words. The British National Corpus and the *LGSWE* Corpus are even larger. The former contains about 4,000,000 words of conversation and the latter about 5,000,000 (out of a total of 40,000,000 in all registers).
 21. Tao and Meyer (2006) report no instances of gapping in their corpus of various kinds of dialogues. However, the corpus size was only 360KB, as opposed to 170.1MB for the Fisher corpora.
 22. That is, the number of different lexical items in a text, as a percentage.
 23. B&H’s examples are all constructed, I believe.
 24. Givón (2002: ch. 3), however, argues that both the auxiliary and the subject pronoun are verbal clitics.
 25. In the *LGSWE* Corpus, the preposition is pied-piped about 20% of the time that it cooccurs with a *wh*-word in conversation and it is stranded about 80% (Biber et al. 1999: 106).

References

Adger, David
1992

The licensing of quasi-arguments. In: Peter Ackema and Maaïke Schoorlemmer (eds.), *Proceedings of Console I*, 1–18. Utrecht: Utrecht University.

- Altenberg, Bengt
1998 On the phraseology of spoken English: The evidence of recurrent word combinations. In: A. P. Cowie (ed.), *Phraseology: Theory, Analysis and Applications*, 101–122. Oxford: Clarendon Press.
- Becker, Alton L.
1984 The linguistics of particularity: Interpreting superordination in a Javanese text. *Berkeley Linguistics Society* 10: 425–436.
- Biber, Douglas
1988 *Variation across Speech and Writing*. Cambridge: Cambridge University Press.
- Biber, Douglas, Stig Johansson, Geoffrey Leech, Susan Conrad and Edward Finegan
1999 *Longman Grammar of Spoken and Written English*. London: Longman.
- Bolinger, Dwight
1977 *Meaning and Form*. London: Longman.
- Borsley, Robert D.
2002 Review of Hunston and Francis, *Pattern Grammar*. *Lingua* 112: 235–241.
- Boye, Kasper and Peter Harder
2007 Complement-taking predicates: Usage and linguistic structure. *Studies in Language* 31: 569–606.
- Bresnan, Joan W.
1978 A realistic transformational grammar. In: Morris Halle, Joan Bresnan and George Miller (eds.), *Linguistic Theory and Psychological Reality*, 1–59. Cambridge, MA: MIT Press.
- Bybee, Joan L.
1998 The emergent lexicon. In: M. Catherine Gruber, Derrick Higgins, Kenneth S. Olson and Tamra Wysocki (eds.), *Chicago Linguistic Society 34, Part 2: Papers from the Panels*, 421–435. Chicago: Chicago Linguistic Society.
- Bybee, Joan L. and Joanne Scheibman
1999 The effect of usage on degrees of constituency: The reduction of *don't* in English. *Linguistics* 37: 575–596.
- Carnie, Andrew
2007 *Syntax: A Generative Introduction. Second Edition*. Oxford: Blackwell.
- Chafe, Wallace L.
1986 Evidentiality in English conversation and academic writing. In: Wallace L. Chafe and Johanna Nichols (eds.), *Evidentiality: The Linguistic Coding of Epistemology*, 261–272. Norwood, NJ: Ablex.
- Coltheart, Max, Brent Curtis and Paul Atkins
1993 Models of reading aloud: Dual-route and parallel distributed processing approaches. *Psychological Review* 100: 589–608.

- Croft, William
 1995 Intonation units and grammatical structure. *Linguistics* 33: 839–882.
- Diessel, Holger and Michael Tomasello
 2000 Why complement clauses do not include a *that*-complementizer in early child language. *Berkeley Linguistics Society* 25: 86–97.
- Diessel, Holger and Michael Tomasello
 2001 The acquisition of finite complement clauses in English: A corpus-based analysis. *Cognitive Linguistics* 12: 97–141.
- Erman, Britt and Beatrice Warren
 2000 The idiom principle and the open choice principle. *Text* 20: 29–62.
- Fox, Barbara A. and Sandra A. Thompson
 1990 A discourse explanation of the grammar of relative clauses in English conversation. *Language* 66: 297–316.
- Fox, Barbara A. and Sandra A. Thompson
 2007 Relative clauses in English conversation: Relativizers, frequency, and the notion of construction. *Studies in Language* 31: 293–326.
- Givón, Talmy
 1995 *Functionalism and Grammar*. Amsterdam: John Benjamins.
- Givón, Talmy
 2002 *Bio-Linguistics: The Santa Barbara Lectures*. Amsterdam: John Benjamins.
- Goldberg, Adele E.
 2006 *Constructions at Work: The Nature of Generalization in Language*. Oxford: Oxford University Press.
- Haiman, John
 1994 Ritualization and the development of language. In: William Pagliuca (ed.), *Perspectives on Grammaticalization*, 3–28. Amsterdam: John Benjamins.
- Haspelmath, Martin
 1996 The converb as a crosslinguistically valid category. In: Martin Haspelmath and Ekkehard König (eds.), *Converbs in Crosslinguistic Perspective*, 1–55. Berlin: Mouton de Gruyter.
- Hawkins, John A.
 1994 *A Performance Theory of Order and Constituency*. Cambridge: Cambridge University Press.
- Hawkins, John A.
 2004 *Efficiency and Complexity in Grammars*. Oxford: Oxford University Press.
- Hopper, Paul J.
 1987 Emergent grammar. *Berkeley Linguistics Society* 13: 139–157.
- Hopper, Paul J. and Sandra A. Thompson
 1980 Transitivity in grammar and discourse. *Language* 56: 251–299.

- Hopper, Paul J. and Sandra A. Thompson
1984 The discourse basis for lexical categories in universal grammar. *Language* 60: 703–752.
- Hunston, Susan and Gill Francis
2000 *Pattern Grammar: A Corpus-Driven Approach to the Lexical Grammar of English*. Amsterdam: John Benjamins.
- Jackendoff, Ray
1972 *Semantic Interpretation in Generative Grammar*. Cambridge, MA: MIT Press.
- Keenan, Edward L. and Bernard Comrie
1977 Noun phrase accessibility and universal grammar. *Linguistic Inquiry* 8: 63–99.
- Lambrecht, Knud
1994 *Information Structure and Sentence Form*. Cambridge: Cambridge University Press.
- Langacker, Ronald W.
1987 *Foundations of Cognitive Grammar: Volume 1; Theoretical Prerequisites*. Stanford, CA: Stanford University Press.
- Langacker, Ronald W.
1991 *Foundations of Cognitive Grammar: Volume 2; Descriptive Application*. Stanford, CA: Stanford University Press.
- Langacker, Ronald W.
2000 A dynamic usage-based model. In: Michael Barlow and Suzanne Kemmer (eds.), *Usage-Based Models of Language*, 1–63. Stanford: CSLI Publications.
- MacWhinney, Brian
1978 *The Acquisition of Morphophonology*. Oxford: Blackwell.
- Mehl, Matthias R., Simine Vazire, Nairán Ramirez-Esparza, Richard B. Slatcher and James W. Pennebaker
2007 Are women really more talkative than men? *Science* 317: 82.
- Merchant, Jason
2001 *The Syntax of Silence: Sluicing, Islands, and the Theory of Ellipsis*. Oxford: Oxford University Press.
- Merchant, Jason
2004 Fragments and ellipsis. *Linguistics and Philosophy* 27: 661–739.
- Miller, Jim and Regina Weinert
1998 *Spontaneous Spoken Language: Syntax and Discourse*. Oxford: Clarendon.
- Newmeyer, Frederick J.
1998a *Language Form and Language Function*. Cambridge, MA: MIT Press.
- Newmeyer, Frederick J.
1998b Preposition stranding: Parametric variation and pragmatics. *Languages and Linguistics* 1: 1–24.

- Newmeyer, Frederick J.
 2003 Grammar is grammar and usage is usage. *Language* 79: 682–707.
- Newmeyer, Frederick J.
 2005a A reply to the critiques of 'Grammar is grammar and usage is usage'. *Language* 81: 229–236.
- Newmeyer, Frederick J.
 2005b *Possible and Probable Languages: A Generative Perspective on Linguistic Typology*. Oxford: Oxford University Press.
- Newmeyer, Frederick J.
 2006 Grammar and usage: A response to Gregory R. Guy. *Language* 82: 705–706.
- Nunberg, Geoffrey, Ivan Sag and Thomas Wasow
 1994 Idioms. *Language* 70: 491–538.
- Ono, Tsuyoshi and Sandra A. Thompson
 1995 What can conversation tell us about syntax? In: Philip W. Davis (ed.), *Alternative Linguistics: Descriptive and Theoretical Models*, 213–271. Amsterdam: John Benjamins.
- Pesetsky, David
 1985 Morphology and logical form. *Linguistic Inquiry* 16: 193–246.
- Prince, Ellen F.
 1978 A comparison of *wh*-clefts and *it*-clefts in discourse. *Language* 54: 883–906.
- Ross, John R.
 1969a Guess who? *Chicago Linguistic Society* 5: 252–286.
- Ross, John R.
 1969b On the cyclic nature of English pronominalization. In: David Reibel and Sanford Schane (eds.), *Modern Studies in English*, 187–200. Originally published in *To Honor Roman Jakobson* (1967), pp. 1669–1682. Mouton: The Hague. Englewood Cliffs, NJ: Prentice-Hall.
- Sadock, Jerrold M.
 1991 *Autolexical Syntax: A Theory of Parallel Grammatical Components*. Chicago: University of Chicago Press.
- Takami, Ken-ichi
 1988 Preposition stranding: Arguments against syntactic analyses and an alternative functional explanation. *Lingua* 76: 299–335.
- Tao, Hongyin and Charles F. Meyer
 2006 Gapped coordinations in English: Form, usage, and implications for linguistic theory. *Corpus Linguistics and Linguistic Theory* 2: 129–163.
- Thompson, Sandra A.
 1983 Grammar and discourse: The English detached participial clause. In: Flora Klein-Andreu (ed.), *Discourse Perspectives on Syntax*, 43–65. New York: Academic Press.

- Thompson, Sandra A.
2002 'Object complements' and conversation: Towards a realistic account. *Studies in Language* 26: 125–164.
- Thompson, Sandra A. and Anthony Mulac
1991 A quantitative perspective on the grammaticalization of epistemic parentheticals in English. In: Elizabeth C. Traugott and Bernd Heine (eds.), *Approaches to Grammaticalization, Vol. 2: Focus on Types of Grammatical Markers*, 313–339. Amsterdam: John Benjamins.
- Tomasello, Michael (ed.)
1998 *The New Psychology of Language: Cognitive and Functional Approaches to Language Structure*. Mahwah, NJ: Lawrence Erlbaum.
- Van Hoek, Karen
1997 *Anaphora and Conceptual Structure*. Chicago: University of Chicago Press.
- Wray, Alison
2002 *Formulaic Language and the Lexicon*. Cambridge: Cambridge University Press.

Usage, structure, scientific explanation, and the role of abstraction, by linguists and by language users

Arie Verhagen

1. Complementation and scientific argumentation¹

1.1. A short history of recent thinking on complementation

As noted by Boye and Harder (2007), the analysis of usage and structure of linguistic constructs of the type *John thinks that grammar is dull*, i.e. involving a finite complement clause, has become, over the last ten years or so, a central topic in the debate on the precise relationship between usage and structure. One reason why precisely this topic is worth debating so much is that complementation constructs belong to the prototype of the central structural-syntactic concept of “subordination” (*that grammar is dull* is considered a straightforward case of one clause being subordinated to another (*John thinks X*, *X* being filled by another clause)). Three lines of investigation of actual language use first developed independently, and each led to the conclusion that complements are not really “subordinate”, at least not in the full sense of the word, to their matrix clauses.

The first line concerned conversation. An early publication, already indicating the direction of the consequences of the research quite clearly, was Thompson and Mulac (1991), which concludes that the distinction between matrix clause and complement clause is subject to “erosion” in conversational English. Arguably the most important recent result is Thompson (2002), which claims that the large majority of complementation constructs in (adult) spontaneous conversation does not involve subordination, but rather reusable “fragments” of language which express an “epistemic/evidential/evaluative” (“e/e/e”) stance of the speaker towards what is expressed in the complement clause.

The second line focused on language processing, esp. in text production and text understanding. Using psycholinguistic methods and Dutch data, Schilperoord (1996) showed that a combination of one complement clause and its matrix clause is indistinguishable in the production process from a typical simplex clause, i.e. it is produced as a unit (while subsequent complement clauses to the

same matrix are produced as separate units). Schilperoord and Verhagen (1998) and Verhagen (2001) connected this phenomenon to the role of complementation constructs in the structure of texts (cf. Mann and Thompson 1988),² concluding that matrix clauses are generally a kind of perspectival operator on the content or “force” of the complement clause, which has the consequence that a matrix of a complement is never conceptually independent, in contrast to the “main” clauses of clausal adjuncts.

The third line of research concerned language acquisition. Following up on a longer tradition in acquisition research, Diessel and Tomasello (2001) provided strong evidence that the large majority of children’s early complementation constructs consist of fixed expressions, especially *I think, look, I guess*, and a few other ones, which are attached to other clauses as markers of subjective stance and as interactional cues. Besides these, there are a few other early cases that look like complementation, but they are arguably manifestations of independent constructions. Thus, children do not start to make complement-like utterances by combining two clauses that could be produced independently; there is no general rule for structural subordination in young children’s linguistic competence. Utterances that would allow for an analysis as a complement being embedded in a matrix clause in children’s speech, are actually the product of a number of different processes, a large part involving fixed expressions functioning as modifiers of what the child is communicating. Any general rule for complementation in adults thus has to be the result of later development, not something that is built into the capacity for language at birth. In fact, the claim can be said to be: what Diessel and Tomasello (2001) found in young children’s speech actually mirrors adult usage rather accurately.

Although, as I said, these lines of investigation were initiated and developed independently, they were not totally isolated from each other. Peter Harder wrote a review of Schilperoord (1996) (Harder 1997); Diessel and Tomasello (2001) and Thompson (2002) refer to each other; the latter also mentions Verhagen (2001). Attempts to integrate these ideas and findings were also undertaken more or less at the same time and to a considerable extent independently, in Boye and Harder (2007) and in Verhagen (2005/2007), but once again, these refer to each other, too. Moreover, each of these latter two publications also aimed at extending the new insights to include instances of use that, although a minority, do not lend themselves so readily to the view that they would consist of combinations of a (complement) clause with a more or less fixed expression indicating the speaker’s stance, and not involving subordination at all. To this end, both approaches used some concept of a cline. Boye and Harder distinguish between “lexical” and “grammatical” patterns of complementation, allowing gradual change, through grammaticalization, from the first type to the latter. I

used the construction grammar concept of a network, with specific, relatively fixed phrases located at the “lower” level of the network, but connected to more and more abstract templates (correlated with type frequency) at “higher” levels, with the more specific templates having special properties in addition to, and possibly contradicting, the ones inherited from the more abstract templates; *both* of these may (especially in adult, written language use) productively license new expressions.

Although these approaches are much in the same spirit, they are not, I think, completely identical, at least not conceptually. Not surprisingly, I prefer the network approach, one reason precisely being that it avoids the distinction between “lexical” and “grammatical”, which easily gives rise to the idea of the difference being one of strictly distinguishable categories, rather than a continuum, although the text of Boye and Harder makes it quite clear that they also intend it as a cline. Still, I assume, or at least hope, that what I have to say will translate relatively easily into terms that may come more naturally to Peter Harder. What is crucial for my purpose now, is that these two approaches are indeed aiming at integration and extension, i.e. at developing a single, coherent, and consistent conceptual framework that allows apparently contradictory views on the phenomena to be combined.

1.2. Structure and usage, emergence and reduction, skyhooks and cranes

In the present volume, Fritz Newmeyer provides a new contribution to the debate. As far as I know, it is the first contribution from a formal linguistics side, and as such already an important and welcome step, given the central character that complementation plays in all approaches to grammar. Moreover, Newmeyer uses corpus data as his empirical basis and in that way helps to bridge the gap that otherwise often emerges in debates between formal and functional linguists and that easily blocks any further progress: disagreement on what constitutes the relevant set of facts. Thirdly, his discussion reveals a number of new aspects of complementation that are interesting in themselves, and also relevant to the discussion on the relation between usage and structure (I will return to some of these below). Thus, it is a valuable contribution that can help advance our understanding of the relation between usage and structure in this central domain of grammar.

However, Newmeyer himself uses his discussion as a basis for something different, viz. to claim that usage facts such as those considered by the studies mentioned above, hardly shed any light on issues of grammatical analysis. In

the end, he agrees with usage based linguists that (at least) “frequency is an important factor leading to the shaping and reshaping of grammar”, i.e. usage is recognized as at least one causal factor in the explanation of linguistic structure. This is an important piece of common ground that makes a fruitful discussion between Newmeyer and functional linguists in principle worthwhile. However, he adds: “but appeals to frequency should never be used as a substitute for careful grammatical analysis”, and grammatical analysis is to be based on observations of another kind of phenomena than linguistic usage. This is the methodological position of the “autonomy” of grammar, that makes a debate between the formal linguist Newmeyer and functionalists much more problematic again, as I will demonstrate.

I will try to show that one can agree fully with Newmeyer (and, by implication, with Boye and Harder, with whom Newmeyer agrees) on some form of autonomy of a grammatical (sub)system, i.e. a set of (conventional) rules for formulating and using complementation constructs in a particular language (say English), and at the same time fully maintain the idea that structural phenomena can be reduced to properties at the level of usage. This may sound more surprising than it actually is, but the logic is one that is generally found in all kinds of scientific endeavors. To take an example from physics: the structural difference between solids and liquids does not exist at the atomic level (no single atom is either liquid or solid), but it can be explained in terms of properties of atoms, and what happens when lots of them are close together in certain environments. So the higher level of structure has properties that do not exist at the lower level. But it also constrains what can happen to any lower-level element (i.e. atom) that is contained in it – the structure of a crystal determines where an atom can(not) move, which electrons can move from one atom to another, etc. That is, although higher level phenomena can be completely explained in terms of lower level ones, higher level phenomena, once they have come into existence, become a new, autonomous explanatory factor, not only for higher level phenomena themselves but also for some lower level ones. Examples abound in other sciences as well. Natural scientists have no problem recognizing the autonomy of chemical structure or biological systems relative to the quantum properties of electrons or the chemical properties of complex carbon compounds, respectively, while maintaining the idea that the former are ultimately reducible to the latter. Or to take an example closer to home: economists have no problem recognizing the autonomy of a monetary system once it has come into existence – including its power to affect the “real” economy, as shown by the present day credit crisis – while maintaining the idea that it is ultimately based on a constellation of more elementary processes of production, consumption, and trading of goods.

In short, reduction (to more basic units and processes) and emergence (of properties, at a higher level of organization, that do not exist at a lower level) are generally two sides of the same scientific coin. The really relevant question is: What does one propose as the way to get from the lower to the higher level of organization? In the words of Daniel Dennett: “We must distinguish reductionism, which is in general a good thing, from *greedy reductionism*, which is not. The difference, in the context of [evolutionary] theory, is simple: greedy reductionists think that everything can be explained without cranes [=subprocesses existing in the lower level phenomena that, in certain circumstances, produce higher levels of organization AV]; good reductionists think that everything can be explained without skyhooks.” (Dennett 1995: 81/2). Skyhooks are special mechanisms, not themselves based in lower level phenomena, invoked to explain properties at a higher level.

Clearly, invoking a skyhook does not explain a scientific problem, but rather gives it a name. In the history of science, progress often precisely consisted in the discovery that certain concepts were skyhooks, and that they could be dispensed with. Examples are such discoveries as that we can do *without* a special kind of substance called “caloric” in thermodynamics, a special kind of “vital force” in biology, etc., and actually *explain* processes of heating/cooling (including phase transitions), and life. Such a recognition may involve the discovery of a crane at the same time: the way in which a lower level process produces new properties not originally present at the lower level itself (kinetic energy of molecules explaining temperature, the biochemistry of organic molecules explaining life processes, etc.). But even if it does not, the better scientific strategy is to consider the problem at hand as in need of further investigation, not to invoke an unknown element or process, and give it a name that suggests it provides an explanation.

In this perspective, one might wonder why there should be a debate of this kind in linguistics at all. Communication and processing – i.e. *usage* of signals by senders to influence other organisms on the one hand, and to make inferences about other organisms by receivers on the other – have all the properties to make them prime candidates for the status of the elementary level of phenomena with respect to which human language should count as a higher level of organization (in an evolutionary perspective, communication and the processing of signals are certainly more widespread than, and prior to, language). So shouldn't it be the default assumption that a linguistic system comes into existence as such a higher level of organization on the basis of communicative and cognitive processes, and at the same time that, once in place, it also acquires certain properties that are crucial for understanding how it works and that do not exist at the more elementary level? There is all the more reason to ask this question

(as a rhetorical one), since there are relatively well understood processes that are perfectly suited as mechanisms, already in existence at a lower level than that of linguistic structure, to cause the emergence of higher level structures: routinization (an individual psychological process) and conventionalization (a social one – especially relevant in our own species, given its capacity for empathy and cooperation);³ thus they are definitely cranes, not skyhooks. These processes also provide an immediate basis for explaining the emergence of a certain degree of autonomy: routines are executed automatically whenever certain simple criteria are met, and they “block” the development and performance of non-routinized procedures even if the routine might, in a specific circumstance, be less optimal than some novel course of action. In the same spirit, conventions, based on mutual expectations in a population of individuals, make themselves the preferred procedures to follow by providing a guarantee for at least *some* communicative success within the population, independently of the answer to the question what would be the “optimal” form of communication when only considering the communicative problem at hand. All of this is, in my mind, so straightforward that the continuing debate in linguistics – with Newmeyer’s contribution as the most recent testimony – raises the question: “What is the point?”.

2. The danger of special evidence for structure: jumping to abstractions

2.1. Evidence: usage vs. “tests”

The point seems to be that some linguists, including Newmeyer, only want to go a (small?) part of the way of emergence and reduction; it appears he does not want to abandon all skyhooks. On the other hand, it is also true that Thompson puts less emphasis on the emergence of higher level structure in some of her publications than in other ones, and to the extent that this evokes the conclusion that no abstract structure emerges at all from usage, this may and should invite the same diagnosis, albeit “from the other end”: perhaps she does not recognize the need of any cranes for explaining linguistic structure.⁴ In any case, it appears that Newmeyer does not believe in the scientific ideal of producing an explanation of linguistic structure based *completely* on the more elementary level of usage phenomena (communication and processing), i.e. without invoking some idea of “structure” that does not ultimately come from usage, but is essentially independent (hence a skyhook, in my view). Rather,

he ultimately prefers to conceive of usage and structure as if they were two kinds of phenomena in parallel with many-to-many-connections between them, rather than as phenomena on different *levels*, as Boye and Harder do (despite his explicit endorsement of their paper). This is more evident in some places of his chapter than in others; one where it is relatively clear, for example, is section 3.2. Here he puts “fragments” and “constructions” in opposition to each other, while the general usage-based view would hold that they are just more and less specific instances (i.e. with different levels of generality) in a continuum of basically the same kind of things: stored linguistic units used in processing and production. Several remarks in the text and the footnotes of this section present the same difference as if it were one between “rules” and “lists”, again in such a way that one cannot appear as a natural extension of the other, as (many) usage-based approaches would have it.

As for Thompson, it looks as if Newmeyer attributes to her a “greedy reductionist” approach, when he criticizes her for assuming only “fragments” and not any more general (abstract) constructions. If this is indeed Thompson’s position, then the criticism would be justified (though I would diagnose it somewhat differently). However, I do not think things are quite so clear. Notice the wording of passage he quotes from Fox and Thompson (2007: 318): “small-domain, even sometimes lexically specific, formats which exist in a dynamic family-resemblance relationship to one another that can be modeled in terms of a continuum”. This contains the scalar modifier *even* with *lexically specific*, so the point seems to be that the authors primarily defend the relevance of “small domain” as opposed to “large domain” – and a small domain still involves a generalization, at least that is the only way I can read it; notice also the appeal to the notion of *continuum*. The point rather seems to be the proposal to replace the idea of a *single* uniform construction, with that of a *family* of patterns jointly characterizing relative clause phenomena. Cf. also the quite explicit statement at the end of the conclusion: “Our findings suggest that speakers make use of a wide range of practices – some entirely pre-stored, others partially pre-stored and partially composed based on low-level formats, others not at all pre-stored – and this diversity must be acknowledged and described in our syntactic theories. Focusing too heavily on one practice – whether it is the pre-stored, monoclausal end or the entirely compositional end [–] misses the diversity that underlies the practices by which speakers use ORCs in conversation.” (Fox and Thompson 2007: 319).⁵

As will be(come) clear, I also believe that recognizing the emergence of abstract structures is a crucial part of the story of language, but the degree of abstractness is, indeed, easily overrated, with sometimes serious consequences. Still, the main relevant point here is that fragments and more abstract construc-

tions can be seen as points on a single continuum, and should not be put in opposition to each other.

The basic independence of structure in Newmeyer's view is closely connected to his idea that the most relevant evidence for structural analysis does not consist of usage facts such as frequency or processing data, but rather in the application of certain metalinguistic "tests", of the type: if a constituent X allows replacement by a constituent of type Y, then it is itself also of type Y; or: if a sentence displays an anaphoric relationship between constituents A and B (what Newmeyer calls "binding relations"), then it has a structure of type Z – and others like these. This is a well known and much used method in grammatical research, but that fact does not, of course, make it completely unproblematic. On the contrary, the frequency of use of the method may easily blind us to its dangers. One point that is relevant in this connection, is that the logic of using the outcome of tests as determinants for grammatical analysis invites abstractness. To say that the structure of some sentence is the same as that of another sentence with an anaphor in it, implies abstracting away from possible differences related to the use or non-use of an anaphor. To replace a part X in a sentence by another part Y and, if the result is still good English, thereby determine the structure of the original sentence, implies abstracting away from any structural and functional differences that might be related to the difference between X and Y, etcetera. Now there is nothing wrong in principle with this kind of tests; all evidence is in principle equally welcome, of course. Moreover, they provide a component of the most basic procedure of grammatical analysis, viz. distributional analysis (what are the linguistic environments – encompassing both form and meaning – in which an item occurs, and which items are compatible with what in a certain environment? Cf. Croft 2001, this volume). But when used entirely on its own, this kind of evidence has a certain weakness, because tests in principle only shift the burden of proof: that a particular test may be used to answer a question on structure is something that itself requires justification. Ultimately, it must be possible to justify the use of a test in *another* way than with yet another test; a grammatical analysis based *solely* on metalinguistic tests remains fundamentally shaky, for principled reasons.

An additional danger is that the logic of this method allies easily with the scientific pursuit for generalization and abstractness (finding as few "laws" as possible to account for as many data as possible), which may lead to (mis)taking small generalizations for grand ones (cf. Croft's (this volume, section 2.6) "unwarranted generality assumption"). I think it is telling, in this perspective, that Newmeyer is especially perplexed by the lack of attention for abstractness in Thompson's analysis. While one can in principle see his point (but see my comments above), we should not, as it were with a swing of the pendulum, identify

structure with maximal abstractness. However, this is precisely what happens in Newmeyer's chapter. That is why it provides an excellent opportunity to fill in this particular pitfall for grammatical analysis.

2.2. An illustration: Is “that” a marker of subordination, or of something less abstract?

It is time for an example. In section 2.2 of his chapter, Newmeyer sets out to show that “complements are subordinate” (the title of the section). He starts by making a terminological distinction between “conversationally subordinate” and “syntactically subordinate”, and then argues that evidence for the first is irrelevant for deciding on the second. Rather, evidence for the latter should come from distributional evidence of the “test” type mentioned above. The first point concerns the fact that (in English) a complement clause may be introduced by the element *that*, but this may also be left out. Newmeyer states “The complementizer *that* is uncontroversially a marker of subordination”, and then goes on to observe that it is used in 16% of the cases in his corpus. Now, the default assumption should be, according to Newmeyer, that clauses with and without *that* have the same structure, and in any case he sees no discourse evidence to the contrary, so the 84% complement clauses without *that* are also structurally subordinate.

The way he presents it certainly gives the reader the impression that he considers this a very simple and straightforward argument. However, it may be uncontroversial that *that* is a marker of *complementation*, but this is not at all clear for (structural) *subordination*. The point is that the latter is a much more abstract notion, expressing the idea of a clause being a proper subpart of a phrase (cf. Newmeyer's schematic representation (2)). This concept generalizes over several types of clauses connected to others; some of these are marked by *that* or “zero”, but there also many other types, characterized by distinct conjunctions such as *if*, *whether*, *because*, *since*, and many more. Thus the notion “subordination” abstracts away from *all* of the differences between these conjunctions and the clause types they mark, while “complementation”, although an abstraction itself, refers to a more restricted set of cases. Thus, *that* is most certainly *not* a general marker for all clauses considered “subordinate” in English. It is of course true that the conjunctions mentioned all mark clause combinations, but that it is empirically valid to generalize over these different and differently marked patterns of clause combinations as a unified and linguistically significant category, is something that requires independent demonstration. In other words, only if one already *assumes* that complementation is practically the most typical

case of (structural) subordination, could the observation about *that* count as an argument for the latter.

In fact, for each conjunction, the question is what properties of the pattern involved are best described and explained at which level of abstraction: does some property of, say, an *if*-clause correlate with (is it perhaps a consequence of) its being specifically an *if*-clause, or with its being subordinate? The same holds for *that* as an – indeed – uncontroversial marker of complementation: it is not a priori known whether an alleged higher level of abstraction like subordination is involved in the explanation of any of the properties of the complementation pattern, and if so, of which ones – given the specificity of *that* for complementation, it provides no evidence (neither in favor of, nor against) the relevance of the more abstract notion of subordination.

What is happening here, is what I call “jumping to an abstraction”. The level for which the evidence is considered relevant is actually chosen higher than what is, upon closer scrutiny, warranted.

3. Abstraction after abstraction after abstraction, ...

3.1. Complements as arguments

The over-abstraction described in the previous section is not an isolated phenomenon. Before giving his own arguments in favor of the subordinate status of complements, Newmeyer addresses Thompson’s view that complement clauses should not be analyzed as arguments of the verbs of complement taking predicates, specifically not as “objects” of these predicates. Thompson had supported her view by pointing to a number of differences between complement clauses and phrases that constitute the prototype of direct objects: noun phrases with a lexical head (e.g. *his friends*, *a beautiful picture*, *this highly poisonous chemical*), functioning as the patient argument of a transitive verb (e.g. *betray*, *buy*, *destroy*). On the one hand Newmeyer disputes a number of Thompson’s specific claims, and on the other, he considers the logic of the argument “flawed”.⁶

The first point is another case of jumping to an abstraction. Thompson had suggested that certain verbs taking complement clauses do not take noun phrase objects, two of these verbs being *realize* and *wonder*. Newmeyer now produces counter-examples from his corpus with these (and some other) verbs: *I realized the seriousness of it* and *I wonder that myself*. For claims about the specific verbs, these examples provide compelling evidence, but do they also invalidate the claim about a much higher level of generality, viz. complement taking predicates in general? Certainly not immediately. They can only be presented as such under

the assumption that these few examples do indeed generalize to other cases, both noun phrases and complement taking predicates (CTPs), but this has to be made plausible, to say the least, and not simply assumed. But Newmeyer does not provide evidence to this effect.

The point is that it is actually very hard to substantiate combinability of CTPs with “noun phrases” *at that level of generality*. Very many CTPs can be combined with the personal and demonstrative pronouns *it*, *this*, and *that*, but not even all of them (in English, the convention is to say *I think so*, rather than *?I think it*, while the Dutch equivalent of the latter is *fine*). Some CTPs can also be combined with certain abstract nouns (cf. the example with *realize*), while others disallow this (*?I wonder the seriousness of it*), and yet other verbs allow concrete (*You promised me this book* vs. *?I realized/wondered this book*) or even animate noun phrases (*I know my neighbors well*). What should the criterion be for saying that CTPs can take “nominal objects” – again: at that level of abstraction? We could be very liberal: as soon as a CTP can take one element, say the demonstrative pronoun *that*, from the set of elements considered “nominal”, we say it can take (some) nominal objects; this is what is usually done both in traditional grammar and in (at least classic) generative linguistics. We could also be very strict: as long as some CTP cannot take *any* kind of noun phrase, we claim that “CTPs cannot take nominal objects”. Both positions would in fact be equally arbitrary, instances of what Croft (2001; this volume) has aptly called “methodological opportunism”. What makes them problematic is that they both try to formulate a relation at a very high level of abstraction: one between the entire class of CTPs and the entire class of nominal objects, whereas the reality of the distribution of linguistic elements in fact strongly suggests that the actual relations do not exist at that level of abstraction, but at various “in-between” levels, of specific (semantic and distributional) classes of CTPs, and specific (semantic and distributional) classes of “nominal” phrases. Stating these latter relations is what should really be the contents of the descriptive starting point of any linguistic analysis. This work has not been done yet, as far as I know, but I dare to predict that it will reveal much more complexity than a small set of general rules (something that should not actually surprise us, since we are dealing with phenomena that have been produced by evolutionary processes –both genetic and cultural).

3.2. Grammatical phenomena restricted to complements

Newmeyer’s positive arguments for the position that complement clauses are structurally subordinate are threefold:

- a) *that* is a marker of structural subordination and it is used in 16% of the cases in the corpus; the default assumption should be that clauses with and without *that* have the same structure, so the 84% complement clauses without *that* are also structurally subordinate;
- b) *each other* cannot be used as the subject of a (simplex) main clause, but it can as the subject of a complement clause (*uh joking that that each other are homosexual . . .*), which shows that the complement clause is not a main clause but subordinate;
- c) similarly, the mandative subjunctive can only be used in complement clauses (*my wife's always insisted that somebody else do it*), not in a (simplex) main clause, which shows that the complement clause is not a main clause but subordinate.

This suffices for Newmeyer to formulate the following as a kind of intermediate conclusion: “In a nutshell, whatever the discourse status of sentential complements may be, the evidence is that they are structurally subordinate to their CTP.”

I have already discussed argument a) in section 2.1 as a first illustration of jumping to an abstraction. One thing that I concluded at the end of that section was that it is not a priori known whether an alleged higher level of abstraction, such as subordination, is involved in the explanation of any of the properties of the complementation pattern, and if so, of which ones.

This point is also relevant for arguments b (*each other* as subject) and c (the mandative subjunctive). Concerning b), if we find utterances like *They all knew whether each other were thinking about them* and *They were all laughing because each other were joking about them*, then this will certainly constitute evidence that the possibility of *each other* as subject is a matter of the clause being subordinate –i.e. that subordination is the right level of abstraction to account for this phenomenon. But if we don't, then the evidence does not support this conclusion; then it only indicates that it is a possibility for complements. And if we were actually to find that *each other* as subject only occurs after the complementizer *that* (i.e. if we never find something like *uh joking each other are homosexual . . .*), then this could, of course, even be used to argue for a structural difference between complements with and without *that*. I refrain from drawing a conclusion about this specific point here,⁷ but what I do want to claim is that the phenomenon of *each other* occurring as subject as presented by Newmeyer does not yet *suffice* for the conclusion that the complement clauses involved are *subordinate* –it is jumping to too high a level of abstraction too soon.

A specific conclusion about the mandative subjunctive (argument c) is possible, though. As Newmeyer explicitly remarks, the occurrence of this phe-

nomenon is dependent on a specific set of predicates, and these are all complement taking verbs. That is, the phenomenon does not occur in other clauses than complements; a construct like (*My wife did not want to do it, because somebody else do it*) presumably is not English. Thus, this is not just jumping to a higher level of abstraction than justified by the data, it is clearly the *wrong* level. One may even use this distribution to propose a specific subconstruction of the class of complementation constructions. Newmeyer does not formulate the generalization, but what the relevant predicates have in common clearly is that they indicate directive speech acts (used to get the addressee to do or to think something); in fact, the use of the mandative subjunctive *imposes* such an interpretation: verbs like *suggest* and *propose*, as lexical items, have more uses than that of indicating a directive speech act (e.g. *I suggest that this is an independent construction*), but in the frame of a complement with an uninflected verb, they *have* to be taken as indicating a directive speech act (*I propose that it be recognized as such*).

At the same time, it is quite clear that the evidence adduced by Newmeyer shows that complementation is a special grammatical phenomenon. Specifically: it shows that it is incorrect to view the complement clause as identical to a simplex main clause, and the CTP as no more than a simple add-on that is otherwise inconsequential. On the contrary, it clearly supports the idea that a combination of CTP and complement clause has special properties, as a whole as well as in parts, that do not follow from the properties of clauses and CTPs as such: the whole is more than the sum of its parts. So to the extent that other studies have given the impression that the relationship is so simple, this evidence provides a welcome correction. Still, it does not suffice, in my view, to establish what Newmeyer claims for it: the cognitive reality of abstract structure independent of any functional considerations. I interpret this evidence as showing that the opposition between viewing complementation either as a combination of usage fragments—completely retaining their identity, and gaining nothing, in the combination— *or* as licensed by a general, abstract grammatical process of subordination, is a false dichotomy. Rather, this evidence supports the view that complementation is to a large extent an autonomous grammatical construction, “autonomous” here not in the sense of “independent of meaning or function”, but “(partly) independent of other linguistic items (words and grammatical constructions)”.

3.3. Different CTPs, and in different types of discourse

The arguments discussed so far were all presented by Newmeyer from his own initial assumption that a distinction can and must be made between “conversational” and “structural” subordination. He has also added a point about the relevance of certain data, and it is interesting enough to warrant a separate discussion. Summarizing again, it comes down to the following:

Thompson has explicitly excluded the CTP *say* and other verbs of communication from her analysis, but they are not at all rare; *say* is next in frequency to *think* and it also frequently exhibits the phenomenon of the omission of *that*. Yet, “[s]ince *say* and other verbs of communication do not express an e/e/e stance, there is no argument even in Thompson’s own terms that their complements are not structurally subordinate.”

Although this is not stated explicitly, the observations on frequency and similar grammatical behavior suggest that the structure of the CTP-complements of *think* and *say* should be considered similar, if not identical. So if the complements of verbs of communication must be considered subordinate (and this is obviously what Newmeyer is suggesting), then so must the complements of *think* (and other verbs of cognition), by analogical reasoning.

This point is better and more serious than any of the others discussed so far. However, the usage-based literature already contains some solutions to the challenge that it seems to pose. Several authors have observed that the grammatical similarity between *think* and *say* as complement taking expressions has a functional parallel. Boye and Harder (2007), for example, observe not only that for a number of languages, the translation equivalent of English *say* must be analyzed as “grammaticalized” in the same way as *I think*, they also write: “What is common to all these CTPs is that they express (or imply) epistemic meaning [...] –in particular, evidential meaning” (Boye and Harder 2007: 583). Notice the addition of “(or imply)” to this characterization as opposed to Newmeyer’s formulation, indicating that what is important in a functional grammatical generalization, are the *inferences* that an expression licenses, beyond what it may strictly speaking “express”.⁸ The speaker who says *X says/said Y* provides evidence for *Y* (as information coming from source *X*), and in principle endorses it, albeit as defeasible. Notice that for a speaker, expressing her own stance (*I think Y*) is a good way to induce a certain stance in the addressee since the speaker is a good source of information about her own thoughts, while using someone else’s stance to present something to an addressee is better done by *He says Y* (rather than *He thinks Y*), since speaking is a public rather than a private activity and thoughts are not directly accessible to others, so saying “says” provides stronger

support for the addressee to endorse the statement than “thinks”. The generalization is that in such cases, both *I think* and *He says* are used as stance-inducing elements and not as utterances that can be separately addressed, in Boye and Harder’s terminology. Interestingly, these authors also draw attention to a number of instances, mentioned in the literature, of the basic verb of communication in several languages having developed into a grammatical marker of evidentiality. This approach can also be straightforwardly applied to English *say*, which then no longer appears as something that is functionally totally different from a verb of cognition (basically *think*), but rather as a member (not completely identical) of the same family of expressions, structurally and functionally.

Thus, on the one hand Newmeyer is right in drawing attention to the fact that the frequency of use and the grammatical behavior of *say* as a CTP parallels that of *think*, and that this should have consequences for the account of CTPs. But on the other hand, he is wrong in jumping to the conclusion that the commonality must be that they govern structural subordination while their functions are radically different. There is a clear alternative, viz. making a *limited abstraction*, that also has the advantage of providing a basis for understanding parallel functional *and* grammatical features of the CTPs involved. At the same time, this does imply that *some* abstraction is being made, and that the claim that the specific function of *I think* and a few other expressions of mental states and processes is the function of complementation constructs *in general* (even in conversation) cannot be sustained – it would come down to mistaking a frequent and prototypical exemplar (specific case) for an entire category (involving some abstraction). To put it concisely: whereas Newmeyer too quickly jumps to abstractions that are too high, Thompson should allow at least some abstraction over parallel instances of use of different CTPs.

As I have indicated, the amount of abstraction necessary to include verbs of communication into the analysis is not all that enormous. An additional advantage of this view is that it allows for natural extension into the domain of written discourse. As I showed in Verhagen (2005, chapter 3), the speaker-based CTPs of the type *I think*, *I guess*, constitute a minority of the CTPs in newspaper texts at best. Still, it would be wrong to conclude that the majority of CTPs in these texts are not functionally similar to the e/e/e-type that is (at the least) more characteristic of conversation (granting the point of Boye and Harder that the CTP may more often be part of the speaker’s “point” than Thompson was allowing for), and that all that they would share with conversational CTPs could be a common abstract syntactic structure. On the contrary, the function of the large majority of CTPs in newspapers turns out to be a relatively moderate generalization of their conversational function. They mark and identify the perspectives from which the reader is invited to construe the contents of the complement

clauses, and just as in conversation, the latter consistently provide the “point” of the discourse segment at hand. An adult language user who has learned to produce and interpret sequences such as *The director expects that the problem will be solved by tomorrow, but others believe that it may take a bit longer* still takes the issue of when the problem might be solved as the point to consider, and the CTPs as indicators of the perspectives from which the point is presented, i.e. as a kind of evidential markers, to steer his own considerations in one direction or another (cf. Verhagen 2005: 94–98; Verhagen 2006: 327–331, for arguments supporting this view, in terms of discourse coherence). Thus, this function is a more abstract variant of the e/e/e-kind of marking Thompson is considering, in that the perspectives that can be expressed may extend beyond the speech situation itself –but there is certainly a “family resemblance”, to say the least.⁹

In written discourse, the form of complementation constructions may also be said to be more abstract than in much of conversation. While a small number (between 5 and 10) of lexical items accounts for 80% of CTPs in conversation, newspaper texts exhibit a far greater type frequency: no less than 42 different lexical items account for less than 70% of the CTPs, and about 30 out of 100 CTPs has a token frequency of 1 (cf. Verhagen 2005: 103). This allows for the conclusion that the pattern PREDICATE+COMPLEMENT CLAUSE has developed, at least in adults and in written discourse, into a productive template that may itself license novel expressions,¹⁰ constituting a formal *and* functional abstraction over a large number of different specific expressions (different predicates; both first, second and third persons; different tenses). Certainly some degree of abstractness, but not with usage and structure living in separate quarters (whether interacting with each other or not).

3.4. And long-distance movement?

In opposition to the idea that memorized concrete “fragments” of language use have an important role to play in grammar, Newmeyer defends the view that “[t]he complexity and abstractness of syntactic knowledge that is revealed by conversational speech is stunning”, and he illustrates this with instances of “long-distance *wh*-movement” and “deeply embedded gaps in relative clause constructions”. An example of the former is: *so what do you think that um we should do*, and of the latter: *the rules that they need to be following*. Newmeyer describes the interpretive demands that such constructs place on an addressee in a way that is clearly intended to evoke this alleged complexity: “it is necessary to hold in mental storage a place for an unexpressed direct object in a different clause [viz. the objects of *do* and *following*, respectively – AV] and to link

a fronted *wh*-element or lexical antecedent to that place”, which implies “a sophisticated engine for representing and accessing grammatical knowledge”.

However, the CTPs of all three of the instances of “long-distance *wh*-movement” given by Newmeyer are word by word identical, including the non-occurrence of audible pauses –each is: *what do you think*. This is not a coincidence, but a general feature of such structures as found in actual usage, this time both in conversation and in newspaper texts. On that basis, Dąbrowska (2004) and Verhagen (2005, 2006) have proposed that such constructs should not be analyzed as instances of an abstract pattern of one clause subordinated to another (and then filled in with specific lexical material, of which one element, the *wh*-element, is moved out of its own clause to the front of the main clause), but as directly licensed by a much more specific template for formulating questions with an explicit perspective marker (viz. the addressee’s, the content of whose mind is being activated by the speech act “Question”), roughly: *WH-do-you-think* (actually: the second person, question-marking counterpart of the first person, epistemic/formula *I think*). An important corpus-based argument for positing such a separate lower-level item is the fact that the type and token frequencies of CTPs in such questions differ radically from the *general* distribution of CTPs in a corpus (Verhagen 2005: 124–126). As I mentioned above, Dutch newspaper texts exhibit a high type frequency for CTPs, indicating that they have generalized into an abstract template for formulating complementation constructs. But in so-called long-distance questions, 80% of all instances have the same predicate (*denken*, ‘think’), while the total number of CTPs occurring in the pattern is no more than 4 (besides *denken*: *zeggen* ‘say’, *willen* ‘want to’, and *vinden* ‘find, think’ – the most basic and most general verbs of cognition, communication, and volition). Searches in even larger corpora bring to light that occasionally some other verbs are also used, but they do not at all change the dramatic difference between the patterns found in complementation in general on the one hand, and in “long-distance” cases on the other. Dąbrowska (2004), and especially (2008) support the important role of formulaicity in the patterns underlying the processing of such constructs by means of experimental evidence.

It will be clear that the implications of this view for the claims about the complexity of processing (“holding a place in memory for an unexpressed phrase in another clause”) are far reaching. If the CTP actually has the status of a kind of lexical item (a kind of idiomatic operator dedicated to the formation of a question with a specific type of function), then the point more or less evaporates. Processing such a sentence may still be a complex task, but not one that is *more* complex than processing ordinary *Wh*-questions (in English, Dutch, and related languages) – in which the characteristic item is always at the front of its clause.

To avoid one possible misunderstanding: to claim that the CTPs of “long-distance” *Wh*-questions are a kind of complex, stored formulaic items is not the same as saying that *all* of their properties can and must be explained in terms of that status. What the claim does mean is that the complexity which such sentences appear to exhibit when linguists describe them in terms of the most abstract structure – viz. at the level needed to generalize over constructs of this type and declarative complementation constructs (including those found in elaborate written discourse) – need not really be present in the way the constructs involved are actually used, processed and stored by (other) speakers of the language (I will return to this issue in general terms in section 4). There *may* still be properties that can only be explained with reference to more abstract, structural and/or functional, properties, but such a claim needs separate justification, so to speak. A recent example is the study by Ambridge and Goldberg (2008), claiming that a general (not strictly lexical) principle of backgrounding in discourse is involved in the acceptability of “long-distance” *Wh*-questions. I think it is likely that besides such a principle, if it receives further support, lexical factors also will turn out to co-determine acceptability judgments on such constructs (cf. Dąbrowska 2008), but in any case such studies are on the right track in not *assuming* a particular level of abstraction as the right one to account for the facts, but in actively seeking for relevant evidence instead.

I will only briefly say something about the other type of “long-distance” phenomena mentioned by Newmeyer: relative clauses of the type *the rules that they need to be following*. Newmeyer describes the complexity of these cases and the “long-distance” *Wh*-cases in a single sentence (quoted above). So he sees them as having the same syntactic structure, and he is thus, again, implicitly jumping to an abstraction, abstracting away from all the differences between them. The most important difference here is that all of the relative clause cases involve a *non*-finite complement to a “light” (partly grammaticalized) verb with a modal meaning (in a broad sense): *want to*, *need to*, *should(n't)*, *like to*. One can only see these clauses as structurally similar to “long-distance” *Wh*-sentences if one sees them as involving two clauses, one projected by the tensed “light” verb, the other by the non-finite verb, i.e. by abstracting away from any differences between these expressions and finite complements to CTPs.¹¹ Now although this is a position in formal syntax that is not unique for Newmeyer,¹² it should be clear by now that it may well be another unwarranted abstraction (as I think it is).¹³

4. Conclusion and discussion: abstract structures vs. capacity for abstraction over usage

It is clear from the way Newmeyer presents his critique, that he feels that Thompson, and other “radical” usage-based linguists, underestimate the abstractness of the representation of linguistic structure that ordinary speakers (of English) have at their disposal. While I doubt that this critique is entirely justified, I have tried to show in this contribution that Newmeyer himself greatly *overestimates* abstractness. Now the linguistic analyses that seemed to reveal a high degree of abstraction in linguistic knowledge contribute a considerable part to the basis for claims about the general capacity of humans to deal with abstract structures (including, for instance, the number system). So the question arises: does the claim that linguistic abstractness is often overestimated imply that humans also have far less capacities for dealing with abstractions than traditionally thought? The answer is: Not at all. As a way to explain why not, let us consider the question what may have caused the discrepancy between the high degree of abstractness that grammarians saw in apparent “long-distance” *Wh*-questions and the specificity demonstrated by investigating actual usage. A probable explanation is stated nicely in a recent article by Dąbrowska (2008: 419/20):

This [...] could also be a result of differences in linguistic experience. Many linguists spend a considerable amount of time constructing examples of the structures they are interested in and reading papers containing such examples. [footnote omitted] Since LDD [=Long Distance Dependency] questions have been the object of very intensive research, it is likely that linguists (or at least linguists who work on LDD constructions, or discuss them with their students) have been exposed to more instances of this construction than most ordinary language users, and, crucially, the instances they have encountered are much more varied [...]. As a result, they are much more likely to develop more general representations of these constructions, and accept unprototypical instances of them.

That is, the linguistic knowledge of linguists, including (perhaps ironically) adherents of autonomous linguistics, is just as much usage-based as that of “ordinary language users”. But the experience of these groups of individuals differs, and that is what accounts for the difference in abstractness of the representations produced: the same *capacity* for abstraction simply produces different *results*, i.e. differences in abstractness of representations, in different *circumstances*. The point is that abstract structures are not just “dealt with”, but actually *created* by the human capacity for generalization. Nowadays, since virtually all children in our societies go to school to learn to read and write, practically everyone’s experience with instances of declarative complementation constructs is so var-

ied that it gives rise to a well-entrenched abstract routine for complementation in practically every member of the population. But there is neither a need to assume that all languages of the world and of every era have to have these abstract *structures*, nor to assume that speakers of languages without such abstract structures would have (had) a more restricted *capacity* for abstraction, linguistic or otherwise.

So on the one hand, linguists do not have a “perverted” kind of linguistic knowledge, and at the same time, ordinary language users do not in principle lack the capacity to form the same abstractions – we could train them as linguistics students, for example, and the more their linguistic experience will overlap with ours, the more their capacity for abstraction will start providing them with representations similar to ours. Consider the example of “long-distance” *Wh*-questions discussed in section 3.4. In a usage-based approach, there are good reasons to assume that for ordinary speakers of Dutch, the representation licensing these constructs is a rather specific one, on a low level of the network of complementation construction (the second box from the left with bold lines in figure 1; cf. Verhagen 2006), in which the top node represents the abstract template for complementation.

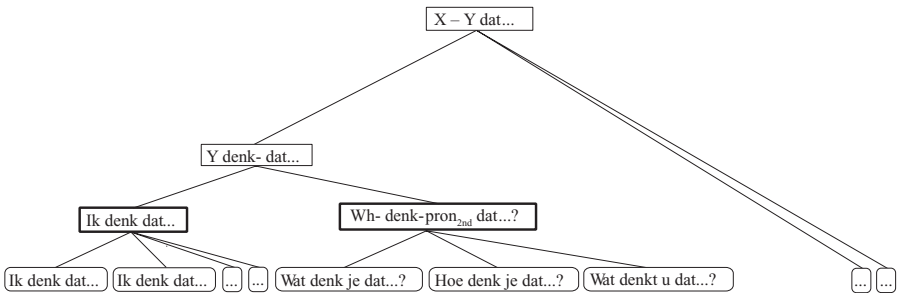


Figure 1.

No basic cognitive capacities have to change in order to change the representation and the structure of this network in such a way that there is (also) a well-entrenched abstract template for “long-distance” *Wh*-questions. Expanding linguistic experience, especially increasing the variety in the cases encountered, would suffice. The judgments of trained linguists testify to this possibility, since there are no reasons to assume that the *basic* capacities of linguists differ dramatically from those of other language users. In fact, I claim that exactly the same mechanism is actually responsible for the fact that a productive template for declarative complementation *is* part of the linguistic knowledge of most members of (Western) modern language communities. So what all of this actu-

ally shows is that it is sometimes very misleading and dangerous to talk about “the” structure of a sentence as if it were something invariable across speakers, whereas in fact each speaker constructs her representation on the basis of her experience, so that differences are bound to arise, despite uniformity of basic cognitive capacities.

A parallel with the number system may be useful here. As is well known, recursion in our number system is a product of cultural evolution. The development of the place-value system for writing numbers and doing arithmetic was a gradual development, as was the “invention” of zero, which made it possible to distinguish between 11, 101, and 110, and which also greatly simplified the task of performing calculations on paper (rather than with an abacus). To see the lack of things as, in some way, “the same” as a value represented by a number, and to represent and use it in calculations in the same way as “true” numbers, involves a considerable abstraction. The inclusion of zero in the line of numbers thus basically coincides with an increase in abstractness of the concept “number”. In turn, it provided the basis for further abstractions, leading to the inclusion of negative numbers (turning the previously recognized ones, besides zero, into positive numbers), etcetera. But of course, peoples using the system of Roman rather than Arabic numerals had no lesser *basic capacity* for abstraction.

The parallel is even more interesting, in that it is clear that once a recursive number system, including the use of zero, is in place, it in turn truly expands the cognitive abilities of its users. Thus, it creates a system with emergent properties, i.e. properties that do not exist in the more elementary level phenomena out of which it evolved. Surely, we do not want to say that the results of these expanded abilities (e.g. the concept of zero, or infinity, or rational numbers, . . .) have been part of all humans’ cognitive make-up for millennia before they were “discovered” a few centuries ago, when it became possible to start *using* them (in those parts of the world that had access to the discovery . . .). The only view that makes sense is that these concepts are *truly* new structures, having emerged on the basis of still the same basic capacity for abstraction (among other things), which happens to apply to new circumstances all the time because of cultural evolution and therefore can give rise to truly novel results.

These are a few well known facts from another cognitive domain than language. I see no objection whatsoever against assuming a parallel story for complementation in grammar. Humans have largely similar capacities for abstraction, but these only gives rise to an abstract, grammatical template for marking perspectives under certain circumstances, a crucial one being sufficient variation in experience with CTPs; where and when such a system arises, it provides its users with a useful, flexible and consistent tool for subtly managing points of view in complex texts. However, for some reason, the lessons that these facts

contain have not really been taken up in linguistics, or at least not in large and prominent parts of linguistics. The name of the reason is, I submit, “structuralism”, and then especially the idea that structure is logically prior to, and independent of usage (communication and processing), i.e. the idea, attributable to Saussure, that structure is the “object proper” of linguistic theory. This is what is usually meant when formal linguists talk about “autonomy” of structure – not the kind of autonomy that I have been presenting in this chapter, and that Newmeyer also appears to adopt at least at some points. I agree entirely when he says that autonomy is totally compatible with the leading idea of usage-based linguistics. But when he then says that usage “shapes” and “reshapes” structure, (only) “to a considerable extent”, and especially when he goes on to repeat that the not-so-surfacey constituent structure of a phrase is to be determined on the basis of totally different things than usage, then I conclude that Newmeyer actually still adheres to the more radical interpretation of autonomy, viz. that some aspects of structure can only be explained in terms of principles dedicated to grammatical structure as such, i.e. skyhooks (if this interpretation is wrong, then I think I can only say to Newmeyer: “Welcome to the usage based club!”). This kind of autonomy is another one than the idea of properties at a higher level of organization that are not present at a lower level but nevertheless causally explained by the latter; in grammar, these properties include open slots in templates, which are, by definition, the product of abstraction over instances of use, and the causal mechanisms include, besides abstraction, routinization and conventionalization (manifested in, among other things, grammaticalization) – these are cranes for building structure out of usage. In this sense, in fact, autonomy and abstractness are consequences of the emergence of structure from usage. They are completely included in a usage-based approach, instead of requiring an explanation on independent, possibly non-reducible principles. Moreover, the usage-based approach also provides a basis for preventing overestimating the role of abstractness of structure, and for understanding why it may be as limited and variable as it turns out to be.

Notes

1. It was a draft of Newmeyer’s chapter in the present volume, distributed and discussed on the internet (esp. the Funknet discussion list), that made me decide to change the topic of my contribution to the present volume. I thank Fritz Newmeyer and the editors for giving me the opportunity to see the final version of his chapter, Bill Croft for sending me his chapter, and the editors again for useful comments that helped me to clarify certain issues. The usual disclaimers apply.

2. This publication, of which Sandra Thompson was also a co-author, may well be regarded as one of the first suggesting (albeit then still without a theoretical interpretation) that complements are not (as) subordinate (as adjunct clauses). Another one that should be mentioned here is Halliday (1985), who replaces the traditional distinction between ‘coordination’ and ‘subordination’ with a tripartite distinction between ‘coordination/parataxis’, ‘hypotaxis’ and ‘embedding’; cf. also Matthiessen and Thompson (1988) for a link between Halliday’s proposal and text analysis.
3. This is the strategy that was and is most forcefully developed in linguistics in Ron Langacker’s work: start from a few generally recognized and well known mechanisms, and show that complex linguistic structure arises out of them and out of their interaction. Two relevant publications, also for alternative views on claims made by Newmeyer that I do not address here (e.g. on ‘bracketing paradoxes’), are Langacker (1997) and (2000).
4. However, I read less of a straightforward contradiction between Fox and Thompson (2007) and Ono and Thompson (1995) than Newmeyer does; cf. my comments in the next paragraph.
5. In other places, Fox and Thompson (2007) formulate as their goal to reverse the focus of attention from the more general to the more specific patterns, not to deny the existence of abstract patterns. Thus, their point concerns the *balance* between generality and specificity, but they, Newmeyer, Boye and Harder, me and, e.g. Croft (this volume, section 2.5) all agree that each of the extremes of maximal computational or maximal storage parsimony is unwarranted. Paradoxically, while Newmeyer considers Fox and Thompson (2007) even more radical than Thompson (2002), the terms ‘abstract’ and ‘general’ as characterizations of grammatical patterns, do occur in the former paper.
6. As for the latter claim, I can only say that there also seems to be some ‘theoretical opportunism’ among different advocates of formal linguistics. Newmeyer ignores a rather long history in generative grammar of considering complement clauses as objects, as well as theoretical issues precisely about the status of complement clauses in a theory that includes the so-called theta-criterion, which implies that each structural position is either an A (=argument, possible target of NP-movement) or an A’ (=non-argument, possible target of *Wh*-movement) position. Newmeyer makes it seem as if no formal grammarian in their right mind would ever have thought of assigning complement clauses the status of argument of the matrix predicate, but this is precisely the position that the formal linguists Hinzen and Van Lambalgen (2008) take in their critique, working with assumptions from Chomsky’s ‘minimalist program’, of Verhagen’s (2005) analysis of the syntactic status of complement clauses, which like Thompson’s starts by denying complement clauses argument status (cf. also Verhagen 2008a).
7. A brief search on the world wide web suggests that at least strings of the type “whether/if each other” and “since each other” do occur, but looking at some of these occurrences as a non-native speaker, I often had a hard time figuring out whether such a usage was anaphoric, as I assumed it should be in the interpre-

tation meant by Newmeyer, or a non-anaphoric phrase meaning “each one out of two”.

8. This insight is elaborated and turned into the foundation of an alternative approach to grammar and semantics in Verhagen (2005); see also Verhagen (2008)b, and the discussion between Hinzen and Van Lambalgen (2008) and Verhagen (2008)a.
9. An even higher degree of abstraction would, finally, consist in a generalization over verbs as CTPs and as transitive event descriptions (based on pairs such as *He wrote that the problem would be solved soon* and *He wrote a message*), ultimately allowing a CTP to be used, in specific circumstances, to describe a transitive event, effectively turning the complement clause into an argument of the verb (e.g. *He wrote that the problem would be solved, waited a few seconds, and then pressed Enter to send the message*). In the Dutch corpus consulted by Verhagen (2005: 112), this type of usage of CTPs amounts to less than 5%. Notice that this suggests that the capability to see and use a CTP as a transitive verb (generalizing over nominal and clausal complements), is a product of linguistic experience, and should thus develop later in life than the capacity to use CTPs and transitive verbs as such; Brandt et al. (submitted) present experimental evidence in support of this view.
10. Notice that this is another and more powerful kind of criterion for establishing a *rule* of grammar than tests that establish similarities and differences.
11. This passage in Newmeyer’s text, especially his use of the phrase “*lexical antecedent*” (my emphasis) might allow for an interpretation in which the relative clause is monoclausal, with the ‘light’ verb and the non-finite verb together constituting a single clause. There would then still be a long-distance dependency, because the (relativized) gap would be directly related to the lexical head outside the clause containing the gap. But such an analysis would contradict the generally accepted view, in traditional, structural, generative and functional linguistics, that the head NP is anaphorically linked to the element at the front of the relative clause, and that it is the latter that is grammatically associated with the gap. If we assume this, and would also analyze these expressions as monoclausal, then they would actually not have the same structure as ‘long-distance’ *Wh*-sentences. Hence my interpretation of Newmeyer’s text at this point.
12. It is no coincidence that the underlying structures posited in generative syntax often resemble the historical source of the phenomenon studied, with the transformations removing large parts of the structure that is actually absent in the modern structure – effectively describing long social, historical chains of events as somehow simultaneously represented in the minds of individual speakers.
13. In cognitive and functional linguistics, it is commonly observed that combinations of verbs with non-finite complements exhibit both formally and semantically more integration with the complement-taking verb than finite complements, which is even used as a typical example of iconicity in language structure. See Kemmer and Verhagen (1994) for an argumentation that causal verbs with non-finite complements do not constitute complex sentences, but exhibit yet another autonomous kind of construc-

tion, which is actually best analyzed as an analogical extension of the (di)transitive template licensing simplex clauses.

References

- Ambridge, Ben and Adele E. Goldberg
2008 The island status of clausal complements: Evidence in favor of an information structure explanation. *Cognitive Linguistics* 19: 357–389.
- Boye, Kasper and Peter Harder
2007 Complement-taking predicates: Usage and linguistic structure. *Studies in Language* 31: 569–606.
- Brandt, Silke, Arie Verhagen, Michael Tomasello and Elena Lieven
submitted German children's productivity with simple transitive and complement-clause constructions: Testing the effects of frequency and variability.
- Croft, William
2001 *Radical Construction Grammar. Syntactic Theory in Typological Perspective*. Oxford: Oxford University Press.
- Croft, William
this volume Ten unwarranted assumptions in syntactic argumentation.
- Dąbrowska, Ewa
2004 *Language, Mind, and Brain: Some Psychological and Neurological Constraints on Theories of Grammar*. Edinburgh: Edinburgh University Press.
- Dąbrowska, Ewa
2008 Questions with long-distance dependencies: A usage-based perspective. *Cognitive Linguistics* 19: 391–425.
- Dennett, Daniel C.
1995 *Darwin's Dangerous Idea. Evolution and the Meanings of Life*. New York: Simon and Schuster.
- Diessel, Holger and Michael Tomasello
2001 The acquisition of finite complement clauses in English: A corpus-based analysis. *Cognitive Linguistics* 12: 97–141.
- Fox, Barbara A. and Sandra A. Thompson
2007 Relative clauses in English conversation: Relativizers, frequency, and the notion of construction. *Studies in Language* 31: 293–326.
- Halliday, Michael A.K.
1985 *An Introduction to Functional Grammar*. London, etc.: Edward Arnold.
- Harder, Peter
1997 Review of Schilperoord (1996). *Studies in Language* 21, 3, 667–674.

- Hinzen, Wolfram and Michiel van Lambalgen
 2008 Explaining intersubjectivity: A comment on Arie Verhagen, *Constructions of Intersubjectivity. Cognitive Linguistics* 19: 107–123.
- Kemmer, Suzanne and Arie Verhagen
 1994 The grammar of causatives and the conceptual structure of events. *Cognitive Linguistics* 5, 115–156.
- Langacker, Ronald W.
 1997 Constituency, dependency, and conceptual grouping. *Cognitive Linguistics* 8: 1–32.
- Langacker, Ronald W.
 2000 A dynamic usage-based model. In: Michael Barlow and Suzanne Kemmer (eds.), *Usage-Based Models of Language*. Stanford: CSLI Publications, 1–63.
- Mann, William C. and Sandra A. Thompson
 1988 Rhetorical Structure Theory: Toward a functional theory of text organization. *Text* 8: 243–281.
- Matthiessen, Christian and Sandra A. Thompson
 1988 The structure of discourse and “subordination”. In: John Haiman and Sandra A. Thompson (eds.), *Clause Combining in Grammar and Discourse*. Amsterdam: John Benjamins, 275–329.
- Newmeyer, Frederick J.
 this volume What conversational English tells us about the nature of grammar: A critique of Thompson’s analysis of object complements.
- Ono, Tsuyoshi and Sandra A. Thompson
 1995 What can conversation tell us about syntax? In: Philip W. Davis (ed.), *Alternative linguistics: Descriptive and theoretical models*. Amsterdam: John Benjamins, 213–271.
- Schilperoord, Joost
 1996 *It’s About Time – Temporal Aspects of Cognitive Processes in Text Production*. Amsterdam/Atlanta, GA: Rodopi.
- Schilperoord, Joost and Arie Verhagen
 1998 Conceptual dependency and the clausal structure of discourse. In: Jean-Pierre Koenig (ed.), *Discourse and Cognition. Bridging the Gap*. Stanford: CSLI Publications, 141–163.
- Thompson, Sandra A.
 2002 “Object complements” and conversation: towards a realistic account. *Studies in Language* 26: 125–164.
- Thompson, Sandra A. and Anthony Mulac
 1991 The discourse conditions for the use of the complementizer *that* in conversational English. *Journal of Pragmatics* 15: 237–251.
- Verhagen, Arie
 2001b Subordination and discourse segmentation revisited, or: Why matrix clauses may be more dependent than complements. In: Ted Sanders,

- Joost Schilperoord and Wilbert Spooren (eds.). *Text Representation. Linguistic and psychological aspects*. Amsterdam: John Benjamins, 337–357.
- Verhagen, Arie
2005 *Constructions of Intersubjectivity. Discourse, Syntax, and Cognition*. Oxford: Oxford University Press.
- Verhagen, Arie
2006 On subjectivity and “long distance *Wh*-movement”. In: Angeliki Athanasiadou, Costas Canakis and Bert Cornillie (eds.), *Subjectification: Various Paths to Subjectivity*. Berlin/New York: Mouton de Gruyter, 323–346.
- Verhagen, Arie
2008a Intersubjectivity and explanation in linguistics: A reply to Hinzen and van Lambalgen. *Cognitive Linguistics* 19: 125–143.
- Verhagen, Arie
2008b Intersubjectivity and the architecture of the language system. In: Jordan Zlatev, Timothy P. Racine, Chris Sinha, Esa Itkonen (eds.), *The Shared Mind: Perspectives on Intersubjectivity*. Amsterdam/Philadelphia: John Benjamins Publishing Company, 307–331.

Raising verbs and auxiliaries in a functional theory of grammatical status

Kasper Boye

1. Introduction¹

A terminological distinction between “raising verbs” and “auxiliaries” is widespread in both formal and functional linguistics (see Langacker 1995: 1–8 for a brief introduction to the notion of raising verbs, and Davies and Dubinsky 2004 for a book length introduction). Standard examples of expressions referred to by the two terms are *seem* in (1) and *have* in (2) respectively.

- (1) The risk of malformations seems to increase with maternal age. (BNC: HOP 423)²
- (2) The brandy has poisoned me. (BNC: FAJ 233)

As the term “raising verbs” has since its coining been employed in analyses of lexical main verbs, and “auxiliaries” is invariably associated with grammar, the distinction evokes the more general distinction between “lexical” and “grammatical”. Symptomatic for the current status of the latter distinction, the basis for the former is not at all clear in the literature. On the one hand, there is a tradition especially among formal syntacticians of analysing standard examples of auxiliaries as so-called subject-to-subject raising verbs, a tradition which goes back to Ross (1969) (e.g. Postal 1974: 292; Borsley 1996: 140–144; Davies and Dubinsky 2004: 11; see Langacker 1995: 49 for a similar analysis within Cognitive Grammar). On the other hand, functional linguists frequently associate standard examples of subject-to-subject raising verbs with grammaticalization and refer to them as “auxiliaries” or “semi-auxiliaries”. For instance, Traugott (1997) is careful to make a terminological distinction between raising verbs and auxiliaries, but she still judges it “likely that all raising verbs are undergoing incipient grammaticalization” (Traugott 1997: 191; cf. Cornillie 2007, Heine and Miyashita 2008: 97, and de Haan 2008).

As far as I can see, the confusion arises primarily because a set of distributional properties suggests that there is a structural similarity between the con-

structions in which raising verbs occur and the constructions in which auxiliaries occur. In this paper I shall argue that if one takes into account a second set of distributional properties as well as the discourse prominence of the two classes of expressions in actual communication, it is possible to make a strict distinction between raising verbs as lexical expressions and auxiliaries as grammatical expressions (cf. Boye 2005a). The relevant distinction mirrors the distinction between lexical and grammatical complement-taking predicates developed in Boye and Harder (2007). More generally, the distinction between raising verbs and auxiliaries presupposes a functional theory of grammatical status outlined in Boye and Harder (2009a, 2009b). A central assumption underlying this theory is that linguistic structure is not only distilled out of usage, but also simultaneously presupposed by usage. The distinction between lexical and grammatical expressions must be understood as pertaining both to structure and to discourse prominence in actual communication. The distinction between raising verbs and auxiliaries to be developed below has exactly this dual character.

The paper draws on linguistic data mainly from English and Danish. It is structured as follows. Section 2 supports the view that there is a structural similarity between raising-verb constructions and auxiliary constructions, but rejects the claim that there is also a general functional similarity between the two classes of expressions as they are standardly conceived of. Section 3 gives the basics of the functional theory of grammatical status outlined in Boye and Harder (2009a, 2009b), and summarizes the analysis of complement-taking predicates developed in Boye and Harder (2007). Subsequently, section 4 points out a number of differences between raising verbs and auxiliaries, distributional differences as well as differences pertaining to discourse prominence in actual communication. Section 5 presents a unified synchronic account of the differences, and section 6 links the synchronic differences to a diachronic distinction between changes that lead to raising verbs and changes that lead to auxiliaries. Section 7 discusses traditional distinctions between lexical verbs and auxiliaries in light of the theory outlined in section 3 and the analyses presented in sections 5 and 6. Finally, section 8 is a summary of the main points of the paper.

2. Similarities between raising verbs and auxiliaries

Since raising verbs were first subjected to in-depth analysis (Rosenbaum 1967), they have been defined in terms of a number of characteristic distributional properties. A recent list of the properties of subject-to-subject raising verbs is presented by Eide (2005: 175) in connection with a discussion of control vs.

raising analyses of Norwegian modal verbs (cf. Davies and Dubinsky 2004: 4–8; Eide's list is presented here in a slightly adapted form).

Raising verbs ...

- a. take expletive subjects,
- b. take weather-*it*,
- c. take idiom-chunk subjects,
- d. allow a quirky subject (in languages with quirky subjects),
- e. allow an inanimate subject and a passive non-finite predication,
- f. allow subject-verb scope ambiguity,
- g. do not passivize,
- h. do not allow the non-finite predication to be pseudo-clefted.

With one exception, however, standard examples of subject-to-subject raising verbs like *seem* in (1) share these properties with standard examples of auxiliaries like *have* in (2).

a. Both *seem* and *have* take expletive subjects.

- (3) There seems to be no saturation point. (BNC: A6Y 794)
- (4) There has been a promise that prosperity will be permanent. (BNC: A3A 363)

b. Both *seem* and *have* take weather-*it*.

- (5) In summing up the wet-weather skills of the South Sea Islanders, American journalist Ed Hagerty put it better than anyone, 'It seems to rain for everyone except Fiji'. (BNC: CKA 54)
- (6) For nearly 200 million years it has rained on the Pennines. (BNC: B1H 1933 C)

c. Both *seem* and *have* take idiom-chunk subjects.

- (7) The cat seems to be out of the bag.
(*New Jersey Lawyer Online-News*, June 9, 2007;
www.njlnews.com/articles/2007/06/11/news/a1b-fullmathesius.txt)
- (8) The trouble is that the cat has been of the bag for a while, and many of these stocks have been driven up to dizzying heights by speculators.
(*Forbes*, April 4, 2007; www.forbes.com/2007/04/04/water-utilities-suez-pf-ii-in_jb_0404soapbox_inl.html)

d. In Icelandic, which has quirky subjects, both *virða* (a near equivalent of *seem*) and *hafa* (a near equivalent of the English auxiliary *have*) allow a quirky subject.

Icelandic

- (9) ... svo honum virðist vera heitt í hamsi í þessum
so he.DAT seems be hot in skin.DAT in these.DAT
efnum líka.
matters.DAT also

‘So he also seems to be annoyed (hot in the skin) over these matters’.

(fannygudbjorg.blog.is;

www.fannygudbjorg.blog.is/blog/fannygudbjorg/entry/519886/)

- (10) Honum hefur líklega verið kalt.
he.DAT has probably been cold
‘He has probably been cold’.

(nanna.blog.is;

www.nanna.blog.is/blog/nanna/entry/473413/)

e. Both *seem* and *have* allow an inanimate subject and a passive non-finite predication (in (11) the accompanying non-finite predication is *this process to be slowed down ...*, in (12) it is *chess been followed ...*).

- (11) This process seems to be slowed down, however, in phenobarbital anaesthetised animals, although distinct features of restitution such as formation of lamellipodia in surface mucous cells and partial re-epithelialisation of the surface are evident three hours after ethanol.
(BNC: HU2 5861)

- (12) Since then, chess has been followed with the fanatical devotion usually associated with the major physical sports. (BNC: A3G 277)

g. Neither *seem* nor *have* passivizes.

- (13) *The risk of malformations is seemed to increase with maternal age.

- (14) *The brandy is had poisoned me.

h. Neither *seem* nor *have* allows the non-finite predication to be pseudo-clefted.

- (15) *What the risk of malformations seems is to increase with maternal age.

- (16) *What the brandy has is poisoned me.

The only exception is found in property f on Eide's list. While standard examples of raising verbs like *seem* arguably allow subject-verb scope ambiguity, standard examples of auxiliaries like *have* do not. That is, while *seem* in (17) is arguably compatible with both reading (17a) and reading (17b), *have* in (18) is compatible only with a reading that corresponds to (17a).

- (17) All I can tell you is that someone seems to want to harm you. (BNC: H8F 415)
- a. '... there is somebody and it seems that she or he wants to harm you'.
 b. '... it seems that there is somebody and that she or he wants to harm you'.
- (18) Someone has been here and fairly recently. (BNC: H90 2027)
 'There is somebody and she or he has been here and fairly recently'.

However, the subject-verb scope ambiguity in (17) is arguably due to the fact that *seem* takes a proposition (or third-order entity) in its scope, rather than to its status as a raising verb. Raising verbs that take a state-of-affairs (or second-order entity) in their scope are compatible with only one reading, just like *have* in (18). In (19), for instance, the Danish perception verb *se* 'see' occurs as a subject-to-subject raising verb and is accompanied by a non-finite predication that arguably designates a state-of-affairs (Boye 2002; cf. e.g. Dik and Hengeveld 1991, Schüle 2000, Dixon 2006, and Boye forthcoming on the distinction between semantically different types of clausal perception-verb complements).³ And (19) has only one reading – a reading which corresponds to (17a).

Danish

- (19) Hun blev set danse med en mørk mand. (KorpusDK)
 she became seen dance with a dark man.
 'She was seen dancing with a dark man': 'There is a female person and she was seen dancing with a dark man'.

Thus, it may be claimed that all the distributional properties normally invoked in order to define subject-to-subject raising verbs are found also with standard examples of auxiliaries.

This suggests that there is a structural similarity between raising-verb constructions and auxiliary constructions. In a functional-cognitive approach to syntactic structure (compatible for instance with construction grammar), the distributional overlap between subject-to-subject raising verbs and auxiliaries can be accounted for in terms of a similarity in semantic structure – i.e. what Harder calls "content syntax" or "content structure" (e.g. Harder 1996, 2008) –

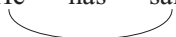
between the constructions in which the two classes of expressions are found (cf. Langacker 1995: 35–36). First, neither subject-to-subject raising verbs nor auxiliaries have a predicate-argument relation with their subject. That is, neither “assign a theta-role” to their subject. This accounts for the facts that both classes of expressions a) take expletive subjects, b) take weather-*it*, c) take idiom-chunk subjects, d) allow a quirky subject (in languages with quirky subjects), and e) allow an inanimate subject and a passive non-finite predication. Second, neither subject-to-subject raising verbs nor auxiliaries have a predicate-argument relation with the non-finite predicate that accompanies them. This accounts for the facts that both classes of expressions g) do not passivize (since they do not have two arguments), and h) do not allow the accompanying non-finite predication to be pseudo-clefted (since the non-finite predicates are not arguments).

To put it slightly differently, both subject-to-subject raising verbs and auxiliaries license a predicate-argument relation between their subject and the non-finite predicate they co-occur with, as illustrated in (20) and (21).

(20) He seems to say that Tory councils equal good, Labour councils equal bad. (BNC: HHX 18333)



(21) He has said repeatedly that the club is not for sale. (BNC: K2L 613)




And both raising verbs and auxiliaries have a semantic relation with either the non-finite predicate or the whole non-finite predication as such, as illustrated in (22) and (23).

(22) He seems to say that Tory councils equal good, Labour councils equal bad. (BNC: HHX 18333)



(23) He has said repeatedly that the club is not for sale. (BNC: K2L 613)



But neither enters into further semantic – or content-structural – relations.

In this light, it is perhaps no surprise that the distinction between the two classes of expressions is not at all clear in the literature. Functional linguists have explicitly taken the distributional properties discussed above to justify an analysis of standard examples of raising verbs as grammatical expressions, i.e. auxiliaries (Traugott 1997: 191, Heine and Miyashita 2008: 97). In addition, they have found justification for this analysis in a functional similarity between standard examples of raising verbs, on the one hand, and auxiliaries and other

grammatical expressions, on the other. Many raising verbs are arguably functionally similar to grammatical expressions. For instance, as a raising verb German *drohen* ‘threaten’ expresses, among other meanings, “negative evaluation” and “aspectuality” (Heine and Miyashita 2008: 64), meanings that are often found with auxiliaries. For Heine and Miyashita, this appears to be an important reason for analysing the raising verb *drohen* as an auxiliary. On the basis of a description of its meanings, they first characterize the raising verb as “functional *drohen*”, as opposed to “lexical *drohen*” (Heine and Miyashita 2008: 56), and then go on to deal with its development as a case of grammaticalization. For de Haan (2008), likewise, the “subjective” character of the meaning of many raising verbs plays an important role in his view of “raising as grammaticalization” and thus of raising verbs as grammaticalized expressions. But since he first defines “subjectification” as a “grammaticalization phenomenon” and then specifies that he will “use the term *raising* for all instances [of grammaticalization] which involve subjectification” (de Haan 2008: 129, 135), his analysis may in fact be seen as a restatement of its premises.

While in many individual cases there does seem to be a functional relation between raising verbs and grammatical expressions, there is clearly no general relation. Standard examples of raising verbs differ in meanings, and as acknowledged by de Haan (2008: 135), not all are even subjective. In any case, a functional relation between raising verbs and grammatical expressions cannot be an argument for analysing the former as belonging among the latter. Many of the types of meanings expressed by grammatical expressions – Slobin’s (1997) “grammaticizable notions” – are not found exclusively with grammatical expressions. In English, for instance, the meaning of ‘possession’ is arguably expressed both by the clitic *-s*, as in *the king’s palace*, and by the verb *have*, as in *the king has a palace*. Surely, nobody would argue on the basis of this functional relation that possessive *have* is a grammatical expression. In general, the analysis of a given linguistic element as expressing a grammaticizable notion does not licence an analysis of the element as grammatical (cf. Boye and Harder 2007: 575–577).

Thus, raising verbs and auxiliaries are related in general only in terms of a structural similarity between the constructions in which they occur. Below I shall try to demonstrate that this similarity notwithstanding, it is possible to make a strict distinction between raising verbs as lexical expressions and auxiliaries as grammatical expressions.

3. Complement-taking predicates and a functional theory of grammatical status

The distinction to be drawn between raising verbs and auxiliaries presupposes a conception of the grammatical-lexical distinction which is compatible with the functional theory of grammatical status outlined in Boye and Harder (2009a, 2009b). The central idea behind this theory is that grammar is constituted by expressions (morphemes, words, constructions) that cannot themselves convey the main point of a linguistic message, but serve an ancillary communicative purpose by providing secondary (or background) information. More precisely, grammatical expressions are defined like this:

Definition of grammatical expressions

Grammatical expressions are coded as discursively secondary.

Lexical expressions, by contrast, are defined like this:

Definition of lexical expressions

Lexical expressions are coded as capable of being discursively primary.

Accordingly, grammaticalization, conceived of as the type of linguistic change that produces grammatical expressions, is defined like this:

Definition of grammaticalization

Grammaticalization is a diachronic change which gives rise to linguistic expressions which are coded as discursively secondary.

With these definitions, the theory of grammatical status finds a place within a general theory of usage-based structure. On the one hand, grammatical and lexical expressions are defined in terms of their coded potential for discourse prominence. Discourse prominence is understood here as a relative notion which covers cognitive and communicative prominence. Lexical expressions can in actual communication be discursively primary in the sense that they are communicatively and cognitively prominent relative to all other expressions in a linguistic message, or they can be discursively secondary in the sense that at least one other expression is prominent relative to them, but grammatical expressions, under normal circumstances⁴, have only the latter possibility. On the other hand, the different coding properties link up different ranges of discourse prominence with different structural properties. For instance, it follows from the different coding properties that grammatical and lexical expressions differ with respect to boundness. Grammatical expressions, being by code (or convention) inherently discursively secondary, are all dependent upon a co-occurring expression with respect to which they can be secondary in actual discourse. By

contrast, lexical expressions, being coded as potentially discursively primary, do not show such a dependency. As a special case, they may be discursively primary simply by virtue of constituting the only expression of a linguistic message. What is more relevant in the present context, it follows from the different coding properties that unlike lexical expressions, grammatical expressions cannot enter into structural relations with expressions that have the effect of addressing them or bringing them into focus (see below and section 5). Thus, the theory emphasizes that the distinction between lexical and grammatical expressions must be understood both as a structural distinction and as a distinction pertaining to discourse prominence in communication.

As an illustration, consider *I think* in constructions like (24).

(24) I think we have desperate problems of law and order. (BNC: K55 6932)

The standard analysis of such constructions is that *think* is a lexical verb which takes a clausal complement. However, there is an alternative analysis according to which *I think* is a complex adverbial or grammatical expression which accompanies a main clause (e.g. Thompson 2002). In Boye and Harder (2007) it is argued that neither of the two analyses can stand alone (cf. also Newmeyer, this volume). If one takes into account a set of distributional properties of clauses with *I think* as well as the discursive prominence with which *I think* occurs in communication, a distinction can be made between a variant of *I think* which is lexical and one which is grammatical in the sense of the lexical-grammatical distinction specified above.

On the structure level of analysis, the distinction finds support in distributional differences between lexical and grammatical *I think* constructions of which three will be mentioned here. First, lexical *I think* always precedes the clause it co-occurs with, as in (24). Grammatical *I think*, on the other hand, has adverbial distribution. Like adverbs such as *presumably* and *probably*, it can occur inside the accompanying clause.

(25) Because women have not had the same historical relation of identity to origin, institution, production, that men have had, women have not, I think, (collectively) felt burdened by too much Self, Ego, Cogito, etc.
(BNC: ARD 477)

(26) Because women have not had the same historical relation of identity to origin, institution, production, that men have had, women have not, prseumably/probably, (collectively) felt burdened by too much Self, Ego, Cogito, etc.

Second, with lexical *I think* a tag-question relates to *I think*, as in (27). With grammatical *I think*, on the other hand, a tag-question must relate to the accompanying clause, as in (28).

(27) Well I think it's a just a mess about place don't you? (BNC: KE6 7437)

(28) I think he fits in very well doesn't he? (Boye and Harder 2007: 579)

Third, with lexical *I think* a morphosyntactically attached negation must relate to *I think*. With grammatical *I think*, on the other hand, the negation must relate to the accompanying clause. That is, it must be read as "NEG-raised". In constructions like (29), accordingly, *I don't think* is conceived of as structurally ambiguous. Reading (29a) goes with lexical, and reading (29a) with grammatical *I think* (see sections 4 and 5, and Boye and Harder 2007: 601n7 for arguments for considering "NEG-raising" with *I think* a structural phenomenon).

(29) I do not think I can do any more. (BNC: G10 2159)

a. 'It is not the case that I think I can do any more'.

b. 'I think it is not the case that I can do any more'.

On a usage level of analysis the distinction between lexical and grammatical *I think* is supported by the finding that the former variant of *I think* can be primary in actual communication, whereas the latter can only be secondary. A criterion for deciding whether an expression is primary or secondary is addressability. What is addressed in an utterance is arguably what constitutes the main point of it, and what constitutes the main point is arguably something which is discursively primary. In accordance with this criterion, it is perfectly possible to address – and thus treat as the main point of the utterance – lexical instances of *I think* like that in (22).

(30) – I think we have desperate problems of law and order.

– You do?

But it seems quite impossible to address grammatical, clause-medial, instances like that in (25).

(31) – Because women have not had the same historical relation of identity to origin, institution, production, that men have had, women have not, I think, (collectively) felt burdened by too much Self, Ego, Cogito, etc.

– *You do?

Likewise, when the interpretation of a morphosyntactically attached negation as affecting *I think* disambiguates *I think* as lexical in cases like (29), it is perfectly possible to address *I think*.

- (32) – I do not think I can do any more.
 Intended reading: ‘It is not the case that I think I can do any more’.
 – You don’t?

But when the negation is interpreted as “NEG-raised”, and *I think* is thus disambiguated as grammatical, it is impossible to address *I think*.

- (33) – I do not think I can do any more.
 Intended reading: ‘I think it is not the case that I can do any more’.
 – *You do?

Both usage-level and structure-level differences can be seen as motivated by the coding difference between lexical and grammatical *I think*. Grammatical *I think* is coded as discursively secondary. This is why it is found only with secondary uses in actual communication, and why, for instance, it aligns itself positionally with adverbs such as *presumably* and *probably* – these adverbs arguably have the same coding property. By contrast, lexical *I think* is coded as potentially discursively primary. This is why it is found also with primary uses, and why it aligns itself positionally with other (lexical) expressions that are coded as potentially primary (see section 5 on the relation between the coding difference and the difference in behaviour with respect to negations and tag-questions).

As mentioned, the theory of grammatical status outlined above emphasizes the need for understanding the lexical-grammatical distinction both as a structural distinction and as a distinction pertaining to discourse prominence in communication. In accordance with this, the analysis of *I think* in Boye and Harder (2007) emphasizes the need of paying attention to both distributional facts and discourse prominence in linguistic analysis. Often tokens of *I think* can be classified as lexical or grammatical both on the basis of their distribution and on the basis of their discourse prominence. But this is not always the case. In (30), *I think* can be classified as lexical only because it expresses the main point of the utterance. The fact that *I think* precedes the accompanying finite clause is the only cue as to its structural properties, but clause-initial position is found not only with lexical expressions, but also with adverbs like *supposedly* and *presumably* which share the positional properties of grammatical *I think*. In (31), on the other hand, *I think* can be classified as grammatical only on the structural

ground that it takes the position of an adverb. The fact that it is discursively secondary is not decisive since also lexical *I think* may have this discourse status. Finally, it follows from the analysis that there are tokens of *I think* that cannot be classified. *I think* in (34) is a case in point.

- (34) *I think* it only lasted through the summer vacation, but it was a, it was an interesting experience, and in fact in, in their own little way the group showed some of the tensions which we found in our seventeenth-century radicals. (BNC: KRH 1586)

However, cases like (34) do not expose a weakness of the analysis. Rather, by drawing attention to undecidable cases, the analysis pinpoints one reason for the lack of consensus about the status of complement-taking predicates. The distinction between lexical and grammatical *I think* is summarized in figure 1.

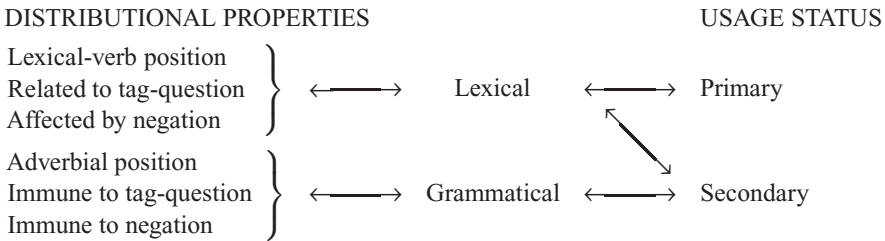


Figure 1. Summary of the two-fold distinction between lexical and grammatical *I think*

4. Differences between raising verbs and auxiliaries

Among expressions that have the properties discussed in section 2, a distinction can be made which is similar to that between lexical and grammatical *I think*. On the one hand, there are expressions that are grammatical in the sense that they are by code inherently discursively secondary. They constitute a class to which it is appropriate to refer as “auxiliaries”. On the other hand, there are expressions that are lexical in the sense that they are by code potentially discursively primary. These expressions constitute a class for which the term “raising verbs” can be reserved.

An example of the latter class of expressions is the Danish modal verb *kunne* ‘can, may’ used in constructions like that in (35) with the meaning of epistemic possibility. An example of the former class is the Danish modal verb *skulle* ‘shall, must’ used in constructions like that in (36) with the meaning of reportive evidence (i.e. ‘hearsay’).

- (35) Hun kan have været psykotisk i gerningsøjeblikket. (KorpusDK)
 she can have been psychotic in moment.of.crime.DEF
 ‘She may have been psychotic in the moment of crime’.
- (36) Han skal have været i Danmark. (KorpusDK)
 he shall have been in Denmark
 ‘He has been to Denmark reportedly’.

Both expressions have epistemic meaning, and both have the distributional properties discussed in section 2. However, they differ with respect to a second set of distributional properties and with respect to the ranges of discourse prominence they are found with in communication.

4.1. Differences pertaining to discourse prominence in communication

Whereas *kunne* can be either primary or secondary, *skulle* can under normal circumstances (cf. note 4) only be secondary.

In a sample of 50 occurrences of epistemic *kunne* (including both the present tense form *kan* and the past tense form *kunne*) in constructions like that in (35) from a corpus of spoken Danish (the BySoc corpus) both primary uses and secondary uses were found.⁵ (37) and (38) are examples of primary uses.⁶

- (37) (A and B are discussing the occupation of a guy from B’s neighbourhood)
 B: – jeg tror ligeså godt han **kan** være gårdmand altså.
 ‘I think he may equally well be a farmer really’.
 A: – ja.
 ‘yes’.
- (38) (A and B are discussing when a certain kind of ground school exam ceased to exist)
 A: – jeg troede egentlig det holdt op i seks-syvoghalvfjerds.
 ‘I thought it stopped in ‘76–’77’.
 B: – (haws)
 A: – det gjorde det altså ikke?
 ‘it didn’t?’
 B: – mm nej det **kan** det ikke have gjort for jeg var allerede uddannet
 [...].
 ‘no, it cannot have done that as I was already educated’.

In (37), the only natural interpretation of A's *ja* 'yes' is that it addresses the epistemic possibility expressed by B's *kan*. A's affirmation is an affirmation that there is an epistemic possibility that the proposition 'he be a farmer' is true, rather than an affirmation that this proposition is actually true. In so far as addressability can be taken as a symptom for primary status (cf. section 3 on constructions with *I think*), this is evidence that in B's utterance *kan* is discursively primary. In (38), likewise, epistemic *kan* must be interpreted as discursively primary. The main point of the utterance in which it is found is to deny the mere epistemic possibility that 'it stopped', rather than simply to affirm that 'it didn't'.

(39) is an example of secondary uses of epistemic *kunne*.

(39) (A and B are discussing the possible military rank of the fathers of some of B's friends from childhood)

A: – mm men de **kan** måske have været civile eller haft lavere rang eller så noget.

'but they may perhaps have been civilians or had a lower rank or something like that'.

B: – ja det har de jo nok været.

'yes, that's probably what they were'.

The only possible interpretation of B's affirmation is that it concerns the proposition 'they have been civilians . . .', rather than the epistemic possibility of that proposition being true. B explicitly addresses the proposition. This is evidence that the proposition 'they have been civilians . . .' is primary, and accordingly that *kan* with its meaning of epistemic possibility is but a secondary accompaniment.

Also (40) possibly involves a secondary use of epistemic *kunne*.

(40) (A and B are discussing the reason why B and C were baptized)

A: – men det **kan** jo være bare for (break) følge følge traditionerne.

'but that may be just in order (break) to follow traditions'.

B: – traditionens skyld (laughter) jah det ved jeg ikke.

'for the sake of traditions (laughter), well I don't know'.

At least in the most natural interpretation of (40), B's 'well I don't know' addresses the proposition 'that be just in order to follow traditions', rather than A's evaluation of that proposition as being epistemically possible. However, another interpretation is also possible in which B's 'well I don't know' concerns A's epistemic evaluation – 'well I don't know if that is possible' – and in which B must thus be taken to treat A's *kan* as primary.

By contrast, in a sample of 50 occurrences of epistemic *skulle* (including both the present tense form *skal* and the past tense form *skulle*) in constructions

like that in (36), no primary uses were found. (41) and (42) are examples of secondary uses.

- (41) (A, B and C are discussing people in B's and C's neighbourhood; V, X, Y and Z represent the names they are discussing)

A: – der **skal** bo en i nummer fem som hedder V.

‘Reportedly there is a person in number five whose name is V’.

B: – X.

C: – nej.

‘no’.

A: – Y.

C: – Z.

A: – Z.

C: – nej hun bor i nummer fire.

‘no, she lives in number four’.

- (42) (A, B and C are talking about a guy from the neighbourhood; X and Y represent street names)

A: – jeg har ikke kunnet finde ham fordi jeg har fået (det?) opgivet at han **skulle** bo på hjørnet af X og Y.

‘I haven’t been able to find him because I have been told that reportedly he lives on the corner of X and Y’.

B: – nej.

‘no’.

C: – det gør han ikke

‘he doesn’t’.

In (41), after a few turns have been spent on identifying the name V with Z, C returns to A's initial remark and corrects it. The correction clearly addresses the proposition ‘there is a person in number five whose name is V/Z’, rather than A's indication by means of *skal* that there is reportive evidence for the proposition. This is evidence that C treats *skal* with its evidential meaning as discursively secondary relative to the proposition. In (42), likewise, B and especially C unquestionably address the proposition ‘he lives on the corner of X and Z’ from A's initial utterance, rather than the evidential meaning of *skulle*. Again, then, *skulle* with its evidential meaning is treated as secondary relative to the proposition it accompanies.

It is my impression that the pattern found in the corpus holds in general. Declaratives containing epistemic *kunne*, like that in (43), can be used to assert *kunne*'s meaning of epistemic possibility as the main (primary) point of the utterance (reading (43a)). But they can also be used to assert the accompanying

proposition as the main point, in which case *kunne* must be considered secondary (reading (43b)).

- (43) Han kan være i køkkenet.
 he can be in kitchen.DEF
 a. ‘There is a possibility that he is in the kitchen’. (primary *kunne*)
 b. ‘He is in the kitchen perhaps’. (secondary *kunne*)

Likewise, interrogatives containing epistemic *kunne* can be used to question *kunne*’s meaning of epistemic possibility, in which case *kunne* must be considered primary (reading (44a)). But they can also be used to question the accompanying proposition, in which case *kunne* must be considered secondary (reading (44b)).

- (44) Kan han være i køkkenet?
 can he be in kitchen.DEF
 a. ‘Is there a possibility that he is in the kitchen?’ (primary *kunne*)
 b. ‘Is he in the kitchen perhaps?’ (secondary *kunne*)

Accordingly, the answer *nej* ‘no’ to the question in (44) can (out of context) be interpreted as denying either the epistemic possibility expressed by *kan* or the proposition ‘he is in the kitchen’.

By contrast, declaratives containing epistemic *skulle* can hardly be used to assert *skulle*’s meaning of reportive evidence, and interrogatives containing *skulle* can hardly be used to question this meaning. It seems that such declaratives and interrogatives can only be interpreted in a way that corresponds to the b readings of (45) and (46).

- (45) Han skal være i køkkenet.
 he shall be in kitchen.DEF
 a. *‘There is evidence that he is in the kitchen’. (primary *skulle*)
 b. ‘He is in the kitchen reportedly’. (secondary *skulle*)
- (46) skal han være i køkkenet?
 shall he be in kitchen.DEF
 a. *‘Is there evidence that he is in the kitchen?’ (primary *skulle*)
 b. ‘Is he in the kitchen reportedly?’ (secondary *skulle*)

Accordingly, a comment on (45) like *det tror jeg ikke* ‘I don’t think so’, and the answer *nej* ‘no’ to the question in (46) cannot be interpreted as addressing the evidential meaning of *skulle*. Rather, they must be interpreted as addressing the proposition ‘he is in the kitchen’. It is my impression that even in cases where

epistemic *skulle* receives focal stress, *skulle* cannot under normal circumstances be discursively primary (cf. note 4). Focal stress may endow *skulle* with some prominence, but it does not have the effect of making *skulle* primary in relation to its syntagmatically related expressions. In fact, it is my impression that *skal*, the present tense form of epistemic *skulle*, cannot even receive focal stress. Stressed *skal* will necessarily be heard as having deontic meaning.

Returning, finally, to English *seem* and *have* as standard examples of raising verbs and auxiliaries, they appear to show the same difference as epistemic *kunne* and *skulle*. As is the case with *kunne*, it appears that in constructions like that in (1) *seem* can be used with either primary or secondary status. Accordingly, the main (primary) point of (47) is not to claim (among other things) that ‘Silver dance before him’, and the main point of *seemed* is not to provide a hedge to this claim. Rather, the main point is to assert by means of *seemed* that Silver had a certain impression of the crow before him.

- (47) Silver stopped short in fear and the crow seemed to dance before him,
its great, black wings flapping in a horrible commotion.
(BNC: EWC 1003)

On the other hand, the main point of (48) is not to assert by means of *seems* that the speaker has a certain impression. Rather, the main point is to make a claim about the reason for the bishops’ and archdeacons’ reluctance, and *seems* only conveys a secondary hedge to this claim.

- (48) What is behind the bishops’ and archdeacons’ reluctance even to consider breaking up the boundaries seems to be a desire to maintain a mixture of middle, high and low churches and not upset the balance.
(BNC: C8L 906)

In contrast, *have* in constructions like (2) can be used only with secondary status, just like epistemic *skulle*. The main point of (2) (repeated here as (49)) cannot be to communicate the meaning of ‘past but relevant to the present situation’, which is arguably the meaning of the English present perfect construction.

- (49) The brandy has poisoned me. (BNC: FAJ 233)

Accordingly, a comment on (49) like *I don’t think so* cannot be taken to be concerned with whether or not the state-of-affairs ‘the brandy poison me’ is in fact ‘past but relevant to the present situation’. As in the case of epistemic *skulle*, even if *have* receives focal stress, it is under normal circumstances not primary in relation to its syntagmatically related expressions (cf. note 4).

4.2. Distributional differences

As mentioned, there are also distributional differences between the constructions in which epistemic *kunne* and epistemic *skulle* are found (cf. Croft this volume on the relevant sense of “distributional”). The two expressions are distinguished by distributional properties similar to two of the properties that distinguish lexical *I think* from grammatical *I think* (cf. section 3). While *kunne* has properties similar to those of lexical *I think*, *skulle* has properties similar to those of grammatical *I think*.

First, epistemic *kunne* is invariably found in the semantic scope of a morphosyntactically attached negation. That is, whenever epistemic *kunne* is constructed with a morphosyntactically attached negation, as in (50) and (38), the modal verb’s meaning of epistemic possibility is negated (reading (50a)) (Brandt 1999: 77; Jensen 2005: 258). A reading of the negation as “NEG-raised” (reading (50b)) is impossible.

- (50) Han kan ikke være i køkkenet.
 he can not be in kitchen.DEF
 a. ‘It cannot be the case that he is in the kitchen’.
 b. *‘It may be the case that he is not in the kitchen’.

On the other hand, epistemic *skulle* is semantically immune to a morphosyntactically attached negation. With epistemic *skulle* the negation must be read as “NEG-raised” (reading (51b)). A reading of epistemic *skulle* as being within the semantic scope of a morphosyntactically attached negation (reading (51a)) is impossible (Brandt 1999: 81; Jensen 2005: 261–262).

- (51) Han skal ikke være i køkkenet.
 he shall not be in kitchen.DEF
 a. *‘There is not evidence that he is in the kitchen’.
 b. ‘He is not in the kitchen reportedly’.

Second, with epistemic *kunne* as the finite verb, a tag-question relates to *kunne* itself. Thus, the answer *jo* ‘yes’ to the tag-question in (52) is an affirmation that there is an epistemic possibility that the proposition ‘he is in the kitchen’ is true, rather than a confirmation that the proposition is true.

- (52) Han kunne være i køkkenet, kunne han ikke?
 he can.PST be in kitchen.DEF can.PST he not
 ‘He might be in the kitchen, might he not?’

On the other hand, with epistemic *skulle* as the finite verb, a tag-question must relate to the accompanying non-finite predication. The answer *jo* ‘yes’ to the tag-question in (53) cannot be understood as an affirmation that there is reportive evidence. It can be interpreted only as an affirmation that the proposition ‘he is in the kitchen’ is true, according to reportive evidence.

- (53) Han skulle være i køkkenet, skulle han ikke?
 he can.PST be in kitchen.DEF can.PST he not
 ‘He is reportedly in the kitchen, isn’t he?’

This difference between the two modal verbs is a purely semantic or content-structural phenomenon. Both in (52) and in (53) the tag resumes the finite modal verb form.

Returning once again to the standard examples of raising verbs and auxiliaries discussed in section 2, English *have* in constructions like that in (2) behaves distributionally like epistemic *skulle*. With *have*, as with *skulle*, a morphosyntactically attached negation must under normal circumstances be read as “NEG-raised”. It cannot under normal circumstances take *have* and the rest of the English present perfect construction in its semantic scope (cf. note 4). In (54), for instance, *not* does not negate the meaning of ‘past but relevant to the present situation’, which is arguably the meaning of this construction, only the state-of-affairs (‘the pope die’) to which this meaning relates (this holds whether or not the negation is cliticized to *have*).

- (54) The Pope has not died. (BNC: A33 385)

Likewise, when a tag-question resumes *has* or *had* as the finite element in a clause, it does not relate semantically to *have*. The answer *yes* to the tag-question in (55) cannot be understood as an affirmation that the state-of-affairs ‘Jackie be in there a while’ is ‘past but relevant to the present situation’. It must be understood as an affirmation that the whole proposition ‘Jackie has been in there a while’ is true.

- (55) Jackie’s been in there a while, has she not? (BNC: KE4 2679)

As for *seem*, it appears to share the distributional properties of both epistemic *skulle* and epistemic *kunne*. It can, but need not be found in the semantic scope of a morphosyntactically attached negation. In (56), the first negation *not* must be interpreted as negating *seem*. The first of the two coordinated clauses in (56) does not express a claim that ‘it did not hit the kids hard’. Rather, it expresses a claim that, as expressed by negated *seem*, there was no impression that ‘it hit the

kids hard'. Only with an interpretation of *seem* as being in the semantic scope of the negation does the clause introduced by *but* make sense.

- (56) It did not seem to hit the kids hard but they did not show their feelings.
(BNC: CBF 13475)

By contrast, in the predominant reading of (57) *seem* is semantically unaffected by *not*. In this reading, (57) expresses the claim that 'there is not a consistent dose related hepatotoxic effect', and *seem* merely adds a hedge to this claim.

- (57) There does not seem to be a consistent dose related hepatotoxic effect, even in overdose.
(BNC: HU2 616)

In accordance with this, a tag-question may, but need not, relate semantically to *seem*. In one reading of (58), the tag-question relates semantically to *does seem*. Thus, if the tag-question is answered by *yes*, there is at least one reading in which it is the assertion of *seem* which is affirmed.

- (58) The Prime Minister's star does seem rather lost over Maastricht, does it not?
(BNC: K5D 2015)

In (59), on the other hand, the tag clearly relates to the infinitive accompanying *seem*: *isn't it* resumes the copula *be* rather than *seem* in spite of the fact that it is *seem* which is the finite verb.

- (59) It seems to be settled now, isn't it – though of course Zilla keeps rooting for a nice vacation in New York and Atlantic City [...].
(Sinclair Lewis 2006 [1922]: *Babbitt*, chapter 5.3)

5. A unified account of the differences between raising verbs and auxiliaries

The functional theory of grammatical status outlined in section 3 makes possible a unified account of the differences between epistemic *kunne* and *skulle*, and between *seem* and *have*. More precisely, the properties of the four expressions discussed in section 4 are compatible with the following analyses.

English *have* and Danish epistemic *skulle*, in constructions like those in (2) and (36) respectively, are both grammatical expressions, to which it is appropriate to refer as 'auxiliaries'.

Danish epistemic *kunne*, in constructions like that in (35), is a lexical expression, to which it is appropriate to refer as a ‘raising verb’.


English *seem*, in constructions like that in (1), has both a lexical raising-verb variant and a grammatical auxiliary variant.

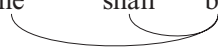
That is, while *seem* is like *I think* in having both a lexical and a grammatical variant, *have* and epistemic *skulle* are exclusively grammatical, and epistemic *kunne* is exclusively lexical.

These analyses directly account for the corpus findings discussed in section 4.1. As lexical expressions, epistemic *kunne* and one variant of *seem* are coded as potentially discursively primary. This accounts for the fact that with *kunne* and *seem* not only secondary uses, but also primary uses are found. By contrast, *have* and epistemic *skulle* as grammatical expressions are coded as discursively secondary. This accounts for the fact that with these two expressions only secondary uses are normally found.


The analyses also provide a motivation for the distributional properties discussed in section 4.2. The properties have to do with negations and tag-questions. Whereas epistemic *kunne* has semantic relations with morphosyntactically attached negations and tag-questions, *seem* can, but need not, have such relations, and *have* and epistemic *skulle* do not have them. Arguably, what negations like Danish *ikke* ‘not’ and English *not* take in their semantic scope, and what tag-questions relate to, inevitably has discursively primary status. That is, tag-questions and negations have the effect of assigning primary status to the expressions they relate to. Epistemic *kunne* and one variant of *seem* may be thought of as allowing semantic relations with negations and tag-questions by virtue of their lexical status as raising verbs. Because they are coded as potentially primary, there is nothing which prevents them from entering into semantic relations with elements that assign primary status. By contrast, *have*, epistemic *skulle* and another variant of *seem* may be thought of as blocking such relations by virtue of their grammatical status as auxiliaries. Because they are coded as secondary, they cannot enter into semantic relations with elements that would assign primary status to them. As in the case of grammatical *I think* (cf. section 3), the only reason why *have*, *skulle* and auxiliary *seem* allow a morphosyntactically attached negation in the first place is that as relatively weakly grammaticalized they retain the negation slot of their lexical sources.


The proposed analyses are compatible with the fact that raising verbs and auxiliaries share the distributional properties discussed in section 2. Accordingly, it is compatible with a description of raising-verb and auxiliary constructions as sharing the semantic structure illustrated in (22) and (23) with *seem* and *have*, and in (60) and (61) with epistemic *kunne* and *skulle*.

- (60) Han kan være i køkkenet.
 he can be in kitchen.DEF

 ‘He may be in the kitchen’.

- (61) Han skal være i køkkenet.
 he shall be in kitchen.DEF

 ‘He is in the kitchen reportedly’

However, while both raising verbs and auxiliaries have a semantic relation with either the accompanying non-finite predicate or the whole accompanying non-finite predication as such, the proposed analyses entail that this semantic relation is not the same in the two constructions. With raising verbs like epistemic *kunne*, the relation must be described as a predicate-argument relation: as a lexical verb epistemic *kunne* predicates its meaning of the proposition expressed by *han være i køkkenet* ‘he be in the kitchen’. With auxiliaries like epistemic *skulle*, on the other hand, the relation must be described as an operator-operand relation: as grammatical expressions auxiliaries are coded as secondary ancillary elements, and they must be described as operating on a non-finite predicate or – as in the case of epistemic *skulle* – a whole non-finite predication.

- (62) Han kan være i køkkenet.
 he can be in kitchen.DEF

 ‘He may be in the kitchen’.
- Predicate-argument relation
 with raising verb

- (63) Han skal være i køkkenet.
 he shall be in kitchen.DEF

 ‘He is in the kitchen reportedly’.
- Operator-operand relation
 with auxiliary

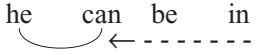
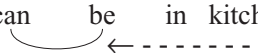
Like all other complex constructions, both the construction in (62) and the construction in (63) are of course grammatical in the sense defined in section 3: the semantic relations they code – for instance, the semantic predicate-argument relation between the clause subject and the infinitive – are by code inherently secondary information. The proposal made here is that their finite verbal material is not grammatical in both cases. Constructions like (62) involve a lexical raising verb, while constructions like (63) involve a grammatical auxiliary. This proposal has no ambition to account for the oddity of raising-verb constructions. That is, it has no ambition to account for the fact that, unlike what is the case in

most other lexical-verb constructions, raising verbs morphosyntactically make their own argument discontinuous. Nor has it any ambition to account for the fact that not all verbs occur in raising-verb constructions. However, maintaining that there is a class of lexical raising verbs, the proposal rejects Traugott's (1997: 191), Heine and Miyashita's (2008: 97) and others' attempt to account for the oddity of raising-verb constructions in terms of grammaticalization of the verbs themselves (cf. section 2, and see Dik 1979 and Langacker 1995 for accounts of English raising-verb constructions, and Bolkestein 1979, 1981: 90–106 for an account of similar constructions in Latin, that do not postulate grammaticalization of raising verbs).

6. Diachrony: discourse prominence, code and structure

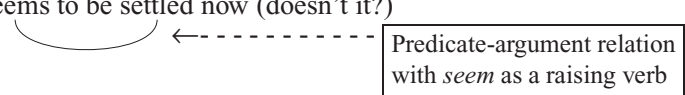
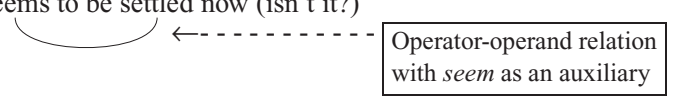
The synchronic distinction between raising verbs and auxiliaries links up with a theoretical distinction between the types of changes that result in the two classes of expressions.

Raising verbs, being lexical expressions, can be understood as the result of a reanalysis of the semantic structural properties of control verbs (or of control-verb constructions). For instance, the epistemic raising-verb variant of Danish *kunne* in constructions like that in (35) can be understood as having developed from a non-epistemic (deontic or dynamic) control-verb variant of the same verb through a change which basically consisted in the rise of a new predicate-argument relation, as illustrated in (64).

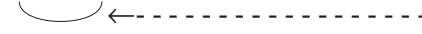
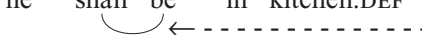
- (64) a. Han kan være i køkkenet.
 he can be in kitchen.DEF
- 
- Predicate argument relation between non-epistemic *kunne* (predicate) and the subject *han* (argument)
- ‘He is able/allowed to stay in the kitchen’.
- > (Reanalysis)
- b. Han kan være i køkkenet.
 he can be in kitchen.DEF
- 
- Predicate argument relation between non-epistemic *kunne* (predicate) and the infinitival predication *han være* (argument)
- ‘He may be in the kitchen’.

This change may be considered a case of grammaticalization in so far as it involves the coding of a new semantic relation, and in so far as this semantic relation is discursively secondary. However, what is important is that it does not involve grammaticalization of the verb *kunne*. As a raising verb *kunne* retains the lexical, potentially primary, status of the control verb that gave rise to it. In support of this, the change in meaning from non-epistemic to epistemic possibility that accompanies the reanalysis is no symptom of auxiliariation. It can be straightforwardly accounted for in terms of the reanalysis itself – that is, in terms of the change from a predicate-argument relation found with non-raising verbs into a predicate-argument relation found with raising verbs (cf. Langacker 1995: 36–37): while the non-epistemic possibility meaning of *kunne* in (64a) is an agent-oriented possibility concerning the nominal argument ‘he’, the epistemic possibility meaning of *kunne* in (64b) is a proposition-oriented possibility concerning the likelihood that the propositional argument ‘he is in the kitchen’ is true (Boye 2005b; cf. e.g. Bybee et al. 1994).

In contrast, auxiliaries, being grammatical expressions, are the result of grammaticalization of a lexical verb. The source may be a raising verb. For instance, the lexical and the grammatical variant of *seem* discussed in section 5 can be assumed to be linked to each other in terms of grammaticalization, as illustrated in (65).

- (65) a. It seems to be settled now (doesn't it?)

 > (Grammaticalization of *seem*)
- b. It seems to be settled now (isn't it?)


But the source need not be a raising verb. For instance, the auxiliary *skulle* may have devolved directly from a control verb (deontic *skulle*), as illustrated in (66).

- (66) a. Han skal være i køkkenet.
 he shall be in kitchen.DEF

 'he is obliged to stay in the kitchen'.
 > (Grammaticalization of *skulle*)
- Predicate-argument relation
with (epistemic) *skulle* as
a control verb
- b. Han skal være i køkkenet.
 he shall be in kitchen.DEF

 'He is in the kitchen reportedly'.
- Operator-Operand relation
with (epistemic) *skulle* as
an auxiliary

In any case, the grammaticalization of a lexical verb into an auxiliary can be hypothesized – in accordance with the definition of grammaticalization given in section 3 – to basically consist in the coding (i.e. conventionalization) of its meaning as discursively secondary. In the source situation, a lexical verb – for instance, the lexical raising-verb variant of *seem* – is used both with primary status in relation to the accompanying infinitival predication, as illustrated in (67a), and with secondary status, as illustrated in (67b) (bold face indicates primary status). An auxiliary – for instance, the grammatical variant of *seem* in (67c) – arises as the result of a coding of the use of lexical *seem* with secondary status.

- (67) a. It **seems** to be settled now (*isn't it?)
 (Lexical and primary *seem*)
 (Alternation in usage)
- b. It **seems to be settled now** (*isn't it?)
 (Lexical and secondary *seem*)
 > (Grammaticalization of *seem*: coding of discursively secondary status)
- c. It **seems to be settled now** (isn't it?)
 (Grammatical, inherently secondary *seem*)

In accordance with the theory outlined in section 3, this diachronic scenario emphasizes the usage-based nature of grammar and grammatical structure. The different semantic structures of raising-verb constructions and auxiliary constructions are motivated by different potentials for discourse prominence in raising verbs and auxiliaries. In turn, the different potentials for discourse prominence are the result of actual discourse prominence statuses becoming coded: The in-

herent secondary status of grammatical expressions is the result of coding (i.e. conventionalization) of one of the two possible statuses of lexical expressions (primary and secondary).

This does not entail that grammatical structure can be disregarded as an epiphenomenon. Just like the coded potential for discourse prominence, the structural properties of auxiliary and raising-verb constructions are coded, conventionalized properties that constrain usage. Structure is distilled out of, but also simultaneously presupposed by, usage (Boye and Harder 2007: 570).

7. On traditional distinctions between lexical verbs and auxiliaries

The functional theory of grammatical status outlined in section 3 is intended to be compatible with widely shared intuitions about what is lexical and what is grammatical. In the vast majority of cases, I believe, it is compatible. In addition to the auxiliary *have*, for instance, standard examples of English grammatical expressions like the past-tense suffix *-ed* and the genitive clitic *-’s* would straightforwardly qualify as grammatical expressions by the definition that they are coded as discursively secondary. Likewise, uncontroversial examples of lexical expressions like the verb *swim* and the noun *flower* would straightforwardly qualify as lexical expressions by the definition that they are coded as potentially discursively primary. In some cases, however, adhering to the theory leads to analyses that may be unexpected. In particular, scholars that subscribe to a traditional view of what counts as lexical verbs and auxiliaries in English and Danish may be surprised to find that *seem* has a grammatical (auxiliary) variant, and that epistemic *kunne* is a lexical (raising) verb. As for *seem*, there is a tradition in English grammar of reserving the term auxiliary for a small group of expressions that, among other distributional features, share the so-called NICE properties (e.g. Davidsen-Nielsen 1990: 15–18). Unlike *have*, *do*, *be*, *can*, *may*, *must*, *shall*, *will* and possibly a handful of more expressions, *seem* does not possess these properties. As opposed to *be*, for instance, it standardly requires *do*-support in negative, interrogative, tag-question and emphatic contexts.

- (68) a. He wasn’t swimming.
 b. He didn’t seem to be swimming.
- (69) a. Was he swimming?
 b. Did he seem to be swimming?

- (70) a. He was swimming, wasn't he?
 b. He seemed to be swimming, didn't he?
- (71) a. He WAS laughing.
 b. He DID seem to be laughing.

As for the Danish modal verb *kunne*, there is a tradition in Danish grammar for analysing it as an auxiliary on the ground that it requires a co-occurring infinitive to be bare (Wiwel 1901: 151; Diderichsen 1962: 169; Davidsen-Nielsen 1990: 22).

Thus, the inventories of English and Danish auxiliaries defined by the functional theory of grammatical status do not correspond exactly to the sets of English and Danish expressions traditionally referred to as auxiliaries. This is not really a problem for the theory, however. First, the theory does not claim to say everything there is to say about grammatical expressions. It is intended only to point out one property that is common to all grammatical expressions. The analysis of *seem* as having a grammatical, auxiliary variant is perfectly compatible with the fact that there is a separate, distributionally uniform group of auxiliaries in English. For instance, one might envisage that *seem* is relatively weakly grammaticalized and simply has not (yet) acquired the properties characteristic of other more strongly grammaticalized auxiliaries.

Second, under the assumption that in the vast majority of cases the theory is compatible with standard intuitions about what is lexical and what is grammatical, the cases where theory and intuitions differ arguably constitute a problem for the latter rather than for the former. Strictly speaking, an application of the term 'auxiliary' can only be justified if the expression to which it is applied can be demonstrated to be grammatical and a verb. Neither for Danish modal verbs nor for the English group of expressions that share the NICE properties has such a demonstration been carried out. In particular, it has never been shown that there is a link between grammatical status on the one hand and the NICE properties and co-occurrence with a bare infinitive on the other. In fact, co-occurrence with a bare infinitive, which is traditionally taken to be criterial for the classification of Danish modal verbs like *kunne* as auxiliaries, can hardly be linked to auxiliarihood and grammatical status. As pointed out in Boye (2001: 113), bare infinitives occur also with Danish verbs that no-one would think of as auxiliaries, and in some languages standard examples of auxiliaries require the infinitive to occur with an infinitival marker. Claims about grammatical status – or about links between distributional features and grammatical status – can only be evaluated against an explicit and coherent theory of what it means to be lexical and what it means to be grammatical. As far as I know, the theory outlined in section 3 is the only such theory.

8. Conclusion

The basis for the terminological distinction between raising verbs and auxiliaries is not at all clear in the literature. Standard examples of auxiliaries are often analysed as raising verbs, and standard examples of raising verbs are often analysed as auxiliaries. In this paper I have not wished to criticize any specific analysis of raising verbs or auxiliaries (for instance, Traugott's (1997) analysis of *promise* and *threaten* and Heine and Miyashita's (2008) analysis of German *drohen*). In fact, the analysis of *seem* that I have presented above supports the belief that standard examples of raising verbs often evolve a grammatical variant. What I hope to have demonstrated is that this is not always the case. I have tried to show that corresponding to the terminological distinction between raising verbs and auxiliaries it is possible to make a strict distinction between a class of lexical verbs that occur in a peculiar construction on the one hand and a class of grammatical verbs on the other.

The distinction has the dual character of pertaining to both usage and structure. On a usage level of analysis, raising verbs and auxiliaries differ with respect to the discourse prominence they have in communication. On a structure level of analysis, raising verbs and auxiliaries differ in that they enter into different semantic – or content-structural – relations in the constructions in which they are found. While raising verbs predicate their meaning of an argument (which is itself predicational), auxiliaries operate on a predicate or a whole predication. What unites the two levels of analysis is a difference in the way the two classes of expressions are coded. Raising verbs are coded as potentially discursively primary. Auxiliaries are coded as inherently secondary. This coding difference links up different ranges of prominence in communication with different structural properties.

In accordance with the functional theory of grammaticalization on which it is based, the distinction entails a view of usage as diachronically basic. Differences in discourse prominence in actual communication are conventionalized into a difference between raising verbs' and auxiliaries' coded potential for prominence, and in turn, the coding difference motivates a difference between the semantic – or content-syntactic – structure of raising-verb and auxiliary constructions. However, as soon as the different structural patterns have appeared, they are linguistic phenomena in their own right.

Notes

1. Work on this paper was made possible by a grant from The Carlsberg Foundation for which I am grateful. In addition I wish to thank Elisabeth Engberg-Pedersen and Frederick Newmeyer for comments on a first version of the paper, and Torben Juel Jensen for making his tagged version of the Bysoc corpus available to me and thus providing me with an easy way of extracting relevant data.
2. All examples marked with the code BNC have been extracted from the British National Corpus Online service, managed by Oxford University Computing Services on behalf of the BNC Consortium. All rights in the texts cited are reserved.
3. As demonstrated in Boye (2002), the perception-verb construction in (19) does not express perception of the subject referent (*hun* 'she'), only of the referent of the whole infinitival predication (cf. Kirsner and Thompson 1976: 209, and Barwise and Perry 1983: 187). This scope property is however unrelated to the scope ambiguity on Eide's list.
4. 'Normal circumstances' are meant to exclude contexts where a linguistic expression is considered in relation to a *paradigmatically* related expression rather than in relation to a *syntagmatically* related expression. In metalinguistic contexts, for instance, a grammatical expression may be discursively primary in relation to a paradigmatically related expression, as in *I said emergED, not emergENT* (from Boye and Harder 2007: 575). The claim that grammatical expressions are coded as discursively secondary is a claim that they are inherently secondary *in relation to one or more syntagmatically related expressions*.
5. Data were extracted from a tagged version of the BySoc corpus which Torben Juel Jensen generously made available to me. The fifty tokens of epistemic *kunne* 'can, may' discussed in section 4.1 have in common 1) that they were all classified and tagged by Torben Juel Jensen as expressions of 'epistemic possibility', and 2) that for all tokens I agree with Torben Juel Jensen's classification. Similarly, the fifty tokens of epistemic *skulle* 'shall, must' have in common 1) that they were all classified and tagged by Torben Juel Jensen as expressions of 'reportive evidence', and 2) that for all tokens I agree with Torben Juel Jensen's classification.
6. Data extracted from the Bysoc corpus of spoken Danish are presented in a simplified version (e.g. without indications of pauses) and with my own translations into English.

References

- Barwise, Jon and John Perry
1983 *Situations and Attitudes*. Cambridge: MIT Press.
- Bolkestein, A. Machtelt
1979 Subject-to-object raising in Latin? *Lingua* 48.1. 15–34.

- Bolkestein, A. Machtelt
1981 Embedded predications, displacement and pseudo-argument formation in Latin. In: A. Machtelt Bolkestein, Henk A. Combé, Simon C. Dik, Casper de Groot, Jadranka Gvozdanoviæ, Albert Rijksbaron and Co Vet (eds.), *Predication and Expression in Functional Grammar*, 63–112. London/New York/Toronto/Sydney/San Francisco: Academic Press.
- Borsley, Robert D.
1996 *Modern Phrase Structure Grammar*. Oxford/Cambridge, MA: Blackwell.
- Boye, Kasper
2001 Evidence for evidentiality in Danish. In: Henrik H. Müller (ed.), *Reflections on Modality* (Copenhagen studies in language 26), 81–127. Copenhagen: Samfundslitteratur.
- Boye, Kasper
2002 Den danske infinitivneksus – distribution, funktion og diakroni / The Danish infinitival nexus – distribution, function and diachrony. *Danske Studier* 2002. 17–68.
- Boye, Kasper
2005a Raising verbs vs. auxiliaries. In: Michael Fortescue, Eva S. Jensen, Jens Erik Mogensen and Lene Schøsler (eds.), *Historical Linguistics 2003* (Amsterdam studies in the theory and history of linguistic science 257), 31–46. Amsterdam and Philadelphia: John Benjamins.
- Boye, Kasper
2005b Modality and the concept of force-dynamic potential. In: Alex Klinge and Henrik H. Müller (eds.), *Modality. Studies in Form and Function*, 49–80. London: Equinox.
- Boye, Kasper
Forthcoming Reference and clausal perception-verb complements. To appear in *Linguistics*.
- Boye, Kasper and Peter Harder
2007 Complement-taking predicates: Usage and linguistic structure. *Studies in Language* 31.3. 569–606.
- Boye, Kasper and Peter Harder
2009a Evidentiality: Linguistic categories and grammaticalization. *Functions of Language*.
- Boye, Kasper and Peter Harder
2009b Grammatikalisering, syntagmer og paradigmer / Grammaticalization, syntagms and paradigms. In: Rita Therkelsen and Eva S. Jensen (eds.), *Dramatikken i Grammatikken*, 143–156. Roskilde: Institut for Kultur og Identitet, Roskilde University.

- Brandt, Søren
1999 *Modal verbs in Danish* (Travaux du cercle linguistique de Copenhagen XXX). Copenhagen: The Linguistic Cercle of Copenhagen.
- Bybee, Joan, Revere Perkins and William Pagliuca
1994 *The Evolution of Grammar: Tense, Aspect and Modality in the Languages of the World*. Chicago: University of Chicago Press.
- Cornillie, Bert
2007 *Evidentiality and Epistemic Modality in Spanish (Semi-)Auxiliaries: A Cognitive-Functional Approach*. Berlin/New York: Mouton de Gruyter.
- Davidson-Nielsen, Niels
1990 *Tense and Mood in English: A Comparison with Danish* (Topics in English linguistics 1). Berlin/New York: Mouton de Gruyter.
- Davies, William D. and Stanley Dubinsky
2004 *The Grammar of Raising and Control: A Course in Syntactic Argumentation*. Malden/Oxford/Victoria: Blackwell.
- de Haan, Ferdinand
2008 Raising as grammaticalization: The case of Germanic SEEM-verbs. *Italian Journal of Linguistics* 19. 129–150.
- Diderichsen, Paul
1962 *Elementær Dansk Grammatik / Elementary Danish grammar*, 3rd edn. Copenhagen: Nordisk Forlag.
- Dik, Simon C.
1979 Raising in a functional grammar. *Lingua* 47. 119–140.
- Dik, Simon C. and Kees Hengeveld
1991 The hierarchical structure of the clause and the typology of perception-verb complements. *Linguistics* 29. 231–259.
- Dixon, R. M. W.
2006 Complement clauses and complementation strategies in typological perspective. In: R. M. W. Dixon and Alexandra Y. Aikhenvald (eds.), *Complementation*, 159–177. Oxford: Oxford University Press.
- Eide, Kristin M.
2005 *Norwegian Modals*. Berlin/New York: Mouton de Gruyter.
- Harder, Peter
1996 *Functional Semantics: A Theory of Meaning, Structure and Tense in English*. Berlin/New York: Mouton de Gruyter.
- Harder, Peter
2008 Determiners and definiteness: Functional semantics and structural differentiation. In: Henrik H. Müller and Alex Klinge (eds.), *Essays on Nominal Determination*, 1–25. Amsterdam/Philadelphia: John Benjamins.

- Heine, Bernd and Hiroyuki Miyashita
 2008 Accounting for a functional category: German *drohen* 'to threaten'. *Language Sciences* 30. 53–101.
- Jensen, Torben J.
 2005 Irrealitetsmarkører i dansk talesprog: En korpuslingvistisk undersøgelse af *hvis*-konstruktioner og modalverber i medarbejdersamtaler og sociolingvistiske interview / Irreality markers in Danish spoken language: A corpus linguistic investigation of *hvis* constructions and modal verbs in employee conversations and sociolinguistic interviews. Dissertation. Copenhagen: University of Copenhagen.
- Kirsner, Robert S. and Sandra A. Thompson
 1976 The role of pragmatic inference in semantics: A study of sensory verb complements in English. *Glotta* 10.2. 200–240.
- Langacker, Ronald W.
 1995 Raising and transparency. *Language* 71.1. 1–62.
- Postal, Paul M.
 1974 *On Raising*. Cambridge, MA: MIT press.
- Rosenbaum, Peter S.
 1967 *The Grammar of English Predicate Complement Constructions*. Cambridge, MA: MIT press.
- Ross, John R.
 1969 Auxiliaries as main verbs. In: W. Todd (ed.), *Studies in Philosophical Linguistics*, 77–102. Evanston, IL: Great Expectations Press.
- Schüle, Susanne
 2000 Perception Verb Complements in Akatek, a Mayan Language. Dissertation. Tübingen: University of Tübingen.
- Slobin, Dan I.
 1997 The origins of grammaticizable notions: Beyond the individual mind. In: Dan I. Slobin (ed.), *The Crosslinguistic Study of Language Acquisition*, Vol. 5: *Expanding the Contexts*, 265–323. Mahwah, N.J.: Erlbaum.
- Thompson, Sandra A.
 2002 "Object complements" and conversation: Towards a realistic account. *Studies in Language* 26.1. 125–164.
- Traugott, Elisabeth C.
 1997 Subjectification and the development of epistemic meaning: The case of *promise* and *threaten*. In: Toril Swan and Olaf J. Westvik (eds.), *Modality in Germanic Languages: Historical and Comparative Perspectives*, 185–210. Berlin/New York: Mouton de Gruyter.
- Wiwel, H. G.
 1901 *Synspunkter for Dansk Sproglære / Views of Danish Language Science*. Copenhagen: Det Nordiske Forlag.

The rise of structure

How not to disagree: The emergence of structure from usage

Ronald W. Langacker

1. Metaphors in linguistics

A key insight emerging from cognitive linguistic investigation is the pervasive importance of metaphor in virtually every kind of mental activity, ranging from casual thought to artistic endeavor to intellectual inquiry (Lakoff and Johnson 1980, 1999; Lakoff and Núñez 2000). It is therefore unsurprising that metaphor plays a crucial role in linguistic investigation itself. The conceptions entertained by linguists about the general nature of language, as well as the descriptive and theoretical notions employed to describe it, are in large measure metaphorically constituted. There is no point trying to resist, for in addition to being natural and unavoidable, metaphor is efficacious and essential to the enterprise. It does however come with limitations. If pushed too far, all metaphors are bound to be misleading in some respect. It is not uncommon for spurious conceptual problems to be engendered by metaphorical entailments.¹ The antidote is to recognize the metaphorical component of linguistic notions and develop some independent understanding of the phenomena at issue.

1.1. Conflicting metaphors

Not a few linguistic controversies and theoretical divisions stem at least in part from conflicting metaphors. In comparative-historical linguistics, a classic issue (to some extent still lingering) is whether genetic relationships are best accommodated by Schleicher's "family tree" model or Schmidt's "wave" model. Its counterpart on the contemporary scene, the celebrated theoretical opposition between formal vs. functional approaches, can likewise be characterized in terms of the types of metaphors that tend to be employed (Langacker 2006). Predominant in the formalist outlook are metaphors emphasizing discreteness and stability, portraying language as a fixed and highly structured object (like a building or a tree). Functionalists incline to metaphors highlighting continuity and dynamicity, viewing language as a large collection of elements (like neurons

or people) that flexibly participate in varied and often transient coalitions (like neural networks or social groups).

I take it as self-evident that both general outlooks have their place in an overall account of language: depending on what we look at, and for what purpose, it exhibits both discreteness and continuity, both stability and dynamicity. Much less evident, of course, is the optimal way of viewing particular phenomena (e.g. grammatical constructions). Linguists have thus been known to disagree. In addressing such disagreements, an essential step is to determine their possible metaphorical basis. To what extent do they stem from conflicting metaphors? Are these actually appropriate? Can the differences somehow be resolved?

Conflicting metaphors figure prominently in the issue of usage vs. structure. Usage consists in the speech activity continually occurring within a large collection of individuals. Viewed on a global scale, these individuals constitute an effectively homogeneous mass, construed metaphorically as a fluid through which linguistic traits diffuse or spread like waves. A finer-grained view sees them as being organized in myriad overlapping networks, of varying sizes and degrees of permanence, based on the density of communicative interactions. Approaches that emphasize usage naturally favor conceptions of language congruent with this picture. At the extreme, it can be identified with speech activity *per se*, in which case it is maximally dynamic in the sense of being wholly transient and impermanent. Speech activity is more commonly regarded as merely the manifestation or implementation of language, which is however the product of usage and dynamic in the sense of being subject to its constant influence. In “usage-based” approaches (Barlow and Kemmer 2000), language itself is seen as consisting in large collections of elements organized in overlapping networks (like a “construction” or the members of a complex category). Elements come together in expressions, forming transient coalitions of different sizes, which may themselves – with varying degrees of robustness – be established through usage as linguistic elements. But even well established elements are malleable, adapting to those they co-occur with as well as to the context of use.

If “usage” conjures up an image of transience, variability, and the absence of rigid boundaries, the word “structure” invokes the opposite. The archetypal structure is a building. Employed metaphorically, the term suggests a single, discretely bounded object decomposable into distinct parts arranged in a particular, fixed configuration, its form being stable and unaffected by the context. This image of discreteness and stability was epitomized in early formulations of generative grammar. Language was viewed as an encapsulated mental module (Fodor 1983) organized into separate components (phonology, lexicon, syntax, semantics). Grammar was described by an ordered list of rules formulated as strings of discrete symbols. Step by step, these rules effected the algorithmic

computation of a set of well-formed sentences which – in accordance with classical categorization (Taylor 2004) – was presumed to be strictly delimited. Sentences had fixed structures conceived metaphorically as trees. A language and its expressions were taken as being sufficiently stable to be initially describable without regard to context, variation, or change.

Obviously, the views and issues involved are much too complex for these brief characterizations to be anything but simplistic. I do not regard the linguistics community as being rigidly divided into opposing “camps” based on their wholesale subscription to incompatible metaphorical systems.² The general outlooks described can nonetheless be recognized as roughly corresponding to “functionalist” vs. “formalist” approaches. Owing in part to their substantial metaphorical coherence, they have a strong influence on default modes of thinking about linguistic problems. What do we then make of their apparent inconsistency, especially when applied to the same phenomenon (grammar in particular)? Can the conflict somehow be resolved?

There are three basic means of resolving it: denial, compartmentalization, and reconciliation. I doubt that anyone seriously embraces the denial strategy. From the formalist perspective, this would involve denying the very existence of usage, or at least (only slightly less implausibly) the linguistic relevance of factors like variation, contextual adjustment, and degrees of conventionality. From the functionalist perspective, it involves denying the existence of linguistic structure: there is only usage, so language consists in speech activity *per se*. While functionalist rhetoric can sometimes be interpreted in this manner, it is doubtful whether the views espoused are actually that extreme. We will take up this matter shortly.

The second strategy – compartmentalization – is basically incompatible with the functionalist outlook, which by nature favors a unified account of usage and structure. On the other hand, it is fully consonant with the formalist outlook and offers itself as a natural means of dealing with variation and non-discreteness. Thus structure and usage can both be accommodated, albeit separately, by making a distinction like the notorious competence vs. performance. There is no denial of the existence and linguistic relevance of usage – the claim is rather that structure can be described independently of it.

For the most part, functionalists envisage a unified, non-dichotomous account in which the seemingly opposing properties of structure and usage are somehow reconciled. This is accomplished in a usage-based approach where structure is acknowledged as existing but is not independent of usage or radically different in nature. Rather, structure emerges from usage, is immanent in usage, and is influenced by usage on an ongoing basis. An approach of this sort can accommodate both discreteness and continuity, both stability and dynamicity. There

is thus a place for both formalist and functionalist metaphors, but they need to be invoked judiciously, for different purposes or different aspects of the same phenomena.

1.2. Emergent grammar?

The idea that structure emerges from usage cannot necessarily be equated with Hopper's conception of "emergent grammar" (Hopper 1987, 1998). Hopper can be interpreted as denying the existence of linguistic structure. In describing grammar as "epiphenomenal" (1998:156), he would seem to be relegating it to the status of a virtual entity that only exists in the mind of the analyst, having no causal influence on usage. However, he can also be interpreted as subscribing to the kind of reconciliation achievable in a usage-based approach. The matter hinges on the clarification of central notions, in particular what is meant by "structure".

In speaking of "a structure", one is typically referring to a single, large, enduring physical entity constructed out of numerous pieces, with a stable and well-defined configuration of some complexity (like a building, a pier, a wall, or the Eiffel Tower). More generally, one speaks of "the structure of X", where X can be almost anything: an atom, a cell, the brain, a novel, a sonata, a curriculum, an argument, a theory, an event, a corporation, a society, the internet, a galaxy, or the universe. The locution is thus not limited to object-like physical entities composed of material substance, but extends metaphorically to any sort of target on the basis of properties like complexity, decomposability, configuration, and stability. Understood most abstractly, the term "structure" applies to any kind of pattern, regularity, or discernible organization.

We are thus not out of line in talking about the "structure" of a sentence or a language. But what exactly is intended by this usage, especially from a functionalist standpoint? In view of its prevalence in linguistic discourse and its pivotal role in theoretical disputes, we need to have a clear and cogent understanding of this notion. What do linguists mean (or what could they plausibly mean) when they talk about language structure? What is the actual import of saying that structure emerges from usage? I will approach these matters gradually, starting with a very general consideration of structure and its emergence.

2. A dynamic view of structure

Since language is learned, used, analyzed, and theorized about by sentient creatures, I will consider structure from the standpoint of its apprehension. Among its basic elements, a general model will thus include an apprehending *subject* capable of activity by means of which it observes, interacts with, and interprets its surroundings. For those of us who are not omniscient, this activity is limited in scope as well as the kinds of entities it engages. Other basic elements are thus a *field* of engagement and a range of possible *targets*. Structure is therefore apprehended through activity by a subject serving to engage target entities within a certain field. The role of the subject's activity is one factor making this a *dynamic* view of structure.³

2.1. Discreteness vs. continuity

This basic model allows the nature of discreteness, continuity, and structure, as well as their close relationship, to be addressed in fundamental terms. Let us start with the case of maximal continuity, in which the content of the field is uniform throughout. Imagine – just for sake of concreteness (the notions being fully general) – that the same shade of gray is continuously registered at every point in the visual field, which thus presents a homogeneous and featureless expanse. Now in a certain way this might be regarded as a highly structured situation. It is maximally regular in the sense that the same sensation is registered throughout (the antithesis of a random distribution). However, this regularity is evident only to an observer with a broader perspective, who is able to view it as part of a larger field where it stands out as being different and distinctive, or in relation to all the other possibilities previously or potentially experienced. The subject in question, for whom a uniform field represents the sole basis for assessment, would not perceive the situation as special or highly regular. Indeed, if that is all the subject ever experiences, we might better say that it has no experience at all. A constant featureless expanse provides no traction for detecting patterns and apprehending structure.

As in climbing a vertical sheet of rock, traction requires some kind of discontinuity. Most fundamentally, it depends on the subject's capacity for detecting differences, which in turn implies comparison of entities or locations in the field. We can thus presume that a basic aspect of the subject's activity – constant and ubiquitous within the field – consists in comparison events serving to register sameness or difference. This I take to be the ultimate basis of continuity vs. discreteness (Langacker 2006). With respect to a given parameter, continuity

is a matter of there being no disparity between a standard and a target of comparison: the activity involved in apprehending the former simply perseveres in apprehending the latter ($S = T$). Discreteness arises from discrepancy: the activity associated with the standard, though it forms a basis for apprehending the target, has to be adjusted in some fashion to do so ($S > T$). This adjustment ($>$) is itself an aspect of the subject's activity, above and beyond the processing involved in apprehending the standard and target individually. Experientially, it amounts to the target standing out as being different from the standard.

S and T can each be taken as comprising a number of properties bound together at some location in the field. Suppose that alternate values of the same property – for instance, black and white – are manifested in the field at different locations. If they are far enough apart, these occurrences constitute separate, unrelated experiences. But if they appear in close proximity (in adjacent “pixels”, if you will), they will almost certainly be compared.⁴ The comparison can equally well go in either direction: with black as standard and white as target, or conversely. Either way, though, the occurrences are connected by the very act of comparison to constitute a more complex experience involving the detection of a difference ($S > T$). It represents a minimal case of discontinuity or discreteness.

Imagine next that a single black dot appears in a field that is otherwise white throughout. This is a classic instance of figure/ground organization; the situation tends strongly to be perceived in that fashion – not as an expanse of white with a hole in it, seen against a black background. Why should this be so, given that a black/white contrast can in principle be observed in either direction? Our basic model provides an answer given the assumption that comparison is ubiquitous and essentially automatic between adjacent locations. Being surrounded by white, the black dot serves as target of comparison for many assessments that register a discrepancy (white $>$ black). Each such event reinforces its status as the entity that stands out as being different. While the converse assessments also occur (black $>$ white), each has a different target, so none of these stands out with comparable salience.

Perceiving a dot may not seem like much, but it does give us traction. A key point is that comparison consists in processing activity, and in particular that the detection of a difference ($S > T$) requires activity above and beyond that involved in apprehending S and T individually. This additional processing – the adjustment ($>$) inherent in the transition from S to T – can itself be compared, functioning as S or T in higher-level comparison events. These events themselves register sameness or difference: $[[S_1 > T_1] = [S_2 > T_2]]$ or $[[S_1 > T_1] > [S_2 > T_2]]$. In the latter case, the requisite adjustment can in turn be compared at a higher level. And so on. This I take to be the general basis for apprehending pattern or regularity. More specifically, we can speak of pattern emerging when

differences detected at one level (discreteness) give rise at a higher level to assessments of sameness (continuity). We usually speak of “structure” in regard to complex cases where pattern emerges at multiple levels.

Let us see how this works with some basic examples. If two dots appear fairly close together in the field, they are likely to be compared in regard to location. The requisite adjustment amounts to an assessment of their relative position. This adjustment, which we can factor into components indicating distance and direction, is an aspect of processing activity, hence susceptible to comparison with other such occurrences. If another pair of dots are also observed and assessed for relative position, the adjustments required for the pairs can be compared with respect to some property. Suppose the comparison for distance (i.e. magnitude of spatial discrepancy) registers sameness. This constitutes the subject’s apprehension of the dots in each pair being just the same distance apart.⁵ It represents a modicum of patterning. The pattern is more impressive if there are numerous pairs of dots, all the same distance apart, so that many higher-level comparisons all result in assessments of sameness. It is even more impressive if the same continuity obtains when the requisite adjustments are compared with respect to direction as well as distance. The subject thereby apprehends a highly organized situation in which many pairs of dots all exhibit the same spatial displacement with the same alignment in the field.

Comparisons form chains when the target in one event functions in turn as standard in the next. Consider a line of dots spaced at constant intervals. At one level, its apprehension consists in a chain of comparisons each of which registers a discrepancy in location. The regularity is captured by assessments of sameness at a higher level, where the discrepancies are themselves compared in regard to distance and direction. Since distance determines likelihood of comparison, the regularity becomes more evident as the dots get closer together. Its apprehension is essentially automatic when the distance between the dots is zero, so that they form a solid line. The “dots” are not then individuated along the linear axis, but do still stand out as different with respect to the transverse axis. Their perception as a line (not just a set of points of contrastive color) implies some processing activity serving to register their continuous extensionality. This can be accomplished by a chain of comparisons for location in which the discrepancies registered for distance are arbitrarily small. The line is perceived as being straight (the most “regular” situation) when higher-level comparisons reveal continuity with respect to direction of displacement.⁶

Whether considered as processing activity or the experience it engenders, a line is itself an entity subject to assessment and comparison with others in the field. Two lines can be compared in terms of length. The distance between them can be assessed at any point, and sameness of distance at every point, as

revealed through higher-level comparison, constitutes the apprehension of their parallelism. The perception of a square comprises assessments of equal length for all the sides, parallelism of opposite sides, and equality of all the angles. By continuing in this fashion, at successively higher levels, the subject can in principle build up to configurations of indefinite complexity.

Obviously, this model is just a toy. There is no claim that cognition works in precisely this way, nor – to the extent that it does – about the specifics of its neural implementation. The model does however provide a basis for making some general points. Most basically, it indicates the coherence of talking about “structure” from a dynamic perspective where everything consists in processing activity. More specifically, it suggests the fundamental importance of comparison and the registration of sameness or difference. I see this as holding for almost any facet of cognition at any level of organization.⁷ Finally, the model serves to illustrate how structure involves the interplay of discreteness and continuity. In particular, patterns emerge when operations that register differences at one level are themselves compared, giving rise to assessments of sameness at a higher level.

2.2. Elaboration of the model

The model is also instructive for what it thus far lacks. Let us briefly note some respects in which it has to be greatly elaborated to represent even a crude approximation to cognition. Though still a toy, the elaborated model will offer a basis for discussing language and the emergence of structure from usage.

For one thing, we have not yet considered time, though it has figured implicitly as the medium for processing activity. Time is further relevant in several respects. Most obviously, it is one dimension of the field, in which entities occupy locations, comparisons are made, and patterns are detected. Presented with successive tones, for instance, the subject can register the differences in their temporal locations, and determine (through higher-order assessments) whether they are evenly spaced. Time is also the dimension where *change* is manifested, as well as the *stability* characteristic of “structure”. The apprehension of change consists in a difference being registered when a situation is compared at successive temporal locations; stability, of course, consists in temporal continuity.

Like stability, *recurrence* is a matter of sameness being registered in the comparison of successive situations. The distinction hinges on whether the perseverant situation occupies adjacent temporal locations or locations with a detectable distance between them (leaving a “gap” where it fails to be manifested). Of course, recurrence can only be noted if the original processing event leaves

some trace making possible its comparison to the subsequent one. This happens on different time scales. At smaller intervals, the trace might take the form of residual activation, so that the same activity can be resuscitated in apprehending the target. In such cases we can speak of priming and short-term memory. On a larger time scale, we speak instead of learning and long-term memory, where the trace can hardly be ascribed to residual activation. We must instead assume that the subject undergoes some adjustment or adaptation with enough permanence to affect its subsequent processing activity. This is usually identified as a modification in the strength of neural connections. But whether it is due to residual activation or to adjustment in connection weights, the occurrence of a processing event renders more likely the occurrence of the same or a similar event: occurrence facilitates recurrence. There is thus an overall tendency for patterns to be detected and structure to emerge.

In terms of our basic model, *learning* by a subject can thus be characterized as an adaptation, with some degree of permanence, serving to facilitate the occurrence of a certain processing activity. Since it is based on previous occurrences, and provides the basis for subsequent occurrences, we can refer to this as an *established pattern* of activity.⁸ This pattern need not be exhaustive of the processing events giving rise to it – the activity that recurs and is thereby reinforced is typically just a portion of those events, representing only certain facets of the subject's overall experience. Suppose that each experience consists in apprehending a set of dots and the regularity of their spatial arrangement (e.g. as forming a straight line). Let us further suppose that in each event the dots are all the same in color, but a different color on each occasion. In this case the pattern that emerges through recurrence and reinforcement will exclude those aspects of the processing activity which are responsible for a particular color experience. It is non-specific in regard to color, limited to shared configurational properties of the apprehended situations. As a general matter, the inherent selectivity of reinforcement ensures that learning involves some amount of abstraction and schematization.

Thus far we have tacitly been assuming that the subject's activity is driven by something akin to perceptual input, e.g. the apprehension of color at certain locations in the visual field. Of course, an even semi-realistic model of cognition cannot be limited in this fashion. A more realistic model will transcend these limits in three basic ways, one of which is that the subject engages the world not just perceptually, but also through motor actions. An essential aspect of the subject's activity thus consists in controlling and effecting such actions. This of course gives rise to established motor patterns, essential for coping with the world (after all, a subject has to eat).

Two additional factors can be noted. First, we have seen how activity grounded in sensory input can support the emergence of a pattern which abstracts away from any specific sensory experience. More generally, a pattern that is well established, hence readily elicited, may come to be activated independently of the conditions that normally prompt it. This *disengagement* of processing activity results in phenomena like imagery and mental simulation. A second factor is the *integration* of processing patterns, which occurs when they are coactivated and connected by virtue of overlapping or being assessed in relation to one another. The result is a new and more elaborate pattern of activity (constituting a new and more elaborate experience) with the potential to recur and become established as an easily activated whole. This happens at many levels of organization, giving rise to configurations of indefinite complexity. Together, disengagement and integration provide the basis for imaginative phenomena, including metaphor, blending, and the invocation of fictive entities (Fauconnier and Turner 2002; Langacker 2008: ch. 14).

A final deficiency of the model, as presented so far, is that it does not reflect the social basis of cognition. This is a fundamental failing, since cognitive development is shaped by social interaction, which comprises a large portion of one's experience. A subject recognizes the existence of other subjects, interacts with them, reads their intentions, and simulates their experience. Much of the apprehended "world" is socially and culturally constructed. Being especially critical for language, the social dimension is a central concern in what follows.

3. Applicability to language

What could linguists sensibly mean when they talk about "the structure of a language"? What could it mean for cognitive linguists, who investigate language as an aspect of human cognition? Consideration of these matters tends to be clouded by misconceptions largely engendered by metaphor. From its basic use in regard to buildings and such, the word "structure" suggests a static entity with a single, fixed location. As an aspect of cognition, moreover, this structure must be in the brain, which is encased in a skull. It is thus quite natural for the brain and skull to be construed metaphorically as containers, with cognition and language as their content. And since a good container presents a discrete, impermeable boundary that keeps its contents inside, the metaphor entails an insular view of language that cannot accommodate its social nature.

These metaphorical entailments need not and should not be taken seriously. They are in fact antithetical to the cognitive linguistic view of cognition and language structure. Rather than being static, linguistic structure is inherently

dynamic, consisting in patterns of processing activity. Even well-established patterns – referred to as *units* in Cognitive Grammar (Langacker 1987: §2.1) – are also dynamic in the sense of having to be maintained through usage, where they are always subject to adaptation and modification. Nor do cognitive linguists have an insular view of language or cognition. There is first the central doctrine of *embodiment*, which holds that cognition is grounded in perception and motor action, and thus in our interaction with the world. Additionally, cognitive linguists subscribe to the *usage-based* approach, which is founded on the very notion that language emerges through social interaction.

3.1. Intersubjectivity

Even when analyzed from a cognitive perspective, processing activity cannot be regarded as isolated or acontextual. In canonical language use, there are two subjects, who interact on multiple levels. Each interlocutor's activity is aimed at and responsive to the other's. This *coupled activity* provides the basis for linguistic structure. In order to see how this might work in principle, I will once again start with the simplest possible case.

Suppose that one subject produces a sound and the other hears it. This minimal instance of coupled activity has the following basic elements: $((m_c m_p) \gg \gg (s_p s_c))$. Respectively, the symbols 'm', ' $\gg \gg$ ', and 's' represent motor activity, the sound waves it produces, and the sensory activity that results. The subscripts 'c' and 'p' indicate more central vs. more peripheral aspects of processing activity. Presumably this boundary is fuzzy, so that the line can be drawn at different places for different purposes. Roughly, however, we can identify m_p with innervation and contraction of the muscles involved in articulating the sound, and m_c with whatever higher-level neural activity is responsible for driving and coordinating m_p . We can likewise identify s_p with physical activity of the hearing apparatus (bones of the inner ear, cochlea) as well as the low-level neural signals this produces, and s_c with the higher-level processing responsible for integration and interpretation.

The coupled activity $((m_c m_p) \gg \gg (s_p s_c))$ comprises a single event in which a sound is spoken and heard. It represents the joint, collaborative effort of two subjects, commonly referred to as "speaker" and "hearer". The subjects have different roles: although the division of labor is less than absolute, the activity $(m_c m_p)$ is primarily carried out by the speaker, and $(s_p s_c)$ by the hearer. With sufficient rehearsal, these processing patterns become well established – or *entrenched* – and thus have the status of units (indicated by square brackets). The unit $[m_c m_p]$ is thus the established ability to produce the sound, and $[s_p s_c]$

is the basis for its recognition. While they are manifested in coupled activity, these units cannot be identified with any particular speech event. Rather, they are *immanent* in any number of events, residing in aspects of the processing activity constituting them. They are non-exhaustive of this processing by virtue of their lesser specificity: as they emerge by entrenchment of what is common across events, fine-grained differences fail to be reinforced.

In contrast to an actual instance of processing activity, which is ephemeral, an established unit has a certain kind of permanence. Having mastered the unit [m_c m_p] does not, of course, imply that the subject produces the sound in question at every waking moment. The implication is rather that the subject has undergone some physical change (like a strengthening of synaptic connections) with a lasting effect on subsequent processing. In particular, it means that *instances* of [m_c m_p] – events in which this pattern of activity is immanent – are readily elicited and easily executed. When this happens, a unit is said to be *activated*. We can represent activation by means of boldface: [**m_c m_p**]. The activation of a unit is an actual processing occurrence. Whereas learning linguistic elements consists in units being established, language use involves their activation.⁹

As a well-rehearsed routine, the activity comprising a unit, once initiated, can be carried out more or less automatically. But since each distinguishable part of a complex unit is itself an established routine, it has at least the potential to be activated independently of the remainder. One such case is the disengagement of central processing from its peripheral implementation. If a subject has learned to articulate a certain sound, actually producing it consists in the complex unit [m_c m_p] being fully activated: [**m_c m_p**]. Suppose, however, that activation of m_c – which normally drives and controls m_p – fails for some reason to elicit it: [**m_c** m_p]. The disengaged occurrence of m_c is what we experience as a motor image (or simulation). Analogously, a sensory image consists in the disengaged activation of s_c : [s_p **s_c**].

So far, the subjects engaged in coupled activity have only abstracted a single unit each: one has learned to produce a sound, and the other to recognize it. In reality, of course, few language users specialize to this extent. As a small but crucial step in the direction of making the model more realistic, we must allow each subject to alternate between the speaker and hearer roles in coupled actions. Various factors contribute to a subject's becoming proficient in both. In a very general way, it stems from the very nature of social interaction and the fact that a person is expected to function in both capacities. An essential factor is empathy, and more specifically, the ability to read the intention of one's interlocutor (Tomasello 2003). An apparent neural basis is *mirroring*, wherein some of the same neurons or neural circuits are activated in either performing or observing an action. More concretely, we find a basis for a subject developing a

dual capacity just by focusing on the coupled activity ($(m_c m_p) \ggg (s_p s_c)$). A subject who produces a sound normally also hears it, thereby engaging in both $(m_c m_p)$ and $(s_p s_c)$. Moreover, one learns to make a sound by hearing it and trying to reproduce it, so that once again $(m_c m_p)$ and $(s_p s_c)$ occur in the activity of a single subject.

Their consistent pairing establishes an *association* between the emerging units $[m_c m_p]$ and $[s_p s_c]$, such that either is able to activate the other. The higher-order unit $[[m_c m_p] [s_p s_c]]$ can thus be ascribed to a subject who has learned to both produce the sound and recognize it. Different ways of using the sound are then describable as different ways of activating the components of this complex unit. Minimally, invoking the sound as a motor image requires only the activation of m_c : $[[\mathbf{m}_c m_p] [s_p s_c]]$. By the same token, a sensory image requires only s_c : $[[m_c m_p] [\mathbf{s}_p s_c]]$. Yet even in the case of imagery matters are no doubt more complicated, since (by mirroring) a motor image tends to activate the corresponding sensory image, and conversely: $[[\mathbf{m}_c m_p] [s_p s_c]]$. A fortiori, these images occur when the sound is actually produced or perceived: $[[\mathbf{m}_c \mathbf{m}_p] [s_p s_c]]$; $[[m_c m_p] [\mathbf{s}_p s_c]]$. In effect, then, each interlocutor simulates the other's primary experience with the sound. On this basis the speaker estimates what it sounds like for the hearer, who realizes that it was produced by coordinated motor activity (as opposed to being just a random acoustic occurrence). The *intersubjectivity* of language thus has to be acknowledged even for a single sound.

3.2. Scaling up

How do we go from a single sound to language in all its vast complexity? Luckily there is no necessity to tell that full story here in any detail, as our objective is merely to clarify what it means in principle to speak of language structure and its emergence from usage. We can thus make do with the most fragmentary account, sketched in the broadest outline. At this level of generality (or vagueness, if you like), the story can basically be told in terms of notions already introduced. Matters that need to be considered include complexity, symbolization, schematization, and conventionality.

Fundamental to the story is the integration of simpler processing patterns into more elaborate patterns. Integration consists in the component patterns (which may or may not have the status of units) being coactivated and connected through overlap or assessment in relation to one other. If it recurs, a pattern arising in this manner can be established as a unit, which is then available to participate, as a prepackaged whole, in a still more elaborate pattern. And so on indefinitely.

A person's linguistic ability consists in a vast array of such units, which can be of any size and emerge at any level of organization. In an instance of language use, a speaking or hearing subject draws upon a selection of linguistic units (along with other resources). These activated units provide a partial basis for the elaborate coupled activity that constitutes the resulting linguistic expression. The contribution of the activated units is what we identify as the expression's linguistic structure. The term "structure" alludes to the complexity and regularity of their contribution: almost always there are many units at numerous levels of organization, each representing an established pattern of activity which also figures in other expressions.

A minimal case of integration is the association of $[m_c m_p]$ and $[s_p s_c]$ to form the more complex unit $[[m_c m_p] [s_p s_c]]$, representing the ability to produce and/or recognize a sound. Naturally, patterns representing sounds are integrated into successively more elaborate patterns, any of which has the potential to be established as a unit.¹⁰ I will use the label P to indicate any pattern of phonological activity, regardless of size, complexity, or degree of entrenchment.

Phonological activity is just one facet of the overall processing activity engaged in by the subjects who learn and use human language. This overall activity is conveniently referred to as "cognition", but in a suitably broad sense of the term, i.e. it is not limited to central or higher-level processing or to the acquisition of "knowledge".¹¹ The cognition of "cognitive" linguistics encompasses sensory, motor, and emotive experience as well as the processing activity it resides in. While cognition is commonly ascribed to the brain, this should be regarded as an instance of CENTRAL PART FOR WHOLE metonymy. The brain is the nexus of a nervous system that runs throughout the body and connects with the sensory and effector organs through which we interact with the world. Though sometimes partially disengaged, its activity is part and parcel of the interactions occurring at all these levels. In short, cognition is *embodied* (Ziemke, Zlatev, and Frank 2007; Frank, Dirven, Ziemke, and Bernárdez 2008).

Like the special case of phonological processing, cognition in general consists in patterns of activity which are integrated into progressively more elaborate patterns, any of which can be established as a unit. Here I can only mention certain factors contributing to the daunting complexity of this patterned activity and the conceptual experience it gives rise to. Patterning emerges in many dimensions and at many levels of organization. A key factor is disengagement, whereby patterns grounded in sensory and motor experience are carried out independently. They can thus be invoked for imaginative purposes, notably in metaphor, blending, and fictivity. Along with mirroring, disengagement also figures in the apprehension of other conceptualizers and the simulation of their experience. This in turn leads to mental space configurations, the recognition of

alternate conceptions of reality, and the construction of entire imaginary worlds. But however far cognition takes us along these paths of mental construction, it all originates in coupled activity with the physical and sociocultural world.

Let C stand for a pattern of cognitive activity, irrespective of its nature, complexity, or entrenchment. Under certain conditions, the coactivation of C and P (a phonological pattern) induces their integration as facets of a more elaborate pattern of processing activity which, like any other, is subject to entrenchment as a unit: [[C] [P]]. Their established association has the consequence that the activation of either [C] or [P] serves to activate the other. Although the entire unit [[C] [P]] is itself a cognitive (or conceptual) pattern (Langacker 1987: §2.2.1), it has the special property that the execution of [P] produces an observable signal allowing it to symbolize [C] in coupled actions. We can thus describe [[C] [P]] as a *symbolic* unit (Σ).

Of course, this symbolic function requires that both interlocutors have mastered [[C] [P]] as a well-rehearsed routine. As a first approximation, the coupled action of using [P] to symbolize [C] can thus be given as follows: ([[C] [P]] >>> [[P] [C]]). The ordering of [C] and [P] represents the difference between “encoding”, where [C] activates [P], and “decoding”, where [P] activates [C]. We obtain a second approximation by breaking down [P] into its motor and sensory components, making it possible to show that the interlocutors primarily activate different facets of it: ([[C] [[m_c m_p] [s_p s_c]]) >>> [[[m_c m_p] [s_p s_c] [C]]]. That is, the speaker executes the motor routine [m_c m_p], thereby producing an acoustic signal that the hearer apprehends via the sensory routine [s_p s_c]. This does not, however, capture the full complexity or the intersubjective nature of the processing activity. As noted previously in regard to a single sound, to some extent each interlocutor simulates the other’s processing activity. The speaker estimates what the hearer is likely to perceive and understand, while the hearer grasps (and may well anticipate) the speaker’s intent in producing the signal.

Lexicon consists of established pairings of the type [[C] [P]]. Naturally, symbolic units can co-occur, resulting in more elaborate symbolic configurations with the potential to be established as units: [[Σ] [Σ]]. This may happen at multiple levels of organization, producing lexical items with substantial internal complexity. Importantly, a higher-level symbolic unit is not just the sum of its symbolic components. If nothing else, the very fact of their integration induces some adjustments in the processing activity comprising them, so that neither component has precisely the same manifestation in the composite whole that it would in isolation. There may well be more substantial modifications, reflecting the circumstances giving rise to their co-occurrence. Furthermore, rehearsal leads to “streamlining”, so that effectively the same results are achieved by more efficient processing activity.¹² Lexical units also vary in regard to *analyzability*,

i.e. the extent to which component elements still figure in the activation of the composite whole. Once the latter has been established as a well-rehearsed routine, it has the potential to be activated directly in streamlined fashion, not by way of invoking and adjusting the component patterns.

3.3. Grammatical constructions

That brings us, finally, to our main interest, namely grammar. By means of grammar we are able to produce and understand an endless supply of new, symbolically complex expressions. Many become established as lexical units, many more do not. Given an appropriate view of grammar,¹³ it represents a natural continuation of the story being told, by virtue of two basic properties. First, grammar is symbolic in nature, and as such is inherently meaningful, forming a continuum with lexicon. Second, “grammatical” units are generally more schematic than those considered “lexical”. Grammar consists in established patterns for assembling complex expressions out of simpler symbolic elements. These patterns – grammatical *constructions* – are abstracted from such expressions by reinforcement of their recurring commonality. Like the expressions giving rise to it, a construction is symbolically complex, incorporating whatever they share in regard to the integration of component elements. But since these expressions differ in their fine-grained detail, which fails to be reinforced, the resulting construction is partially or wholly schematic. A construction is thus an assembly of symbolic structures characterized at any level of abstraction. Minimally it comprises two such structures, together with their mode of integration to form a composite whole. It may however span multiple levels of organization and have any degree of internal complexity.

In principle, the exploitation of grammatical patterns in forming new expressions is a straightforward matter of coactivation and integration due to overlap. An essential point is that a schema is immanent in its instantiations, consisting in processing activity that each of them augments by way of making finer-grained specifications. As a kind of overlap, this immanence allows the integration of a schematic construction with instantiating elements (cf. Goldberg 1995; Langacker 2009). Consider a minimal constructional schema, with just two symbolic components: $[[]_{\Sigma 1} []_{\Sigma 2}]$. Potential instantiating expressions (possibly lexical items) can be given as $[A]_{\Sigma 1}$ and $[B]_{\Sigma 2}$, where $[]_{\Sigma 1}$ and $[]_{\Sigma 2}$ stand for schematic specifications, with A and B indicating the further processing responsible for their finer-grained detail. Through their schematic specifications, $[A]_{\Sigma 1}$ and $[B]_{\Sigma 2}$ overlap with the construction’s two symbolic components. Simply by being coactivated, therefore, the construction and the component expressions

are integrated to form the composite expression ($[[[A]_{\Sigma 1} [B]_{\Sigma 2}]]$).¹⁴ In using the new expression, the interlocutors have different points of access to this complex structure: the speaker is prompted by a meaning to express, and the hearer by the perceived acoustic signal. But since they each have both active and passive control of the units employed, and since each simulates the other's activity, both interlocutors activate the entire complex as part of a coupled action: ($[[[A]_{\Sigma 1} [B]_{\Sigma 2}]] \gg \gg [[A]_{\Sigma 1} [B]_{\Sigma 2}]]$).

They are able to do this because the units employed are conventional, i.e. shared by the interlocutors as a mutually recognized basis for communication. Their conventionality reflects their origin: units emerge in the first place through coupled activity, in the broader context of social interaction in a culture. So as each person learns to talk, the units being acquired gradually converge on those of the models and the wider speech community. To be sure, convergence, conventionality, and communicative success are all matters of degree; we are dealing here with approximations rather than strict identity. But approximations may be enough. People do talk, and they often seem to communicate decently well.

4. Structure in action

I have sketched an account that reconciles structure and usage, as well as the cognitive and social aspects of language. In this usage-based account (Langacker 2000), linguistic structure is dynamic in at least two ways. First, structure consists in established patterns of processing activity. Encompassing both central and peripheral processing, these patterns are defined by their role in coupled activity occurring in social interactions. Second, linguistic patterns are established, maintained, adjusted, and modified through usage. They are abstracted from *usage events* – i.e. actual instances of language use (coupled actions) in their physical, social, and discourse context – by reinforcement of recurring configurations. Any recurring aspect of the actions or their context can thus be incorporated in the patterns established as units. Once established, a pattern is available for exploitation in subsequent events, where it is subject to adaptation and negotiation. Since they are learned and adapted via social interaction, the units controlled by different individuals in a group are usually similar enough for successful communication.

Stated in very general terms, structure emerges when phenomena observed at one level of organization give rise to assessments of sameness at a higher level. Its emergence reflects the fundamental necessity of cognition relying on the exploitation of existing resources, using previous experience as a basis for

interpreting new experience. For this to happen, experience must leave some “trace” that allows it to influence subsequent processing. Its neural basis is usually identified, following Hebb (1961), as the strengthening of active synaptic connections (hence the slogan “neurons that fire together, wire together”). Due to this strengthening, the occurrence of a bit of processing activity facilitates recurrence of the same activity. Its recurrence involves reduced “processing effort”, in the sense that less input (activation from other sources) is required to elicit it or constrain it to its course. There is thus an overall tendency for structure – based on sameness or continuity – to emerge whenever possible.¹⁵

4.1. Linguistic units

Let us then contemplate the life history of a linguistic unit, identified as an established pattern of processing activity. We can start at the beginning, when the unit does not yet exist. An initial step in this direction is the occurrence, in response to some input, of some approximation to what will ultimately be the pattern. At this stage it has no privileged status. Yet the very fact of its occurrence leaves some trace, in the form of strengthened neural connections, allowing the same or a similar pattern to occur more readily. This strengthening may be transient, but if a semblance of the pattern does in fact recur, each time it is further entrenched, eventually to the point of having enduring consequences. At some stage (and it may just be a matter of degree), it is well enough entrenched that its occurrence requires only minimal processing effort: little input is needed to prompt or constrain its execution. It is then an established pattern, i.e. a unit. Of course, being established is not the same as being either immortal or immutable. If a unit is never used, the strengthened connections sustaining it will gradually decay. Nor is simple maintenance a likely option, since a unit that continues to be employed will almost certainly undergo some modification. If nothing else, it is subject to further entrenchment and streamlining, as witnessed by the importance of frequency effects in language (Bybee and Hopper 2001).

The better established a pattern is, the more it tends to impose itself in processing new input. Once activated on the basis of very partial or low-level input, its automatized execution amounts to a top-down interpretation of the target experience. It may largely constitute that experience, in some cases overriding specifications of the input.¹⁶ The unit invoked can be said to *categorize* the target, providing its interpretation with respect to the patterns established through previous experience. Categorization requires the least processing effort when the target is fully compatible with the activated unit, which then need only be executed in routine fashion; we can say that the unit, serving as standard of

comparison, is *recognized* in the target: $S = T$. But in some cases comparison registers a discrepancy: $S > T$. This happens when T has enough overlap with S to activate it as the categorizing unit, while at the same time providing input that is inconsistent with S and sufficiently strong to deflect the pattern's execution from its normal path. Although the established pattern still provides an initial basis for interpretation, the conflicting input drives an adjustment in its actual execution. What actually occurs is the altered pattern ($S >$), i.e. S as adjusted to accommodate the target. Naturally, ($S >$) has the potential to recur and be established as a unit in its own right: [$S >$]. [S] and [$S >$] then coexist as established patterns, each available for the interpretation of new experience.¹⁷

Let us now apply this general scheme to language. At a given time, a person's linguistic ability comprises an immense number of patterns entrenched to varying degrees. The products of usage, these actual and incipient units are available for exploitation in further usage events. In each such event, an expression is produced and apprehended as part of a coupled action unfolding in a physical, sociocultural, and discourse context. Now an expression only counts as an instance of language by virtue of being interpreted with respect to linguistic units (otherwise the sounds are just noise, and the conceptions that occur fail to qualify as meanings). This interpretation is referred to in Cognitive Grammar as *coding*. Both interlocutors engage in it, for while the speaker moves primarily from conception to sound (*encoding*), and the hearer from sound to conception (*decoding*), to some extent each simulates the other's role. Coding consists in linguistic units being activated to categorize particular facets of the target expression. Many categorizations – involving configurations of different kinds, sizes, and dimensions of linguistic organization – figure in the interpretation of a given expression. Each can register either sameness or difference. The expression is “well-formed” to the extent that it conforms to the categorizing units, so that S is recognized in T without adjustment. But a certain amount of context-induced adjustment is usual and easily tolerated (if even noted). In the common process known as *extension*, adjusted patterns are established through recurrence as new linguistic variants.

4.2. “A language”

In a strict sense, language is never fixed and static. This is so even if we focus on just a single speaker and a single linguistic unit. There is first the ephemeral nature of a unit's actual manifestation, as an aspect of processing activity. Nor is a unit ever really constant in terms of its status as an established pattern: it is subject to decay or reinforcement depending on the frequency of its activa-

tion, and subject to negotiation and adjustment when employed in usage events. Constancy is even harder to find when we move from the individual level to that of a social group or an entire speech community. It is a truism – and undoubtedly even true – that the inventory of linguistic units is not exactly the same for any two speakers. Nor are shared units identical in all particulars. Moreover, the extreme prevalence of variation and the complex distribution of linguistic traits entail the arbitrariness of drawing discrete or precise lines of demarcation between dialects, and even languages. Can we then talk about “the structure of expressions” or “the structure of a language”? Indeed, can we even talk about “a language”?¹⁸

It is essential here not to be seduced by the siren of all-or-nothing thinking. The fact that nothing lasts forever does not prevent us from enjoying things while they do. The fact that every rock is different does not mean that there is no such thing as a rock. The fact that waves form a gradient with the surrounding water does not imply that these bounded entities are just a figment of our imagination. In making sense of our world, we necessarily rely on assessments of stability, sameness, and bounding that are less than absolute, but depend on factors like scale, resolution, and level of organization.¹⁹ If these assessments are less than absolute, they can nonetheless be valid and effective relative to their scope and purpose, often capturing something important that would otherwise be missed. For example, despite its temporary nature and the absence of discrete bounding, a wave is a real phenomenon: we can see it, we can surf on it, it can knock us over.

It is reasonable to talk about “a language” in the same way that it is reasonable to talk about a wave: it represents a significantly non-random distribution of linguistic traits, just as a wave represents a significantly non-random distribution of water. Of course, reference to “a language” is misleading if allowed to invoke the idealized cognitive model of a homogeneous community in which everyone’s speech is identical and sharply distinct from the speech of outsiders. Yet avoiding this locution would be even more misleading by implying the opposite extreme: a featureless sea of variation, in which only random similarities are observed in the speech of any two individuals. There would then be nothing to describe. But in talking about a language we are usually pointing to a real phenomenon. To various degrees, individuals are organized in communities within which everyone’s speech is pretty much alike. It might even be judged “the same” for certain purposes, where a coarse-grained view is sufficient and appropriate. Also in a coarse-grained view, boundaries can be drawn on the basis of contrast with the speech in other groups, and may be valid for some purposes even if the differences are actually gradual. The bounded entities thus invoked are not fictitious – it is a significant fact about our world that, by and large, people who

speak “the same language” can communicate with one another, but not with speakers of other languages. These idealizations are not only unavoidable but useful provided that we handle them judiciously and do not confuse them with bedrock reality.²⁰

It remains true that, in absolute terms, no single entity can be identified as “language X”. So if we want to describe “the structure of language X”, what should be the target of description? All-or-nothing thinking leads to two extreme alternatives: all or nothing. Neither is very satisfactory. In principle, we could try to describe the speech of every individual, separately and in its own terms. Apart from its sheer impracticality, this option has the drawback of failing to capture the substantial convergence in their patterns of speech which allows individuals to communicate successfully. The alternative of describing nothing at all, while obviously feasible, has the more serious drawback of failing to even note the patterns, let alone capture their convergence. A third option is to give up trying to describe this non-existent entity – the absolute “language X” – and focus solely on variation. But essential though it is, variation cannot be studied exclusively: this would not provide a positive description of the patterns involved, without which variation cannot be properly characterized. Thus we keep coming back to the need for a unified description, even if its target represents a compromise or an idealization vis-à-vis absolute reality. Depending on circumstances, a number of options can be contemplated: patterns that are shared by virtually all speakers; some version of the “standard” variety; the speech of a single individual taken as being “representative” in some respect; and so on. While these are only rough approximations to the linguistic reality in all its dynamic complexity, they are considerably better than nothing at all. They also provide the basis for closer approximations. For example, having a comprehensive description of one person’s speech makes it relatively easy to work out the description of another’s.

5. Language structure

Linguists are therefore acting reasonably when, as a first approximation to describing “language X”, they describe some particular version of it. They are also acting reasonably, I suggest, when they talk about “the structure of language X”. I have further suggested that this structure emerges from usage and resides in established patterns of processing activity (conventional linguistic units). This latter point raises certain questions that we are now in a position to address.

5.1. Basic questions

The first question is whether language structure can indeed be characterized as an aspect of cognition. It bears reiterating that cognition is broadly interpreted as encompassing any kind of experience, including the guidance and registration of sensory and motor activity. It is therefore not insular (sealed inside the skull), but our primary means of engaging the world. Might we then say, as an alternative, that language structure is to be found in the world? Or in our interaction with the world? The former is not a viable option. Language consists in a means of establishing sound-meaning pairings. Sounds occur “out there”, in the world, but they do not count as the sounds of a language except by being interpreted as instances of linguistic patterns (coding). Also, if cognitive semantics has taught us anything, it is that meaning does not straightforwardly reflect the world’s actual nature, but is crucially dependent on how we apprehend and construe it. And clearly, symbolic relationships between form and meaning are not to be found “out there”, but are only established in the minds of speakers. The other option, that language structure resides in our interaction with the world, is not much different from what is being proposed: that it consists in processing activity, both central and peripheral, through which we apprehend and engage the world. An essential qualification, however, is that we do not always engage it very directly. Though grounded in sensory and motor experience, linguistic meanings routinely go far beyond it (e.g. through imaginative phenomena like fictivity, metaphor, and conceptual blending).

Another option is to locate language structure in social interaction. This too is either non-viable or not a true alternative. It is non-viable if taken as implying that cognition is irrelevant, i.e. that linguistic patterns reside solely in the social sphere and have no status, basis, or representation in the mind, brain, or cognitive processing of an individual. Obviously, it is only through cognition that people are able to engage in social interaction or use language in any patterned way. How can linguistic usage, if it leaves no trace in the processing activity of individuals, have an effect on subsequent usage? On the other hand, admitting that cognition figures in social interaction makes this option indistinguishable from the position adopted here. Linguistic units emerge from socially engaged cognition, comprising patterns of coupled activity in which each interlocutor simulates the other’s primary role. It is not a matter of choosing between cognition and social interaction: they are mutually dependent, and both are crucially involved.

If one adopts this basic outlook, certain questions remain concerning the apprehension and localization of language structure. There is first the issue of whose apprehension we are talking about: those who learn and use language,

or those who analyze this process. In talking of “units”, “patterns”, and even “structure”, we adopt the analyst’s perspective: a speaker as such has no real awareness of such entities, but has simply learned to participate effectively in coherent, meaningful linguistic interactions. Moreover, since analysts engage in different kinds and levels of analysis, they posit entities that differ in their nature and status. When linguists describe languages in the classic manner, they usually hope that the entities they postulate (e.g. phonemes, lexical items, and constructions) correspond at least roughly to something psychologically real. While this can sometimes be tested by psychological means, the further identification of linguistic elements with patterns of neural activation represents a different level of analysis and calls for different methods (e.g. computer simulation). We are, of course, a long way from being able to describe the specifics of such patterns. But even if we could, there would still be another level to deal with: the neural circuitry in which the activation patterns are manifested, being shaped and sustained by the strength of synaptic connections. What counts as “structure” is therefore rather different when viewed from these various perspectives. Still, they are all valid and hopefully consistent ways of apprehending the same overall phenomenon (Feldman 2006).

A final question is whether the term “structure” is actually appropriate. Certainly it is appropriate (at any level) if we take it in the well-established sense of merely indicating some kind of pattern, regularity, or discernible organization. At the opposite pole, the phrase “a structure” is typically construed much more narrowly: as designating a large, enduring physical entity built out of many pieces, having a definite, stable configuration of some complexity. What linguists intend in referring to “the structure of a language” is somewhere in between. Obviously, they do not take it literally as being a building-like physical object.²¹ Beyond this, they vary greatly in the extent to which the metaphorical construal is taken seriously and other building-like properties are ascribed to language.

Approaching the maximum in this respect is the classic conception of generative grammar. By assuming modularity and adopting the competence/performance distinction, it sees a grammar – like a building – as being discretely bounded and clearly distinct from its surroundings. By further abstracting away from learning, usage, and change, it portrays linguistic structure as stable and enduring.²² It fully embraces pattern and regularity (to say the very least) with its emphasis on general rules, as well as the presumption of generativity and full compositionality. And even with the limitations imposed, the grammar of a language is seen as being immensely complex.

The proposal outlined here steers a middle course between this maximal embrace of “structure” and its full rejection. Though it does posit units that are

specifically linguistic in nature, they are not exclusively linguistic (for they draw on other resources), nor do they constitute a discretely bounded set (Langacker 1987: §2.1.2). Because it consists in processing activity, linguistic structure is inherently dynamic, being realized through time. It nonetheless counts as “structure” in the ordinary sense of pattern or regularity, which often have temporal manifestation (consider rhythm, or the structure of the solar system as defined by the orbits of the planets). And while it is never static, substantial portions of language structure are sufficiently stable that speakers can use it effectively and linguists can describe it.²³ The patterns identified as linguistic units are essential for speaking and understanding (not at all epiphenomenal), but rather than being separate, distinct, or clearly delimited, they inhere in aspects of the more elaborate processing activity of actual language use. Hence they do not afford either generativity or full compositionality, and, in accordance with the usage-based approach, most have only limited generality. As for the immense complexity of language, it is not ascribed to a system of general rules characterizing purely “grammatical” structure, but rather to factors like conceptual structure, low-level patterns, inheritance networks, and the organization of complex categories.

5.2. Emergent grammar

The proposal, then, is that something reasonably called “language structure” does exist, that it emerges from usage, that it has a presence in cognition (as patterns of processing activity), and that it has a causal role in speaking and understanding. How does this compare to “emergent grammar” as described by Hopper (1998)? Though tempting, it would be simplistic to claim that emergent grammar (EG) represents the full rejection of structure. The “grammar” that Hopper rejects as “epiphenomenal” is clearly identified as the classic generative conception with its maximal embrace of structure. He describes his target as follows: “a fixed, prediscourse adult grammar” (155); “a prerequisite for discourse, a prior possession attributable in identical form to both speaker and hearer”, where “signs are equipped . . . , prior to any act of communication, with all the information necessary for their successful communicative use” (156); “a closed fixed code linking preexistent forms to preexistent meanings” (158); “a bounded object to be thought of as structure” (158); “a constant invariable code common to all acts of communication” (164).

Hopper is certainly correct to reject the classic generative conception with its maximal embrace of structure. But does EG represent the opposite extreme, the rejection of structure altogether? That depends on what he puts forth as an alternative, which is not described as precisely as one would like. For the

most part, his description is quite compatible with the intermediate position advocated here – a usage-based approach that is both dynamic and interactive. On many points, Hopper’s characterization of EG applies equally well to this position: “structure, or regularity, comes out of discourse and is shaped by discourse in an ongoing process” (156); “the sign [is] subject to the exigencies of communication”, its form and meaning being “dependent . . . on previous uses and contexts in which the current speaker has used or heard it” (157); “grammar is a vast collection of . . . subsystems” resulting from “the partial settling . . . of frequently used forms into temporary subsystems” (158); it “comes about when certain groups of forms become routinized . . . as the result of a favoring of certain types of expression” (165); “language is . . . to be viewed as a kind of pastiche, pasted together in an improvised way out of ready-made elements” (166),²⁴ “learning a language is . . . a question of . . . *expanding a repertoire of communicative contexts* . . . and new occasions of negotiation of meaning . . . occur constantly” (171).

Observe that Hopper does refer to “structure” and “regularity”, as well as the “prepatterned, prefabricated aspect of speech” (167). The key question, then, is whether cognition plays any role in this story. It might seem that it does not. Hopper does not explicitly talk about cognition or cognitive processing. Moreover, he states that “there is no room – in fact, no need – for mediation by mental structures” (167). Here, though, he is evidently equating “mental structures” with something like a generative grammar in the classic sense. And he does speak of learning and routinization, as well as “a repertoire of strategies for building discourses and reaching into memory in order to improvise and assemble them” (167). That certainly sounds like cognitive processing. What Hopper evidently has in mind is that cognition (as understood here) does have a role in language, but a very limited one: it serves only as a place of storage for previously encountered expressions. He does not acknowledge that these expressions have any significant internal structure, or that their storage and use involves anything like linguistic units or abstracted regularities. Language use is simply a matter of taking bits and pieces from stored expressions and putting them together in new combinations depending on the communicative context. If this is Hopper’s intent, and if he embraces it utterly and without qualification, then his view does indeed represent the full rejection of structure. He is then rejecting as epiphenomenal not just the archetype of a classic generative grammar, but “structural” units of any sort whatever (e.g. sounds, lexical items, even the most elemental constructions). Language, as mentally represented, is simply an unorganized collection of encountered expressions stored as completely unanalyzed wholes.²⁵

This is not the place to argue for the unworkability of this radical conception. I will merely note some respects in which Hopper strays from it in the direction of the present account. He indicates the partial analyzability of expressions by stating that certain “parts of expressions” are “frequently used” (166). Included are elements like idioms, clichés, formulas, etc., even “morphological and syntactic repetitions” (166). He speaks of “subsystems”, “small-scale temporary systematicity”, and “a spreading of systematicity from individual words, phrases, and small sets” (158, 166). Systematicity is a kind of organization (hence “structure”). Moreover, its attribution to “small sets” suggests some measure of abstraction (or at least categorization), as does reference to “groups of forms” becoming routinized and “certain types of expressions” being favored (165). In saying that “structure [is] always provisional, always negotiable” (157), Hopper is tacitly admitting that patterns can indeed be discerned.²⁶ Following Reddy (1979), he adopts the metaphor of language as a blueprint, which does not “specify every brick and every nail”, but provides “a structural outline” (170). This is reminiscent of schematization. He further talks about the perceiving of analogies (171), which presupposes the apprehension of some structural parallelism.

In sum, EG apparently does not amount to a complete rejection of structure. The challenge it poses to “structure”, and the attendant claim that grammar is epiphenomenal, are really directed at the maximal embrace of structure in classic generative syntax. It would not take much adjustment for EG to be compatible with the position outlined here, where structure emerges from usage, has a presence in cognition, and has a causal role in speaking and understanding.

6. A rule by any other name

In the classic generative conception, the “rules” of grammar consisted (at least prototypically) in fully general statements formulated as operations on strings of symbols. The grammar of a language was conceived metaphorically as a device for “constructing” expressions (giving them as “output”), with rules then serving as instructions to be followed in this process. As the constructive metaphor gradually fades from the scene (even in formalist approaches), the term “rule” loses a good deal of its original motivation. It remains useful if understood as a neutral way of referring to linguistic patterns or regularities of any sort. This is still a motivated sense by virtue of alluding to the role of established convention in determining what will be accepted as normal language use. But if “rule” is employed in this general fashion, it has to be stripped of erroneous metaphorical entailments. In particular, it must not be taken as suggesting rigidity, a central authority, explicit instructions, or a constructive view of grammar.

There is general agreement in cognitive and functional linguistics that linguistic “rules” (i.e. patterns and regularities) do not take the form of explicit instructions for constructing expressions.²⁷ There is, however, no evident consensus about the proper alternative. In Cognitive Grammar, rules assume the form of *schemas*, described metaphorically as templates. Instead of positing schemas, some theorists appeal to our general capacity for *analogy*. Another option, currently gaining in popularity, is to adopt an *exemplar* model of language structure. The last item on our agenda is to compare these approaches to determine how they actually differ, if at all.

6.1. Analogy

Appealing to analogy is not a viable substitute for linguistic analysis and description. One cannot account for the systematic productivity of language – the creation of new expressions in accordance with established convention – just by saying that a speaker stores unanalyzed expressions and produces new ones analogically. In their detailed exposition of the analogical approach, Itkonen and Haukioja (1996) make it quite clear that analogy is based on *structural similarity*, where the elements involved are interpreted as having a particular semantic and formal analysis. They cite, for example, a case advanced by generativists (Chomsky 1971; Crain and Nakayama 1987) to show that rules of grammar are “structure-dependent”. Given pairs of expressions like *The man is tall* and *Is the man tall?*, what should be the interrogative form of the more complex expression *The man who is tall is in the room?* If it only applied to unstructured sequences of words, neither analogy nor a question-deriving rule would properly distinguish the correct outcome *Is the man who is tall in the room?* from the blatantly incorrect *Is the man who tall is in the room?*. Getting it right depends on the recognition that a subject-verb relationship is pivotal and that the entire sequence *the man who is tall* functions as subject in the complex expression.

Generativists are certainly correct in pointing out the structure-dependence of many grammatical patterns.²⁸ Grammatical ability cannot just be a matter of performing analogies on stored word sequences. If the formation of new expressions is ascribed to analogy, the expressions it applies to must be taken as exhibiting a certain structure (interpretation with respect to the patterns of a language). Without the apprehension of structural similarities, there is no basis for distinguishing plausible analogies from those with no real chance of ever occurring or being interpretable if they did.

Consider the case at hand, assuming for sake of discussion that questions are categorized as extensions vis-à-vis the corresponding statements.²⁹ The basis for

analogy would then be pairs of analyzed expressions like the following, where Q indicates the interactive force of questioning: $((the\ man)_S (is)_V (tall)_X) > ((is)_V (the\ man)_S (tall)_X (Q))$; $((she)_S (has)_V (left)_X) > ((has)_V (she)_S (left)_X (Q))$; etc. Given this basis, and presented with the statement $((the\ man\ who\ is\ tall)_S (is)_V (in\ the\ room)_X)$, a speaker is presumed capable of analogically forming the proper question: $((is)_V (the\ man\ who\ is\ tall)_S (in\ the\ room)_X (Q))$. In so doing, the speaker relies on the structural similarity $((\)_S (\)_V (\)_X) > ((\)_V (\)_S (\)_X (Q))$, shared by both the original pairs and the new one. This formula makes explicit what is meant in saying that the members of the original pairs and the new one are related in “the same way”.

I suggest, however, that this structural similarity amounts to a schema instantiated by both the new and original pairs – the commonality they all exhibit when viewed at a certain level of abstraction. How might a schema differ from a “mere” structural similarity? Not by virtue of being a separate or independent structure, for as characterized here (and in Cognitive Grammar) a schema is immanent in its instantiations, consisting in certain aspects of the processing activity comprising them. Nor by virtue of being more abstract, since either a schema or a structural similarity can occupy any position along a scale of specificity. It might be proposed that a schema has some stable presence, whereas a structural similarity is apprehended only fleetingly as part of a specific usage event. Yet that is hardly a fundamental distinction – not a difference in kind, but only in degree of entrenchment. And as with any other processing activity, the exploitation of a structural similarity facilitates its subsequent exploitation and progressive entrenchment. The putative distinction therefore disappears if analogical formation shows any measure of pattern or systematicity. I conclude that, when the analogical process is made explicit, there is no real difference between invoking analogy or a schema as the means of licensing a new expression (Langacker 1987: §11.3.4).³⁰

6.2. Exemplar theory

Analogy plays a role in exemplar theory, a model of categorization that is commonly seen as an alternative to positing abstracted entities like rules or schemas (e.g. Eddington 2007). It is nicely summarized by Pierrehumbert (2001: 140–141): “In an exemplar model, each category is represented in memory by a large cloud of remembered tokens of that category. These memories are organized in a cognitive map, so that memories of highly similar instances are close to each other and memories of dissimilar instances are far apart . . . When a new token is encountered, it is classified . . . according to its similarity to the exemplars

already stored.” That is, categorization is by analogy to stored instances. Our question, then, is how such models relate to a usage-based conception in which schematization is a primary factor in categorization and language structure.

Exemplar theory is of course based on usage; it is, in fact, the ultimate usage-based approach. The hallmark of such approaches is an emphasis on the importance of low-level regularities, including specific expressions, as opposed to fully general rules. Even an extreme formulation of exemplar theory – one that posited only highly specific tokens, allowing no abstraction or analysis – would still count as a particular implementation of the usage-based outlook. But with the arguable exception of EG, it is not maintained that complex expressions are simply stored as unanalyzed wholes. Several points indicate the recognized need for analysis: the fact that categorization is a prime concern; that tokens can be elements of any size or kind (e.g. sounds, words, clauses); and that the same token can participate simultaneously in multiple categorizations. It is further acknowledged that granularity is a factor, if only due to perceptual limitations: “As a result, an individual exemplar . . . does not correspond to a single perceptual experience, but rather to an equivalence class of . . . experiences” (Pierrehumbert 2001: 141). Of course, the neutralization of fine-grained differences is just the way a schema is defined, so a sort of schematization is being admitted, even if restricted to peripheral processing. I will suggest that this is not the only sort involved.

Descriptions of exemplar theory are strikingly metaphorical. There is first the “storage” metaphor, where the mind is likened to a container, and tokens to the objects stored inside. Not entirely consistent with this is the “map” or “landscape” metaphor, where tokens occupy particular locations so that the “distance” between them can be calculated. And rather than being randomly distributed, tokens form “clouds” or “clusters”. If they are taken too literally, these metaphors are misleading. The mind is not a container, and tokens are not discrete objects stored inside it. Nor does a token occupy a single, point-like location in the brain. I recognize the power and utility of these metaphors, and I am not saying that anyone has seriously been misled by them. Still, theoretical approaches are best compared on the basis of the actual claims being made, not their metaphorical packaging. It is not being claimed that an instance of language use results in discrete objects being placed at particular locations in the brain. What really happens, presumably, is that neural activity induces a slight adjustment in the “strength” of synaptic connections and thereby has some influence on subsequent activity.

6.3. Comparison

In comparing the exemplar-based and schema-based approaches, it is essential to be aware of the metaphors standardly used in thinking and talking about them. I have just commented on the metaphors employed by the former. With respect to the latter, I have myself been guilty of misleading metaphor, notably in describing complex categories as “networks” and representing schemas as separate “boxes”. The network metaphor is overly discrete; I have suggested replacing it with the metaphor of a topographic map, showing a continuous landscape with peaks rising to different elevations – or alternatively, with valleys descending to different depths – corresponding to salience or degrees of entrenchment (Langacker 2006). Especially misleading (though helpful for certain purposes) is the representation of a schema as a separate box. This suggests that it is static as well as distinct from its instantiations, when it is actually conceived as being dynamic and immanent in its instantiations.

As just noted, the schema-based and exemplar-based approaches both invoke the metaphor of a landscape or topographic map. This metaphor is widely and usefully employed in neural-network processing to describe and analyze the behavior of dynamic systems. Suppose there are n processing units, each with a range of possible levels of activation. These define an n -dimensional “space”, where each “location” corresponds to a possible “state” of the system. As processing proceeds, the system is thought of metaphorically as “moving” through this space, its location at a given instant depending on the activation levels of all the units. For convenience, the space is usually conceptualized and diagrammed as a two-dimensional landscape. A third dimension (“verticality”) is then added to represent processing ease, the likelihood of the system occupying a particular location or moving from one to another. Here the usual metaphor is that of a marble rolling along a smooth surface pock-marked with depressions of different sizes, depths, and degrees of curvature. Using a force-dynamic metaphor, these depressions are described as “attractors” in the state space, their depth corresponding to the strength of their attractive force.

When viewed from this perspective, exemplar theory takes on a different appearance. We no longer have the static image of a token being stored at a particular location. Indeed, tokens per se are not represented in the dynamic image of the system moving through state space. They do however figure implicitly in this conception. The occurrence of a token corresponds to the system occupying a particular location at a particular point in time.³¹ And that is all a token actually is: a transient processing *occurrence*. Strictly speaking, it does not endure and cannot be stored. It does however have an enduring effect. By the usual mechanism – an adjustment in connection weights – it leaves a trace

that can influence subsequent processing. In terms of the state-space metaphor, it slightly alters the contour of the landscape, making it easier for the system to reach or approach the same location. Cumulatively, therefore, a large number of similar occurrences carve out a notable depression in the landscape, i.e. a strong attractor.

I doubt that exemplar theorists would voice much disagreement with this interpretation. The “large cloud of remembered tokens” constituting a category can be identified with the large number of processing occurrences responsible for carving out a depression. Whether the tokens are tightly or loosely clustered corresponds to whether the depression is more like a well or like a basin. The depth of the depression at a given point corresponds to the “strength” (or resting activation level) of a given exemplar, which is factored into the computation of distances (Pierrehumbert 2001: 141). It is not clear how seriously exemplar theorists subscribe to a particular entailment of the storage metaphor: that every single stored token can be retrieved in all its specific detail. It is hard to believe, for example, that we retain “detailed perceptual memories” of all the many thousands of individual occurrences of a certain sound. Pierrehumbert (2001: 143) wisely offers a qualification: “The memories are granularized as a function of the acuity of the perceptual system (and possibly as a function of additional factors).” The degree of granularization is not a fundamental issue, however. The state-space metaphor readily accommodates the possibility of a large number of exemplars – or equivalence classes of exemplars – having some kind of individual representation. These would simply take the form of individual, point-like depressions embedded in the surface of the wider depression corresponding to the cloud (or category) as a whole.

Let us now interpret the schema-based approach in terms of the state-space metaphor. Since linguistic elements of any sort consist in patterns of activation, they correspond to locations in state space.³² The occurrence of a pattern leaves a trace (in adjusted connection weights) that facilitates the subsequent occurrence of the same or a similar pattern. In terms of the metaphor, its occurrence contributes to the creation of a depression centered on its location in state space. A large number of similar tokens therefore have the cumulative effect of carving out a depression in the region encompassing them. The depression is more well-like (deep and compact) when the tokens are all highly similar, more basin-like (shallow and broad) when they exhibit only a tenuous similarity. The abstraction of a schema is simply the carving out of a depression, with degree of schematization corresponding to its size. That is, the emergence of a schema consists in the reinforcement of processing activity defining either a broader or a more compact region in state space. Naturally, the depressions carved by usage in the landscape vary greatly in their specific configuration and are often

quite complex; there may, for example, be compact wells within a broader basin, and more point-like depressions within either one. Area corresponds to levels of abstraction: schemas, subschemas, and even particular instances.

It should be evident that I have just told the same story twice. When stripped of their metaphorical clothing – or rather, when the same metaphor is used to clothe them – the exemplar-based and schema-based approaches are essentially equivalent.³³ Moreover, an analogical account need not be any different, when the basis for analogy is made explicit. I am not suggesting that these approaches are indistinguishable; there are differences in emphasis, detail, and methodology which make them worth pursuing in parallel. But this should not mislead us into thinking that there is necessarily any basic disagreement.

Notes

1. In the early days of transformational grammar, I recall someone seriously posing the question of what happened to the elements cut off by deletion rules (as if they might clog the derivational machinery).
2. That is, the discipline itself is more aptly viewed in terms of continuity and dynamism.
3. For present purposes we need not be concerned with whether apprehended structures have any kind of objective existence or whether the world has a “true nature” independent of its apprehension by subjects. We can simply assume that there is a real world, that subjects are attuned to certain aspects of it, and that the structures they apprehend have sufficient veridicality to let them cope with it successfully.
4. Indeed, likelihood of comparison provides an abstract basis for defining proximity.
5. Importantly, this low-level “apprehension” is not the same as conscious reflection about the spatial relationships or the formulation of propositions concerning them. These involve additional factors at higher levels of cognition.
6. To a lesser extent, a smoothly curved line is also “regular”. This is due to comparison at a higher level still, where continuity is registered in regard to the degree of change of direction.
7. For example, perceiving a dot bears at least a functional similarity to the discourse-level process of comparing two sentences in order to determine what stands out as different (i.e. as focus or new information) in the second.
8. From the standpoint of the subject, this is not *recurrence* in the sense that processing events are compared and assessed as being the same; “learning” implies a time scale large enough that the events constitute separate experiential episodes. The “pattern” is only evident to an imagined outside observer whose field encompasses a long enough time span to accommodate the multiple occurrences involved in learning and subsequent behavior.

9. I do not regard this as a categorical distinction, since entrenchment is a matter of degree and use serves to further reinforce a unit (or at least prevent its decay).
10. Although we started with a single sound for sake of exposition, I am not suggesting that phonological learning begins with individual sound segments (if anything, syllables are a more promising candidate). More generally, structures become more complex not only via the combination of simpler structures, but also through the subsequent analysis of configurations originally learned holistically.
11. The same holds for “conceptualization”, identified as the basis of meaning in Cognitive Grammar and cognitive semantics.
12. Streamlining is a well-known and very general phenomenon. In learning to type, for example, we achieve greater efficiency by integrating separate gestures (e.g. first typing K, resetting, and then typing L) into a single, integrated gesture that overall involves less motion and more rapid execution. Although it has not been emphasized in Cognitive Grammar, streamlining can be recognized as an inherent aspect of the automatization and entrenchment giving rise to linguistic units. It is one factor contributing to diminished analyzability.
13. I am of course referring to Cognitive Grammar (Langacker 1987, 1991, 2008). Extensive research over the course of three decades has demonstrated the viability of this framework and applied it successfully to a wide range of phenomena in numerous languages.
14. The parentheses represent the entire configuration of constructional schema plus instantiating units. They are used instead of brackets to indicate that the overall configuration is novel, even though its components – including the schema – are all well entrenched. With repetition, of course, the entire structure can be established as a unit: [[[A]_{Σ1} [B]_{Σ2}]].
15. This is comparable to Feldman’s notion that “neural computation involves *continuously finding a best match* between the inputs and current brain state” (2006: 5). Though rudimentary at best, the account sketched here is broadly compatible with Feldman’s neural theory of language. (See also Lakoff and Johnson 1999: Appendix.)
16. A case in point is the failure to notice errors while proofreading.
17. As defined, [S >] incorporates [S] in the sense of invoking it while nonetheless subverting its full implementation. The connection with [S] may eventually be lost through a kind of streamlining, whereby the adjusted processing pattern comes to be directly activated.
18. Another basic issue, the absence of any specific boundary between language and other facets of cognition, is addressed in Langacker 1987 and 2008.
19. Lacking omniscience, we can only deal with the world as it presents itself to us, or as we ourselves construct it (physically, mentally, or socially).
20. The same holds for the idealizations inherent in the family tree model of genetic relationships (Langacker 2006), as well as the stability presupposed for purposes of “purely synchronic” description. This is not to say, of course, that the privilege of idealization is never abused.
21. Thus it is not usual to describe a language as “a structure”.

22. It is not denied that a language is learned, is used, and changes. The claim is rather that a synchronic description of the adult linguistic system is prerequisite for investigating these phenomena.
23. Some time will pass before you read these words I am writing, but I still expect you to be able to do so.
24. Cf. Langacker 1987: §1.2.2.
25. Technically this would still be compatible with the position outlined here, representing the limiting case where the only units posited are full expressions. If their storage is seen as temporary, they can be regarded as units with a rapid rate of decay.
26. Their provisional and negotiable nature does not however entail that they are “epiphenomenal . . . an effect rather than a cause” (157). It is simply gratuitous to assume that they have no effect on language use.
27. The “instructional” approach suggested by Harder (1996: 214–218) is no exception, as the instructions in question are not rules for constructing expressions. Rather, linguistic meanings are instructions for “the addressee to carry out a sense-making operation” (215). This is perfectly consistent with their characterization in Cognitive Grammar (Langacker 2008: 460).
28. This does not however argue for constructive rules, autonomous syntax, or an innate universal grammar. A framework that rejects them all (e.g. Cognitive Grammar) is still capable of describing grammatical structure.
29. This is not the same as deriving them from “underlying” statements (Langacker 1987: §11.3.3), but it does capture the evident insight of the transformational account. While the statement and question patterns are separate, parallel constructions (neither derived from the other), they can perfectly well be related to one another, in which case the statement form is unmarked or prototypical.
30. Either way it is just a matter of coactivation. For instance, the question $((is)_V (the\ man\ who\ is\ tall)_S (in\ the\ room)_X (Q))$ results from activating the pattern $((()_S ()_V ()_X) > (()_V ()_S ()_X (Q)))$ in the special context where $(()_S ()_V ()_X)$ is immanent in the active structure $((the\ man\ who\ is\ tall)_S (is)_V (in\ the\ room)_X)$.
31. Certain qualifications are needed here. The location in question may be defined in terms of only a subset of dimensions in the state space, since only certain processing units are relevant for the activity the token consists in. And because this activity unfolds through time in a way that is often critical to a token’s linguistic import, in general it represents a *trajectory* through state space, not just a single location (Elman 1990).
32. More accurately, they correspond to trajectories through it (fn. 31). Talking just about locations makes for simpler exposition and does not affect the basic argument. I cannot resist pointing out, however, that since units are trajectories in state space, carving out a depression is actually akin to digging a trench. The term *entrenchment* is thus well-motivated.
33. I thus agree with Roehr (2008) about the desirability and possibility of a model that combines the virtues of the two approaches. Such a model is not however a “hybrid”, as they are fundamentally the same to begin with.

References

- Barlow, Michael and Suzanne Kemmer (eds.)
2000 *Usage-Based Models of Language*. Stanford: CSLI Publications.
- Bybee, Joan and Paul Hopper (eds.)
2001 *Frequency and the Emergence of Linguistic Structure*. (Typological Studies in Language 45.) Amsterdam/Philadelphia: John Benjamins.
- Chomsky, Noam
1971 *Problems of Knowledge and Freedom*. New York: Pantheon Books.
- Crain, Stephen and Minehara Nakayama
1987 Structure dependence in grammar formation. *Language* 63: 522–543.
- Eddington, David
2007 Flaps and other variants of /t/ in American English: Allophonic distribution without constraints, rules, or abstractions. *Cognitive Linguistics* 18: 23–46.
- Elman, Jeffrey L.
1990 Finding structure in time. *Cognitive Science* 14: 179–211.
- Fauconnier, Gilles and Mark Turner
2002 *The Way We Think: Conceptual Blending and the Mind's Hidden Complexities*. New York: Basic Books.
- Feldman, Jerome A.
2006 *From Molecule to Metaphor: A Neural Theory of Language*. Cambridge, MA/London: MIT Press/Bradford.
- Fodor, Jerry A.
1983 *The Modularity of Mind*. Cambridge, MA/London: MIT Press/Bradford.
- Frank, Roslyn M., René Dirven, Tom Ziemke and Enrique Bernárdez (eds.)
2008 *Body, Language and Mind*, vol. 2, *Sociocultural Situatedness*. (Cognitive Linguistics Research 35.2.) Berlin/New York: Mouton de Gruyter.
- Goldberg, Adele E.
1995 *Constructions: A Construction Grammar Approach to Argument Structure*. Chicago/London: University of Chicago Press.
- Harder, Peter
1996 *Functional Semantics: A Theory of Meaning, Structure and Tense in English*. (Trends in Linguistics Studies and Monographs 87.) Berlin/New York: Mouton de Gruyter.
- Hebb, D. O.
1961 *The Organization of Behavior: A Neuropsychological Theory*. New York: John Wiley & Sons. Science Editions.
- Hopper, Paul J.
1987 Emergent grammar. *Proceedings of the Annual Meeting of the Berkeley Linguistics Society* 13: 139–157.

- Hopper, Paul J.
 1998 Emergent grammar. In: Michael Tomasello (ed.), *The New Psychology of Language: Cognitive and Functional Approaches to Language Structure*, 155–175. Mahwah, NJ/London: Erlbaum.
- Itkonen, Esa and Jussi Haukioja
 1996 A rehabilitation of analogy in syntax (and elsewhere). In: András Kertész (ed.), *Metalinguistik im Wandel: Die 'Kognitive Wende' in Wissenschaftstheorie und Linguistik*, 131–177. Frankfurt am Main/New York: Peter Lang.
- Lakoff, George and Mark Johnson
 1980 *Metaphors We Live By*. Chicago/London: University of Chicago Press.
- Lakoff, George and Mark Johnson
 1999 *Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought*. New York: Basic Books.
- Lakoff, George and Rafael E. Núñez
 2000 *Where Mathematics Comes From: How the Embodied Mind Brings Mathematics into Being*. New York: Basic Books.
- Langacker, Ronald W.
 1987 *Foundations of Cognitive Grammar*, vol. 1, *Theoretical Prerequisites*. Stanford: Stanford University Press.
- Langacker, Ronald W.
 1991 *Foundations of Cognitive Grammar*, vol. 2, *Descriptive Application*. Stanford: Stanford University Press.
- Langacker, Ronald W.
 2000 A dynamic usage-based model. In: Michael Barlow and Suzanne Kemmer (eds.), *Usage-Based Models of Language*, 1–63. Stanford: CSLI Publications.
- Langacker, Ronald W.
 2006 On the continuous debate about discreteness. *Cognitive Linguistics* 17: 107–151.
- Langacker, Ronald W.
 2008 *Cognitive Grammar: A Basic Introduction*. New York: Oxford University Press.
- Langacker, Ronald W.
 2009 Constructions and constructional meaning. In: Vyvyan Evans and Stéphanie Pourcel (eds.), *New Directions in Cognitive Linguistics*, 225–267. (Human Cognitive Processing 24.) Amsterdam/Philadelphia: John Benjamins.
- Pierrehumbert, Janet B.
 2001 Exemplar dynamics: Word frequency, lenition and contrast. In: Joan Bybee and Paul Hopper (eds.), *Frequency and the Emergence of Linguistic Structure*, 137–157. (Typological Studies in Language 45.) Amsterdam/Philadelphia: John Benjamins.

- Reddy, Michael J.
1979 The conduit metaphor – A case of frame conflict in our language about language. In: Andrew Ortony (ed.), *Metaphor and Thought*, 284–324. Cambridge: Cambridge University Press.
- Roehr, Karen
2008 Linguistic and metalinguistic categories in second language learning. *Cognitive Linguistics* 19: 67–106.
- Taylor, John R.
2004 *Linguistic Categorization: Prototypes in Linguistic Theory*. Third edition. Oxford: Oxford University Press/Clarendon.
- Tomasello, Michael
2003 *Constructing a Language: A Usage-Based Theory of Language Acquisition*. Cambridge, MA/London: Harvard University Press.
- Ziemke, Tom, Jordan Zlatev and Roslyn M. Frank (eds.)
2007 *Body, Language and Mind*, vol. 1, *Embodiment*. (Cognitive Linguistics Research 35.1.) Berlin/New York: Mouton de Gruyter.

Paradigmatic structure in a usage-based theory of grammaticalisation

Lars Heltoft

1. Introduction

In the present article I shall discuss one particular aspect of linguistic structure, namely paradigmatic organisation principles. I shall argue in favour of paradigms and paradigmatic structure as necessary parts of any theory of grammaticalisation and as necessary parts of any functional content-based grammar. Paradigms are closed sets of alternating options within a semantic frame.

My main claim will be that paradigmatic structure can – *mutatis mutandis* – be generalised from morphology to syntax, and under the heading of ‘syntax’ I include both word order – or topology, henceforth – and constructional syntax. Both topological oppositions and constructional oppositions organise in paradigms, and my focus will be on the latter. The fundamentals of morphology are also relevant as organising principles for constructional syntax. There are of course differences of expression, and constructions are not syntagmatically framed in exactly the same sense as inflexional paradigms, but constructional oppositions can be characterised in terms of closed sets of meaning oppositions.

Constructions contain more or less complex syntagmatic structures, often compositional according to general syntactic rules – but constructions are not just expression phenomena: They are complex conventionally coded signs, and so far we are not at variance with construction grammar (Goldberg 1995, 1998, and Croft 2001). But the point can be taken further: Constructions are coded according to principles that bear resemblance to those already known from morphology.

A level of structure is also a precondition for any distinction between usage processes that concern the lexical level only, and those usage processes that lead to grammaticalisation (grammation, regrammation or degrammation, in the sense of Andersen 2006).

From the point of view of American functionalism, my title may seem to be a contradiction in terms. According to Hopper (1998), grammar is emergent in the sense of being always shaped and reshaped by usage, and ‘emergent’

instead of ‘emerging’ because grammar is always in the process of emerging. ‘Emergent structure’ is “always in flux“, and structure is provisional, “in fact epiphenomenal, that is, as an effect, rather than as a cause” (1998:157). In Hopper’s view, structure is in opposition to structure as “a fixed code” that is assumed to be there “at the outset, prior to any act of communication” (156), a position that is ascribed to “standard approaches to linguistic data, both those that call themselves “formal” and those that call themselves “functional”” (156).¹

A paradigm in the sense I shall use this word is certainly meant as a tool for describing or reconstructing the common grammatical preconditions for the use of a particular language. Language users of a given linguistic community will always face their language as something objective, in the sense that they are not free to bend its signs at their will. For actual usage to take place a level of structure is always presupposed, an insight that was already there in Saussurean structuralism and that can in modern times be sharpened by pointing to the double-sided nature of the relationship. ‘Structure’ is to be read, then, in the wake of European structuralism, as structural form, not as syntagmatic structure alone, and ‘form’ again as referring to organisation of expression *and* content, not in the Anglo-Saxon sense of expression systems alone, see further the preface to Engberg-Pedersen et al. (1996) and Harder (1996bc).

Usage-based functional grammars must reflect the insight that ‘structure is distilled out of, but simultaneously presupposed by, usage’ (Boye and Harder 2007:570). The same demand will apply to any theory of diachronic grammaticalisation, since changes are always initiated in usage as (faulty) hypotheses of structure that become adopted by speakers. The central concept to relate usage and structure in diachrony is the concept of reanalysis. I rely on the semantically oriented notion of reanalysis as put forward by Andersen (2001ab, 2006). Reanalysis takes place in usage and always takes the form of an abductive guess as to what rule or principle the relevant (part of) an utterance is an instance of.

Paradigmatic relations are (with their syntagmatic counterparts) the cornerstones of classical structuralism. It is not surprising, however, that – given the focus on syntagmatic relations in formal syntactic theories and the bracketing of semantic issues – the concept of a paradigm has been absent from those theories. The more striking is the minor role that this concept plays in American functionalism. The word ‘paradigm’ is absent from for instance Bybee, Perkins and Pagliuca (1993), and expectedly so, since these authors subscribe to the view that structure is epiphenomenal (1993:1), and in Givón (1995) the central wording ‘taking structure seriously’ refers to syntactic structure in a mainly syntagmatic sense. It is there in Bybee (1985:49–79) as clusters of surface forms, with certain types of relations among them (‘basic and derived form’, ‘degrees of relatedness’), but a paradigm is not viewed as a semantic organisation principle

for the content of the paradigm. My claim will be that paradigmatic relations are found everywhere in grammar ('grammar' in the widest sense), and it follows that they cannot sensibly be bracketed from the study of syntax.

Paradigmatic relations (*les relations associatives* of Saussure) can grammaticalise and they do so in closed sets of oppositions, another classical insight, cf. recently Andersen's (2006) suggestions for a clearer terminology in the theory of grammatical change. For a set of items to be grammaticalised, they must form a closed paradigmatic set. Structuralism extracted this insight from morphology and this led to more explicit distinctions between the terminological heirlooms such as roots, derivatives and endings: derivational and inflexional affixes are organised in closed paradigmatic sets and they were as such singled out from 'free morphemes'. In American structural linguistics, free morphemes equalled 'semantic morphemes', a reflection of the still widespread idea that grammatical morphology is a system of wellformedness restrictions applying to the expression side only, a formal system to polish the output surface of sentences.² An influential European trend (Haspelmath 2002) acknowledges that morphemes bear meaning, but the concept of a paradigm is traditional in that paradigms concern word-forms (2002:14).³

Grammatical paradigms, however, always organise meaning, if conceived of in the Saussurean vein. The traditional concept of a paradigm (a 'pattern' or 'model') was formed from the expression side and applied to a frame: a syntagmatic context in the shape of a word stem to be declined or conjugated, and even Saussurean linguistics is in line with this tradition in ascribing content to a paradigm that is ultimately delimited through its expression frame: the word stem inflected. For a more detailed discussion of the senses in which a paradigm can be content-based, see Heltoft 1996, and for an updated view of grammatical change based on the concept of a paradigm, see Nørgård-Sørensen, Heltoft and Schøsler (to appear).

2. Morphology-based structure

In Heltoft (1996) I argued that morphological paradigms should be thoroughly analysed not only as expression systems, but in particular from the content side. I stressed the need to look for common denominators of content, that is, for a common semantic frame articulated by the members of the paradigm, and again, the relations between the members were relations of markedness, that is, inclusive ones, a well-known point from the heyday of Hjelmslevian structuralism (Hjelmslev 1935–37:102, and 1973 [1933]:70–74). This point is not trivial, however, in relation to models that downplay the semantic role of morphology.

As an example, the purported three member pronominal case systems of Danish and English were analysed, leading to the conclusion that the genitive should be separated from case proper (nominative and oblique case), since the genitive does not define argument functions, as different from case in classical case languages (Latin, Greek, Finnish, Old Scandinavian, etc.). The genitive, instead, converts NPs to predicative complements and determiners; English has further differentiated the results of these conversion processes by distinguishing predication and determination: *hers* (predicative) vs. *her* (determiner). I suggested that such content analyses could be used as a criterion for checking and revising traditionally recognised paradigms, that is, as a method to unveil instances of ‘squinting grammar’: analyses copied from tradition, intended or not.

Instead of the traditional lists of three ‘cases’, I suggested with Aage Hansen (1956) for Danish that two distinct paradigms should be recognised, a case paradigm, distinguishing only nominative and accusative:

- (1) nominative *hun* ‘she’
 oblique *hende* ‘her’

and another paradigm the semantic frame of which is category-shifting: namely of arguments into non-arguments (determiners or predicative complements). This paradigm is also found with non-pronominal NPs:

- (2) a. non-genitive *hun/hende* ‘she/her’ (argument)
 genitive *hendes* ‘her/hers’ (determiner/predicative)
 b. non-genitive *huset* ‘the house’
 [hus-et] (NP definite form)
 c. genitive *husets* ‘the house’s/of the house’
 [hus-et]-s (determiner/predicative)

Strictly speaking, this means that only pronominal NPs have a case distinction in Modern Danish. Thus, neither in Danish nor in English is the genitive a member of the category of case.

The remaining case opposition is between the nominative and the oblique case, see (3), and I shall specify this opposition in order to pinpoint a central feature of the organisation of morphological content. After 1800, the content of the nominative has added a feature of cohesion to its content, by specialising from the classical function of expressing the subject to also marking anaphoric subjects, in the sense that non-anaphoric subjects take the oblique case.

- (3) *Strindberg og Ibsen kunne bruge vores kulturs ældst kendte dramainorm til at udtrykke*

<Strindberg and Ibsen could employ our culture's oldest known dramatic norm to express

protesten i. Dem de
 their protest>. pron-3PL.OBL pron-3PL.NOM

protesterer mod, romantikerne, har jo nemlig forladt den
 protest against, the romanticists, have particles abandoned it

'For those they protest against, the romanticists, have indeed abandoned it.'
 Thomas Bredsdorff: *Magtspil* 105

Similarly, in the 3rd person singular:

- (4) *ham hun protesterer imod, har forladt denne norm*

he-OBL she-NOM protests against has abandoned this norm

'he who she protests against has abandoned this norm'

Examples (3)–(4) show non-anaphoric subjects. The subject pronoun must be in the oblique case form. At the expression side, there is no morphological change. Only the content articulation has changed, resulting in an extra semantic opposition to combine with the opposition subject vs. non-subject.

- | | | |
|-----|------------------------|---------------------|
| (5) | Nominative form | Oblique form |
| A. | + subject | non-subject |
| | and | and / or |
| B. | + anaphoric | non-anaphoric |

The nominative case is doubly marked since both content parameters have the positive value. For the oblique form to apply, only one of the content parameters needs to be selected, meaning that non-subjects and non-anaphoric pronominal NPs are always in the oblique form, for example predicative complements (non-anaphoric and non-subject) and objects (anaphoric and non-subject).

- (6) *Det var hende. Jeg så hende.*

It was she-OBL I saw she-OBL

'It was her. I saw her'

The point of this analysis is the semantic relations between the nominative and the oblique form. I shall state them in terms of markedness relations, stressing that the point is the substantial semantic division of labour between the case forms. Markedness is a way of handling these facts, and theories without such

a concept will want alternative ways of conceptualising such phenomena. The nominative form is the marked term, in that it must signal the positive value of both dimensions (AB). The oblique form is unmarked in both dimensions, and the terms non-A and non-B mean that in neither dimension is the positive meaning necessary: The oblique form can be the subject case, but it need not be; it can be anaphoric, but again, it need not be. In both dimensions, we find the asymmetrical or inclusive relation characteristic of morphological relations in natural language, see Andersen (2001a) for a detailed analysis, including the reception of markedness in American functionalism by Givón.⁴

3. Constructionally based structure

In Heltoft (1996) I further used the concept of a grammatical paradigm to formulate a criterion for ascribing grammaticalised status to linguistic elements, that is, to those that occur as productive options in closed paradigms. Such paradigms are grammaticalised in a language, and the processes that create them, restructure them, or dismantle them are diachronic processes of grammaticalisation. I explicitly discussed the paradigmatic organisation of word order options and pointed on to areas of construction that would seem equally feasible to analysis in terms of paradigmatic organisation, namely for example oppositions between locative constructions and prepositional recipient constructions (Heltoft 1996:477). Danish distinguishes locative patterns from recipient-patterns, both by way of word order and by way of unit accentuation, a stress reduction phenomenon that manifests complex constituent formation. The locative predicate complement construction carries stress reduction on the finite verb *0sendte* ‘sent’, manifesting the complex predicate *0sendte til Køben'havn* ‘sent to Copenhagen’:

- (7) *de 0sendte pakken til Køben'havn*
 they send-PAST the parcel to Copenhagen
 ‘they sent the parcel to Copenhagen’

The locative argument *til Køben'havn* ‘to Copenhagen’ is packed up with the verb to form a complex predicate (Hengeveld 1986, Dik 1989), yielding the analysis:

- (8) de_{A1} [_{P1} *0sendte* [_A *til Køben'havn*]] $pakken_{A2}$

Example (9), however, has full stress on the finite verb and is a three argument construction with an A3 referent described as a Recipient.

- (9) *de* 'sendte *pakken* *til* 'Lone
 they send-PAST the parcel to Lone [a girl's name]
 'they sent the parcel to Lone'
- (10) *de*_{A1} [_{P1}'sendte] *pakken*_{A2} *til* 'Lone_{A3}

Notice the lexical similarity between the constructions. The verb stem is deliberately kept neutral, and also the directional preposition *til* 'to' is lexically neutral. The constructional options involved are quite general where unit accentuation and complex constituent formation are concerned, and they are in no way lexically conditioned, nor governed by the verb stem. Choosing the stem *send-*, however, will trigger the constructional contrast between complex predicate formation and a simple verbal predicate. The similarity to morphological paradigms is obvious, since the opposition is a closed paradigmatic set.

An obvious comparison would be case languages with an allative vs. dative opposition. Such similarities should not, however, lure us into thinking that where semantics is concerned we are just dealing with alternative expression systems of the same cognitive content. The construction systems have their own content coding options not found in the case system of, say, Finnish, and these belong to the language specific content structure of Danish (or to Danish content form, as structuralism would have it). Of course, at the level of cognitive and communicative substance, Finnish and Danish enable speakers to carry out the same communicative tasks, for practical purposes; this, however, is not equal to saying that their content systems are identical. And again, whereas Finnish and Danish can be used to evoke the same meanings (intended meanings), putting these two languages to use will entail drawing on encoded meanings (conventionally encoded senses).

Some functionalists (Goldberg, Taylor, and Croft) have taken a version of the constructionalist stand that I shall name – possibly somewhat provocatively – lexicalism, meaning that the lexical idiom is taken as the starting point for the understanding of constructions. In the development of American construction grammar, lexical idioms were a central point of departure, since these did not lend themselves to compositional analysis in Chomskian syntactic terms. Word classes, idioms, and systematically constructed phrases are all constructions. Expressions like *kick the bucket* are lexical idioms, *kick somebody* is a productive, constructional extension of V, a pattern into which the verb stem *kick* will fit, but the pattern has a meaning of its own, irreducible to the semantics of particular word stems.

Instead of this attempt at a lexical generalisation I shall suggest that constructions should be distinguished in principle from lexical classes. The concept

of a construction does not arise from generalisation of the concept of a lexical class, it is a different one. Some traditional constructions such as existential and presentative constructions or cleft-sentences do not bear any obvious resemblance to patterns defined by words or verb stems in particular, so-called valency patterns; and the valency patterns of particular verbs do not always fit very well with their constructional frame,⁵ see in section 5.1 the comments on for instance the Danish verb *bebrejde* ‘reproach’.

The view that constructions organise in paradigms in a way analogous to morphology has been further developed recently in Nørgård-Sørensen, Heltoft and Schøsler (to appear).

4. The frame structure of paradigms

A usage-based theory that recognises a level of language specific structure presupposed by any usage will call for answers to the question what the grammatical items (morphological, topological or constructional) can and must mean in a given language. Again, we must confront the necessity of generalising along the negative borders of the sign, as did the structuralists in consequence of their view that linguistic items were negatively defined solely.

The stance I shall defend is not identical to the classical structuralist position. I shall suggest that within the ‘emic’ units of particular languages we recognise a structure of semantic variants that could be very well described in terms of prototypical structure, as the core variant and peripheral variants of the category member, reflected at the level of usage as core usage and peripheral usage.

Recognising this level of prototypical organisation of categories does not, however, make superfluous the search for a basic meaning of a category, in the sense of a maximally general formulation of its meaning at a given stage of the development of the language in question. This does not imply that we must assume the limits of categories to be necessarily ‘sharp’ and never fuzzy. Formulating a basic meaning of a category is an attempt to generalise across even prominent variant functions of a sign in order to capture its semantic width. To give an example, I shall briefly mention tense in Danish, a category that will upon scrutiny turn out to be not a grammaticalised category of time only, but a category neutral to traditional distinctions between tense and mood. The past form can in context be brought to refer to time distinctions in the actual world, but it can equally well be brought to refer to hypothetical scenarios with no past anchoring and to counterfactual scenarios as well. The following example shows a change from time anchoring to the modal or hypothetical use:

- (11) *Hun vidste, at hun ikke kunne noget dansk, men hun overbeviste sig selv om,*
 She knew (time) that she knew (time) no Danish, but she convinced (time) herself

at hvis hun nu sagde noget, der kunne være dansk, så ville hun lære det.

that if she said (modal) something that could (modal) be Danish, then she would learn (future in the modal universe) it.

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This change has no reflection at the expression side, and thus, the category is neutral to the time vs. modality distinction that is easily recognisable in usage. Typologically, this shows us that Danish has no tense category, but something more abstract: ‘Distance from the world of the speech event’, it has been suggested (Danish grammarian H. G. Wivel 1901), and Danish would seem to have a proximality distinction, not a tense distinction. Diachronically, this analysis makes nonsense of the traditional claim that Danish has lost the subjunctive mood. Danish lost the indicative vs. subjunctive distinction and this was replaced by a more abstract category of proximality. The time usage and the modality usage of the proximality system reflect variants at the level of structure, not an ‘emic’ difference. Nothing prevents us from viewing ‘time’ as the prototypical variant, but it is part of our task to study empirically how the sign relation delimits the linguistic category. Time anchoring and modality are always cognitively and communicatively important, and in many languages such distinctions grammaticalise to a large extent. But they do not grammaticalise in the Danish proximality system.

5. Ditransitive constructions and their development

An instructive example of the paradigmatic organisation of constructions is the semantics of so-called ditransitive or indirect object constructions. Taylor (1989, 1998) deals with constructions as prototype categories, acknowledging that constructions have content, and claiming that their content can be described in terms of prototype effects. A recurring example is the following which he quotes from Goldberg, example (12).

- (12) a. *Joe baked a cake*
 b. *Joe baked Sally a cake*

Taylor's first and best formulation of its meaning is that:

“The general meaning of the double object construction is that one entity (designated by NP₁) intends to benefit NP₂, by acting on NP₃ in such a way that NP₂ comes to have access to NP₃”. (Taylor 1998:178).

Later, he offers the following, including a description in terms of semantic roles:

(...) in the transitive construction [NP₁-V-NP₂], an agent, NP₁, effects a change-in-state in the patient, NP₂. The distinctive feature of double object constructions [NP₁-V-NP₂-NP₃] is that the first post verbal nominal designates, prototypically, a benefactor⁶; it is, namely, the intention of the agent, NP₁, that the benefactor NP₂, should come to have access to the patient, NP₃, as a consequence of the agent's manipulation of the patient. (Taylor 1998:189–90)

I read these as suggestions for a general description of the meaning of the English construction. There is a paradigmatic relation between (12b) and (13):

(13) *Joe baked a cake for Sally*

We can assume that the referent of Sally is to be described as a Beneficiary in both cases; in neither version are we told whether Sally received the cake in her hands or had access to it. A transfer-reading will be frequent in context, but the construction's coding does not restrict us to the transfer reading. Of the two possible readings of *for* in (13) 'for Sally to possess' and 'on behalf of Sally', only the former is part of the paradigmatic organisation with the NP₂-indirect object construction.

Danish and English have similar indirect object constructions as long as we focus on the expression side only, but in Danish the so-called free indirect object as in the English example (12b) is no longer as freely usable as in earlier stages of Danish. It has a very low frequency in the modern language; a good 19th century example would be (14):

(14) (...) *derfor vilde jeg lette hende Livet* (..)

therefore wanted I smoothen her life-DEF

Jeg byggede hende en Lykke-Verden

'I was building her a world of happiness'

'Therefore I wanted to make life easier for her; I was building her a

world of happiness' Vilhelm Bergsøe, ADL

In 18th century Danish the indirect object (NP₂) had an even wider range of application. J. P. Høysgaard, 18th century grammarian, lists the examples below (Høysgaard 1752:107–108), including the semantic role of a Dative of interest. Whereas the Beneficiary readings can be stipulated, in accordance with Taylor's

description, to always convey at least virtual transfer and possession, the Dative of interest has no such relations.

- (15) a. *Han skal løse os knuden*
 he must loosen us the knot
 ‘He must untie the knot for us’
 b. *åbne nogen en dør*
 open somebody a door
 ‘open a door for somebody’
 c. *pløje en et stykke jord*
 plough somebody a piece of land
 ‘plough a piece of land for somebody’

Such examples are impossible in the modern standard language; only prepositional constructions are found and possible.

- (16) a. *han skal løse knuden for os*
 he must loosen the knot for us
 ‘He must untie the knot for us’
 b. *åbne en dør for nogen*
 open a door for somebody
 ‘open a door for somebody’
 c. *pløje et stykke jord for en*
 plough a piece of land for someone
 ‘plough a piece of land for somebody’

The indirect object (NP₂) was semantically less specific in this period, and notice that the semantic role of Beneficiary in (12b) and (14) will entail the ‘Dative of interest’ and could thus in Høysgaard’s time be taken to count as a special case or variant of the latter. In the modern language, however, the double object construction has been reinterpreted to denote normally relations of transfer, to the complete exclusion of the dative of interest, and to the reduction of the number of verbs that take a free indirect object as in (14). This implies that during early Modern Danish a reanalysis took place of the meaning of the construction, in particular of the indirect object itself. The actualisation process of this change consisted among other things in the exclusion from this construction of certain verbs that did not fit the semantic transfer pattern and thus did not apply the role of Receiver to A3; see subsection 2.3.2 for examples illustrating exclusion.” Whereas present day English NP₂s are coded as a Beneficiary, the Danish NP₂ is narrower, namely a Recipient in transfer relations. As a consequence, the free indirect object construction is possible nowadays only with verbs that are readily

interpretable as a transfer relation, not only an intended one. Examples are the verbs *skaffe* ‘get, obtain for’, *sende* ‘send’.

- (17) a. *Han skaffede en billet*
 he got a ticket
 b. *Han skaffede hende en billet*
 he got her a ticket

In Modern Danish (17b) is a transfer construction, but its paradigmatic counterpart (18) is not. The latter means ‘an intended and not necessarily completed transfer’.

- (18) *Han skaffede en billet til hende*
 he got a ticket for her
- (19) *De sendte Lone pakken*
 they send-PAST Lone the-parcel
 ‘They sent Lone the parcel’
- (20) *De sendte pakken til Lone*
 (= 9) they send- PAST the parcel to Lone
 ‘They sent the parcel to Lone’

Thus, the paradigm NP₂ (17b) vs. Prep + NP (18) has a content opposition of the inclusive, overlapping type known from structuralist analyses of inflexional systems, cf. the analysis shown in (5). Thus, the concept of markedness will find its application also in the analysis of constructional paradigms, ‘telic’ being the marked term, atelic the unmarked term. In Nørgård-Sørensen, Heltoft & Schøsler (manuscript to appear) we suggest tables like Table 1 for the representation of paradigms of all types. Notice that the expression system is also a word order difference, like in English. In the atelic construction A3 is downgraded to a PP.

The changes of the indirect object (NP₂) in Danish from around 1700 to the present day can be summarised as in Table 2.

The ‘emic’ reading defines the borderline of the meaning of the indirect object.⁷ For 18th century Danish, all functions of the indirect object can be subsumed under the notion of ‘person interested’, but the notion of a recipient may well define the prototypical indirect object at all stages, since it is in all probability the most cognitively salient interpretation and probably also the most frequent one.

Table 1. Modern Danish paradigmatic structure of telicity with indirect objects. The opposition within the frames Receiver and Telicity is between telic and atelic readings.

Domain: V + NP + [NP (=A3) IO]		
Frame: Telicity		
Frame: A3 Recipient		
expression 1	expression 2	content
zero + NP	IO precedes DO	Telic
prep + NP	DO precedes PP	Atelic

Table 2. Danish indirect object reinterpreted

	'-emic' meaning	Main variants
1700	Dative of interest	Beneficiary < Receiver
Mid 19 th century	Beneficiary	Receiver
Present day	Receiver	

5.1. Adaptation of the syntactic system

Examples like (14) were still acceptable in the 19th century, but are nowadays absolutely marginal, a change in usage that must be if not explained, then made sense of. Verbs of acquisition like *købe* 'buy, purchase', *anskaffe* 'purchase', *bygge* 'build', *finde* 'find', etc. do not freely take indirect objects. Examples like (21)–(23) are stylistically marked as old fashioned and are hard to find in modern corpora.

- (21) *hun købte sin mor et nyt fjernsyn*
 she bought refl. mother a new telly
- (22) *hun fandt sin søster en mand*
 she found refl. sister a husband
- (23) *Ole bagte Lise en leverpostej*
 Ole baked Lise a liver paté

What has happened is a contraction of the distribution of IO with such verbs to reflexive uses. The following type is frequent and stylistically unmarked:

- (24) *Hun købte sig et nyt fjernsyn*
 she bought refl. a new telly
 ‘She bought herself a new telly’
- (25) *Hun fandt sig en mand*
 she found refl. a husband
 ‘She found herself a husband’

I hypothesise that such contractions will normally take place on the background of already existing models. One obvious model is the verb *tage* ‘take’ denoting transfer, but always adding the extra meaning that ‘the subject referent is also conceived of as the receiver’. This verb has a free IO as a possible A3, and this A3 will then be expressed by a reflexive pronoun:

- (26) a. *Han tog en kop kaffe*
 he took a cup of coffee
 ‘He took a cup of coffee’
- b. *Han tog sig en kop kaffe*
 he took refl. a cup of coffee
 ‘He had a cup of coffee’

A3 (= IO) can never refer to a referent different from the subject referent. In this case, the only construction available is A3 (= PP) as in (27b).

- (27) a. **Han tog hende en kop kaffe*
 he took her a cup of coffee
- b. *Han tog en kop kaffe til hende*
 he took a cup of coffee for her

This reduction to reflexive indirect objects may be conceived of as one of the visible consequences of the semantic reanalysis of the indirect object, or, in Andersen’s terms, as a part of the actualisation processes to follow, actualisation processes being the visible changes in usage to follow from a reanalysis.

There is no way to understand this change in a model that views syntactic change as just changes inside an autonomous syntactic component, nor in a model that assumes the existence of a universal set of semantic roles. The set of semantic roles necessary in the present context is a reconstruction of three different paradigmatic frames for the indirect object, each characterising synchronically a stage of the historical change of the Danish indirect object. Its language specificity is easily documented by reference to the fact that English has not undergone the third stage.

5.2. Adaptation of the lexical system

Consequences of this reinterpretation affect not only the distributional limits of the construction, but actualisation is visible in lexical changes of usage, too. Verbs that do not fit semantically well with the modern indirect object construction tend to be transferred to other constructions. Verbs with such deviant meanings, for example *bebrejde* ‘to blame’, *godskrive* ‘to credit’, *tilgive* ‘to forgive’, are in the process of transfer to another constructional pattern, namely NP₁–V–NP₂–for NP₃, a pattern used with many other verbs meaning praise or vituperation, for instance *rose* ‘praise’, *kritisere* ‘to criticise’, so that we find innovative usage, e.g. *bebrejde nogen for noget* ‘blame somebody for something’ along with traditional *bebrejde nogen noget* NP₁–V–NP₂–NP₃.

Such processes are not regrammations, but adjustments of the lexical system through usage to the now dominant basic paradigmatic frame of the indirect object construction. Notice that according to the present analysis they are not excluded because of their status as non-prototypical IO-verbs, they are excluded because they fit badly into the paradigmatic frame of the construction.

Table 3. Process of exclusion of Danish IO-verbs

V + IO + DO		V + DO + for NP	
bebrejde nogen noget	>	bebrejde nogen for noget	(‘blame sb for sth’)
godskrive nogen noget	>	godskrive nogen for noget	(‘credit sb for sth’)
tilgive nogen noget	>	tilgive nogen for noget	(‘forgive sb sth’)
		rose nogen for noget	(‘praise sb for sth’)
		kritisere nogen for noget	(‘criticise sb for sth’)
		beskyldte nogen for noget	(‘blame sb for sth’)

From the point of view of prototypicality within the lexical class the transfer verbs may very well have represented the prototypical relation all along from the sixteenth century, and similarly, these three verbs in the process of expurgation may have been peripheral all along. To make sense of such processes, we need a characterisation of the semantic borderline of the construction, not of prototypicality within the class of verbs the valency of which fits the IO-construction. It is both sensible and necessary to seek the limits to what a sign can mean, and Hjelmslev’s point is that once we formulate the borderlines of meanings in an adequate way, such characterisations will automatically include the prototypical or more salient variants.

Across the differences of the various historical stages of a given language, the very same conceptualisation may stay as the prototype, for instance: the transfer function and the role of a Recipient may very well hold the status of a prototype in ditransitive constructions from, say, the Reformation to the present day, but this will say nothing about the regrammation processes leading from one stage to another.

5.3. Grammaticalisation processes or lexical change?

Grammaticalisation processes very often include processes of subjectification and bleaching, and often even both. However, we cannot identify a bleaching process or a subjectification process and conclude that what is going on is grammaticalisation. To formulate such a diagnosis, we must relate the usage process to an analysis of the output of the process in synchronic terms to see if there is a change in paradigmatic structure. An instructive example would be the lexical usage processes observable in the detransitivisation of verbs like English *threaten*, Danish *true med* ‘threaten’, originally only transitive verbs denoting always a speech act, but in present day English and Danish also intransitive ‘raising’ verbs with a subjective epistemic or emotive meaning:

- (28) a. The bridge’s wooden structure threatened to collapse
 b. *Broens trækonstruktion truede med at styrte sammen*

In Danish there is a similar development of *true med* ‘threaten’, adding an intransitive reading to the original performative transitive sense. This development leads to a categorisation of *true med* along with other verbs taking the construction nominative + infinitive, such as *tegne til* ‘look as if’, *synes* ‘seem’, *lade til* ‘look as if’; *pleje* ‘normally happen’, *behøve* ‘need’, *trænge til* ‘be in need of’. For the sake of the present argument, we may disregard the difference with such verbs between complement object infinitives and complement prepositional infinitives and just characterise this class as comprising the meanings ‘subjective evidential background’ (*tegne til*, *synes*, *lade til*) and ‘habitual’ or ‘normative’ character of an action (*pleje*, *behøve*, *trænge til*), a polysemy within this construction that is well known from modality already. The construction is polysemous with the meanings ‘probably true fact’ and ‘desirable action’, and its paradigmatic frame, then, is to add an ‘ought’ value to the proposition (an approximate formulation of the common denominator of these two meanings, cf. the polysemy of English *he ought to be around*). The verb *true med* adds an evaluative or emotive function, namely the presupposition that the process described is undesirable, but this presupposition is not at variance with the already

existing nominative + infinitive construction's semantics. A similar more recent development is Danish *risikere* 'risk', originally only 'do something risky', 'run a risk', but from the second half of the 20th century also an intransitive.

- (29) *Broens trækonstruktion* *risikerer* at bryde sammen
 the bridge's wooden construction risks to collapse
 'The bridge's wooden construction risks collapse'

Whatever the exact formulation of the common ought-value of this epistemic-normative-habitual paradigmatic frame of the nominative + infinitive construction, the development of *true med* and *risikere* are usage processes that reclassify through extension these two verbs to fit also the intransitive raising construction. If read this way, this process will not count as a grammation process, nor as a regrammation process, since it does not lead to a change of paradigmatic structure.

What these changes do is to reconfirm the existing paradigmatic structure of nominative + infinitive construction, and again: the main point is that without the paradigmatic target structure as a measure there would be no way to decide whether usage processes count as actualisation processes of preceding reanalyses that lead to grammatical change or as corroborations of existing structure.

6. Summary

I have claimed that usage presupposes the existence of an organised sign inventory common to those participating. Hence usage-based grammars must include levels of structure to account for what members of a linguistic community have in common. Such grammars include no claim about structure being the cause of usage, contrary to what Hopper almost explicitly claims.

Cases like the indirect object dealt with in section 5 are hopefully instructive illustrations of the double nature of the relationship between structure and usage. The analysis of paradigms as content structure and the formulation of historically specific semantic frames furnish us with a measure against which we can identify usage processes symptomatic of a change and make sense of them.

Presupposing the adequacy of Andersen's model of linguistic change as abductive change and the central concept of content reanalysis, it follows that language users must also be able to cognitively discern meaning distinctions more specific than or different from those defining the 'emic' ones. For a reinterpretation to take place from Dative of Interest to Beneficiary, users must be able to master in practice the then erroneous, but supposedly correct coding of an NP as a Beneficiary. They must already master this concept, and it is exactly

their mastery of such concepts that enables them to misinterpret the semantic width of the construction, thus paving the way for its reanalysis. However, the loss of variants must in the cases studied here be seen as a redefinition of the whole system, not just as the withering away of something obsolete. What we want to understand is exactly its obsolescence, and in the case of the indirect object this becomes clear, I have suggested, from the reinterpretation of an original variant (Beneficiary) as the ‘emic’ basis of the paradigm, and from yet another reinterpretation of a variant (Recipient) as the ‘emic’ basis. From these reinterpretations follow new paradigms and thus a failure to hand down to posterity the older meanings of the ‘dative’.

Notes

1. Hopper subsumes all opponents under the notion of a priori grammar, APG, hereby blurring the difference between *a priori* in a stricter (Kantian) sense (about universal – and hence binding – notional preconditions for any empirical approach) and *a priori* in the sense of necessary preconditions for participation in a historically given institution (say, the American English language). The latter are historical and undergo change, but are nevertheless binding for language users.
2. See for instance the definition of the morpheme by Katamba and Stonham (2006:24) where a morpheme is said to be “the smallest difference in the shape of a word that correlates with the smallest difference in word or sentence meaning or in grammatical structure”.
3. Implicitly, Haspelmath sidesteps the claim that paradigms organise meaning by discarding any content based concept of markedness in favour of a frequency based concept (2002:237–252). In European structuralism, it will be known, paradigms were held to consist prototypically of inclusive oppositions, but Haspelmath’s position presupposes that meanings are just meanings, and that there is nothing interesting to be learned from the semantic relations among the members of a paradigm.
4. Notice that the joint effect of the two dimensions changes the markedness relation from an overlapping or skewed relation to an exclusive one. Andersen (2001a:46–47) is particularly clear in his appraisal of such points in Hjelmslev’s morphological thinking (Hjelmslev 1973 [1939]:87): Exclusive divisions of labour are but a special case of the general markedness relation, and we need such refinements to be precise in matters like the present one. At the joint level, the opposition between the nominative and the oblique case is an exclusive one, in that the plain oblique form can never function as an anaphoric subject. At this level, the relevant opposition is the exclusive one: A vs. –A, not the inclusive one: A vs. non-A, an empirical fact about the semantics of the grammar of the Danish language of the present day, not a necessary cognitive distinction, nor a universal feature of language as such.

5. Constructions cannot be described in terms of hierarchical syntagmatic configurations alone, be they ever so characteristic of certain verb classes. They will normally include morphological information as well and very often also topological information, but above all, they conform to structuring principles of content.
6. Sic! 'Beneficiary' it must be.
7. I suggest that such content delimitations could be seen as a sensible interpretation at the historical level of the concept of basic meaning or *Grundbedeutung*. It follows that for instance grammaticalisation of case systems on the basis of local structure will be just one possible (though widespread) way of organising case systems. The conceptual zones of the young Hjelmslev (1935–37) will be historically specific organisation principles as well, universally accessible, but not always the relevant ones for the linguistic structure.

Sources

ADL = Arkiv for dansk litteratur [Archive of Danish Literature], www.dsl.dk
Information - Danish daily newspaper
 Bredsdorff, Thomas. 1986. *Magtspil* [Games of Power]. Copenhagen: Gyldendal.

References

- Andersen, Henning
 2001a Markedness and the theory of linguistic change. In: Henning Andersen (ed.), *Actualization. Linguistic Change in Progress*. Amsterdam/Philadelphia: John Benjamins, 21–57.
- Andersen, Henning
 2001b Actualization and the (uni)directionality of change. In: Henning Andersen (ed.), *Actualization. Linguistic Change in Progress*. Amsterdam/Philadelphia: John Benjamins, 225–248.
- Andersen, Henning
 2006 Grammation, regrammation, and degrammation: Tense loss in Russian. *Diachronica* XXIII, 2. 231–258.
- Boye, Kasper and Peter Harder
 2007 Complement-taking predicates: usage and linguistic structure. *Studies in Language* 31. 569–606.
- Bybee, Joan
 1985 *Morphology: A Study of the Relation between Meaning and Form*. Amsterdam/Philadelphia: John Benjamins Publishing Company.
- Bybee, Joan, Revere Perkins and William Pagliuca
 1994 *The Evolution of Grammar: Tense, Aspect, and Modality in the Languages of the World*. Chicago/London: The University of Chicago Press.

- Croft, William
2001 *Radical Construction Grammar: Syntactic Theory in Typological Perspective*. Oxford: Oxford University Press.
- Dik, Simon C.
1989 *The Theory of Functional Grammar. Part I: The Structure of the Clause*. Dordrecht and Providence: Foris Publications.
- Eisenberg, Peter
1989 *Grundriss der deutschen Grammatik*. Stuttgart: Metzler.
- Eisenberg, Peter
1996 Syntaktische Funktionen und Semantische Rollen: Subjekt, direktes und indirektes Objekt im Deutschen. In: Lars Heltoft and Hartmut Haberland (eds.), *Proceedings of the 13th Scandinavian Conference of Linguistics*. Roskilde: Roskilde University, Department of Languages and Culture. 7–26.
- Engberg-Pedersen, Elisabeth, Michael Fortescue, Peter Harder, Lars Heltoft and Lisbeth Falster Jakobsen (eds.)
1996 *Content, Expression, and Structure: Studies in Danish Functional Grammar*. Amsterdam/Philadelphia: John Benjamins.
- Givón, Tom
1995 *Functionalism and Grammar*. Amsterdam/Philadelphia: John Benjamins Publishing Company.
- Goldberg, Adele
1995 *A Construction Grammar Approach to Argument Structure*, Chicago: The University of Chicago Press.
- Goldberg, Adele
1998 Patterns of experience in patterns of language. In Tomasello (ed.), 203–220.
- Halliday, Michael A.K.
1985 *An Introduction to Functional Grammar*. London: Arnold.
- Harder, Peter
1996a On content and expression in syntax. In: Lars Heltoft and Hartmut Haberland (eds.), *Proceedings of the 13th Scandinavian Conference of Linguistics*. Roskilde: Roskilde University, Department of Languages and Culture. 83–92.
- Harder, Peter
1996b *Functional Semantics: A Theory of Meaning, Structure and Tense in English*. Berlin: Mouton de Gruyter.
- Harder, Peter
1996c Linguistic Structure in a Functional Grammar. In: Elisabeth Engberg-Pedersen, Michael Fortescue, Peter Harder, Lars Heltoft and Lisbeth Falster Jakobsen (eds.), *Content, Expression, and Structure: Studies in Danish Functional Grammar*. Amsterdam/Philadelphia: John Benjamins. 423–452.

- Hansen, Aage
 1956 Kasusudviklingen i dansk [The development of case in Danish]. In: S. Aakjær et al., *Festskrift til Peter Skautrup*. Aarhus. 183–193.
- Haspelmath, Martin
 2002 *Understanding Morphology*. London: Arnold.
- Heltoft, Lars
 1996 Paradigms, word order and grammaticalization. In: Elisabeth Engberg-Pedersen, Michael Fortescue, Peter Harder, Lars Heltoft and Lisbeth Falster Jakobsen (eds.), *Content, Expression, and Structure: Studies in Danish Functional Grammar*. Amsterdam/Philadelphia: John Benjamins. 469–494.
- Hengeveld, Kees
 1986 Copular verbs in a functional grammar of Spanish. *Linguistics* 24, 393–420.
- Hjelmslev, Louis
 1935–1937 *La Catégorie des Cas* 1–2. Copenhagen: Munksgaard.
- Hjelmslev, Louis
 1959 [1939] Notes sur les oppositions supprimables. In: *Essais linguistiques. Travaux du Cercle Linguistique de Copenhague*, vol. XII. 84–88.
- Hjelmslev, Louis
 1973 [1933] Structure générale des corrélations linguistiques. In: *Essais Linguistiques II. Travaux du Cercle Linguistique de Copenhague*, vol. XIV. 57–98.
- Hopper, Paul J.
 1998 Emergent Grammar. In Michael Tomasello (ed.), 155–176.
- Høysgaard, Jens Pedersen
 1752 *Methodisk Forsøg til en Fuldstændig Dansk Syntax*. In: Bertelsen, Henrik (ed.), *Danske Grammatikere V*. Det Danske Sprog- og Litteraturselskab. 1919–1920).
- Katamba, Francis and John Stonham
 2006 *Morphology*. Basingstoke/New York: Palgrave Macmillan.
- Nørgård-Sørensen, Jens, Lars Heltoft and Lene Schøsler
 to appear Connecting Grammaticalisation: The Role of Paradigmatic Structure.
- Taylor, John R.
 1989 *Linguistic Categorization: Prototypes in Linguistic Theory*. Oxford: Clarendon Press.
- Taylor, John R.
 1998 Syntactic Constructions as Prototype Categories. In Tomasello (ed.), 177–202.
- Tomasello, Michael (ed.)
 1998 *The New Psychology of Language: Cognitive and Functional Approaches to Language Structure*. Mahwah N.J./London: Lawrence Erlbaum.

Wivel, H.G.

1901

Synspunkter for Dansk Sproglære [Views of Danish Language Science]. Copenhagen.

Where do simple clauses come from?

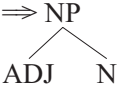

T. Givón

1. Introduction*

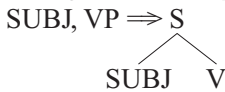
In a recent investigation of the genesis of complex clauses (Givón 2009), I deliberately deferred the discussion of one topic that is crucial for our understanding of both the ontogeny and phylogeny of syntactic complexity. I noted first that in both language diachrony and language ontogeny, complex (subordinate) clauses arise from chained (conjoined) simple clauses. Simple clauses thus appear to be the developmental prerequisite for the genesis of both chained and complex-subordinate clauses. But how do simple clauses come into being? That is:

- (1) How do children, and how did earlier hominids, bridge the gap between single-word utterances (mostly nouns) that stand for whole verbal clauses, and multi-word clauses that include a verb?

Derek Bickerton (2008) has proposed answering this question by suggesting that early hominid speakers must have used the minimalist formal procedure called “merge”. The very same procedure, he suggests, was also used in the evolution of complex clauses from chained simple clauses. In formal terms, “merge” may be described as the creation of a hierarchic configuration, whereby adjacent but previously unattached constituents are joined under a higher, more abstract node. This can be presumably done at the phrase level, as in (2a,b) below; at the simple clause level, as in (3); or at the complex-clause level, as in (4a,b) below:

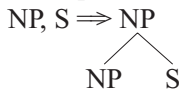
- (2) “Merge” at the phrase level:
 - a. Noun phrase:
ADJ, N \Rightarrow NP

 - b. Verb phrase:
V, OBJ \Rightarrow VP


- (3) “Merge” at the simple clause level:

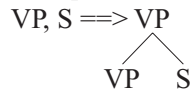


- (4) “Merge” at the complex clause level:

- a. Noun phrase embedding:



- b. Verb phrase embedding:



However attractive such a procedure may appear to the formal minimalist, it does not begin to answer my question (1), leastwise not in the sense I have intended it. To begin with, constituents are not merged by virtue of mere adjacency, but only when they are functionally relevant to each other within a specific domain. Thus, an adjacent pair N,V within the string ADJ,N,V,OBJ will not be automatically “merged” into either a hierarchic NP (2a) or VP (2b). The two adjacent constituents will only be “merged” when they are relevant to each other as either “pertaining to the same referent” (a modifier-noun pair = NP) or “pertaining to the same predication about the same subject” (a verb-object pair = VP), respectively. Likewise, the adjacent pairs NP,S or VP,S will not be automatically “merged” into a complex NP (4a) or complex VP (4b), respectively. They will only “merge” when the S is either a relevant event/state specifier of a referent (4a), or a verbal modal operator on another state/event (4b).

Further, Bickerton does not specify a behavioral mechanism by which the gap between the one-word clause, most typically a noun, and the simple multi-word verbal clause can be bridged, in either ontogeny or phylogeny. For the “merge” operation to be more than a formal label for the developmental process, it must be fleshed out into a feasible behavioral-developmental mechanism. A genetic mutation and/or neurological recruitment, however important a role they may play at some level of development, will not by themselves do the trick. That is, not if behavior is indeed, to paraphrase Ernst Mayr, the *pacemaker of evolution* (Fernald and White 2000).

What I propose to do in this chapter is describe a plausible developmental-behavioral mechanism that could bridge the gap between the one-word stage and the simple-clause stage in both ontogeny and phylogeny.¹ I will go about this task by describing first a synchronic communicative behavior – a grammatical construction – that is so ubiquitous in spoken language that it is most commonly ignored. I will call this construction either *verbless clauses* or *scattered non-verbal constituents* falling under their own intonation contour. I will

first illustrate the use of this construction in two typologically-dissimilar languages, Ute (oral narrative) and English (conversation), and will show that it is an amazingly well governed construction in both languages, thus in both oral genres.

The verbless-clause construction is a full analog of nominal zero-anaphora. First, both constructions reflect (“obey”) the same universal principle of pre-grammar (Givón 2009):

(5) “Leave predictable information unexpressed”.

The predictability of the zero constituent, however, can only be seen in connected discourse. And second, in natural communication (‘performance’) this construction is just as amazingly well-governed as nominal zero-anaphora – at a level approaching 100% fidelity – and by the very same licensing principle:

(6) “The licensing governor of the zero element is found in a directly-adjacent clause, most commonly the preceding clause”.

The description of verbless clauses and their communicative use given in this chapter also offers a vivid example of how pre-grammar – so prevalent in early child language, 2nd language pidgin and Broca’s aphasia – is still available and indeed ubiquitous in grammaticalized adult language.

After describing the use of the verbless-clause construction in oral adult usage, I will describe its use in early child language, using English data from a relatively early period of grammar acquisition (ca. age 1;8–1;11; stage-I; see ch. 7). During this period, a major transition occurs, from one-word clauses that are predominantly nouns (Bloom 1973) to two-word or longer clauses with the verb and nominal arguments falling under a single intonation contour (Bowerman 1973). I will suggest that the very same behavioral mechanism attested in adult usage for joining together nominal arguments of the clause with their relevant verb under a single intonation contour, is also available to children at this transitional stage of language acquisition. What is more, the use of the verbless-clause construction is just as well-governed in the children as it is in the adults.

I will next show the use of the same construction, with the same communicative behavior, in 2nd language pidgin narrative text, using stage-I Korean-English oral narrative transcripts (Bickerton and Odo 1976; see Givón 2009, ch. 9). I will show that this construction is widespread in the pidgin narrative, and that its use is just as well-governed in the pidgin as it is in adult Ute, adult English, and early childhood usage.

Lastly, I will describe the use of the same construction in oral narrative of a Broca’s aphasia patient (Menn 1990), showing both its high text frequency and its

amazing well-governedness. The inference I will draw at the end is that the same behavioral mechanism identified in the usage of adult English and Ute speakers, young children, pidgin speakers and Broca's Aphasia patients must have also been available in the corresponding early stage of language evolution. Indeed, I will suggest that just like nominal zero-anaphora, our ubiquitous construction – verbal zero-anaphora – is part of pre-grammar or proto-grammar. And that just like its nominal counterpart, this construction remains part of the mature adult grammatical inventory.

2. Zero anaphora and verbless clauses

Zero anaphora is usually thought of as applicable to nominal arguments of clauses (NPs; subjects, objects, etc.), and as such has been studied by both formal and functional linguists. In formal studies, it has been assumed to be characteristic of a certain type, so-called “non-configurational” or “pro-drop” languages (Hale 1980, 1982, 1983, 1992; Huang 1984; Jelinek 1984; Payne 1993; Austin and Bresnan 1996; *inter alia*; see also Chomsky 1981, 1982, as well as Givón 2002, ch. 3).

In function-oriented studies, most conspicuously of the discourse distribution of referent-coding devices (Givón ed. 1983a, 1983b, 1983c; DuBois 1987; *inter alia*), nominal zero anaphora was shown to be amazingly well governed, in the sense that nearly 100% of its distribution in text can be predicted from its very short anaphoric distance from its antecedent – one clause back. Put another way, the reference of zero anaphors are cognitively highly accessible (Givón 1992).

A phenomenon that in many ways closely parallels nominal zero anaphora is that of verb-less clauses falling under their own separate intonation contours. To the naked eye, such verbless chunks may seem but classical *performance* phenomena of spoken language, the kind of careless slop that is associated with memory lapses and other extra-grammatical cognitive constraints. However, Chafe (1987, 1988a, 1988b, 1994) has described such constructions more revealingly as part of the grammar of spoken language, where information is typically packaged in short breath groups (intonation units, intonation contours; Givón 1991).

What I would like to show first is that verbless clauses are prevalent in languages regardless of the putative typological feature of “configurationality”. And that their behavior in spoken language is just as well-governed as that of nominal zero anaphora. I will use Ute and English as my typological comparison set, one that can easily be extended (e.g. Croft 1997, 2007).

3. Verbless clauses in spoken Ute narrative

3.1. Flexible word-order in Ute

Ute has considerable word-order flexibility, very much in the same vein as described for the “non-configurational” Papago or Walpiri (Hale 1992). A quantitative documentation of the word-order distribution in a wide range of clausal constituents in Spoken Ute may be found in Givón (1983c). The following examples, all in clauses falling under a single intonation contour, are taken from a recorded traditional narrative by an accomplished traditional story teller, the late Mollie Buck Cloud (Givón ed. 1985b; Story #5):

- (7) a. 'iya-na mən i-'ura agha-paa poro-xwa-gha
 here-LOC you/PL/SUBJ-be WH-DIR walk/PL-go-GER
 LOC S LOC GERUND-ADV
 'ani-kh?
 do-IMM
 V
 ‘... “Where are y’all going flocking through here?” ...’
- b. mən i-'ura nənay kac 'u-vwaa-tə nóo'wa-y-'ura
 you/NOM-be me/OBJ NEG there-DIR carry-IMM-be
 S O LOC V
 ‘... “Won’t you please carry me there?” ...’
- c. 'uməaat# ya-yagha-pəga 'u-vwaa-amə
 one/PART/NOM RED-cry-REM there-LOC-3P
 S V LOC
 ‘... one of them kept crying there ...’
- d. 'uru máy-pəga 'uməs
 that/OBJ say-REM they/NOM
 O V S
 ‘they said it’
- e. 'uwas-'ura payu-kwa-pəga 'u mamach-'u
 she-be return-go-REM that/SUBJ woman-DEF
 S V S
 ‘... so she returned home, that woman ...’

- f. mavaa-tugwa-su-ni mawisi-vaani mama-'ayh-pu-chi
 there-TO-CONJ-ADJ appear-FUT woman-child-DIM/SUBJ
 LOC V S
 '... a young woman will appear right there'
- g. 'umʉs-nukw-'ura-'uru suwa-kwáa-xw-puay-aghay-'u
 they-EMPH-be-that almost-win-ASP-REM-CONCL-him
 S V
 'uwayas sinawavi
 him/OBJ Sinawav/OBJ
 O
 '... they almost beat Sinawav (in the race) ...'
- h. 'uni-kya-puga 'umʉs 'uru
 do-PL-REM they/SUBJ that/OBJ
 V S O
 '... so they did that ...'

Such word-order flexibility, coupled with extensive nominal zero anaphora, presumably makes Ute a *bona fide* “non-configurational” language.

3.2. Verbless constituents under separate intonation contours

The following examples of verbless clauses in spoken Ute are all taken from traditional oral narratives (Givón ed. 1985b). As one can see, such ‘clauses’ may be the subject, object, indirect object or various adverbs. And, Ute being a recently-changed ex-SOV language, such verbless constituents may appear either post-verbally or pre-verbally.

- (8) a. Post-verbal subject & locative:
 'umʉ Sinawavi-u yúaa-va-tʉ tavi-navichi-puga,
 3p/OBJ Sinawav-PL land-LOC-DIR step-MASS-REM
 'umʉ chakuura-u, 'uwa-vaa-chʉ
 3p/NOM crane-PL 3s/OBJ-LOC-DIR
 '... [and they] landed on Sinawav’s people’s land, those cranes, in front of him ...’
 (Story #3, Mollie C.)

- b. Pre-verbal locative & post-verbal object:
 yagha-vaa-tu-av, tuɸɸɸchi kuu-pga, 'i-vee-tu
 side-LOC-DIR-REFL rock/OBJ take-REM here-LOC-DIR
 pa'a-toghwa-tu tuɸɸɸchi, magachi niaa-gha-tu
 long-NOM/OBJ rock/OBJ pestle name-have-NOM/SUBJ
 '... at his side, (he) picked a rock, right there a long rock, they call
 it 'pestle' ...' (Story # 6, Harry R.)
- c. Post-verbal object:
 táa-mana-xwa-'uru 'əa-xwa-puga, tukuavi
 knee-leave-go-it/OBJ pour-go-REM meat/OBJ
 '... from his knee he poured it, meat ...' (Story #6, Harry R.)
- d. Post-verbal locatives and object:
 súu, kani-vaghay-kwa-nu, máa-pa nu-vwaa-chux,
 hey house-walk-go-IMP there-LOC 1s-LOC-DIR
 'áa-vaya-vaa-chugwa-av, kani-vaghay-kwa-nu
 new-side-LOC-DIR/OBJ-REFL house-walk-go-IMP
 '... Say, come visit, there at my place, (me) your new neighbor,
 come visit (me) ...' (Story #6, Harry R.)
- e. Pre-verbal subject, post-verbal object:
 kh-'ura 'uwas-'u, kuchu-'u, kuu-puga ...
 then he-DEF/SUBJ buffalo-DEF/SUBJ take-REM
 'ivichi kuvua-ri-kya-tu
 stick/OBJ sharp-NOM-HAVE-NOM/OBJ
 '... then he, buffalo, picked up ... a sharpened stick ...'
 (Story #7, Mollie C.)
- f. Post-verbal adverb:
 "Whwhwh ..." may-puga, 'uwas, kuchu-gwa-y
 "onomato ..." say-REM he buffalo-be-IMM
 '... "Whwhwh ..." (he) said, he, like buffalo ...'
 (Story #7, Mollie C.)

- g. Post-verbal adverb:
 khakha-ti-puga, púupa 'uni-kya-na 'uwayas,
 crouch-CAUS-REM manner do-ANT-SUB he/OBJ
 kuchu
 buffalo/OBJ
 '... (and he) lowered his head, the way that one did, buffalo ...'
 (Story #7, Mollie C.)
- h. Pre-verbal locatives, post-verbal subject & locative:
 'i-vee-ni kh-'ura, qovaa-va-na-'u-'ura ...
 here-LOC-LOC then front-LOC-LOC-his-be
 qovaa-va-y-'u pu'i-av-kway tu-turapi-kya-puga,
 front-LOC-OBJ-3s eye-REFL-lo RED-throw-PL-REM
 piñchi-u, wa'apu wuni-ru-ma-tux ...
 child-PL piñon/OBJ stand-NOM-LOC-DIR
 '... right there and then, in front of him... in front of him (they)
 kept throwing their eyes up, children, into the standing piñons ...'
 (Story #8, Mollie C.)

The only major constituent type that is rarely found at the pre-verbal position under its own separate intonation contour is the *direct object*. It is seldom scattered away from the verb, and when it is scattered, it appears only post-verbally (R-dislocation). This probably reflects the persistence of the old OV order in Ute (Givón 1983c).

3.3. Text distribution of verbal vs. verbless clauses in Ute

Tables 1 through 5 summarize the distribution of major non-verbal constituents under separate intonation contours, i.e. our verbless-clause construction, in five Ute oral narratives (stories 1 through 5 of Givón ed. 1985b).

The four story-tellers that contributed these narratives ca. 1976–1978 were all tribal elders, with the oldest showing early signs of memory loss and the youngest a very vigorous speaker. Plotting the total percent of scattered verbless constituents against the speakers' approximate age at the time of contributing the narrative may thus be of some interest (cf. Table 6).

While this seeming correlation lays no statistical claim, it is nonetheless of some interest. What it suggests is not all that different from Chomsky's (1965) idea about processor ('performance') effects and their interaction with 'competence' (grammatical fluency and consistency; 'generativity') in spoken language. In this, oral language contrasts with at least some types of well-edited written

Table 1. Verbless (scattered) vs. verbal (unscattered) clauses in Ute narrative; story #1 (Ralph C., age 75)

role	scattered		unscattered		total	
	N	%	N	%	N	%
SUBJ:	13	35.1	24	64.9	35	100.0
DOBJ:	8	36.4	14	63.6	22	100.0
LOC:	5	20.0	20	80.0	25	100.0
DAT:	/	/	/	/		
INST:	/	/	/	/		
ASSOC:	/	/	1	100.0	1	100.0
PRED:	3	30.0	7	70.0	10	100.0
ADV:	8	25.8	23	74.2	31	100.0
total:	37	29.4	89	70.6	126	100.0

Table 2. Verbless (scattered) vs. verbal (unscattered) clauses in Ute narrative; story #2 (Julius C., age 86)

role	scattered		unscattered		total	
	N	%	N	%	N	%
SUBJ:	23	40.3	34	59.7	57	100.0
DOBJ:	13	56.5	10	43.5	23	100.0
LOC:	13	59.1	9	40.9	22	100.0
DAT:	/	/	/	/		
INSTR:	/	/	1	100.0	1	100.0
ASSOC:	/	/	/	/		
PRED:	5	35.7	9	64.3	14	100.0
ADV:	16	42.1	22	57.	38	100.0
total:	70	45.1	85	54.9	155	100.0

Table 3. Verbless (scattered) vs. verbal (unscattered) clauses in Ute narrative; story #3 (Julius C., age 86)

role	scattered		unscattered		total	
	N	%	N	%	N	%
SUBJ:	10	43.5	13	56.5	23	100.0
DOBJ:	5	55.5	4	44.5	9	100.0
LOC:	13	59.1	9	40.9	22	100.0
DAT:	/	/	/	/		
INST:	/	/	/	/		
ASSOC:	/	/	/	/		
PRED:	/	/	2	100.0	2	100.0
ADV:	13	50.0	13	50.0	26	100.0
total:	41	50.0	41	50.0	82	100.0

Table 4. Verbless (scattered) vs. verbal (unscattered) clauses in Ute narrative; story #4 (Mollie C., age 76)

role	scattered		unscattered		total	
	N	%	N	%	N	%
SUBJ:	27	24.3	84	75.7	111	100.0
DOBJ:	19	34.5	36	65.5	55	100.0
LOC:	7	17.9	32	82.1	39	100.0
DAT:	/	/	4	100.0	4	100.0
INST:	/	/	/	/		
ASSOC:	/	/	/	/		
PRED:	3	21.4	11	78.6	24	100.0
ADV:	35	37.2	59	62.8	94	100.0
total:	91	28.7	226	71.3	317	100.0

Table 5. Verbless (scattered) vs. verbal (unscattered) clauses in Ute narrative; story #5 (Bertha G., age 60)

role	scattered		unscattered		total	
	N	%	N	%	N	%
SUBJ:	2	5.9	32	94.1	34	100.0
DOBJ:	4	20.0	16	80.0	20	100.0
LOC:	1	6.6	14	93.4	15	100.0
DAT:	/	/	/	/		
INST:	/	/	1	100.0	1	100.0
ASSOC:	/	/	/	/		
PRED:	/	/	7	100.0	7	100.0
ADV:	4	15.4	22	84.6	26	100.0
total:	11	10.7	92	89.3	103	100.0

Table 6. Age of speaker and percent of verbless clauses

age	percent 'scattered' constituents
60	10.7 (Bertha G.)
75	25.8 (Ralph C.)
76	28.7 (Mollie C.)
86	45.1 (Julius C.)
86	50.0 (Julius C.)

genres, where the frequency of scattered verbless constituents may indeed be minuscule (Chafe 1994). Such well-edited written genres seem to approximate Chomsky's ideal 'competence'.

4. Verbless clauses ('scattered' constituents) in spoken English

Our data of spoken English is taken from a rather different population: Undergraduate college students, in five recorded diadic conversations elicited by a movie they had just seen (Givón 1991; Dickinson and Givón 1997). We exclude the subject constituents in this study because of low text frequency (most subjects were pronominal). As in Ute, we consider a non-verbal constituent to be 'scattered' if it comes under a separate intonation contour without a verb. Such scattering may occur either within the same conversational turn (9a) or across adjacent turns (9b):

- (9) a. the man was ... hoeing, **with a hoe, in a ... garden, very dry**
 b. M: walked with ...
 D: mmm [overlap]
 M: **a hoe and a shovel**
 D: and **a rake**
 M: yeah and **a rake**

With post-verbal constituents, an NP separated by a pause from its article is still counted as an instance of scattering, as in:

- (10) a. she went back to the ... **the hatch or something**
 b. and got a ... **something, uh a cloth with something inside it ...**

The separated constituent may be the direct object, as in:

- (11) a. she brought the, uh, **the wrapped up thing**
 b. she said ... **some sort of a ...**
 c. so she did collect, like, **dry branches and leaves**
 d. and got a ... **something, uh a cloth with something inside it ...**

This contrasts with unscattered DOs, as in:

- (12) a. she started **a little fire**
 b. she broke up **branches and dry things**

The scattered constituent may be a locative – most often prepositional – object, as in:

- (13) a. it was very dry and sunny around, **on the outside**
 b. she went back to the ... **the hatch or something**
 c. so she put her skirt ... **under ... between her legs**
 d. it was, **in a bag of plastic**

This contrasts with unscattered locatives, as in:

- (14) a. she went **to a shady place**
 b. he was hoeing **in the garden**

The scattered constituent may be, at least in principle, a dative prepositional object, but no such examples were found in our transcripts, where unscattered dative direct-objects predominate, as in:

- (15) a. yelling **at him**
 b. yelling at him **about something**
 c. she said something **to him**

The scattered constituent may be an instrument, as in:

- (16) a. M: walked with . . .
 D: mmm [overlap]
 M: **a hoe and a shovel**
 D: and **a rake**
 M: yeah and **a rake**
 b. M: the man was . . . hoeing, **with a hoe**

This contrasts with unscattered instrumentals, as in:

- (17) chased her around the tree 'bout three times **with the hoe**

The scattered constituent may be, at least in principle, an associative object, but only one example of such an object was found in our transcripts – unscattered:

- (18) mine started **with the guy**

The scattered constituent may be a predicate – nominal or other – as in:

- (19) a. Yeah they were about . . . boy, maybe, **two inches in diameter**
 b. my guess is there were **four or five**
 c. there was, uh, probably **two sitting benches**

This contrasts with unscattered predicates, as in:

- (20) a. it was **very dry and sunny around**
 b. it was **rather ineffective**
 c. there was **a dress**
 d. it was **a mountain of brush**
 e. it looked **kinda comical**

Finally, the scattered constituent may be an adverb, as in:

- (21) a. she put the pot ... on the stove uh ... **at that point** ...
 b. so she did collect, like, dry branches and leaves in yours **right after she walked off with the firewood?**
 c. she went around my lean-to [...] **the very beginning**
 d. so she put her skirt ... **under** ... between her legs **like this** ...
 e. and he chased around in a circle ... **twice**

This contrasts with unscattered adverbs, as in:

- (22) a. we didn't show the guy again **until later**
 b. it's focused on her **for quite some time**
 c. we didn't show the guy **again**
 d. she put it **right explicitly** on the stove
 e. I read the label on the video **real quick**
 f. she let it go **on purpose**
 g. she rearranged it **a coupla times**
 h. you have three pieces of wood around the fire **like blocks**

The overall mean frequency of scattering of VP constituents, i.e. of post-verbal objects and adverbs appearing under a separate intonation contour, in 5 conversational diads is summarized in Table 7.

Table 7. Overall mean frequency of verbless (scattered) vs. verbal (unscattered) clauses in English conversations

pair	scattered		unscattered		total	
	N	%	N	%	N	%
#1	34	29.0	83	71.0	117	100.0
#2	63	33.0	128	67.0	191	100.0
#3	33	27.0	89	73.0	122	100.0
#4	32	32.6	66	67.4	98	100.0
#5	24	24.5	74	75.5	98	100.0
total:	186	29.7	440	70.3	626	100.0

Though our English speakers were young (ca., 20 years old), the incidence of verbless clauses – i.e. scattered major VP constituents coming under separate intonation contours – in our English conversational transcripts falls within the range seen above for our non-senile 75 yr. old Ute speakers. The ‘performance’

effect of old age is thus not a sufficient explanation. Rather, as Chafe (1994) has suggested, verbless clauses are an integral part of the grammar of spoken language. But are they regular enough to be counted as *grammar*?

5. Are verbless clauses well-governed?

The conventional wisdom has always been that there was something terribly ungoverned about constituent scattering in oral language, Chafe's (1994) verbless 'bursts'. In the preceding section I have shown that the frequency of this construction in oral language is quite high, that it has relatively little to do with the presumed typological dimension of "configurationality",² that it is hard to predict on purely grammatical grounds,³ and that it does not seem to correlate with age. In this section I will show that verbless clauses – this zero-predicate construction – are extremely well-governed in terms of their indexing to particular governing – licensing – predicates. Such indexing operates very much like the indexing of nominal zero anaphora. That is, in the overwhelming majority of cases the antecedent "licensing" predicate to which the verb-less clause is indexed, or by which it is "governed", is found in the *directly-preceding* clause.

5.1. Government of verbless clauses in English conversation

The vast majority of verbless clauses in our English conversational transcripts are anaphorically governed. In the few cataphoric cases, the licensing predicate directly follows. By way of demonstration, I have taken the transcripts of the first two conversational pairs studied in section 4. To contrast verbless (scattered) clauses with their verbal (unscattered) counterparts, consider first some of the relatively few examples in our English conversation transcripts in which a great number of post-verbal arguments fall under the *same* intonation contour with their licensing verb:

(23) **Unscattered verbal clauses:**

- a. ... chases her around the tree about three times with the hoe ...
- b. ... I read the label on the video real quick ...
- c. ... put the wood over there on the fire before she ...
- d. ... she didn't go into the lean-to or around it to get there ...

In such examples, the non-verbal constituents are all indexed to the verb that falls under the same intonation contour with them.

Consider now the use of verbless clauses. In the majority of such cases, they are indexed to an adjacent preceding predicate within the same conversational turn, as in (with the licensing verbal clause bold-faced):

- (24)
- a. **and, it was**, in a plastic bag, a bag of some sort ...
 - b. **She did something little** ... block of wood or something ...
 - c. **It was very dry outside** and sunny around, on the outside and green in the back
 - d. **She went back to the** ... the hatch or something
 - e. **she collects**, like, dry branches and leaves in yours
 - f. **so she put her skirt** ... under ... between her legs like this
 - g. **a man was ... hoeing** ... with a hoe, in a ... garden, very dry
 - h. **He was wearing**, uh, red shorts and white T-shirt. No shoes ...

In several cases, the same anaphoric adjacency manifests itself across turns, as in:

- (25)
- a. L: **He was wearing**, uh, red shorts and white T-shirt. No shoes ...
V: No shoes?
L: No shoes.
 - b. M: **walked in with** ...
D: mmm ... [overlap]
M: a hoe and a shovel and a ...
D: and a rake ...
M: yea and a rake ...
 - c. M: ... **Yeah...she tried to slit its throat** ...
D: yeah ...
M: yeah, a fairly big knife
D: yeah, a whole bunch of knives ...
 - d. M: I didn't see **her put the pot** ...
D: Uh ... [overlap]
M: on the stove

In the few instances where the indexing was cataphoric, i.e. to a following verbal clause, adjacency to the licensing verb is observed just as rigidly. In one case, (26d) below, the cataphoric indexing is due to an intervening turn:

- (26)
- a. ... the next time ... that I remember **she uh moved, the man was hoeing** ...
 - b. Yeah, in mine she, yeah, **she sat down** ...
 - c. and then, like you said, **she put it** ...

- d. V: ... the chicken she ...
 L: Yeah ... [overlap]
 V: **she kinda rearranged it**

In a few cases—all excluded from the frequency count below—the scattered constituent does include a verb. But in some fundamental way, a fairly similar indexing strategy is involved in such cases, with just as rigid a constraint on adjacency. However, the licensing predicate is repeated, so technically we don't have a verbless clause, and thus didn't count it. Such a strategy, which one may term *expansion*, is occasionally found within the same turn, as in:

- (27) a. My lady went over **and kinda yelled at him for** ...
 sounded like she **yelled** at him for doing whatever ...
 b. ... **and she put** ... [...] ... I thought she **put** a little bit of
 kindling in to get it going ...

In other cases, this strategy is found across several turns, as in:

- (28) L: **He was wearing**, uh, red shorts and white T-shirt. No shoes ...
 V: No shoes?
 L: No shoes.
 V: My guy was **wearing** foot ... or something ...

In only one instance was the direction of the indexing ambiguous, and could be counted as going in either direction – anaphoric or cataphoric. However, a change of turn is involved here:

- (29) V: **She never sat down** ... in mine ...
 L: Mine too ... **she just never sat down** ...

Finally, in only one case does an intervening clause break the adjacency between the scattered verbless constituent and its licensing predicate. This case was again due to an intervening turn (30a). In another case, this time within the same turn (30b), the licensing predicate 'bring' is recapped later, somewhat sloppily, with 'do' – directly preceding the scattered object:

- (30) a. L: **and, it was**, in a plastic bag, a bag of some sort ... uh ...
 and she unwrapped the bag, and then she, she, *she cut the* ...
 V: It was a bag, not a cloth ...
 b. ... **basically she is bringing lunch**, but I assume **she is doing** ...
 or a snack or something

The frequency distribution of the indexing of verbless clauses to adjacent predicates in our English conversation (pairs #1 and #2) is summarized in Table 8.

Table 8. Adjacency of verbless clauses to their governing predicate in English conversation

pair	scattered		unscattered		total	
	N	%	N	%	N	%
#1						
ANAPH	/	/	41	100.0	41	100.0
CATAPH	/	/	6	100.0	6	100.0
#2						
ANAPH	1	1.4	71	98.6	72	100.0
CATAPH	/	/	8	100.0	8	100.0
total:	1	0.8	125	99.2	126	100.0

As can be seen, in 99.2% of the cases, the verbless constituent was governed by an *adjacent* predicate, predominantly a preceding (anaphoric) one.

5.2. Government of verbless clauses in spoken Ute narratives

The same quantitative analysis regarding the adjacency of the governing predicate was applied to story #4 of our Ute narrative collection (Givón ed. 1985b), the longest of the five stories. The results are given in Table 9 below.

Table 9. Adjacency of verbless clauses to their governing predicate in Ute oral narrative (#4, Mollie C., age 76)

pair	non-adjacent		adjacent		total	
	N	%	N	%	N	%
ANAPH	1	1.9	52	98.1	53	100.0
CATAPH	1	3.2	31	96.8	32	100.0
total:	2	2.3	83	97.7	85	100.0

Only two examples in the Ute texts violated the strict adjacency constraint, one anaphoric (31a), the other cataphoric (31b). In both cases, the crossing of a direct-quote boundary is involved, i.e. the intervention of the quotative ‘say’:

- (31) a. ...: “ma-vaa-tugwa-su-ni **mawisi**-vaani
 there-LOC-go-CONJ-ADJ **appear**-FUT
 mama-‘aypuchi” may-puga-s, “‘ú
 woman-child/SUBJ say-REM-CONJ that/SUBJ
 kwáatu-mu-s ‘ú” ...
 fast-AN-CONJ that/SUBJ
 ‘...: “A young woman will appear over there” he said, “A fast one
 that one” ...’
- b. ... x-‘ura ‘ú ‘aapach *i*
 then that/SUBJ boy/SUBJ DEF
 ‘u pini-vuni-paghay-gya: “ya ‘ay-kwa-xa-n” **may-puga** ...
 back-look-walk-GER die-ASP-ANT-I **say-REM**
 ‘... then the boy, looking backward (said): “I have died” (he)
 said ...’

6. Verbless clauses in early child language

What we have seen so far is that verbless clauses, i.e. scattered nominal constituents falling under their own separate intonation contours, are widespread in spoken adult language and are amazingly well-governed, in the sense that the predicate that licenses (‘governs’) the scattered verbless constituent can be found, with rare exceptions, in an *adjacent* verbal clause. What I will show in this section is that the same is true in the early-stage of child communication, ca. age 1;8–2;0, when the child still produces a plethora of one-word verbless clauses. With one important difference: The licensing predicate is to be found, most commonly, in an adjacent preceding or following turn produced by the adult interlocutor.

Let us first illustrate the phenomenon from our stage-I transcripts of conversations between Naomi (N; age 1;10) and her mother (M) (Givón 2009, ch. 7).

- (32) M: **What’s this**, honey?
 N: Lap.
 M: Hmm?
 N: Lap.
 M: Lap. **That’s Mommy’s lap**. [p. 1]

The mother’s verbal clauses at both the beginning (anaphoric) and the end (cataphoric) of the interaction in (32) license Naomi’s ‘scattered’ nominal constituent (‘lap’) as the predicate of the licensing clause.

Consider next:

- (33) N: Kitty. Kitty.
M: No, **it's not a kitty, honey. It's a mouse.**
N: Mouse. [p. 2]

The mother licenses the verbless constituent ('kitty') twice as the predicate of the following two verbal clauses. The second of those licenses Naomi's corrected verbless constituent ('mouse').

Consider next:

- (34) N: Mouse
M: **You see a mouse here, too? Where is the mouse?**
N: Mouse too. [p. 3]

The mother licenses the child's verbless constituent ('mouse') first as the object of the first adjacent clause, then as the subject of the next adjacent clause. The child then responds to the first licensing clause with the recapitulated verbless constituent ('mouse', plus 'too').

Consider next:

- (35) N: Lolly. Lolly.
M: **Do you see a lolly?**
N: Lolly. [p. 3]

Again, following the child's verbless constituent ('lolly'), the mother contributes an adjacent verbal clause, licensing 'lolly' as its object. After which Naomi re-confirms with the same verbless constituent ('lolly').

What the next example illustrates is the emergence in the child's usage, after considerable negotiation, of an explicitly-uttered verb, as a single word under its own intonation contour:

- (36) N: Lolly
M: **What's that lolly doing?**
N: Lolly ear.
M: What? **Smiling, honey.**
N: Smiling. [p. 3]

The mother first licenses the child's verbless constituent ('lolly') as the subject of the adjacent following clause. The child then responds with another verbless clause, two nouns. The mother counters with a zero-subject verbal clause, clearly indexed to the child's directly-preceding 'lolly' as the subject. To which the

child responds with the appropriate zero-anaphora expression, a one-word verbal clause ('smiling'). The child's zero-anaphora subject was in turn licensed by the adult's directly-preceding clause with the same zero-anaphora subject ('lolly').

A more elaborate example of the gradual, collaborative emergence of the child's two-word verbal clauses may be seen in:

- (37) N: **Got** [???]. **Got** [???].
 M: What?
 N: **Got shoe**.
 M: Got shoe, yeah. [p. 4]

And similarly:

- (38) M: **Point to the doggie**.
 N: [???]
 M: There it is.
 CHI: **Point. Doggie**. [pointing] [p. 7]

And again:

- (39) M: What's this piggy doing?
 N: Piggy.
 M: **That piggy is crying**.
 N: **Piggy crying**. [p. 12]

Finally, in only few cases, the adjacent verbal clause that licenses a verbless constituent is produced by the child, then reinforced by the adult, as in:

- (40) N: Hi.
 M: Hi what? I don't understand.
 N: Birdie.
 M: Yes, birdie.
 N: **Birdie singing**.
 M: **Singing, yeah**. [p. 9]

What our last three examples illustrated, rather vividly, is how the collaboration between adult and child not only provides the context within which the child's verbless one-word clauses are interpreted ('licensed'), but also provides the child with the context for – eventually – beginning to produce verbal clauses on their own.

In a few instances, the child's verbless clauses are two-noun or noun-modifier clauses. The licensing by the adult's adjacent verbal clause is just as recognizable. Thus:

- (41) a. M: **There's a blanket on the baby's bed.**
N: Blanket bed.
b. M: **Do you see some toys in the room?**
N: Toys in room.
c. M: **Are there some nice toys?**
N: Nice toys. [p. 6]

Table 10 summarizes the frequency distribution of instances in which single non-verbal constituents, coming under their separate intonation contours, are licensed by an *adjacent* clause, either preceding (anaphoric) or following (cataphoric), as against the frequency of instances where the licensing predicate is *non-adjacent*. All instances of the child's use of non-verbal single-word 'clauses' in the first 12 pages of the Naomi-I transcript were counted.

Table 10. Adjacency vs. non-adjacency of verbal clause that licenses the child's verbless clause (Naomi-I, age 1;10; pp. 1–12)

adjacent		non-adjacent				total	
anaphoric		cataphoric		anaphoric		cataphoric	
N	%	N	%	N	%	N	%
31	63.2	18	36.8	/	/	49	100.0

The frequency distribution in Table 10 demonstrates, rather vividly, the role of the immediate communicative context in licensing the successful use of verbless clauses by the child. The developmental stage studied here is a transitional one, during which the child is shifting from one-word verbless clauses to two-word or longer clauses that include a verb under a unified intonation contour. As in the adult usage, 100% of the verbless (scattered) clauses used by the child are governed ('licensed') by a predicate in an adjacent clause.

A frequency count of the totals of verbless vs. verbal clauses in the child transcript used above would have been somewhat meaningless, given the deliberate selection of a transitional stage. A more meaningful count on Bloom's (1973) "one-word stage" transcripts was presented in Givón (1979, ch. 7, p. 294).⁴ At this developmental stage, ca. 80% of the child's utterances were indeed single-word turns. The frequency distribution of the various types of one-word turns in Bloom's transcript is reproduced in Table 11.

Table 11. Verbless vs. verbal child utterances at the one-word stage
(Bloom 1973 transcripts; appendix pp. 150–160)

non-verbal	N	%
nouns & names	63	
prepositions	22	
there	15	
'ivot' (<i>wid</i>)	36	
interjections (<i>oh, uh</i>)	13	
total non-verbal:	149	81.9
predicative	N	%
<i>no</i>	6	
<i>dirty</i>	4	
<i>gone</i>	5	
<i>more</i>	18	
total predicative:	33	18.1
total utterances:	182	100.00

What our data suggest, I think, are two interlinked core features of child language development:

- It is the immediate communicative context – in this case supplied primarily by the adult – that makes possible the mutually-negotiated interpretation of the child's one-word verbless clauses.
- It is also the same immediate communicative context, with the missing verb supplied mostly by the adult, that makes it possible for the child to shift, gradually, from using verbless one-word clauses to using two-word and longer verbal clauses under a unified intonation contour.

7. Verbless clauses in 2nd language pidgin

To investigate the use of verbless clauses in 2nd language pidgin communication, I looked at a 7-page narrative produced by a 79 year old Korean-born woman who had spent most of her life in Hawaii. The text is taken from Derek Bickerton's Hawaii Pidgin collection, Stage-I (Bickerton and Odo 1976). An example of the pidgin narrative and my proposed English translation is given in (42), below. Verbless clauses under their own separate intonation contours are marked [VL] on the right. All verbs, including those that license verbless clauses, are bold-faced. Wherever a number higher than [1] is given on the right side, it indicates

that more than one verbless clause is governed by the same predicate, i.e. in an equi-predicate chain.

- (42)
- a. Picture **marry**.
(I was married through a picture.)
 - b. Husband picture me **see** girl-time Korea.
(My husband saw a picture of me when I was a girl in Korea.)
 - c. My picture my husband **see**.
(My husband saw my picture.)
 - d. He **like** OK marry. **Come** Hawaii.
(He liked it well enough for marrying. So I came to Hawaii.)
 - e. Husband **pay, help** husband better.
(My husband paid for it, so I can come and help him.)
 - f. That's why Hawaii **come**.
(That's why I came to Hawaii.)
 - g. I **like** Hawaii come.
(I liked coming to Hawaii.)
 - h. My father, my mama, all **say**: "Go. You like, go".
(My father and mother said "Go. If you like it/him, go".)
 - i. That's why **come** Hawaii.
(That's why I came to Hawaii.)
 - j. Yes, one brother, six sister ... VL [2]
(Yes, I had one brother and six sisters ...)
 - k. No, one brother, three sister, all together. VL [3]
(No, I had one brother and three sisters altogether.)
 - l. No, only me **come**.
(No, [of all of us] only I came.)
 - m. Japan, first-time, ship Japan **come**. VL [2]
(First the ship came to Japan.)
 - n. Second **come** Hawaii.
(Next it came to Hawaii.)
 - o. This steamer ... **name** Chang-Yang-Huang ... VL [1]
(The steamer was named C.-Y.-H. ...)
 - p. He **said** ... ah ...
([??] said ... hah ...)
 - q. Some people they ... ah ... American boat **come**. VL [1]
(Some people came on an American boat.)
 - r. **Too big**.
(It was too big.)

- s. America boat **come**, first time in *Made* [?] ... VL [1]
(The American boat stopped first in *Made* [?] ...)
- t. Satori **come**,
(Then it came to Satori,)
- u. Satori they Japan, VL [1]
(Satori is in Japan.)
- v. Japan **come** one ... one month time, VL [1]
(It came to Japan in one ... [?] it took one month,)
- w. boat Hawaii **come**.
(for the boat to come to Hawaii.)
- x. Yes, Ulsan ... me **stop** Ulsan. **Go**. Me go. VL [1]
(Yes, I was in Ulsan (once). I went there.)
- y. Girl-time another place no **go**, never.
(During my childhood I never went anywhere else.) [pp. 1–2]

Another example of multiple indexing to the same verb can be seen in (43e–f) below:

- (43)
- a. Two twin girl. VL [1]
(I have twin girls.)
 - b. One ... one girl husband **wika** office. VL [1]
(One of the girls' husband works in an office.)
 - c. Four year **stop** girl in town over-here ...
(She lived in town over here for four years ...)
 - d. Honolulu office. VL [1]
(She worked in an office in Honolulu.)
 - e. He **name** two girl, twin girl **name**.
(He [husband?] named the two girls.)
 - f. One girl Carol, one girl Natalie. Twins. VL [3]
(One girl is named Carol, the other Natalie. They are twins.)
 - g. Before school, yeah, highschool. Yes, twins. VL [2]
(They went to highschool. Yes, they're twins.)
 - h. Highschool, highschool diploma. Diploma highschool. VL [3]
(They have a highschool diploma.) [p. 4]

In the seven pages of the life-story narrative analyzed, 89 instances of verbless clauses were found. All – 100% – were licensed by a predicate in an adjacent verbal clause. Even when a new topic is introduced, rather infrequently, it is licensed by a following (cataphoric) adjacent predicate, as in (44b) below with the shifting to *Korean food*:

- (44) a. Diploma my son highschool **get**. Yes, yes, Farrington highschool.
VL [1]
(My son also got a highschool diploma, from Farrington High-
school.)
- b. Yes, **Korea food**, everything, everything for **eat, eating, eating**.
VL [2]
Yes, we eat only Korean food [?].
- c. Yeah, everything. Everything food **can eat**. VL [1]
All we can eat is Korean food. [p. 4]

The frequency distribution of the verbless vs. verbal intonational clauses in the 7-pp. text is summarized in Table 12.

Table 12. verbless (scattered) vs. verbal (unscattered) intonational clauses in the Korean-English text (7 pp. of transcript)

verbless/scattered		verbal/unscattered	total
adjacent	non-adjacent		
89 (42.7%)	/	119	208

The percent of verbless clauses in the text was $89/208 = 42.7\%$. This compares with the 10–35–50% range for the Ute-speaking elders and ca. 30% for the English-speaking young adults, above.

8. Verbless clauses in Broca's aphasic speech

For assessing the distribution of verbless constituents falling under their own separate intonation contour in the speech of a Broca's aphasia patient, I counted the entire text produced by case #1 (Mr. Franklin) in Menn (1990; pp. 154–156). As an example of this type of communication, consider (pp. 154–155):

- (45) a. ... Little Red Riding Hood ... **go** ... to ... **see** ... grand. ma ...
house ... VL [4]
- b. The wolf. **was. watching**. Uh ... the wolf. **says** ... "Where're
you. **going**. VL [2]
- c. Little Red Riding Hood **says** ... "I'm **going**. to **see** ... grandma
house. VL [1]
- d. An[d]. the wolf. **said**: "Oh" (chuckles). So ... he, ah, the wolf ...
hurrying ... VL [4]

- e. **running** ... (pause) ... the uh, the wolf. **is running** to. Little Red ... VL [3]
- f. Riding Hood. grandma. So. he. **comes in**, An(d)... he ... **tied up** ... VL [4]
- g. uh. grandma ... And then. he. uh. **took** ... gran, grandma. han, hanet, VL [6]
- h. han, hanet, that, bonnet. And **dropped in**. to bed ... VL [5]

The sole example in (45) above of an argument falling under the same intonation contour with its licensing verb is (45c) ‘Little Red Riding Hood says ...’.

The frequency distribution of verbless (scattered) vs. verbal (unscattered) intonational clauses in the Broca’s aphasia text is summarized in Table 13.

Table 13. verbless (scattered) vs. verbal (unscattered) intonational clauses in the Broca’s aphasia text (2 pp. of transcript; Menn 1990, pp. 154–155)

verbless/scattered		verbal/unscattered	total
adjacent	non-adjacent		
131 (89.2%)	/	16	147

The total number of intonational units in the text was 147. Out of those, 131 – 89.2% – were verbless (‘scattered’) constituents falling under their own separate intonation contours. All of them – 100% – were *adjacent* to their licensing predicates. Only 16 of the intonational clauses – 10.8% – were unscattered verbal clauses; that is, with the non-verbal argument falling under a joint (“merged”) intonation contour with their licensing verb.

9. Summary

In spoken adult language, as exemplified by the Ute narratives and English conversation, two language processing modes seem to co-exist. First, the one usually discussed by linguists, with nominal arguments placed under the same intonation contour with their licensing verb; that is, in Bickerton’s (2008) terms, with “merge” operation having applied. This processing mode may be called grammatical. And second, with the nominal arguments placed under their own separate intonation contours, but nevertheless indexed rather stringently – at the level of ca. 99% – to the proper semantic predicate in an *adjacent* clause. This is the processing mode that may be called pre-grammatical.

As we have known all along (Givón 2009, ch. 9), adult humans do not lose the ‘rules’ of pre-grammar when they acquire grammar. Rather, they remain

capable of reverting to pidgin communication in the appropriate context (2nd language acquisition, Broca's aphasia). In our English conversation transcripts, produced by young adults, the use of "unmerged" verbless clauses – pidgin, pre-grammar – appeared at a frequency level of ca. 30%. In the Ute narrative the figure ranged from 10–35%–50%, with the higher figure produced by the oldest, memory-impaired speaker.

We also know that at a certain early stage of language acquisition, the so-called "one-word stage" (Bloom 1973; Scollon 1976), children use the same "unmerged" verbless construction at a much higher frequency – in our count (Table 11) ca. 80%. What we also saw is that the child's use of verbless "unmerged" clauses is just as well-governed as the adults', at the level of ca. 100% *adjacency* to the licensing predicate (Table 10). But with two important differences:

- First, at an early stage (ca. 1;0–1;6) children use this "un-merged" processing mode almost exclusively, not just as an option (Bloom 1973; Scollon 1976). That is, their usage level (80%) approximates that of Broca's aphasia patients (90%).
- Second, when children use this "unmerged" pre-grammatical language processing mode, the predicate that governs ('licenses') the verbless one-word constituents is supplied most often *not* by the child's own adjacent intonational units, but primarily by the adult's adjacent turns (Ochs *et al.* 1979).

We saw, next, that the same verbless "unmerged-clause" construction appeared in 2nd language pidgin usage at the level of 42%; and that it is just as well-governed – 100% adjacent to the licensing predicate – as in the adult and child usage. And lastly, we saw that the same construction, again 100% well-governed by an adjacent predicate, appears at the level of 90% in Broca's aphasia usage.

For both language processing modes, verbless vs. verbal clauses, and in all four data-bases we have inspected, the strict adjacency governing condition was observed. The only difference between the two modes of processing appears to be their intonational packaging – "merged" intonation contours in the more evolved grammatical mode, "unmerged" intonation contours in the more primitive pre-grammatical mode.

10. Discussion

10.1. Indexing verbless constituents to adjacent verbal clauses

Our quantitative results raise a number of issues. The first one is formal: One could now describe two well-governedness conditions for indexing clausal ar-

guments to their proper ('licensing') predicates, one for the grammatical processing mode, with arguments falling under the *same* intonation contour with their governing predicate,⁵ the other for the pre-grammatical processing mode, with scattered non-verbal arguments falling under separate intonation contours:

(46) **Conditions for indexing arguments to their proper predicates:**

a. **Under the same intonation contour (grammatical):**

Index the argument to the predicate falling under the same intonation contour.

b. **Under separate intonation contours (pre-grammatical):**

Index the argument to the predicate falling under the most adjacent intonation contour.

The conditions that govern the choice of anaphoric vs. cataphoric indexing in adult oral communication are yet to be specified. The paucity of cataphoric indexing in both nominal and verbal zero-marking, at least in a VO language like English, strongly suggests that cataphoric indexing in adult English usage may be described as a special case, and anaphoric indexing the default ('elsewhere') case. The much higher frequency of cataphoric indexing in Ute, on the other hand, may perhaps be ascribed to its having relatively recently changed from OV to flexible-order.

The frequency distribution data from the English-learning child (Table 10) suggest a slightly different story about the direction of the governing predicate. Cataphoric indexing of verbless clauses accounts for ca. 36% of the total sample. And the controlling factor seems to be – who takes the initiative in starting a new unit of verbal interaction. If the child takes the initiative with a verbless clause, the indexing is most likely to be cataphoric – the following verbal clause supplied by the adult. If the adult takes the initiative with a full verbal clause, and the child then responds with a verbless constituent, the indexing will be by definition anaphoric. Given the dynamics of child-adult communication at this age, one should not expect a strong bias either way.⁶

In both 2nd language Pidgin and Broca's aphasic communication, licensing of a scattered verbless constituent by an adjacent predicate/clause could be either anaphoric or cataphoric regardless of typological considerations. Thus, the fact that Korean is an OV language shows prominently in the clauses where the nominal arguments fall under the same ("merged") intonation contour with its licensing verb (Bickerton and Givón 1976). But our stage-I Korean-English speaker scatters well-governed non-verbal constituents either before or after their licensing predicate. And the same is true in the Broca's aphasia transcripts.

One may as well note that well-edited or consciously-constructed written texts that display the idealized properties of Chomsky's 'competence' will tend to abide more consistently by condition (46a). On the other hand, oral communication, where the natural cognitive constraints on the amount of information packaged into a single intonational clause are more decisive (Goldman-Eisler 1968; Givón 1975b; Chafe 1994), may display a higher frequency of government by condition (46b). However, such a division is not absolute (see 8.2. below).

10.2. Cognitive status of verbless clauses

The second issue arising out of the study of verbless clauses is cognitive. One might as well note that the strict adjacency condition that governs our verbless clauses closely parallels the one that governs nominal zero-anaphora. Thus, in Givón (1983b) it was found that 98% of anaphoric zeros in English found their antecedent in the directly-preceding clause (anaphoric distance 1), and the remaining 2% within the next clause (anaphoric distance 2). The comparable numbers for oral Ute narrative (Givón 1983c) were 86% and 8%, respectively.

As I have suggested elsewhere (Givón 1992), the almost absolute requirement of adjacency in zero anaphora can be interpreted to mean continued mental activation of the persisting topical referent in focal attention or working-memory. One could likewise suggest that the equally near-absolute adjacency requirement on verbal zero-anaphora means the very same thing: continuing mental activation of the persisting governing predicate in focal attention or working-memory.

Cognitively, thus, zero predicates can be indexed to their proper overtly-expressed 'licensing' predicate because it is the only one that is mentally activated at that point. Presumably then, the same limiting-capacity provision invoked in the grammar of referential coherence must also hold in the case of predicates: Only one at a time can be mentally activated. The firm grounding of this parsimony provision in the attentional literature is only too transparent (Givón 1992).

10.3. Are verbless clauses a product of 'performance' or 'competence'?

Derek Bickerton (in personal communication) has suggested that verbless clauses in native-speaking unimpaired adults, as in our Ute and English data, are nothing but the effect of 'performance factors' on an underlying compe-

tence. This suggestion would, presumably, ascribe the scattering of verbless constituents under their own separate intonation contours to working-memory limitation and other vagaries of the overloaded processor beyond the speakers' choice. It would thus be of interest to note that the same construction, with the same well-governed adjacency condition, is also used by English prose writers, not only in quoted conversation but also in their own narrative voice. Let me illustrate this by an example from one of my all-time favorite short stories, written by a premier stylist, D. Barthelme's "The Emperor" (1981; p. 31; licensing predicates bold-faced):

- (47) a. Every morning the Emperor **weighs** the documents brought to him,
 b. every evening he **weighs** them again;
 c. he **will not rest** until a certain weight has passed through his hands;
 d. he has **declared** six to **be** the paramount number of his reign,
 black the paramount color; VL [1]
 e. he **hurries** from palace to palace, along underground corridors,
 VL [1]
 f. **ignoring** gorgeous wall hangings, bells, drums, beautiful ladies;
 VL [3]
 g. how many more responsible officials **must he strangled**
 h. before his will **prevails**, absolutely. VL [1]

In Barthelme's one-page story, there are 55 scattered verbless constituents under their own separate intonation contours, as marked by punctuation. Without exception, they are all strictly governed by ('indexed to') adjacent predicates. There are a total of 125 marked verbs in the text. Out of the total 180 (55 + 125) clauses under a separate intonation contour, thus, 55/180 = 30.5% – are verbless constituents indexed to an adjacent verbal clause. This is well within the range of spoken Ute narrative (10%-35%-50%) and spoken English conversation (ca. 30%).

Since Barthelme is one of the most careful self-editing stylists writing in English, the likelihood of his verbless clauses being due to the vagaries of 'performance' during the time-pressured flow of oral conversation is *nihil*. One could of course argue that he is anticipating his readers' performance problems. But they too are not pressured by the rhythm of spoken language. A 'performance' account of verbless clauses thus seems somewhat unhelpful.

10.4. Developmental trends

In early child language, a switch in language processing mode occurs – from pre-grammar to grammar. Among other things, this switch involves a change from one-word verbless utterances with clausal meaning, to multi-word verbal clauses. This switch is accomplished, manifestly, not by expansion (analysis) but by combination (synthesis; Tallerman, 2007). In early childhood, one-word utterances are not analyzed into component parts. Rather, other words, especially the verb, are gradually transferred from the communicative context – be it cross-turns or within-turn – into the emerging clause. A holistic-to-analysis model is simply not consonant with the facts.

The child language data surveyed above also suggest that the early child language transition from the one-word verbless clause to the two- or three-word verbal clause may be also characterized as a transition from our governing constraint (46b) to our governing constraint (46a). Developmentally, the first constraint (46b) applies to the kind of interactive communication used at the one-word stage, when multi-propositional coherence stretches across adjacent turns and is often supplied by the adult. The second constraint (46a) is phased in when the child begins to acquire longer multi-clausal turns, in which multi-propositional coherence applies within the child's own turn (Givón 2009, ch. 8).

10.5. The role of multi-propositional coherence

In language ontogeny and most likely also in language phylogeny, the move from one-word non-verbal clauses to multiple-word verbal clauses coincides with the rise of multi-propositional discourse coherence. Indeed, one may argue that it is the appearance of such cross-clausal coherence, i.e. a sequence of one-word clauses that cohere together as pertaining to the same event, that prompt the eventual packaging of all event components under a single intonational contour. That is, schematically, in a pre-grammatical pidgin:

(48) man, catch, goat, barn, yesterday > man catch goat barn yesterday

Put another way, there is no plausible motivation for joining the words together into a unified intonational clause and hierarchic constituent structure – Bickerton's "merge" – unless they are already seen as pertaining to, or cohering in, the same event. The developmental trend, in ontogeny, and most likely in phylogeny, is therefore *not* from words to clauses, but rather from words representing coherent single events in a succession of one-word intonational clauses to words

representing the same coherent event *more efficiently* under a single intonation contour. Bickerton's "merge" may thus be interpreted as a cognitive operation, perhaps akin to Simon's chunking (Chase and Simon 1973). But it could apply, in both ontogeny and phylogeny, only after coherent multi-propositional discourse has emerged.

10.6. Shared mechanisms in behavior, ontogeny and phylogeny

As Fernald and White (2000) note, the synchronic (on-line) adaptive behavior of biological organisms is the shared, linking mechanism between individual adaptive behavior, ontogeny and phylogeny. The comparative study of the use of verbless clauses by adults, young children, pidgin speakers and Broca's aphasia patients suggests a similar story about the relation between synchronic communicative behavior, child language acquisition and language evolution. The mechanism of transferring information from the adjacent context to an explicitly-coded verbal clause is a fundamental synchronic mechanism in mature adult communication. The entire field of discourse pragmatics rests on this very mechanism. This is also the main developmental mechanism in child language acquisition, responsible for the rise of multi-word verbal clauses out of one-word non-verbal ones. I see no reason to assume that the same mechanism was not also implicated in the evolution of multi-word verbal clauses out of one-word non-verbal clauses.

Notes

* I am indebted to Derek Bickerton for comments on an earlier version of the ms. Likewise, discussions with Luigi Rizzi and access to two of his papers (Rizzi 2005, 2008) have proven most helpful. This is not to suggest either of them would endorse my conclusions.

1. In diachrony this of course is not an issue, since current adult speakers, the agents of diachronic change, have already passed the one-word stage.
2. In this, verbless clauses – verbal zero- anaphora – are just as universal as nominal zero-anaphora, and just as irrelevant to this presumed typological dimension (Givón 2002, ch. 3).
3. Though as Goldman-Eisler (1968) points out, it is highly predictable on psycholinguistic grounds, a fact that is underscored by the increase of this feature with aging, no doubt due to memory loss.
4. Bloom (1973), appendix, pp. 150–160.

5. Well-known special conditions govern the indexing of arguments of subordinate clauses embedded under the same intonation contour with their main clause, and many syntactic mechanisms can be used to distinguish embedded from main clauses.
6. In Givon (2009, ch. 7), it was shown that children and their adult interlocutors at stages I-II-III of our study initiated modal interaction units at about the same frequency in the CHILDES transcripts.

References

- Austin, Peter and Joan Bresnan
 1996 Non-configurationality in Australian aboriginal languages. *Natural Language and Linguistic Theory* 14. 2: 215–268.
- Barthelme, Donald
 1981 The Emperor. *The New Yorker*, 1–26–81: 31.
- Bickerton, Derek
 2008 How central is recursivity? *Symposium on the Genesis of Complex Syntax*. Rice University, Houston, March 2008 (ms).
- Bickerton, Derek and T. Givón
 1976 Pidginization and syntactic change: From SOV and VSO to SVO. *Parasession on Diachronic Syntax*, CLS 12, 9–39. University of Chicago: Chicago Linguistics Society.
- Bickerton, Derek and Carol Odo
 1976 *Change and Variation in Hawaii English*, vol. I: *The Pidgin*, NSF final report. Honolulu: University of Hawaii.
- Bloom, Lois
 1973 *One Word at a Time: The Use of Single Word Utterances Before Syntax*. The Hague: Mouton.
- Bowerman, Melissa
 1973 *Early Syntactic Development*. Cambridge, UK: Cambridge University Press.
- Chafe, Wallace
 1982 Integration and involvement in speaking, writing and oral literature. In: Deborah Tannen (ed.), *Spoken and Written Language: Exploring Orality and Literacy*, 35–53. Norwood, NJ: Ablex.
- Chafe, Wallace
 1987 Cognitive constraints on information flow. In: Russell S. Tomlin (ed.), *Coherence and Grounding in Discourse*, TSL #11, 21–51. Amsterdam: John Benjamins Publishing Company.
- Chafe, Wallace
 1988a Linking intonation units in spoken English. In: John Haiman and Sandra A. Thompson (eds.), *Clause Combining in Grammar and Discourse*, TSL #18, 1–28. Amsterdam: John Benjamins Publishing Company.

- Chafe, Wallace
1988b Punctuation and the prosody of written language. *Written Communication* 5: 395–426.
- Chafe, Wallace
1994 *Discourse, Consciousness and Time: The Flow and Displacement of Conscious Experience in Speaking and Writing*. Chicago: University of Chicago Press.
- Chase, William G. and Herbert A. Simon
1973 Perception in chess. *Cognitive Psychology* 4: 55–81.
- Chomsky, Noam
1965 *Aspects of the Theory of Syntax*. Cambridge, MA: MIT Press.
- Chomsky, Noam
1981 *Lectures on Government and Binding: The Pisa Lectures*. Dordrecht: Foris Publications.
- Chomsky, Noam
1982 *Some Concepts and Consequences of the Theory of Government and Binding*. Cambridge, MA: MIT Press.
- Croft, William
1997 Intonation units and grammatical structure in Wardaman and English. University of Manchester (ms).
- Croft, William
2007 Intonation units and grammatical structure in Wardaman and in a cross-linguistic perspective. *Australian Journal of Linguistics* 27.1: 1–39.
- Dickinson, Connie and T. Givón
1997 Memory and conversation. In: T. Givón (ed.), *Conversation: Cognitive, Communicative and Social Perspectives*, TSL #34, 91–132. Amsterdam: John Benjamins Publishing Company.
- DuBois, John W.
1987 The discourse basis of ergativity. *Language* 63.4: 805–855.
- Fernald, Russell D. and Stephanie A. White
2000 Social control of brains: From behavior to genes. In: Michael S. Gazzaniga (ed.), *The New Cognitive Neuroscience*, 2nd edition, 1193–1208. Cambridge, MA: MIT Press.
- Givón, T.
1975b Focus and the scope of assertion: Some Bantu evidence. *Studies in African Linguistics* 6.2: 185–206.
- Givón, T. (ed.)
1983a *Topic Continuity in Discourse: A Quantitative Cross-Language Study*, TSL 3. Amsterdam: John Benjamins Publishing Company.
- Givón, T.
1983b Topic continuity in spoken English. In: T. Givón (ed.) 1983a, 343–363.

- Givón, T.
1983c Topic continuity and word-order pragmatics in Ute. In: T. Givón (ed.) 1983a, 141–214.
- Givón, T. (ed.)
1985b *Ute Traditional Narratives*. Ignacio, CO: Ute Press.
- Givón, T.
1991 Some substantive issues in verb serialization: Grammatical vs. cognitive packaging. In: Claire Lefebvre (ed.), *Serial Verbs: Grammatical, Comparative, and Cognitive Approaches*, 137–211. Amsterdam: John Benjamins Publishing Company.
- Givón, T.
1992 The grammar of referential coherence as mental processing instructions. *Linguistics* 30.1: 5–55.
- Givón, T.
2002 *Bio-Linguistics: The Santa Barbara Lectures*. Amsterdam: John Benjamins Publishing Company.
- Givón, T.
2009 *The Genesis of Syntactic Complexity: Diachrony, Ontogeny, Neuro-Cognition, Evolution*. Amsterdam: John Benjamins Publishing Company.
- Goldman-Eisler, Frieda
1968 *Psycholinguistics: Experiments in Spontaneous Speech*. NY: Academic Press.
- Hale, Kenneth L.
1980 Word-star languages. *Mid-America Linguistic Conference*. Lawrence: University of Kansas (ms).
- Hale, Kenneth L.
1982 Preliminary remarks on configurationality. *Proceedings of the North Eastern Linguistic Society*: 86–96.
- Hale, Kenneth L.
1983 Walpiri and the grammar of non-configurational languages. *Natural Language and Linguistic Theory* 1: 5–47.
- Hale, Kenneth L.
1992 Basic word order in two ‘free word order’ languages. In: Doris L. Payne (ed.), *Pragmatics of Word-order Flexibility*, TSL #22, 63–82. Amsterdam: John Benjamins Publishing Company.
- Huang, C.-T. James
1984 On the distribution and reference of empty pronouns. *Linguistic Inquiry* 15.4: 531–574.
- Jelinek, Eloise
1984 Empty categories, case and configurationality. *Natural Language and Linguistic Theory* 2: 39–76.

- Menn, Lise
1990 Agrammatism in English: Two case studies. In: Lise Menn and Loraine K. Obler (eds.), *Agrammatic Aphasia: A Cross-Language Narrative Sourcebook*, vol. 1. 117–153.
- Payne, Doris L.
1993 Nonconfigurationality and discontinuous expressions in Panare. *Berkeley Linguistics Society. Special Session, Volume on Native American Languages*, 121–138. Berkeley: University of California.
- Rizzi, Luigi
2005 Grammatically-based target-inconsistencies in child language. University of Sienna (ms).
- Rizzi, Luigi
2008 Recent advances in syntactic theory. *Ernst Strüngman forum on the Biological Foundations and Origin of Syntax*. Frankfurt, March 2008 (ms).
- Scollon, Ron
1976 *Conversations With a One-Year Old: A Case Study of the Developmental Foundation of Syntax* Honolulu: University of Hawaii Press.
- Tallerman, Maggie
2007 Analyzing the analytic: Problems with holistic theories of proto-language. University of Durham (ms).

Abbreviations of Ute grammatical glosses

ADJ	adjective	LOC	locative (case)
ADV	adverb	MASS	mass (crowd)
AN	animate (suffix)	NEG	negation marker
ANT	anterior (pluperfect)	NOM	nominal(izer)
ASP	aspect	OBJ	object (case)
CAUS	causative (verb suffix)	OBL	oblique case
CONCL	conclusion (of episode)	PART	partitive
CONJ	conjunction	PL	plural
DEF	definite (article)	RED	reduplication (verb)
DIM	diminutive	REFL	reflexive (possessive)
DIR	directional (case)	S(UBJ)	subject (case)
EMPH	emphasis	TO	'to' (directional)
FUT	future	V	verb
GER(UND)	gerund (adverbial)	WH	WH question/pronoun
IMM	immediate (progressive, perfect)	1s	1 st person singular
IMP	imperative	3p	3 rd person plural (pronoun)
		3s	3 rd person singular (pronoun)

Structure, usage and variation

Alternative agreement controllers in Danish: Usage or structure?

Elisabeth Engberg-Pedersen and Mads Poulsen

1. Introduction

Agreement as covariance of features with at least two constituents in the clause seems to belong to the superficial “machinery” of redundancy: a feature of one constituent “spills over” to another constituent in language production and thereby possibly eases language perception. Nevertheless, agreement is clearly worthy of treatment as part of a language’s system or structure. No matter whether the patterns of agreement are simple or complicated, language users may react strongly to cases of missing or faulty agreement and they may manipulate agreement to express subtle differences of meaning (cf. papers in Barlow and Ferguson 1988; Corbett 2006). Moreover, agreement may reflect semantic and pragmatic distinctions that indicate the way language users wish their messages to be understood.

Danish subject predicatives in the form of adjectives agree with the subject in number and gender as in (1)–(5).¹

- (1) *Jeg er vild med dem*
I am crazy-Ø about them
‘I am crazy about them.’
- (2) *Vi er vild-e med dem*
we are crazy-PL about them
‘We are crazy about them.’
- (3) *Stol-en er grøn*
chair-DEF.SG.COM is green-Ø
‘The chair is green.’
- (4) *Bord-et er grøn-t*
table-DEF.SG.NEUT is green-SG.NEUT
‘The table is green.’

- (5) *Stol-e-ne er grønn-e*
 chair-PL-DEF.PL are green-PL
 ‘The chairs are green’
- (6) *Bord-e-ne er grønn-e*
 table-PL-DEF.PL are green-PL
 ‘The tables are green.’

The singular form of the adjective has no marker with animate subjects (such as *jeg* ‘I’ in (1)) and with subjects with a noun in the common gender (such as *stol* ‘chair’ in (3)). The marker is *-t* when the subject is neuter gender (such as *bord* ‘table’ in (4)). With plural subjects, only number, not gender, is marked on the predicative adjective, cf. (5) and (6).

The pattern is, however, apparently occasionally violated when people say or write the following clauses:

- (7) The host in a broadcast gardening television program, May 2007:
Jeg er vilde med dem
 I am crazy-PL about them
 ‘I am crazy about them’
- (8) Blog, September 2007:
Altså normalt er jeg vilde med gadgets, men...
 In fact normally am I crazy-PL about gadgets, but
 ‘In fact, generally I am crazy about gadgets, but ...’

In (7) and (8) the predicative adjective is in the plural even though the subjects – in both cases the first person singular pronoun – are singular. One possible explanation is that the speaker of (7) and the writer of (8) are confused or inattentive or in some other way drabbed by “performance” difficulties. Another possible explanation for the plural adjective forms of (7) and (8) is that the language users follow an alternative norm where predicative adjectives agree in number with the prepositional object, in (6) *dem* ‘them’ and in (7) *gadgets*, and not the subject, possibly under specific circumstances. In the former case the phenomenon is a usage phenomenon, in the latter it belongs to language structure.

In an earlier treatment of the cases of deviant agreement in Danish as in (7) and (8), Nørby Jensen (2004) claims that the plural form of the predicative adjective with singular subjects and plural prepositional objects is found when the prepositional object is focused. He defines the focus of the sentence as “[d]et informativt vigtigste led” (‘the informatively most important constituent’) (Nørby

Jensen 2004: 167). Danish is an SVO-language, but as it is also a V2-language, the position before the verb can be used for all other constituents than the subject, except for some adverbials. Nørby Jensen claims that the focus domain of Danish sentences is the end of the clause, which means that the prepositional objects of (7) and (8) are placed in the focus domain. But, contrary to other Danish grammarians (Heltoft and Hansen, 2000, cf. also section 2), Nørby Jensen also interprets the placement of a constituent other than the subject in the first position before the verb as a way of focusing the constituent. He, thus, names the deviant agreement pattern *fokuskongruens* ('focus agreement'). Focus agreement would be typologically unusual as trigger-happy (Comrie 2003) or promiscuous (Leer 1991) agreement, i.e. cases of alternative agreement controllers, is otherwise agreement with topics, not foci (cf. section 3). Nørby Jensen's analysis does, however, point to the possibility that agreement in Danish may be changing as a consequence of a possible emphasis on pragmatic information structure at the expense of grammatical relations in the language. If this change is really underway, it could be described as a usage-driven change in the content structure of Danish (Harder 1996), a change with its roots in sentence production, but supported by the emphasis on information structure in Danish which is manifested in the use of the position before the verb for topicalization (Falster Jakobsen 1998; cf. Dik's analysis of Dutch (1997)).

In this chapter we want to examine psycholinguistic and corpus evidence for the possibility that (7) and (8) represent an alternative norm to the standard subject agreement of Danish predicative adjectives. We suggest that a deviant agreement token may arise for psycholinguistic reasons (cf. spontaneous phonetic assimilation). Such deviant usage-arisen "agreement" may leave "a trace that can influence subsequent processing. . . Cumulatively. . . a large number of similar occurrences carve out a notable depression in the landscape, i.e. a strong attractor." (Langacker this volume: 137). Whether eventually, such a form becomes part of the language structure depends on its relation to the existing norm: if it replaces the existing norm, or if it is given an alternative function (e.g. interpreted as expressing topic agreement and not subject agreement), the system has changed.

Section 2 expands on agreement in Danish and gives a short description of the use of the preverbal position in Danish because of its importance to the informational structure of the sentence. In sections 3 and 4, we summarize typological evidence from languages with shifting agreement controllers and psycholinguistic evidence from English of experiment-induced variation in agreement patterns. Then we present corpus evidence for the relative frequency of apparent agreement of the predicative adjective with the prepositional object in Danish in section 5, and, in section 6, a reading-time experiment investigat-

ing whether users of Danish have higher expectations of agreement between the adjective and the prepositional object than of no agreement at all. Finally, we conclude with lessons learnt about corpus data, language processing, and the relationship between usage and structure.

2. Facts about Danish

2.1. Agreement in Danish

In Danish, besides agreement between the adjective of subject predicatives controlled by the subject, there is agreement within the nominal, an adjective as object predicative agrees with the object (e.g. *Det dystre skær malede bordet ildevarslende rødt* ‘The sombre glow painted the table-NEUT ominously red-NEUT’), and free adjectival predicatives agree with the subject of the clause (e.g. *Trætte ankom vi en 1/2 time før planlagt til Kastrup lufthavn* ‘Tired-PL we arrived half an hour before planned to Kastrup airport’). Verbs do not agree with their arguments in Danish. There are two noun genders, common and neuter, which are lexically determined, but can be used to distinguish countable items or types from masses as in *en øl* ‘a beer’ (common gender) and *noget øl* ‘some beer’ (neuter gender). There is person agreement only between the subject and the reflexive pronoun (*jeg/du/han/hun undrede mig/dig/sig/sig* ‘I/you/he/she wondered’), and between the subject and the reflexive possessive (*jeg/du/han/hun tog min/din/sin/sin hat* ‘I/you/he/she took my/your/his/her hat’).

As demonstrated in section 1, the predicative adjective agrees with the subject in number and, in the singular, also in gender. The suffixes in the singular are zero for common gender and *-t* for neuter gender, and in the plural, *-e* in writing. In the spoken language *-e* is pronounced as schwa only in very distinct speech. Generally, schwa is assimilated to a preceding vowel or sonorant consonant without any loss of syllables compared to the written plural form (Grønnum 2005), cf. the following examples of adjectives:

adjective	sg. uninflected	pl. with assimilation	pl. with schwa
<i>glad</i> ‘happy’	g̥lað	ˈg̥læ:ð̥	ˈg̥læ:ðə
<i>sur</i> ‘mad, sour’	suɶ?	ˈsu:ɶ	
<i>vild</i> ‘crazy, wild’	vil?	ˈvill̥	ˈvilə

Even in pronunciations with schwa assimilation, there is a clear difference between the singular and the plural form. In *glad* the vowel quality is changed, in *sur* and *vild* the glottal constriction is dropped, and all three forms are disyllabic in contrast to the uninflected form.

The plural suffix *-e* is usually left out in adjectives ending in a stressed vowel (e.g. *blå* ‘blue’), always in adjectives with a final (unstressed) schwa as part of the root (e.g. *stille* ‘quiet’), and in some loanwords (e.g. *fair*) (Hansen 1967; cf. also Mikkelsen [1911] 1975). Adjectives in some phrases may also occur in uninflected form even with a plural subject, e.g. *De er nogen tak skyldig* lit. ‘they are somebody thanks guilty-Ø’, i.e. ‘They owe thanks to somebody’. The uninflected form may substitute for the plural form of the predicative adjective, “especially in the spoken language and in written language close to the spoken language” (Hansen 1967: 369 – our translation):

- (9) *vi er parat til ...*
 we are ready-Ø to ...
 ‘We are ready to...’

Other grammarians claim that this substitution is found when the adjective takes a prepositional object as in (9) (Heltoft and Hansen 2000). Moreover, participles as subject predicatives with a plural subject may occur in uninflected form (ending in *-t*) or in plural form. The fact that the uninflected form may substitute for the plural form when the adjective is used predicatively is the reason why we talk about the uninflected form, and not the singular form, of the adjective.²

Adjectives that take a prepositional object are particularly interesting from our perspective as clauses with such adjectives may include two nominals, the subject and the prepositional object. In these clauses, the subject and the prepositional object may compete as controllers of number agreement in the adjective.³ As both the subject and the prepositional object may occur in preverbal position with different information structural consequences, and as it has been suggested that information structure may influence agreement patterns, we will briefly present some facts about the use of the preverbal position in Danish.

2.2. Danish as a V2-language

Danish is a V2-language with the finite form of the verb in second position. The position before the verb may be used for all other constituents except certain adverbials. The constituent in the first position is traditionally described as the foundation (*fundament*) of the sentence (Diderichsen 1966; Heltoft and Hansen 2000). It is the constituent that “determines the perspective of the message” (Heltoft and Hansen 2000: 197; cf. also Falster Jakobsen 1998).

In spoken and informal written Danish the constituent in the first position is often anaphoric and unfocused:

- (10) *Mange tak for din mail – den blev jeg glad for.*
 Many thanks for your mail – **it** became I happy-Ø about
 ‘Many thanks for your mail – I was pleased with it.’

In (10), *den* ‘it’ represents given and unfocused information: there is no contrast between the addressee’s mail and any other mails.

A non-subject constituent in preverbal position may, however, be focused. This is particularly clear when it is preceded by a focus operator such as *også* ‘also’ or *især* ‘especially’ (Heltoft and Hansen 2000). In (11) *Også dem* ‘Such ones too’ is a focused object.

- (11) Context: A couple found a farm that fulfilled their expectations and bought it.
Så manglede vi bare nogle dyr. Også dem har vi fundet . . .
 ‘Then we only lacked some animals. Such ones too we have found . . .’

There is, thus, no direct relationship between the pragmatic functions of topic and focus and the preverbal position in the clause in Danish. In data from the web with apparent prepositional object agreement we have found unfocused prepositional objects in preverbal position as in (12), where the prepositional object *Dem* ‘them’ is unfocused, but apparently controls the adjective agreement of *sur-e* ‘mad-PL’:

- (12) *Når jordbærrene var modne, fik hun et særligt problem. Der var en masse solsorte i haven. Dem var hun sure på. “De store fede solsorter æder mine jordbær, dem skulle du se at få skudt” sagde hun.*

‘When the strawberries were ripe, she got a special problem. There were lots of blackbirds in the garden. Them was she mad-PL at. “The big fat blackbird young ones eat my strawberries, you should shoot them” she said.

In (7) the prepositional object at the end of the clause is as unfocused as the subject. The focus is on the predicate denoting the relationship between the subject referent and the prepositional object referent. In section 3 we will briefly present typological evidence for topic agreement in languages where agreement in the verb may be controlled by shifting grammatical constituents.

3. Trigger-happy or promiscuous agreement

The occurrence of shifting agreement controllers has been reported from various languages. Leer (1991) interprets shifting controllers of number agreement in the verb in a number of unrelated languages as an indication of an earlier linguistic area – *Sprachbund* – of languages in the Northern Northwest Coast of North America. In Haida, Eyak, and Aleut any pronoun, including possessors and adpositional objects, may control number agreement in the verb. In Tlingit controllers are limited to subject and object: the number marker *has#* is a proclitic of the verb and marks a third person animate subject or object as plural. If both arguments are third person animate, the clause is ambiguous between a plural subject, a plural object, and a plural subject and plural object reading. Leer mentions that in Tlingit “it is far more frequent that the subject rather than the object is plural” (Leer 1991: 167), that is, the supposedly more topical argument tends to be the controller.

Comrie defines trigger-happy agreement as cases where “different NPs in a particular construction can be controllers for agreement” (2003: 319), i.e. there is competition between different controllers, as apparently in the examples from Danish. Comrie points out that agreement is often sensitive to topicality or topicworthiness, where topicality is “the extent to which a particular NP is topical in a particular usage” (2003: 328) and topicworthiness refers to “an inherent property of an NP, such that it is more likely to serve as topic (although it need not do so)” (2003: 329). Topicworthiness is “closely related to such concepts as the hierarchies of grammatical person, animacy, definiteness and salience” (Comrie 2003: 329). More topical or more topicworthy noun phrases are more likely to serve as controllers of agreement than less topical or topicworthy noun phrases.

Comrie finds that Maithili “comes close to the extreme for a trigger-happy agreement system” (2003: 320). In this language, the verb takes a portmanteau morph encoding the subject and one non-subject noun phrase in the clause. The latter may be the direct object, the indirect object, an oblique-case marked noun phrase, or a possessor of the subject or the object. The choice of second controller – besides the subject – is best described in pragmatic terms as “the NP other than the subject itself that is most prominent” (Comrie 2003: 321), where prominence depends on relevance, honorificity, and animacy. In Tsez, vowel-initial verbs of a matrix clause may agree with the embedded clause as a whole as an absolutive argument, or with the absolutive argument of the embedded clause, so-called long-distance agreement. Agreement with the absolutive of the embedded clause marks this argument as the topic of the embedded clause. Long-distance agreement of the matrix verb with the absolutive in the embedded clause

is excluded if the absolute argument is explicitly marked as focus (Comrie 2003). This is particularly interesting from a psycholinguistic point of view since it rules out the possibility that the absolute agreement in the matrix verb is induced in the production process by the mere occurrence of an absolute nominal in the linguistic context.

In sum, the phenomenon of controllers in competition for a single agreement slot is well known typologically. The choice of controller may be more or less grammaticalized or pragmatically determined, but as with agreement in general, the controller is predominantly the more topical nominal (cf. also Corbett 2006).

4. Agreement in psycholinguistics

Variation in agreement, mostly subject-verb agreement, has also been studied in the psycholinguistics literature. Some of the variation has been described as dialectal, e.g. as a dialectal difference between the treatment of collective nouns in British and American English (Bock et al. 2006). But mostly, psycholinguistic studies have been concerned with what deviations from standard agreement marking can tell us about the cognitive processes that are responsible for the production and comprehension of agreement marking. In this endeavor, deviant agreement marking is mostly treated as performance errors that can be traced to certain subprocesses of language processing, e.g. a hypothesized stage where grammatical properties of words are processed, or a stage where the linear order of the sentence is put together (e.g. Franck, Vigliocco, and Nicol 2002; Vigliocco and Nicol 1998).

Deviant agreement can be elicited in laboratory settings by having experiment participants complete sentence fragments consisting of complex nominals with multiple nouns:

(13) *The key to the cabinets. . .*

People are liable to continue such a sentence with a verb, and even though this verb should agree in number with the singular head noun of the subject nominal, a substantial number of the verb responses are in the plural if the noun in the prepositional phrase is plural as in the example.

Thus it appears that having to produce two nouns with differing number creates the possibility that the language user becomes confused about which noun should control agreement with the verb. A possible explanation for this type of error is that it is difficult to keep track of the agreement relation if there is distracting material between the controller and the verb. It turns out, however,

that manipulating the length of the intervening material does not affect error rates (Bock and Miller 1991). Moreover, Vigliocco and Nicol (1998) showed that people make approximately the same error pattern as in (13) when they are prompted to produce questions where the distractor noun does not intervene between the head noun and the verb in the beginning of the clause, as in (14).

(14) *Were the key to the cabinets safe?*

It thus appears that the distractor's position in the string is unimportant.

A number of studies have used variations over this experiment paradigm, and they report error rates that range from 1% (Haskell and MacDonald 2003) to 35% (Bock et al. 2001) on similar experimental conditions (singular, non-collective head noun, plural distractor noun), but several studies fall in the 5–20% range (e.g. Bock et al. 2006; Fayol, Largy, and Lemaire 1994; Thornton and MacDonald 2003; Vigliocco and Nicol 1998).

The precise causes for the error rate differences are unclear, but there is good evidence that error rates are influenced by notional factors such as how easy it is to construe the subject as notionally plural (Humphreys and Bock 2005) or how likely the distractor noun is as a subject of the verb (Thornton and MacDonald 2003). There is also evidence that error rates are influenced by performance factors such as the extent to which participants monitor their speech (Bock et al. 2006), and by differences in the memory load in the experiment (Fayol, Largy, and Lemaire 1994). It seems plausible that memory load may affect language users' ability to weed out errors that were generated in the production process rather than their tendency to generate errors.

In the present context, the lesson to be learned from the psycholinguistic studies is that there is variation in agreement production that does not seem to be readily attributable to sociolinguistic factors or governed by functional considerations although they may have a notional origin (number in a competing noun). The error proportions are rather high in cases where there is a possibility of confusion about which noun controls the verb morphology. Sentences with confusable agreement opportunities are liable to produce a high error rate, and this psycholinguistic fact should be considered when interpreting corpus data; deviant agreement in the 1–20% range should only be interpreted as signs of an alternative system or a sociolinguistic variable with much caution.

5. Corpus results for Danish predicative adjectives

Danish examples of apparent agreement between the predicative adjective and its prepositional object can easily be found on the web and are heard in everyday language and in the media. Given the fact that agreement with a plural noun as distractor rather than the head of the subject nominal is seen in up to 20% of the examples in psycholinguistic experiments with English, we should expect deviant agreement patterns to occur in language use. To decide whether these patterns should properly be described as part of the structure of the specific language, we need to know the relative frequency of the different patterns: is the frequency with which a predicative adjective apparently agrees with its prepositional object, and not with its subject, in Danish outside or inside the range of the deviant patterns that can be expected in language use when we use psycholinguistic experiments as the standard of comparison?

It can be expected that non-standard agreement is particularly frequent in less monitored language, especially spoken language, but there is no corpus of spoken Danish with a sufficient number of examples of the relevant strings. We, therefore, decided to use the web as our corpus. In this section we first discuss the problems involved in using Google as the search engine of pages in Danish on the World Wide Web. Then we describe our procedure and the outcome of the corpus search, and finally we discuss the results in the light of the results from the psycholinguistic experiments with English.

5.1. Using the web as a corpus

As we used the Danish web pages as our corpus, the data represent only written language, but a mixture of more carefully edited texts and especially, given the types of adjectives we chose, examples from blog- and chatlike pages with very little editing.

It is, however, not without problems to use Google as a search engine for linguistic research. The search engine finds examples from succeeding versions of the same webpage, but reduces the number of hits, apparently by comparing pages and eliminating pages that seem to be sufficiently similar. Thus, what starts out as approximately 157.000 hits with the search string *jeg|du|han|hun|den|glad|glade for*⁴ ‘I|you|he|she|it happy-sg/Ø|happy-pl about’, ends up as 879 examples after the search engine has eliminated what it takes to be repetitions of the same pages. Even then there are a few repetitions within the 879 examples.

But, more problematically, it seems that Google also eliminates pages that are not represented by any version in the reduced set. Among the 879 examples

in the reduced set with *glad|glade* there is only one instance of the plural form of the adjective *glade* with a singular subject, but when searching the web for examples of singular subject followed by the plural *glade* (i.e. strings such as *jeg glade for* ‘I happy-pl about’ and not strings like *jeg glad|glade for*), there were 2590 hits, which Google reduced to 89 pages without repetitions. Thus, only one of these was preserved in the reduced set of all strings with a singular subject followed by the singular|plural string *glad|glade*. It might be the case that the non-standard sequences *jeg glade* had been corrected in later versions of a page, but this is not necessarily the case. Google seems to follow a somewhat haphazard method of eliminating so-called repetitions, but we suspect that the search tool eliminates strings with singular subject and singular adjective to the same extent as strings with singular subject and plural adjective. This means that the relative amount of non-standard strings to standard strings will be the same in the reduced set as in the non-reduced set.⁵

5.2. Procedure

We searched the web for the following strings:

- (I) Ssg: “*jeg|du|han|hun|den|det* Asg|Apl Prep”
- (II) Spl: “*vi|I|de* Asg|Apl Prep”

– where *Asg* is the singular form of the adjective (e.g. *glad*), *Apl* the plural form (e.g. *glade*), and *Prep* the relevant preposition (with *glad* it is *for*)

With one adjective we also searched strings with the negation *ikke* ‘not’ as the negation might focus the adjective and the prepositional object and thereby give more instances of the adjective agreeing with the prepositional object if Nørby Jensen (2004) is right about the effect of focusing. The negation appears between the subject and the adjective in Danish (e.g. *jeg ikke glad for*).

We chose to search for strings with pronominal subjects only and only strings where the subject appears just before the adjective (or the negation and the adjective). The reason for choosing pronominal subjects was that the personal pronouns in the nominative are unquestionably subjects, which means that we would not get thousands of examples of strings that did not fulfil our grammatical criteria. Moreover, we expected pronominal subjects to give us more examples of less edited texts. We did indeed get many examples from sites with texts that have undergone very little editing to judge from the punctuation and spelling.

By choosing strings with the subject just before the adjective, we excluded clauses with the subject in the first position before the finite verb. We estimated that we would not gain much from including examples of SV-clauses since the string (V) S A Prep includes – besides polarity questions – instances with the

prepositional object at the beginning of the clause (*dem er jeg glad for* ‘them am I happy about’) and instances with the prepositional object at the end of the clause (*Alligevel er jeg glad for dem* ‘nevertheless am I happy about them’). That is, we get both topical and focused prepositional objects by searching for strings of S A Prep.

Having found all the strings that fulfilled the criteria in (I) and (II), we eliminated all instances where the prepositional object was a clausal or infinitival complement or the pronoun *det* ‘it’ referring to an infinitival clause or a clause. We sorted the examples in the following groups:

Singular subjects:

- | | |
|---|--------------|
| a. Ssg Asg POpl | S-agreement |
| b. Ssg Asg [PO <i>og/eller</i> (‘and/or’) PO] | S-agreement |
| c. Ssg Apl POpl | PO-agreement |
| d. Ssg Apl [PO <i>og/eller</i> PO] | PO-agreement |

Plurals subjects:

- | | |
|------------------------------------|----------------------------------|
| e. Spl Apl POsg | S-agreement |
| f. Spl Asg POsg | uninflected form or PO-agreement |
| g. Spl Apl POpl | unclear agreement |
| h. Spl Apl [PO <i>og/eller</i> PO] | unclear agreement |
| i. Spl Asg POpl | uninflected form |
| j. Spl Asg [PO <i>og/eller</i> PO] | uninflected form |

Other:

- | | |
|----|-----------------|
| k. | uncategorizable |
|----|-----------------|

Only two examples ended in the category ‘k. uncategorizable’, both had the name of a music group as their PO nominal (*Pink Floyd* and *Us5*). It is not clear whether the names should be analyzed as singular or plural, but both examples followed the standard Spl Apl PO.

We categorized instances with prepositional objects in the form of nominals conjoined with *og* ‘and’ or *eller* ‘or’ as plural prepositional objects since a subject with conjoined nominals can take an adjective in the plural form as seen in (15).

- (15) ... både du og jeg er glad-e for
 ... both you and I are happy-PL PREP
 digitalkameraets opfindelse
 the digital camera’s invention
 ‘... both you and I are happy about the invention of the digital camera.’

We examined three adjectives: *glad for* ‘happy about, pleased with’, *sur på* ‘mad at’, and *vild med* ‘crazy about’.⁶ *Sur på* contrasts with *sur over* in that the former almost always takes a prepositional object denoting a first-order entity, the latter a prepositional object denoting a second- or third-order entity. *Glad for* and *vild med* can take all types of objects, but *glad for* contrasts with *glad over*, which can only take an object denoting a second- or third-order entity. In the plural written form they all add *-e*, but the phonetic effect of number inflection varies (cf. section 2).

The search strings (I) and (II) resulted in hits ranging from 208 to 879 when Google had deleted repetitions. From these lists we deleted further repetitions, fixed phrases such as the title of a popular TV-show, and strings where the prepositional object was clausal or infinitival or *det* ‘it’ referring to a clause or infinitival clause.

5.3. Results

The results of the web search appear from Table 1. The first column shows the percentage of sequences with a singular subject, a plural adjective, and a plural prepositional object (i.e. sequences with unambiguous agreement with plural prepositional objects) of all sequences of singular subject, adjective, and plural prepositional object no matter whether the adjective is in the singular or the plural form. The results show how often the adjective seemingly agrees with a plural prepositional object in sequences where this option can be uniquely determined. The ratio of adjectives agreeing with a plural prepositional object varies between 1.6% and 11.1% (5.5% across all three adjectives). It is immediately obvious that subject agreement is overwhelmingly more likely in Danish than agreement between the predicative adjective and the prepositional object ($\chi^2(1) = 59.06$, $p < 0.001$).

The second column in Table 1 presents the results from the analysis of the uninflected form of the adjective with a plural subject and a singular prepositional object, i.e. sequences where the uninflected form of the adjective could be triggered by a singular prepositional object. The percentage varies between 0.6% and 7.9%. The percentage of PO-agreement across all three adjectives is 2.4%.

But is agreement between the predicative adjective and the prepositional object more likely than no agreement? There are two possible situations of no agreement: 1. Both the subject and the prepositional object are plural, but the adjective is singular. 2. Both the subject and the prepositional object are singular, but the adjective is plural. We did not find any examples of the latter

Table 1. The ratios of prepositional object agreement with singular subjects and with plural subjects, the ratio of clear cases of uninflected adjectives, and for one adjective, the ratio of prepositional object agreement after the negation *ikke* ‘not’.

	Ssg Apl POpl PO-agreement	Spl Asg POsg PO-agreement	Spl Asg POpl A uninflected	Ssg Neg Apl POpl PO-agreement after negation
<i>glad for</i> ‘happy about’	1.6% (1/63)	0.6% (1/162)	0.5% (1/218)	—
<i>sur på</i> ‘mad at’	11.1 % (4/36)	7.9% (3/38)	0% (0/61)	—
<i>vild med</i> ‘crazy about’	6.3% (4/64)	4.4% (2/45)	1.7% (1/59)	7.0% (3/43)
means for all three adjectives	5.5% (9/163)	2.4% (6/245)	0.6% (2/338)	

in our corpus. The first case is represented in the third column of Table 1. In order to examine whether an uninflected form of the adjective is more likely to occur when the prepositional object is singular than plural, we compared the frequency of PO-agreement across the adjectives (column 2) with the frequency of no agreement across the adjectives (column 3). A chi square revealed that the proportion of uninflected adjectives (across all adjectives) was marginally larger when the prepositional object was singular (column 2) compared to when it was plural (column 3) ($\chi^2(1) = 3.64$, $p = 0.06$), suggesting that the number of the prepositional object influences number marking on the adjective.

Column four finally shows the number of the adjective *vild* agreeing with plural prepositional objects after a negation (e.g. ... *jeg ikke vilde med dem* ‘I am not crazy-PL about them’) as a percentage of all sequences of singular subject, negation, adjective, and plural prepositional object no matter the form of the adjective (e.g. ... *jeg ikke vild/vilde med dem* ‘I am not crazy-Ø/crazy-PL about them’). A negation may focus the prepositional object, which might influence the agreement pattern. If Nørby Jensen (2004) is right in claiming that focused prepositional objects trigger agreement in the adjective, we should expect more cases of agreement with the prepositional object in clauses with negation. For typological reasons, by contrary, we should not expect more cases since topics, and not foci, control agreement in languages where the grammatical controller can vary. The percentage of Ssg *ikke vilde med* POpl of all sequences Ssg *ikke vild|vilde med* POpl is 7.0%, i.e. virtually equivalent to the percentage of plural prepositional object agreement with *vild med* without negation (6.3% in the first column).

In the preceding paragraphs, we have only been dealing with the possibility of number agreement. As mentioned in section 2, singular predicative adjectives in Danish agree with singular subjects in gender. In order to examine whether predicative adjectives may agree with the prepositional object in gender, we searched the web for examples of deviant gender agreement, but did not find any with *sur på* and *glad for* (search string “*jeg|du|han|hun|den A-t Prep*”). We did, however, find eleven examples of *vildt med* ‘crazy-NEUT about’ as the predicative adjective. In ten examples the subject was the first person pronoun *jeg*, in one it was the second person pronoun *du*. In some, the prepositional object was clause initial, in others, it occurred at the end. The examples include singular prepositional objects in both common and neuter gender and plural prepositional objects, which are unmarked for gender in Danish:

- (16) Singular prepositional object – neuter gender:

Var du lige som jeg vild-t med det
 Were you like me crazy-NEUT with the-NEUT
gamle DOS-spil Stunts, så . . .
 old DOS game Stunts, then . . .
 ‘If you, like me, were crazy about the old DOS game Stunts, then . . .’

- (17) Singular prepositional object – common gender:

Men et par gennemlytninger senere er jeg
 But after having listened to it a couple of times am I
vild-t med plade-n.
 crazy-NEUT with disc-DEF.COM
 ‘But after having listened to it a couple of times I am crazy about the disc.’

- (18) Plural prepositional object (common gender):

Og så er jeg vild-t med bil-er.
 And then am I crazy-NEUT about car(COM)-PL
 ‘And then I am crazy about cars.’

There does not seem to be any pattern in the examples. Our best suggestion is that the form *vildt* is due to the homonymous adverbial form *vildt*, which is very frequent in contemporary spoken Danish as an intensifier. Furthermore, the colloquial expressions *Det er for vildt* lit. ‘That is too crazy-NEUT’, ‘You rock’, and *Du styrer for vildt* lit. ‘You control too crazy-ly’, ‘You rock’ may have influenced the occurrence of *vildt* as a predicative adjective even with the first and second person pronouns.

5.4. Discussion of the corpus data

The results from the corpus study show that clear cases of a predicative adjective agreeing with a plural prepositional object are within the range of agreement variation found in psycholinguistic studies of agreement in language production in English: the highest ratio of PO-agreement is 11.1% (*sur på*).

As mentioned in section 2.1, several Danish grammars point out that the uninflected form of the adjective may substitute for the plural form in predicative use with a plural subject. However, with the adjectives *glad for*, *sur på* and *vild med* the generalization is rather that the adjective occasionally has the same number marking as the prepositional object when the number of the subject and the prepositional object differs. In the constructions we have examined, where the adjective is followed by a preposition and a nominal prepositional object, there are no cases of complete agreement mismatch with a plural adjective and two singular nominals, and very few cases of an uninflected adjective with two plural nominals, i.e. clear cases of no agreement or neutralization: an uninflected adjective with two plural nominals was found in two cases only, one with *glad* and one with *vild*, constituting 0.6% of all cases with plural subjects and plural prepositional objects. The comparison of the frequency of uninflected form of the adjective with two plural nominals (i.e. no agreement or neutralization of the number distinction in the adjective) with the frequency of the uninflected form of the adjective with a plural subject and a singular prepositional object (i.e. possible agreement with the prepositional object) showed that the difference is marginally significant: agreement between a singular prepositional object and a predicative adjective is more likely than no agreement. The low frequency of number neutralization (singular or uninflected form of the adjective for plural form) is the more noteworthy as relative frequency of a form can be expected to influence the choice of form (cf. the notion of entrenchment (Langacker this volume)), and the singular form of the adjective is by far more frequent than the plural form in predicative use altogether, including also clauses where the prepositional object is a clause or an infinitival clause. In the constructions we have examined and with the adjectives *glad for*, *sur på*, and *vild med*, it is more justifiable to claim that the adjective occasionally has the same number as the prepositional object than to claim that the uninflected form of the adjective may substitute for the plural form in predicative function.

Plural forms of adjectives with subjects in the singular are also seen in some cases reminiscent of long-distance agreement in Tsez (cf. section 3). In (19), the prepositional object *det* 'it' refers anaphorically to a clause that includes a plural nominal as object, which may be interpreted as semantically represented by *det*. The predicative adjective is in plural form.

- (19) *Jeg har nogle gode kontakter, og det er jeg glad-e for.*
 I have some good contacts, and that am I happy-PL PREP
 'I have some good contacts, and I am pleased about that.'

In sum, the main result of the corpus analysis is that the ratios of agreement with the prepositional object in Danish usage seem well within the range of induced production errors in psycholinguistic experiments focusing on agreement in English. The counts are, however, based on written language of the web, which is probably more monitored than spoken language. It can thus be expected to follow the standard more closely than the spoken language.

Contrary to what could be expected if only focused prepositional objects controlled agreement in the adjective, negation did not influence the ratio of plural agreement in the adjective with a plural prepositional object: agreement with plural prepositional objects in negated clauses with *vild med* was found in 7.0% of the cases in contrast to the 6.3% of agreement with plural prepositional objects when there was no negation. Among the examples of deviant agreement patterns, we found all combinations of focused and non-focused prepositional objects in clause-initial and clause-final position.

Finally, we found no examples of predicative uses of *sur* and *glad* agreeing with a prepositional object in gender, but some examples of the neuter form of *vild* with animate subjects. The latter examples had all possible types of prepositional objects, singular neuter and common gender and plural.

The main conclusions of the corpus study is, thus, that deviant agreement patterns are within the expected range of performance-induced deviance, and that gender does not play any role in deviant agreement patterns in Danish. The latter fact may be less surprising as gender is only to a limited extent a notional category in Danish. We can also conclude that negation does not play a role in deviant agreement patterns, a fact which questions the claim that the deviant agreement pattern manifests agreement with the focused constituent.

There are some differences between the specific adjectives in the extent to which they show agreement with the prepositional object: *glad for* is less likely than *vild med* ($\chi^2(1) = 6.69$, $p < 0.05$) and *sur på* ($\chi^2(1) = 12.35$, $p < 0.001$) to show this type of agreement, but there is no significant difference between *vild med* and *sur på* ($\chi^2(1) = 0.68$).⁷

In order to investigate whether the predicative adjective's agreeing with the prepositional object is more expected than no agreement, i.e. whether Danish language users are sensitive to the difference between agreement between the predicative adjective and the prepositional object and the decidedly deviant pattern of no agreement, we conducted an experiment examining the comprehension of the different agreement patterns.

6. A reading-time experiment

The corpus study showed that the frequencies of the plural form of the Danish predicative adjective with a singular subject and a plural prepositional object (*jeg er glade for dem* ‘I am happy-PL about them’) were well within the range of agreement errors elicited in psycholinguistic production experiments in English, as were the frequencies of uninflected adjectives with plural subjects and singular prepositional objects (*vi er glad for den* ‘we are happy-Ø about it’). To follow up on this, we wanted to investigate whether agreement with the prepositional object influences the way people process sentences in comprehension. To this end we conducted a self-paced reading experiment⁸ to test whether agreement with the prepositional object eases processing compared to clear agreement violations, and if so, whether prepositional object agreement is as easy to process as subject agreement. The underlying assumption and rationale for using the reading-time methodology is that it is difficult to process and thus to read sentences that deviate from one’s grammatical expectations. On this assumption, deviations from grammatical expectations can be measured as increased reading times compared to non-deviant sentences. One benefit of the methodology is that it elicits implicit data on grammatical sensibilities from naïve test subjects. The data are implicit in the sense that experiment participants are given the task to read sentences in order to answer comprehension questions, not to detect grammatical anomalies. The data are presumably less prone to conscious prescriptive considerations than, for instance, acceptability judgment data (Poulsen 2005).

Previous reading-time studies on agreement in English have found that ungrammatical agreement marking translates into prolonged reading time compared to standard agreement marking, but also that the presence of a distractor noun influences processing speed (Pearlmutter, Garnsey, and Bock 1999), especially if the noun is a semantically possible subject of the predicate (Thornton and MacDonald 2003). There is thus reason to believe that the paradigm could be sensitive to the questions at hand.

6.1. Method

6.1.1. *Design and predictions*

In designing the experimental sentences, we manipulated presence of subject agreement and presence of prepositional object agreement in a two-by-two factorial design (all sentences can be found in the Appendix):

- (20) A. Full agreement (+Subj+PO) (Ssg POsg Asg):
Den bog var hun helt vild med for et år siden
 That book was she totally crazy-Ø about one year ago
- B. Subject agreement only (+Subj-PO) (Ssg POpl Asg):
De bøger var hun helt vild med for et år siden.
 Those books was she totally crazy-Ø about one year ago.
- C. Prepositional object agreement only (-Subj+PO) (Ssg POpl Apl):
De bøger var hun helt vild-e med for et år siden.
 Those books was she totally crazy-PL about one year ago
- D. No agreement (-Subj-PO) (Ssg POsg Apl):
Den bog var hun helt vild-e med for et år siden.
 That book was she totally crazy-PL about one year ago.

Our main question was whether the inclusion of a plural constituent (here the prepositional object in the first position of the sentence) would ease the processing when there is *disagreement* between the subject and the predicative adjective, i.e. whether (20C) would be processed faster than the no agreement sentences (20D). If so, the next question was whether prepositional object agreement is preferred or dispreferred compared to subject agreement, i.e. whether the prepositional object agreement only sentences (20C) were processed faster or slower than the subject agreement only sentences (20B). The corpus study showed that subject agreement is the standard, so we expected the subject agreement sentences to be processed faster.

The self-paced reading-time methodology gives word-by-word reading-time data, and processing effects of anomalies usually show up at the word that causes the problem or the following word (Pearlmutter, Garnsey, and Bock 1999). Since the possible agreement relations in these sentences are likely to be computed when one reads the adjective, we expected effects of agreement to show up at this position in word-by-word reading of the sentences. Alternatively the effect could manifest itself at the following word.

6.1.2. Materials

Each sentence was initiated by a prepositional object marked for the singular or the plural and consisting of a demonstrative and a noun (*den bog* ('that book')/*de bøger* ('those books')). The make-up of the rest of the sentence can be seen in Table 2. In all sentences the prepositional object was the complement of the preposition on the seventh word position. The subject was always singular,

but the prepositional object and the marking of the adjective varied in number between conditions to create the different agreement configurations.

Table 2. Stimulus template in the reading-time experiment. The example sentence means ‘That book she was very crazy about a year ago.’

Word position	1	2	3	4	5	6	7	8..end
Function	PO		copula	subject	adv.	subj. compl.	prep.	adv.
Example	<i>Den</i>	<i>bog</i>	<i>var</i>	<i>hun</i>	<i>meget</i>	<i>vild</i>	<i>med</i>	<i>for et år siden</i>

Twenty sets of four sentences exemplifying each of the experimental conditions were constructed with the frame specified in Table 2. Each set consisted of the same lexical material manipulated to represent all four conditions in (20). The sentences were divided between four lists. Each list contained one sentence from each set and five sentences representing each of the four conditions. Each list additionally contained 60 distractor sentences of varying degrees of grammaticality. They were included to mask the purpose of the experiment. Individual participants only saw sentences from one of the four lists with the intended consequence that they only saw one sentence from each of the sets, but all experimental conditions were seen by an equal number of participants.

6.1.3. *Participants*

Thirty-six people from various walks of life (post office workers and first year university students) participated on a voluntary basis. The mean age was 34.5 years with a range of 18 to 62 years. Four participants were excluded from the data analysis because they exhibited a behaviour during the experiment that in various ways was clearly at odds with the instructions. One of these participants, for example, often stopped mid sentence and commented on the ungrammaticality of the sentence, while another afterwards told that she had not really read the sentences due to tiredness.

6.1.4. *Procedure*

Participants were tested individually using an Apple iBook running Psycope software (Cohen et al. 1993) with an attached Carnegie Mellon button box. Each trial sentence was presented first with all letters exchanged with dashes. At the first button press, the dashes of the first word were changed to real char-

acters. At the second press, the second word was changed to characters, while the first word was reverted to dashes, and so on. In this way, participants read the sentences one word at a time while still having a feel for the overall length of the sentence. As an index of reading time for a particular word the computer recorded response latencies from the participant saw the word until the button was pressed for the next word. This method is termed the moving window paradigm (Just, Carpenter, and Woolley 1982) and is a standard self-paced reading paradigm used in psycholinguistics. To ensure that participants paid attention to what they read, they were asked to answer a comprehension question after each sentence. This additional task also made it possible to frame the whole purpose of the procedure as one of sentence comprehension rather than one of detecting grammatical oddities, which the participants were asked to ignore.

6.2. Results

After the experiment, an error was found in the construction of one of the sentence sets. This set was omitted from further analysis. For each person, reading times above three standard deviations from the word position mean were replaced with the cut-off value. This affected 1.6% of the data. Data are summarized in Figure 1.

Analyses of variance were performed at each word position with subject agreement and prepositional object agreement as independent variables. Both

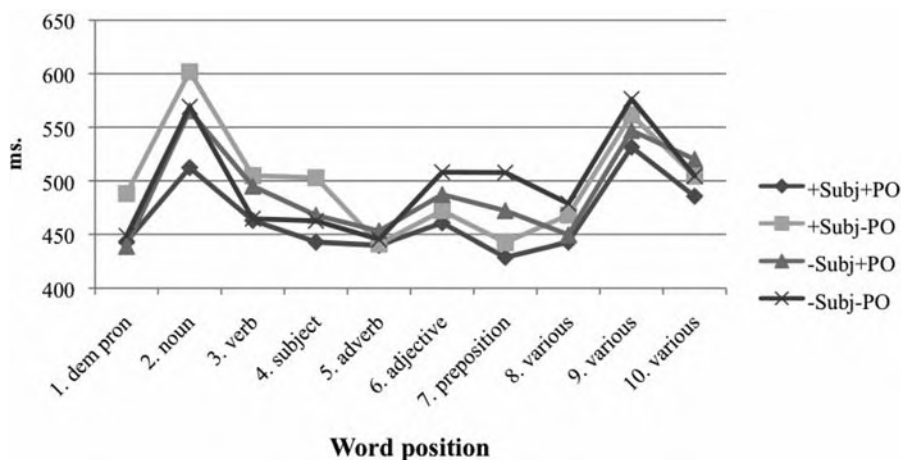


Figure 1. Reaction times on word positions

by-subject and by-item analyses were made. In cases of disagreement between these two analyses, we trust the by-subject analysis.

At the first five words, there were no significant effects or interactions.

At the sixth word, the adjective, there was a significant effect of subject agreement in the by-subject analysis, but not by-items ($F_1(1,31) = 7.17, p < 0.05$; $F_2(1, 18) = 2.11, p = 0.16$). No other effect reached significance (all F 's < 1.4). At the seventh word, the preposition, there were significant main effects of subject agreement ($F_1(1, 31) = 10.69, p < 0.01$; $F_2(1, 18) = 9.02, p < 0.01$) and prepositional object agreement ($F_1(1, 31) = 5.70, p < 0.05$; $F_2(1, 18) = 3.77, p = 0.07$), but no clear interaction (both F 's < 2.5). That is, the sentences with subject agreement (20A and 20B) were read faster on this position than the ones with no subject agreement (20C and 20D), and the sentences without prepositional object agreement (20A and 20C) were read faster than the sentences without prepositional object agreement (20B and 20D). The reaction times at the preposition are summarized in Figure 2.

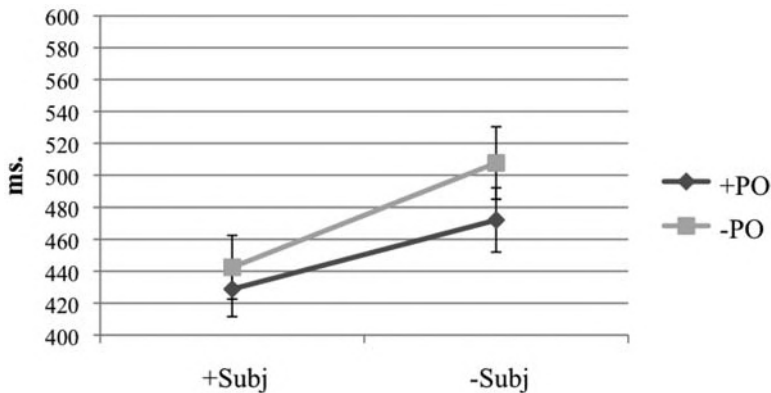


Figure 2. Reaction times at preposition

These analyses suggest that the effects of agreement were clearest at the position of the preposition, i.e. that there was a spill-over effect from the word that caused the effect, the adjective, and that standard subject agreement eases processing overall compared to sentences with no subject agreement. We therefore turned to our specific question of interest: whether the prepositional object agreement condition was read faster than the no-agreement condition. A planned comparison at the position of the preposition revealed that this was the case: there was a reliable 36 ms. difference ($F_1(1, 31) = 5.68, p < 0.05$; $F_2(1, 18) =$

3.35, $p = 0.08$) favouring prepositional object agreement (20C) compared to no agreement (20D).

The next question was if and how the prepositional object agreement condition (20C) differed from the subject agreement condition (20B). The graph shows a trend for sentences with only subject agreement to be read faster than sentences with only agreement with the prepositional object. This difference was not statistically significant ($F_1(1, 31) = 2.28$, $p = 0.14$; $F_2(1, 18) = 2.8$, $p = 0.11$), however.

There were no robust effects in the two-way analyses on the remaining word positions.

6.3. Discussion of the reading-time results

The results showed that people are sensitive to fairly small agreement manipulations in their on-line reading such that deviations from standard agreement between the subject and the predicative adjective translate into prolonged reading time. It also turned out that if, in the subject agreement mismatch sentences (i.e. 20C and 20D), there was a prepositional object with number marking that matched the predicative adjective (20C), reading times were faster than if there was no constituent matching the adjective in number (20D). This shows that deviations from standard agreement rules are less likely to disrupt the comprehension process when alternative controllers are present. The results replicate Pearlmutter, Garnsey, and Bock (1999) on two points: violations of standard agreement are harder to process than standard agreement, but the penalty is smaller when an alternative controller is present. In more general terms, the results confirm that the comprehension system is sensitive to agreement relations despite their seeming redundancy. But we cannot say whether the presence of an alternative controller somehow makes participants less able to detect anomalies, or whether the difference is a symptom of a budding alternative agreement system (cf. the discussion in section 7).

We failed to find reliable differences between the prepositional object agreement condition with no subject agreement (20C) and the minimally different subject agreement condition with no prepositional object agreement (20B), but there was a small tendency for the prepositional object agreement condition to be read more slowly than the subject agreement condition. Nothing much can be concluded from this null result, however. Since we would expect a difference based on the corpus finding that predicative adjectives agree with the subject rather than the prepositional object, the lack of an effect raises the question of whether the experimental paradigm of self-paced reading is sensitive to small

morphological differences that are difficult to perceive. The two conditions often differed by only a single character (and one with an irregular grapheme to phoneme mapping at that, cf. section 2.1), making the visual perceivability of the difference low (*vild* vs. *vilde*).⁹ But it should be noticed that the largest difference between conditions was found between the full-agreement and the no-agreement conditions, i.e. *vilde* vs. *vild*.

7. General discussion

In the present paper we wanted to investigate whether the alternative agreement examples in Danish that various linguists have noticed can be described as the type of trigger-happy agreement found in other languages, specifically whether speakers of Danish use agreement with the prepositional object rather than subject agreement with some degree of consistency. The general result from our corpus study was that deviations from subject agreement exist. Discrepancies in number between the predicative adjective and the subject are, moreover, marginally more probable when the prepositional object differs from the subject in number compared to when the adjective does not agree with any of the nominals.

In our reading-time experiment we furthermore found that sentences with different number marking on the subject and the predicative adjective are read faster if the adjective instead agrees with the prepositional object (compared to if it does not agree with either nominal). There was, however, also a trend for sentences with only subject agreement to be read faster than sentences with only agreement with the prepositional object. But this difference was not statistically significant.

Although the data appear to suggest that there is a possible alternative system of prepositional object agreement in Danish, we emphasize that the proportion of agreement with the prepositional object compared to subject agreement in conflict situations was low, around 5%. This is well within the range of the up to 20% proportion agreement errors in similar conflict situations that has been reported in psycholinguistic studies of subject-verb agreement errors in English. The proportion of non-standard agreement rises substantially in psycholinguistic experiments with English when there are distractor nouns that do not match the subject in number. Something similar appears to be the case in Danish. That is, even though we did find statistical trends towards shifting agreement controllers as in a trigger-happy agreement pattern in our corpus data, the pattern could just as well be a result of a tendency to confuse which out of several possible nominals should control agreement in the process of on-line production. Furthermore, we

did not find any consistent functional factor controlling number agreement in the predicative adjective, and we found no cases of gender agreement controlled by the prepositional object. The latter fact may be interpreted in the light of gender being only marginally meaningful in Danish, in contrast to number. It is possible that language users are only distracted when the agreement feature is notional, but further experiments are required to illuminate this hypothesis.

Some functional and cognitive linguists consider it bad form to dismiss naturally occurring data as performance errors or *accidents de la parole* (Harder 2003: 73). But it is just as problematic to interpret low frequency occurrences of grammatical phenomena as reflecting a grammatical system when we know that people sometimes produce sentences that cannot be interpreted as anything but production errors. On the web, examples like the following with a plural predicative adjective, a singular subject, and a – singular – infinitival prepositional object can be found. It is a reply on YouTube to another individual's evaluation of a music video:

- (21) *Det er jeg glad-e for at høre at du kunne lide det . . .*
 that am I happy-PL PREP to hear that you could like it . . .
 'I am pleased to hear that you liked it . . .'

This cannot be interpreted as anything but a performance error. We are not arguing that naturally occurring corpus data can be dismissed as performance errors at one's own convenience. But if we allow for the possibility that sometimes people actually do produce deviations caused by slips of attention or memory load pressure, then we should be cautious when interpreting non-standard occurrences that we cannot readily account for by sociolinguistic or functional variables.

This is not the same thing as saying that the pattern of variation we have found is uninteresting from a linguistic point of view. Like phonetic assimilation and dissimilation, variation of this kind is something that sociolinguistic or functional forces can prey on, and thus structures that are prone to error variation are interesting to observe as possible starting points for sociolinguistic or functional language change. We chose to examine adjectives that are highly frequent in the spoken language in combination with pronominal subjects, which means that our corpus data are primarily from informal web-sites such as blogs and chat-rooms. It is possible that the ratio of agreement with the prepositional object is much higher in the spoken language than in edited written language, and number agreement may even be a sociolinguistic variable, without our knowledge.

Ending on a speculative note, we would like to suggest in the spirit of Harder (1996, 2003) that if language users do not dismiss agreement with the preposi-

tional object as slips or consider it a sociolinguistic variable, individuals, who see themselves as belonging to the collective of speakers of Danish, may start assigning prepositional object agreement a function as marking either the focus, as suggested by Nørby Jensen (2004), or the topic, which is typologically more likely (Comrie 2003; Leer 1991). Through a social process of production and reproduction of the assignment of function to prepositional object agreement, the alternative agreement pattern may move from occasional slips in usage or a sociolinguistic variable to integration as a structural part of (some norms of) the Danish language:

Because facts about a language state are function-based, the sense in which a language state exists at a given time depends on the place of linguistic forms in complex cause-effect chains as institutionalized facts about the way the world works – and these cause-effect chains necessarily occur over time. The speakers adapt to such patterns continuously, updating their attunement based on past events, which means that some functions stay the same, others are revised and yet others fall into disuse [...]. This means, among other things, that a given linguistic element can literally be in a state of change – because the speaker, in using it, may respond to the direction in which it has been moving over the previous period. (Harder 2003: 74)

Appendix

Sentences used in the reading-time experiment. Each sentence was used in four versions as exemplified in (20) in the main text.

1. Den eksamen bliver hun jo færdig med den 9. juni.
'That exam she will finish (lit.: become finished with) by June 9th'
2. Den hund var han ret nervøs for den første dag.
'That dog he was pretty nervous about on the first day'
3. Den bog var hun helt vild med for et år siden.
'That book she was completely crazy about a year ago.'
4. Den nyhedsvært blev han godt træt af under programmet.
'That news host he got severely tired of during the programme'
5. Den tekst bliver han sikkert tilfreds med efter de sidste ændringer.
'That text he will surely be satisfied with after the last changes'
6. Det svar var han ikke sikker på da han udfyldte testen.
'That answer he was not certain about when he filled-out the test'
7. Den kammerat var han godt sur på efter en dårlig practical joke.
'That friend he was really mad at after a bad practical joke'

8. Den demonstration var han faktisk ligeglad med så det ændrede intet.
'That manifestation he did not actually care about (lit.: was actually ADJ about) so it changed nothing'
9. Den løveunge var han altid god ved omkring fodringstid i haven.
'That lion cub he was always good to around feeding time in the garden'
10. Den regel er hun vel opmærksom på når hun søger støtte?
'That rule she is supposedly attentive to when she applies for support?'
11. Den farve bliver han rigtig ked af når han ser værelset.
'That colour he will be really sorry about when he sees the room'
12. Den ide var hun ret skeptisk over for før hun hørte oplægget.
'That idea she was pretty skeptical about before she heard the presentation'
13. Det skænderi var hun stadig bitter over mange år efter.
'That argument she was still bitter about many years later'
14. Den hemmelighed var han meget flov over efter afsløringen i Ekstra Bladet.
'That secret he was very embarrassed about after the revelation in Ekstra Bladet'
15. Den udtalelse var hun jo uenig i på valgaftenen.
'That statement she evidently disagreed with (lit.: was evidently ADJ with) on election night'
16. Den gave var han spændt på lige fra han så pakken. – (left out of the analysis)
'That gift he was curious about right from he saw the parcel'
17. Den afvisning blev han rigtig vred over efter sine anstrengelser.
'That rejection he was really mad about after his troubles'
18. Den blanding er han altid varsom med i kemilokalet.
'That mixture he is always careful with in the chemistry lab'
19. Den datter var hun altid ond ved i eventyrene.
'That daughter she was always evil to in the fairy tales'
20. Det resultat var han særlig stolt af på evalueringsmødet.
'That result he was particularly proud of at the evaluation meeting'

Notes

1. Abbreviations used: COM – commune gender, the result of merging the masculine and the feminine gender, DEF – definite, NEUT – neuter gender, PL – plural, SG – singular. We, moreover, use Ø to indicate the uninflected form of the adjective, which is also the form of singular commune agreement.
2. We refer to the grammars of Danish for further discussion of exceptions to the general rules, cases of semantic agreement, and resolutions of agreement conflict.
3. The construction with prepositional object is not the only one with the possibility of competing nominals. Alternative constructions are seen in the following examples

(brought to our attention by Kasper Boye and Bjarne Ørnsnes, respectively):

(i) *En af dem, der er rigtig god til det, er russeren Sergej Rublevskij.*

'One of those who are really good-Ø at it is the Russian Sergej Rublevskij.'

(i) has an uninflected form of the adjective in spite of the fact that the relative clause qualifies *dem* 'those'.

(ii) *Han er træner for dem.*

'He is coaches for them.'

In (ii) there is a plural predicative noun with a singular subject.

Here we focus on constructions with a nominal prepositional object, however.

4. In searches on the web with Google as the search engine ']' works as the Boolean 'or'.
5. The Research and Development Unit for English Studies (RDUES) in the School of English at Birmingham City University has developed a linguistic search engine to cache and process large sections of the web (<http://www.webcorp.org.uk/>).
6. A search of the major open-access corpus of Danish, KorpusDK (56 million words of primarily written texts collected around 1990 and 2000), gives an impression of the relative frequency of the three adjectives: *glad for* and inflected variants have 5340 hits, *sur på* 222 hits, and *vild med* 1034 hits. KorpusDK can be found here: <http://ordnet.dk/korpusdk>.
7. The difference between the adjectives may have something to do with the frequency with which the different adjectives are used with a clausal or infinitival complement, i.e. in contexts with no alternative potential nominal controller within the same clause (cf. the notion of entrenchment – Langacker this volume). If there are many such examples with a particular adjective, it is overall more likely to occur with subject agreement than with prepositional object agreement, a fact that may influence language users' processing of the adjective even when it does take a nominal prepositional object and could agree with the object. Searches of the web by means of the strings "Asgl|Apl Prep at", where *at* is the complementizer for both clauses and infinitives in Danish, led to the following results:

glad|glade for at: 1.470.000 hits

sur|sure på at: 28.000 hits

vild|vilde med at: 367.000 hits

The number of hits correlates inversely with the frequency of agreement with the prepositional object. The adjective *sur på* is used much less frequently with a clausal or infinitival complement than the other two adjectives, or put differently, *sur på* can be expected to have a nominal complement referring to a first order entity, which is more likely to be countable than clausal or infinitival complements.

8. We are indebted to Karen Englev for constructing the stimuli materials and collecting the reading time data.
9. The singular and the plural forms of the adjectives are distinguished by only *-e* in fifteen cases, by consonant doubling and *-e* in three cases, and by a difference between singular *-er* and plural *-re* in two cases.

References

- Barlow, Michael and Charles A. Ferguson (eds.)
1988 *Agreement in Natural Language: Approaches, Theories, Descriptions*.
Stanford, CA: Center for the Study of Language and Information.
- Bock, Kathryn and Carol A. Miller
1991 Broken agreement. *Cognitive Psychology* 23.45–93.
- Bock, Kathryn, Kathleen M. Eberhard, J. Cooper Cutting, Antje S. Meyer and Herbert Schriefers
2001 Some attractions of verb agreement. *Cognitive Psychology* 43.83–128.
- Bock, Kathryn, Anne Cutler, Kathleen M. Eberhard, Sally Butterfield, J. Cooper Cutting and Karin R. Humphreys
2006 Number agreement in British and American English: disagreeing to agree collectively. *Language* 82.64–113.
- Cohen, Jonathan, Brian MacWhinney, Matthew Flatt and Jefferson Provost
1993 PsyScope: a new graphic interactive environment for designing psychological experiments. *Behavioral Research Methods, Instruments, and Computers* 25.257–71.
- Comrie, Bernard
2003 When agreement gets trigger-happy. *Transactions of the Philological Society* 101.313–37.
- Corbett, Greville G.
2006 *Agreement*. Cambridge, UK: Cambridge University Press.
- Diderichsen, Paul
1966 *Elementær Dansk Grammatik* [Elementary Danish Grammar]. 3. udg. Copenhagen, Denmark: Gyldendal.
- Dik, Simon C.
1997 *The Theory of Functional Grammar: Part I: The Structure of the Clause*. Berlin, Germany: Mouton de Gruyter.
- Falster Jakobsen, Lisbeth
1998 Funktionel forståelse af fundamentfeltet [A functional understanding of the fundament field]. In: Kjeld Kristensen (ed.), *Selskab for Nordisk Filologi; Årsberetning 1996–1997* [The Society for Nordic Philology: Yearbook 1996–1997], 45–56. Copenhagen, Denmark: Selskab for Nordisk Filologi.
- Fayol, Michel, Pierre Largy and Patrick Lemaire
1994 Cognitive overload and orthographic errors: when cognitive overload enhances subject-verb agreement errors. A study in French written language. *The Quarterly Journal of Experimental Psychology* 47A.437–64.

- Franck, Julie, Gabriella Vigliocco and Janet Nicol
2002 Subject-verb agreement errors in French and English: the role of syntactic hierarchy. *Language and Cognitive Processes* 17.371–404.
- Grønnum, Nina
2005 *Fonetik og Fonologi: Almen og Dansk* [Phonetics and Phonology: General and Danish]. Copenhagen, Denmark: Akademisk Forlag.
- Hansen, Aage
1967 *Moderne Dansk Sprogbeskrivelse: Bd. II* [Modern Danish language description]. Copenhagen, Denmark: Grafisk Forlag.
- Harder, Peter
1996 *Functional Semantics: A Theory of Meaning, Structure and Tense in English*. Berlin, Germany: Mouton de Gruyter.
- Harder, Peter
2003 The status of linguistic facts: rethinking the relation between cognition, social institution and utterance from a functional point of view. *Mind & Language* 18.1.52–76.
- Haskell, Todd R. and Maryellen C. MacDonald
2003 Conflicting cues and competition in subject-verb agreement. *Journal of Memory and Language* 48.760–78.
- Heltoft, Lars and Erik Hansen
2000 *Grammatik: syntaks* [Grammar: syntax]. Roskilde, Denmark: Roskilde Universitetscenter.
- Humphreys, Karin R. and Kathryn Bock
2005 Notional number agreement in English. *Psychological Bulletin and Review* 12.689–95.
- Just, Marcel A., Patricia A. Carpenter and Jacqueline D. Woolley
1982 Paradigms and processes in reading comprehension. *Journal of Experimental Psychology: General* 11.228–38.
- Leer, Jeff
1991 Evidence for a Northern Northwest Coast language area: promiscuous number marking and periphrastic possessive constructions in Haida, Eyak, and Aleut. *International Journal of American Linguistics* 57.158–93.
- Mikkelsen, Kristian
[1911] 1975 *Dansk Ordføjningslaere med Sproghistorisk Tillaeg* [Danish Syntax with Diachronic Addenda]. Copenhagen, Denmark: Lehmann & Stages Forlag/reprinted by Hans Reitzels Forlag.
- Nørby Jensen, Jørgen
2004 Dem er jeg helt vilde med! Om fokuskongruens i moderne dansk [Those ones I am quite crazy about! On focus agreement in modern Danish]. In: Henrik Jørgensen and Peter Stray Jørgensen (eds.), *På Godt Dansk: Festskrift til Henrik Galberg Jacobsen i Anledning af Hans 60 Års Fødselsdag 4. Februar 2004* [In proper Danish: Fest-

- schrift to Henrik Galberg Jacobsen on the Occasion of His 60th Birthday February 4th, 2004], 63–71. Århus, Denmark: Wessel og Huitfeldt.
- Pearlmutter, Neal J., Susan M. Garnsey and Kathryn Bock
1999 Agreement processes in sentence comprehension. *Journal of Memory and Language* 41.427–56.
- Poulsen, Mads
2005 Sentence processing and grammaticality in functional linguistics: extraction in Danish as an example. Ph.D. dissertation. Department of Scandinavian Studies and Linguistics, University of Copenhagen.
- Thornton, Robert and Maryellen C. MacDonald
2003 Plausibility and grammatical agreement. *Journal of Memory and Language* 48.740–59.
- Vigliocco, Gabriella and Janet Nicol
1998 Separating hierarchical relations and word order in language production: is proximity concord syntactic or linear? *Cognition* 68.B13–B29.

Schmidt redux: How systematic is the linguistic system if variation is rampant?

Dirk Geeraerts

1. The ontological status of the language system in a usage-based model

A usage-based conception of language inevitably raises questions about the ontological status of the linguistic system. Usage phenomena are now broadly seen as an integral and crucial part of linguistic description because there is a dialectal relationship between Structure and Use: individual usage events are realizations of an existing systemic structure, but at the same time, it is only through the individual usage events that changes might be introduced into the structure. (For different aspects and versions of the usage-based research paradigm, see Hopper 1998, Barlow and Kemmer 2000, Bybee 2001, 2006, Geeraerts 2002, Tomasello 2003. For an evaluation of the technical state of the art of the usage-based trends in linguistics, see Tummers, Heylen, and Geeraerts 2005.) But how then, in such a dialectic view of the relationship between Structure and Use, does the system exist – if at all? The Use pole of the dialectic relationship is readily identifiable: it exists in the form of actual instances of language use, whether active or passive. But where do we find Structure?

In “The status of linguistic facts: Rethinking the relation between cognition, social institution and utterance from a functional point of view”, Peter Harder (2003) offers a foundational contribution to the debate that answers the question in a social interactionist vein: “Like all social facts, such as everyday routines, fashion, and the value of money, the state of a language has no precise location in the community. Social facts are sustained by individual mental states without being reducible to them, existing within boundaries of variation that are continually created and modified as a result of feedback mechanisms in networks of interactive practices” (2003: 69). If we attempt an analytic reformulation of this synthetic statement, which is further developed in Boye and Harder (2007), we may highlight the following aspects.

First, language as structure is a social fact, as an observable regularity in the language use realized by a specific community. Second, it is at the same

time a cognitive fact, because the members of the community have an internal representation of the existing regularities (the system) that allows them to realize the same system in their own use of the language. Third, the same mechanism that allows the existing collective regularities to enter the individual minds is also the one that allows regularities to emerge to begin with, viz. mutual influence in social interaction. People influence each other's behavior, basically by cooperative imitation and adaptation, and in some cases by opposition and a desire for distinctiveness. Paying attention to what others do, however subconsciously, thus creates a mental representation of the collective tendencies in the behavior of the community; adapting one's own behavior to those tendencies, reaffirms and recreates the tendencies. And fourth, in the same way that the existing regularities emerged from actual interaction, changes may emerge; as such, a degree of variation is an inevitable aspect of any synchronic state of the language.

This view ties in with an emerging line of research in Cognitive Linguistics that takes the view that a language can only be adequately conceived of if one takes into account the socially interactive nature of linguistic communication. Examples of this strand of research include Sinha (2007) on language as an epigenetic system, Zlatev (2005) on situated embodiment, Itkonen (2003) on the social nature of the linguistic system, Verhagen (2005) on the central role of intersubjectivity in language, and Geeraerts and Grondelaers (1995), Palmer (1996) and Kövecses (2005) on the cultural aspects of language. While most of the references cited here focus on theoretical arguments, cross-linguistic differences, and historical variation, variationist research linking up with sociolinguistics is still relatively underrepresented within the social tendencies within Cognitive Linguistics. See however Kristiansen and Dirven (2008) for a collection of variational studies within the framework of Cognitive Linguistics. One of the consequences of the present paper, linking up with the argumentation in Geeraerts (2005), is precisely that such an extension towards the sociolinguistic and dialectological realm is inevitable once the "social turn in Cognitive Linguistics" (Harder, Forthcoming) is taken.

A graphical representation of the model derived from the quote taken from Harder (2003) may be found in Figure 1. For each individual, we first distinguish between outward, externally observable usage, and the mental representation that underlies language use. That mental system is graphically represented as a collection of forms, symbolically couched in a "thought cloud". The individual's system does not only correspond to the individual's usage, but it is also influenced by other people's usage: what other people do has an influence on what we know about language behavior; by interiorizing the behavior that we notice in other's, our mental representation of language is attuned to that of the community. However, we never interact with the entire community, but we in-

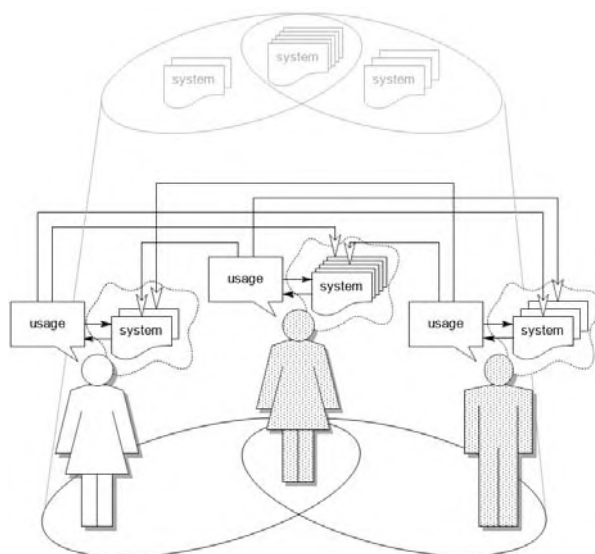


Figure 1. A schematic representation of a usage-based model of language

interact in specific networks. The figure distinguishes simplistically between two dimensions that define social networks, each represented by an elliptical set representation at the bottom of the figure: the boys versus the girls, and the dotted figures versus the others. One individual, needless to say, may be characterized on both dimensions, and in that sense, the interactive networks overlap. Also, it should be kept in mind that lectal differences in actual speech are not just determined by speaker characteristics, but also by contextual features like communicative situations underlying different registers. Because the interactions in the community are not exhaustive (in the sense that not everybody interacts with everybody else), the individual mental representations, and the individual usage behavior, are not identical for all the members of the community. In the figure, this is indicated by the fact that the system component is different for each of the three persons. Iconically, the mental representation of the middle figure (which is situated in the overlapping area of two networks) is represented as composed of both the system of the left hand figure and that of the right hand figure.

In the top half of the figure, the observable regularities in the behavior of the characters are abstracted along the lines of a traditional linguistic description: one that takes the notion of a system for granted (even if the system is a socially structured set of systems), and that does not pay a lot of attention to the dialectic and interactionist aspects. In the usage-based model sketched here, the ultimate

reality of the linguistic system resides in the complex dynamic system depicted in the lower half of the figure. The “system” or “systems” in the upper half are abstractions only that we should take care not to reify or hypostasize: they have no reality independent of what is going on below. To emphasize the epiphenomenal nature of “the system” as an abstraction, the upper half of the figure is drawn in grey.

The recognition of social variation in Figure 1 is a crucial addition with regard to the model defined in the quote by Peter Harder. On the one hand, Harder does accept synchronic variation within the linguistic system, as the quote makes clear, but on the other, the quote refers rather uniformly to “the community”, without explicitly taking into account the internal social dimensions that shape the interactions within the community. In other words, the variation that is correctly included in the model described by Harder is structured variation, and the structure of the variation is a social one. In that sense, the social model of the language system that is described in Harder (2003) cannot be restricted to a general semiotic or philosophical recognition of the social nature of linguistic facts, but it naturally leads to a sociolinguistic, sociovariationist type of description in which the social dimensions of variation and interaction are an integral part of the description of the linguistic system. *If a usage-based model of the language implies a social conception of linguistic facts, then a social conception of linguistic facts also implies a variationist model of the language.*

2. The unsystematic nature of the linguistic system in a usage-based model

But if we accept the addition of this specification to the model defined by Harder (2003), a further question crops up: how systematic are the subsystems? This question introduces a second dimension of heterogeneity into our conception of the linguistic system. We have already recognized that the linguistic system is not homogeneous within a community, i.e. that there are subcommunities with their own grammar – even though all those grammars cluster together as a system of systems. How homogeneous, then, are the systems of those subcommunities? To arrive at an answer to that question, we have to see that we normally think of a linguistic system as a collection of language forms that behave uniformly under identical lectal circumstances. For instance, we can say that there is a West-Flemish dialect of Dutch because the speakers in the province of West-Flanders share a number of linguistic characteristics, including a monophthongal pronunciation of the standard Dutch diphthong *ui* and

a laryngeal realization of *g*. In establishing West-Flemish as a (dia)lect, we assume a high degree of co-variation among a number of linguistic forms, more specifically, co-variation in the distribution of those forms over socially distinct groups of speakers – in the case of traditional dialects, a group of speakers that share a geographical origin. We have discarded the idealization of a totally homogeneous linguistic community, but we may still adhere to the view that what varies over the heterogeneous linguistic community are separate linguistic systems: collections of linguistic forms that together constitute an internally coherent unity – systems, in short, in the structuralist sense of mutually co-determining entities. But to what extent is that actually the case?

The general question to be answered, then, is the following: next to the question how heterogeneously groups of language users behave with regard to a given set of linguistic forms, we need to investigate how heterogeneously sets of language forms behave with regard to lectal dimensions. To what extent do language forms behave in bundles, clusters, sets – systems – of distributionally equivalent elements?

It will be readily appreciated that this question is a variant of the neogrammarian controversy. The neogrammarian concept of sound laws, as originally formulated by Brugmann and Delbrück (1886-1916), or Schleicher (1850) implies that changes affect an entire system of forms at the same time. Phonetic systems change as systems, i.e. as wholes in which individual expressions featuring a certain phoneme have no special position (apart from well-established categories of exceptions to the sound laws, which may be lexically particular, like the occurrence of assimilations). Conversely, the alternative view as already formulated by Schuchardt (1885) argues that the changes in a language may be much less systematic than suggested by the neogrammarians. The later concept of lexical diffusion (Wang 1969, 1977) likewise argues against an all too systemic conception of linguistic change, focusing on the lexical mediation of sound change. Shifting from diachronic changes between languages to synchronic variation between lects, the question we try to address involves a similar distinction between a “system first” and an “individual item first” approach.

To see what is conceptually and methodologically involved in such a question, we need to relate to another chapter of nineteenth century linguistics. The methodology and the conceptual analysis we need to answer our question are somewhat similar to the approach that led to the discovery of the “Rhenish fan” and Schmidt’s formulation of the wave theory of linguistic change (Schmidt 1872). Given the various elements of the High German sound shift, do they geographically occur together? Do the *pf* that distinguishes High German *apfel* from Low German and Dutch *appel*, the *f* that distinguishes High German *dorf* from Low German and Dutch *dorp*, the *ch* that distinguishes High German *ich*

from Low German and Dutch *ik* always occur as a bundle? As it turns out, the dialect landscape in the neighbourhood of the Rhine shows that the isoglosses for the various sound changes do not coincide. The demarcation between *ik* and *ich* lies much more to the north than that between *dorp* and *dorf*, for instance. Between the “pure” High German situation and the “pure” Low German / Dutch situation, a number of dialects exhibit transitional configurations. Metaphorically, each separate sound change spreads like a wave over the dialect landscape, but some waves reach farther than others.

In terms of the systematicity question, the wave theory goes along with the Schuchardian position that different forms may have their own history. At the same time, the combination of different forms identifies different dialect areas. If we look at the major isoglosses, different intermediate situations can be distinguished between the Dutch *ik – maken – dorp – dat – appel* situation, and the High German *ich – machen – dorf – das – apfel* situation. (The words here are only exemplary for the lexical sets featuring the relevant phonemes.) Schematically, the different dialect areas are demarcated as follows:

ik	maken	dorp	dat	appel
ich	maken	dorp	dat	appel
ich	machen	dorp	dat	appel
ich	machen	dorf	dat	appel
ich	machen	dorf	das	appel
ich	machen	dorf	das	apfel

Each dialect area constitutes a different linguistic system: different forms may have their own distribution when you look at them separately, but clusters of co-occurring forms still define lectal systems. However, a more radical interpretation is possible as well, when it is recognized that the variability is so outspoken that the notion of “dialect” – the notion of a system of co-occurring formal phenomena – itself loses its substance. This is a point of view expressed by Paris in a lecture of 1888 (Paris 1888: 163), where he states that dialects in reality do not exist: “Il n’y a réellement pas de dialectes; il n’y a que des traits linguistiques qui entrent respectivement dans des combinaisons diverses, de telle sorte que le parler d’un endroit contiendra un certain nombre de traits qui lui seront communs, par exemple, avec le parler de chacun des quatre endroits les plus voisins, et un certain nombre de traits qui différeront du parler de chacun d’eux. Chaque trait linguistique occupe d’ailleurs une certaine étendue de terrain dont on peut reconnaître les limites, mais ces limites ne coïncident que très rarement avec celles d’un autre trait ou de plusieurs autres traits”.

In a similar vein, we now have to ask whether linguistic phenomena that might be susceptible to lectal variation within a language, always occur in clearly distinguishable bundles, and specifically, if the bundles that they occur in correspond to easily identifiable lectal differences. The latter addition is crucial, because by logical necessity, there is always a level at which linguistic phenomena occur in distinctive bundles. But if this were the level of the idiolect, for instance, or even worse, the level of an individual usage event, we would not be inclined to talk of a social system.

Also, the structure of the lectal variables we need to take into account is more complicated than in the original Rhenish fan. In Schmidt's approach, the basic lectal variables are dialects, distinguished by a single variational dimension, viz. geography. With regard to our contemporary question, we cannot restrict the analysis to a geographic dimension, but we will take into account various dimensions that may lie at the basis of lectal structure: not just speaker characteristics like age and location, but also situational characteristics like style and register. Like Schmidt, we are interested in seeing how lectal variables pattern together with each other and with linguistic variables, in the same sense in which the Rhenish dialects cluster together in dialect areas on the basis of bundles of linguistic variables. However, the lectal space to be explored is a multidimensional one, rather than a monodimensional one. We will see presently how this methodological challenge can be met.

3. Introducing the case study

As an illustration of the issues involved, we will focus on the study of colloquial Belgian Dutch conducted by Koen Plevoets as a PhD project supervised by the author of the present chapter (see Plevoets 2008; Plevoets, Speelman and Geeraerts 2008). This project is part of a line of research conducted within the research team Quantitative Lexicology and Variational Linguistics of the university of Leuven that investigates various aspects of a lectally enriched multivariate grammar (De Sutter 2005, De Sutter, Speelman and Geeraerts 2008; Grondelaers, Geeraerts, Speelman, and Tummerts 2001, Grondelaers, Speelman, and Geeraerts 2008; Tummerts 2005, Tummerts, Speelman, and Geeraerts 2004; Van Gijssel 2007, Van Gijssel, Speelman, and Geeraerts 2008). The investigation carried out by Plevoets is based on the Belgian Dutch (or Flemish, if one wishes) data from the Spoken Dutch Corpus (Oostdijk 2002). Informally speaking, the investigation tries to establish whether a number of linguistic phenomena that were revealed by previous studies to be typical of colloquial Belgian Dutch (see Geeraerts 2001 and the publications just mentioned) do indeed pattern in

a lectally homogeneous way: when we look at the way in which the different linguistic variables occur together, do they occur in bundles that may be readily interpreted in a lectal way, i.e. as corresponding to what we would traditionally consider to language varieties with their own grammar?

In more technical terms, in order to arrive at an objectively based grouping of the target concepts, we use a statistical analysis known as *correspondence analysis*, a type of cluster analysis. Correspondence analysis (which may be considered a counterpart for non-metric data of what principal components analysis achieves for numeric data) is a technique for jointly exploring the relationship between rows and columns in a contingency table. Correspondence analysis can be thought of as trying to plot a cloud of data points (the cloud having height, width, thickness) on a single plane to give a reasonable summary of the relationships and variation between them (Benzécri 1992, Greenacre 1984). In a correspondence plot, the x-axis and the y-axis do not have an a priori interpretation; rather, the interpretation of the plot involves the pattern that emerges from the grouping of the data points. Points that are positioned close to one another have a positive association between them. The interpretation of the plot, in other words, takes the form of identifying the clusters of points in the plots. These points, of course, will be of two types: points representing linguistic variables on the one hand, and points representing lectal variables on the other. (It should also be remarked that the correspondence analysis carried out by Plevoets is not a straightforward correspondence analysis, because it is adapted to the “profile based” methodology developed in Geeraerts, Grondelaers, and Speelman 1999, Speelman, Grondelaers, and Geeraerts 2003. This is a technical point that need not concern us here, however.)

3.1. Specifying the lectal variables

The corpus that we use for our study is the Spoken Dutch Corpus (Corpus Gesproken Nederlands, abbreviated as CGN). Its size is 10 million word tokens in sum, two thirds of which stems from The Netherlands, and one third from Flanders. The CGN is a stratified corpus, in that the linguistic material is sampled from different types of speech situations, called “components”. They are the following fifteen:

- a: Spontaneous conversations (“face-to-face”)
- b: Interviews with teachers of Dutch
- c: Spontaneous telephone dialogues (recorded via a switchboard)
- d: Spontaneous telephone dialogues (recorded on MD via a local interface)

- e: Simulated business negotiations
- f: Interviews/discussions/debates (broadcast)
- g: (political) Discussions/debates/meetings (non-broadcast)
- h: Lessons recorded in the classroom
- i: Live (e.g. sports) commentaries (broadcast)
- j: Newsreports/reportages (broadcast)
- k: News (broadcast)
- l: Commentaries/columns/reviews (broadcast)
- m: Ceremonious speeches/sermons
- n: Lectures/seminars
- o: Read text

These 15 components will prove highly valuable to our analyses, as they enable us to capture the stylistic differences of the variables. One remark to be made beforehand concerns the fact that component e (simulated business negotiations) has material only from The Netherlands and is lacking for Flanders. Also, component o could be removed because it is non-spontaneous, but we have kept it in for comparison.

Furthermore, each utterance is annotated for its speaker's characteristics, such as Region, Age, Sex, Educational level, and Occupational level. Flanders has the following coding scheme, based on the provinces and the traditional dialect areas that they represent:

- brab: Flanders, central region (Antwerpen and Vlaams-Brabant)
- ovl: Flanders, transitional region (Oost-Vlaanderen)
- wvl: Flanders, peripheral region 1 (West-Vlaanderen)
- lim: Flanders, peripheral region 2 (Limburg)

With respect to Age, the CGN only lists the speaker's birthyear. As this level of granularity might be too fine-grained for our analyses, we code instead for the decade in which the speaker was born. Consequently, we code for generations, following the classification of the sociologist Becker (1992). The generations he distinguishes on the basis of sociological criteria are the following:

- pre the pre-war generation, born between 1910 and 1929
- sil the "silent" generation, born between 1930 and 1939
- pro the protest generation, born between 1940 and 1954
- los the "lost" generation, born between 1955 and 1970
- pra the pragmatic generation, born after 1970.

The variable Sex makes the obvious distinction between male (M) and female (F) speakers. Educational Level has a ternary structure, distinguishing between

high (abbreviated *hie*), middle (*mid*), and low (*low*). Occupational Level, finally, looks as follows:

- *occA*: occupation in higher management or government
- *occB*: occupation requiring higher education
- *occC*: employed on the teaching or research staff in a university or a college
- *occD*: employed in an administrative office or a service organisation
- *occE*: occupation not requiring any specified level
- *occF*: self-employed
- *occG*: politicians
- *occH*: employed in the media, entertainment or artistic sector
- *occI*: student, trainee
- *occJ*: having no job.

3.2. Specifying the linguistic variables

The investigation carried out by Plevoets focuses on morphological features of colloquial Belgian Dutch. While lexis and syntax have also been studied (see the references mentioned above), morphology has been cited as the most typical characteristic of colloquial Belgian Dutch (Goossens 2000). We consider three groups of variables: diminutive formation, adnominal variables, and pronominal variables.

Diminutive formation involves the contrast between diminutives on *-je*, which is the standard form, and diminutives on *-ke*, which is the colloquial form: *stoeltje*, *boompje*, *tafeltje*, *pakje* versus *stoeleke*, *bomeke*, *tafelke*, *pakske* (small chair, tree, table, package; a full description involves an analysis of allomorphs like *-je*, *-tje*, *-pje* in the standard case and *-ke*, *-eke*, *-ske* in the colloquial case, but we will not go into these details here). In the correspondence analyses that we will present, these variables are represented as *dim.j* versus *dim.k*.

The variation in the adnominal variables involves a pattern of inflection that is related to the gender of the nouns, and to the first element of the noun. Dutch has a three-gender system, with masculine, feminine and neuter nouns. The primary variation consists of colloquial forms on schwa appearing next to the standard forms. So we get the following distribution, where the right hand column indicates the colloquial forms.

indefinite article ('a')	een	ne
negative pronoun ('none')	geen	gene
distal demonstrative ('that')	die	dieje, diene
possessive pronoun 1 sg ('my')	mijn	mijne

possessive pronoun 3 sg masculine ('his')	zijn	zijne
possessive pronoun 3 sg feminine ('her')	haar	hare
possessive pronoun 3 pl ('their')	hun	hunne

In the possessive pronoun of the second person, we get a lexical alternation: the standard forms on *j* (singular *jouw*, plural *jullie*) are replaced by *uw* in both numbers. In the standard language, *uw* forms would be polite possessives as opposed to the familiar forms on *j*, but the colloquial register does not make such a distinction between T and V pronouns. As such, the variational value of *uw*-forms is ambiguous.

The basic system is complicated by two factors. To begin with, the colloquial forms on schwa basically occur only with masculine nouns, but the gender system of Dutch is characterized by a simplifying drift towards a two-gender system, distinguishing the nouns that take the definite article *de* (the older masculine and feminine classes) with nouns that take *het* (the neuter class). A number of originally feminine nouns, then, are shifting towards the masculine class, a process that has progressed further in Netherlandic Dutch than in Belgian Dutch.

When measuring the proportion of colloquialisms that we find, we therefore make a distinction between three classes of nouns: the ones that have always been masculine, the ones that are registered in the official spelling dictionary of Dutch, and in the authoritative Van Dale dictionary, as having both genders, and the ones that are still considered to be entirely feminine by the spelling dictionary, but that in practice may nevertheless be touched by the current tendency towards masculinization. The odds of getting colloquial forms in these three classes are different. In the traditionally masculine class, the odds will be higher than in the traditionally feminine class, for instance, because in the latter group, the colloquialisms will basically only occur with the nouns that have shifted towards the masculine gender.

A further complication is the fact that the colloquial forms on schwa get an extra *n* before vowels, *b*, *d*, *t*, and *h*. So, we get *ne man* versus *nen hond* ('a man', 'a dog'). Crucially, this variation also occurs with adnominal forms that already have a schwa in their standard form. So, the definite article *de* is the standard form for all masculine and feminine nouns, but with masculine nouns beginning with a vowel, *b*, *d*, *t*, or *h*, *den* is the colloquial variant. This introduces a set of additional markers of colloquial speech, on top of the *n*-variants of the list presented above:

definite article	('the') de den
distributive pronoun ('each')	elke elken
universal pronoun ('every')	iedere iederen

proximal demonstrative ('this')	deze dezen
possessive pronoun 1 pl ('our')	onze onzen

Adjectives too are included in this variation. The standard form for adjectives used with masculine or feminine nouns features an inflectional schwa. In colloquial speech, these inflected adjectives get an *n*-ending under the same conditions as the articles and pronouns; the articles preceding the adjectives are then phonotactically sensitive to the initial element of the adjectives. So, where standard speech has *een magere man, een hongerige man, een magere hond, een hongerige hond* ('a thin man', 'a hungry man', 'a thin dog', 'a hungry dog'), colloquial Belgian Dutch has *ne magere man, nen hongerige man, ne mageren hond, nen hongerigen hond*.

In the plots that we will present later, these various forms are represented schematically. Thus, *de.m* stands for the standard use of the definite article with (traditionally) masculine nouns, and *de.f* with (traditionally) feminine nouns. The labels *den.m* and *den.f* likewise indicate the use of the *den*-variant, before the vowels and consonants that allow for the alternation. In the variables that have a colloquial schwa-variant, the schwa cases and the schwa+*n* cases are represented together as markers of colloquial speech. So, *een.m* is the standard form of the indefinite article for masculine nouns, and *ne.n.m* stands for either the *ne*- or the *nen*-alternative.

Taken together, we can then distinguish between the variants that indicate standard language, and the variants that indicate colloquial language. Without going into further detail, the following overview may help to interpret the plots. For each of the categories, the first line specifies the standard language forms, while the second line lists the forms that are typical for colloquial Belgian Dutch. (The *c*-tag indicates nouns that have both genders according to the dictionary.)

definite article	<i>de.m, de.c, de.f, den.m, den.c, den.f</i>
indefinitive article	<i>een.m, een.c, een.f, nen.n.m, ne.n.c, ne.n.f</i>
negative pronoun	<i>geen.m, geen.c, geen.f, gene.n.m, gene.n.c, gene.n.f</i>
distributive pronoun	<i>elke.m, elke.c, elke.f, elke.n.m, elke.n.c, elke.n.f</i>
universal pronoun	<i>iedere.m, iedere.c, iedere.f, iedere.n.m, iedere.n.c, iedere.n.f</i>
proximal demonstrative	<i>deze.m, deze.c, deze.f, deze.n.m, deze.n.c, deze.n.f</i>
distal demonstrative	<i>die.m, die.c, die.f, dieje.n.m, dieje.n.c, dieje.n.f, diene.n.m, diene.n.c, diene.n.f</i>

possessive pronoun 1 sg	mijn.m, mijn.c, mijn.f, m.n.m, m.n.c, m.n.f, mijne.n.m, mijne.n.c, mijne.n.f, m.ne.n.m, m.ne.n.c, m.ne.n.f
possessive pronoun 2 sg/pl	je.m, jouw.m, jullie.m, je.c, jouw.c, jul- lie.c, je.f, jouw.f, jullie.f, uwe.n.m, uwe.n.c, uwe.n.f, (ambiguous) uw.m, uw.c, uw.f
possessive pronoun 3 sg m	zijn.m, zijn.c, zijn.f, z.n.m, z.n.c, z.n.f, zijne.n.m, zijne.n.c, zijne.n.f, z.ne.n.m, z.ne.n.c, z.ne.n.f
possessive pronoun 3 sg f	haar.m, haar.c, haar.f, hare.n.m, hare.n.c, hare.n.f
possessive pronoun 1 pl	onze.m, onze.c, onze.f, onzen.m, onzen.c, onzen.f
possessive pronoun 3 pl	hun.m, hun.c, hun.f, hunne.n.m, hunne.n.c, hunne.n.f
adjective	adj.e.m, adj.e.c, adj.e.f, adj.n.m, adj.n.c, adj.n.f

Next to the adnominal phenomena (articles, adjectives, demonstratives and possessives), we include the personal pronouns into the investigation. First, if we have a look at pronouns in subject function, we need to distinguish between two positions, the basic non-inverted one and the inverted one. The non-inverted position for the first person singular takes the standard form *ik* or reduced *'k*, whereas the more or less emphatic *ikke* belongs to the class of colloquial forms, or a reduplicated form: *ik kom (e)kik mee* ('I come along'). In the inverted position, the standard forms are the same as in the non-inverted position. The colloquial Belgian Dutch form is *-kik* or *ekik*: *kom ekik mee?* 'do I come along?'. The first person plural has *we* and *wij* as standard forms in non-inverted position, and as colloquial forms *me*, and reduplicating *we* and *wij*. In the case of inversion, *we* and *wij* are standard, *me* is colloquial.

The forms for the second person, singular and plural, are characterized by the same double system as the second person possessives: standard Dutch has a system distinguishing T and V pronouns, whereas colloquial Belgian Dutch has a unitary system. In the non-inverted position, familiar *je*, *jij*, *jullie* and polite *u* contrast with colloquial *ge*, *gij*. The same holds for inversion, but the forms *de* and *degij* (*komde mee? komdegij mee?* 'do you come along?') add to the inventory of colloquialisms.

The third person singular forms feature masculine *hij* and feminine *zij*, *ze* in non-inverted position; colloquial counterparts are reduplicating *hij* and *ze*.

In inversion, the forms are basically the same, except for the addition of *m* as a colloquial masculine form (*komt m mee?* ‘does he come along?’) The plural third person forms are *zij* and *ze*, both in inverted and non-inverted position; colloquial variants are cases of reduplication: *komen ze zij mee?* ‘do they come along?’.

If we then consider the personal pronouns in object functions, no specific phenomena need to be mentioned, except for the typical double system in the second person pronouns: *je, jou, jullie* are standard forms, but *u* can be both a colloquial form (as the counterpart of the subject forms *gij* and reduced *ge*) and a polite standard form.

Finally, with regard to the reflexive pronouns, the typical feature of colloquial Belgian Dutch is the use of *eigen*: *ik was mijn eigen, hij wast zijn eigen* versus the standard form *ik was me, hij wast zich* ‘I wash myself, he washes himself’. The reciprocal pronoun *elkaar* ‘each other’ has a colloquial Belgian Dutch counterpart in *mekaar*.

Following the same conventions as before, we can now give the following overview of the relevant labels.

subject pronoun 1 sg	ik.not, k.not, ik.inv, k.inv, ikke, ik.dbl, k.dbl, k.ik
subject pronoun 2 sg/pl	je.not, jij.not, jullie.not, je.inv, jij.inv, jullie.inv, ge.not, gij.not, ge.dbl, gij.dbl,ge.inv, gij.inv, de.inv, de.gij (ambiguous) u.not, u.inv
subject pronoun	3 sg hij.not, hij.inv, ie, ze.not.vr, zij.not.vr, ze.inv.vr, zij.inv.vr, hij.dbl, m.inv, ze.dbl.vr, ze.zij.vr
subject pronoun 1 pl	we.not, wij.not, we.inv, wij.inv, me.not, we.dbl, me.inv
subject pronoun 3 pl	ze.not.mv, zij.not.mv, ze.inv.mv, zij.inv.mv, ze.dbl.mv, zij.dbl.mv, ze.zij.mv
object pronouns	me.obj, mij.obj, je.obj, jou, jullie.obj, hem, m.obje, haar.obj, ze.obj.vr, hen, hun.obj, ze.obj (ambiguous) u.obj
reflexive and reciprocal	me.ref, mij.ref, je.ref, ons.ref, zich.3, elkaar, mijn.eigen, je.eigen, uw.eigen, ons.eigen, eigen.3, mekaar (ambiguous) u.ref

4. Results and discussion

As a first step in the analysis of the data, we may have a look at each of the lectal dimensions separately. In each case, the question will be to what extent the potential lects (the values on the lectal dimensions) are characterized by a specific bundle of linguistic variables. It is beyond the scope of the present paper to devote a separate discussion to each of the lectal dimensions, so let us have a look at one of the crucial dimensions: register. Given that colloquial Belgian Dutch is an informal variety, we expect a correlation between the linguistic variables that we consider typical for colloquial Belgian Dutch and the more informal registers.

In Figure 2, the register components of the CGN are plotted against the linguistic variables. We can roughly identify two dimensions among the CGN components. Overall, the horizontal dimension of the plot represents a cline from standardized language use on the left, to colloquial speech on the right. In fact, if we look at the distribution of the standardized and the colloquial linguistic variables, in the way in which we identified them above, we can clearly see a

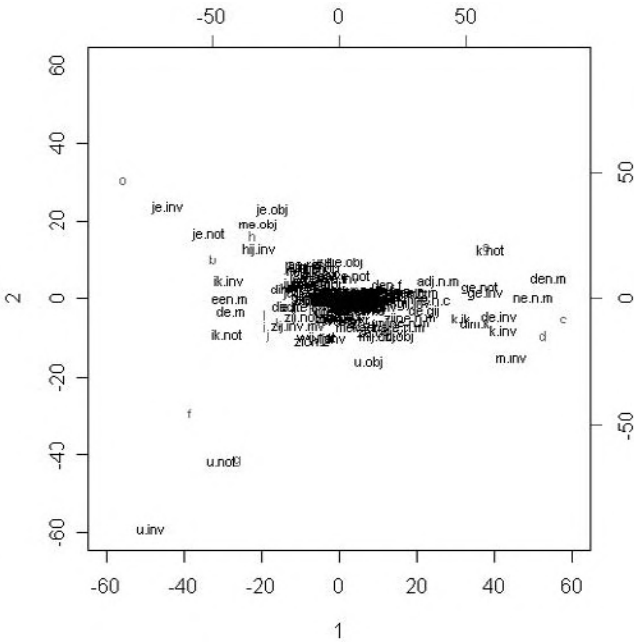


Figure 2. Correspondence analysis of linguistic variables over register

dimension: at the non-colloquial side of the dimension, a distinction needs to be made between situations triggering polite 2nd person pronouns, and situations triggering familiar 2nd person pronouns.

The plots, in other words, confirm the initial assumption that we have to distinguish a set of colloquialisms in contrast with a set of standardized forms, and that the distinction between both sets of variables is indeed at least in part a stylistic one. However, the plots also show that the various linguistic indices (and in particular, the colloquialisms) do not all have the same distribution: they do not coincide in one particular point of the plot, as would be the case if we had a Rhenish fan-like situation. If the CGN components constitute homogeneous lects in the sense in which the areas between the isoglosses of the Rhenish fan constitute homogeneous dialects, then each of the CGN components – or specific clusters of such components – would coincide in the plot with specific (bundles of) linguistic variables. In incidental cases that may be the case, like with component *g* and the polite *V*-pronoun, but the overall pattern exhibited by the linguistic variables is a continuum, not a set of discrete clusters.

We may conclude, then, that lects are much more fuzzy than a traditional conception of the notion “linguistic system” would suggest. If an operational definition of “lect” is one in which lects are characterized by bundles of co-occurring features, then the CGN components are no lects, and the overall systematicity of the language system is lower than we have been taught to assume. There are three alternative interpretations of the plots that need to be considered and that might lead to a revision of the conclusion that we have just reached.

It is tempting to say, in the first place, that the structural fuzziness we see in the plots is merely “a statistical effect”: after all, even if we think in terms of systems (bundles of co-occurring phenomena) as typical for a certain socio-communicative configuration (a socially distinctive group of speakers, a communicative situation, a combination of both etc.), we could still easily accept that not all the individual language users realize that bundle to the same extent. For instance, if *A*, *B*, and *C* are the specific elements of such a lectally characteristic bundle, and if [*x*] is the socio-communicative configuration for which it is typical, we could say that the combination of *A*, *B*, *C*, and [*x*] defines a lect. But we would not assume that all the usage acts performed in [*x*] exhibit *A*, *B*, and *C*. If [*x*] is a local dialect situation, some speakers would still speak the standard language in that situation, i.e. would not realize *A*, *B*, and *C*. In that sense, the situation in [*x*] would be somewhat fuzzy: we can identify a lect typical for that particular socio-communicative situation, but it would not be selected for use by all speakers appearing in that situation.

However, that would still imply that *A*, *B*, and *C* behave in the same way. The reflection in the plot would be that the bundle *A*, *B*, *C* is slightly more removed

from [x] than if situation [x] featured only speakers of the “pure dialect” A, B, C, but A, B, and C would still occur together in the graphical representation. The situations that we see reflected in the plots we have actually considered are different: although there is a lot of co-occurrence, some linguistic phenomena, if not all, clearly fall outside of any bundle.

But couldn't we then say, in the second place, that the fuzziness we find in the plots results from the fact that speakers may choose to realize a given lect to a certain degree? As in the previous interpretation, the choices language users make would involve the selection of a lect (a bundle of linguistic phenomena), but rather than opting in a wholesale manner for the lect in question, the choice would be selective: some speakers might realize some elements, while other speakers might realize others. So, instead of the propositions “all users in situation [x] opt for the bundle A, B, C” or “some users in situation [x] opt for the bundle A, B, C”, we now consider the interpretation “some users in situation [x] opt to some extent for the bundle A, B, C” (or “some users in situation [x] opt for some of the elements in the bundle A, B, C”).

However, if we take a “systems first” rather than “individual elements first” approach, the choice of either A, B, or C as a partial instantiation of the lect would be random: it would amount to the same thing whether you select the combination AB, BC or AC as a selective, partial, mitigated realization of the lect; all combinations would be equally probable as an instantiation of the lect. As such, A, B, and C would again occur together in the graphical representation, because their distance to sociocommunicative situation [x] would be identical. That does not happen, though: we get clear indications in the plots that some elements are more typical for certain sociocommunicative situations than others.

Finally, we could formulate the objection that the plots we have so far considered do not actually live up to the theoretical question that we started off with: by looking at one lectal dimension only – the stylistic dimension of register variation – our lectal analysis is not yet multidimensional, as we initially suggested it should be. Couldn't it be the case that the fuzzy pattern that we find in the data is clarified when we consider not just the CGN components, but all the lectal dimensions that we introduced? Wouldn't we then find more lectal structure if we included more lectal variables?

There are actually two ways of doing this: we can look for broader lectal entities, when two lectal points coincide, or we can have a look at more fine-grained lectal entities, by breaking down the CGN components that we have so far considered.

The first approach is illustrated by Figure 4: we plot a correspondence analysis of all linguistic variables over all lectal variables, and when two lectal variables cluster together, we check whether that clustering could point to a “super-

lect” combining both. In Figure 4, for instance, *brab* (the Brabant province) and *lim* (the Limburg province) appear close to each other: from the point of view of colloquial Belgian Dutch, they seem to behave more or less identically, in contrast with the other regions. Conversely, the position of West Flemish (*wvl*) as an outlier in the upper left corner is not so surprising if we look at the linguistic variables involved: the *je*-pronouns that surface in the neighbourhood of *wvl* (but that are also, as we have seen, characteristic of standardized speech) are indigenous to many West Flemish dialects.

In other cases, however, the fact that two lectal variables co-occur does not necessarily point to a combination of both, but rather to an overlapping. The co-occurrence of component *h* (classroom lessons) and *occC* (academics) is not surprising: who would do the teaching anyway? In the same way, it is not surprising that component *f* (interviews) teams up with *occH* (people working in media and entertainment). The fact that co-occurrences in a plot like Figure 4 may be interpreted in such different ways indicates that it may be necessary to look at combinations of lectal variables in yet another way. And in any case, the overall picture in Figure 4 does not exhibit much more lectal structure than in the previous figures.

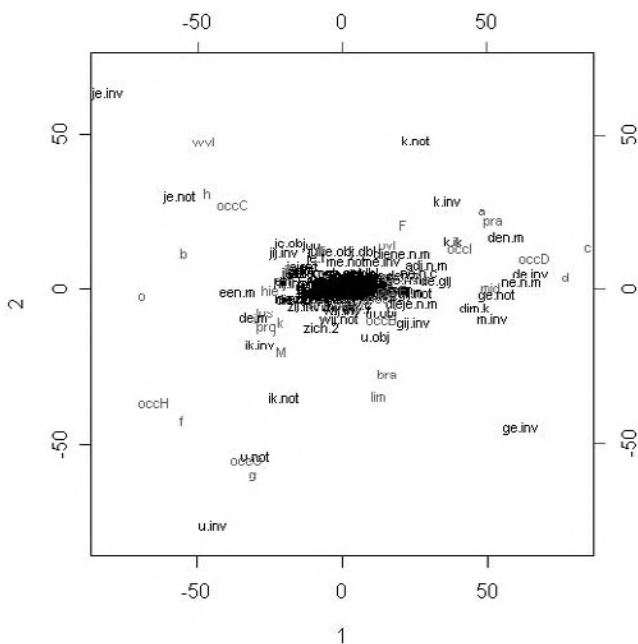


Figure 4. Correspondence analysis of linguistic variables over lectal variables

A different approach, then, is illustrated by Figure 5 and Figure 6. Instead of looking at single lectal points or clusters of such points, we look at the interaction of different lectal dimensions. For instance, instead of considering each generation separately, we consider generations in combination with another factor. In the figures that serve as an illustration of this approach, we consider the interaction of generation and gender. The lectal point *pro.M* (see Figure 6), for instance, refers to the men in the protest generation. The logic of the argument will be clear: if we start from a more fine-grained lectal architecture by taking into account such interactions of lectal dimensions, does the overall structure of the variation become more systematic?

The figures are not very promising in that respect, however. Some tendencies do become apparent, such as the fact that younger women (*pra.F*) (Figure 5) are situated more to the colloquial right hand side of the figure than younger men, or the fact that men in the protest generation (*pro.M*) and the lost generation (*los.M*) (Figure 6) are more represented towards the formal, public sphere – the lower left hand side of the figure – than other groups. The overall structure of the plot, however, is as heterogeneous as the others we have seen. Obviously, there are many lectal interactions of this type that could be illustrated, but in all cases (as may be checked in Plevoets 2008), the global picture of heterogeneity remains the same.

5. Conclusion

So, it seems we have to conclude that the lectal structure of the linguistic system is not built up (entirely) from strictly co-occurring phenomena, but rather from phenomena that may each have their own lectal distribution. Being typical for a certain sociocommunicative situation is a graded matter, but that inevitably implies a difference between the various linguistic forms that we would think of as constituting a lect: describing lects implies describing differences in lectal status between the linguistic phenomena constituting the lect – that is to say: it implies an “individual elements first” perspective. Or, to put it more simply: to the extent that we wish to talk about lects at all, lects have prototype structure (Kristiansen 2003).

From the point of view of historical linguistics as represented by Schuchardt and Schmidt, and probably also from a common sense perspective, that may not be an entirely surprising conclusion. But from a theoretical perspective, the consequences are important enough. Both from the Saussurean and the Chomskyan tradition, we have learned to think of languages as self-contained systems. But how systematic are the systems? A radical usage-based approach

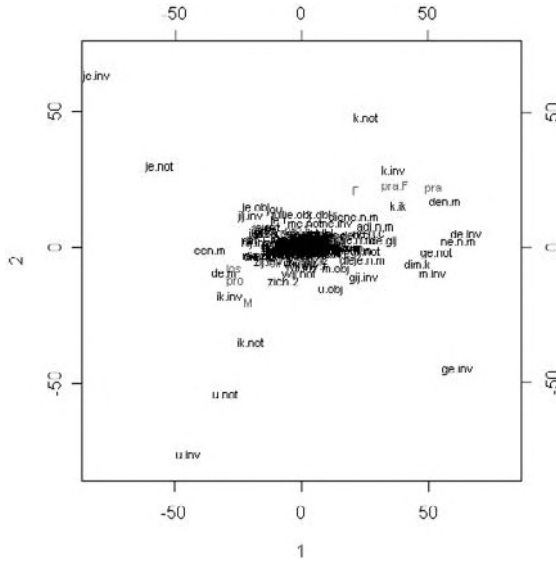


Figure 5. Correspondence analysis of linguistic variables over lectal variables, defined by the interaction of generation and female gender

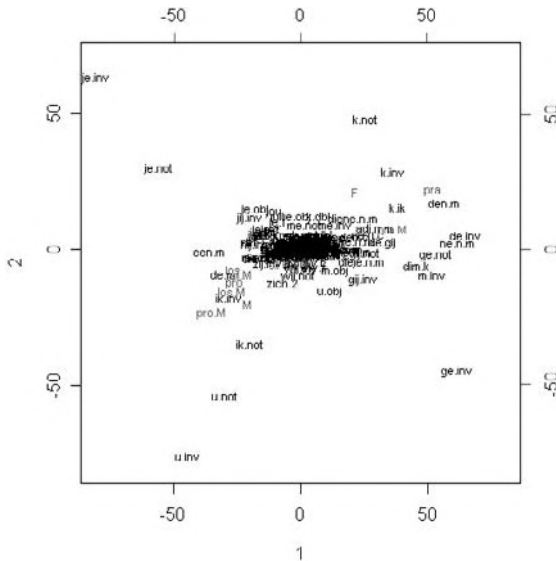


Figure 6. Correspondence analysis of linguistic variables over lectal variables, defined by the interaction of generation and male gender

would seem to do away with the notion of system altogether. Arguing against such a radically restrictive attitude, Boye and Harder (2007) sketch a dialectical conception of the language system, which both arises from and interacts with the level of usage: they argue “that language is indeed based on actual, attested usage, but that it rises above attested instances in providing the speaker not only with actual usage tokens but also with a structured potential that is distilled out of previous usage” (2007: 572). Along the lines of Harder (2003), this potential should be seen as a social fact.

The present paper, then, argues that such a social turn in the conception of the language system has two consequences that are not receiving due attention in Harder’s formulation. To begin with, *a social conception of linguistic structure entails a variationist conception of the linguistic system*: instead of one homogeneous system, we have to think in terms of a cluster or network of lectal systems, each of them partial with regard to what we would normally consider to be “the” language. Further, these lectal systems themselves are not homogeneous, but consist of linguistic phenomena that may be more or less typical for the lect in question: *lects have prototype structure*. A language system, once you start looking at it from a usage-based, social point of view, is much less structured than a traditional structuralist conception of language would have us expect. Linguistic phenomena do not occur in clearly distinguishable bundles that correspond in a straightforward way with lectal entities, and as such, the primary unit of lectally structured variation is not discrete language systems, but individual language phenomena and the continuous dimensions on which they are situated.

References

- Barlow, Michael and Suzanne Kemmer (eds.)
 2000 *Usage-based Models of Language*. Stanford, Calif.: CSLI Publications.
- Becker, Henk
 1992 *Generaties en hun Kansen* [Generations and their Opportunities]. Amsterdam: Meulenhoff.
- Benzécri, Jean-Paul
 1992 *Correspondence Analysis Handbook*. New York: Dekker.
- Boye, Kasper and Peter Harder
 2007 Complement-taking predicates: usage and linguistic structure. *Studies in Language* 31: 569–606.

- Brugmann, Karl and Bertold Delbrück
1886–1916 *Grundriß der vergleichenden Grammatik der indogermanischen Sprachen*. Straßburg: Trübner Verlag.
- Bybee, Joan L.
2001 *Phonology and Language Use*. Cambridge: Cambridge University Press.
- Bybee, Joan L.
2006 *Frequency of Use and the Organization of Language*. Oxford: Oxford University Press.
- De Sutter, Gert
2005 Rood, groen, corpus! Een taalgebruiksgebaseerde analyse van woordvolgordevariatie in tweeledige werkwoordelijke eindgroepen [Red, green, corpus! A usage-based analysis of word order variation in binary clause-final verbal groups]. Ph.D. dissertation, KU Leuven.
- De Sutter, Gert, Dirk Speelman and Dirk Geeraerts
2008 Prosodic and syntactic-pragmatic mechanisms of grammatical variation: The impact of a postverbal constituent on the word order in Dutch clause final verb clusters. *International Journal of Corpus Linguistics* 13: 194–224.
- Geeraerts, Dirk
2001 Everyday language in the media: The case of Belgian Dutch soap series. In: Matthias Kammerer, Klaus-Peter Konerding, Andrea Lehr, Angelika Storrer, Caja Thimm and Werner Wolski (eds.), *Sprache im Alltag. Beiträge zu neuen Perspektiven in der Linguistik Herbert Ernst Wiegand zum 65. Geburtstag gewidmet* 281–291. Berlin/New York: Walter de Gruyter.
- Geeraerts, Dirk
2002 The scope of diachronic onomasiology. In: Vilmos Agel, Andreas Gardt, Ulrike Hass-Zumkehr and Thorsten Roelcke (eds.), *Das Wort. Seine strukturelle und kulturelle Dimension. Festschrift für Oskar Reichmann zum 65. Geburtstag* 29–44. Tübingen: Niemeyer.
- Geeraerts, Dirk
2005 Lectal data and empirical variation in Cognitive Linguistics. In: Francisco Ruiz de Mendoza Ibañez and Sandra Peña Cervel (eds.), *Cognitive Linguistics. Internal Dynamics and Interdisciplinary Interactions* 163–189. Berlin/New York: Mouton de Gruyter.
- Geeraerts, Dirk and Stefan Grondelaers
1995 Looking back at anger: Cultural traditions and metaphorical patterns. In: John Taylor and Robert E. MacLaury (eds.), *Language and the Construal of the World* 153–180. Berlin/New York: Mouton de Gruyter.
- Geeraerts, Dirk, Stefan Grondelaers and Dirk Speelman
1999 *Convergentie en Divergentie in de Nederlandse woordenschat: Een Onderzoek naar Kleding- en Voetbaltermen* [Convergence and Diver-

- gence in the Vocabulary of Dutch: An Investigation into Clothing Terms and Football Terms]. Amsterdam: Meertens Instituut.
- Goossens, Jan
2000 De toekomst van het Nederlands in Vlaanderen [The future of Dutch in Flanders]. *Ons Erfdeel* 43: 3–13.
- Greenacre, Michael
1984 *Theory and Applications of Correspondence Analysis*. London/New York: Academic Press.
- Grondelaers, Stefan, Dirk Geeraerts, Dirk Speelman and José Tummerts
2001 Lexical standardisation in internet conversations: Comparing Belgium and The Netherlands. In: Josep M. Fontana, Louise McNally, M. Teresa Turell and Enric Vallduví (eds.), *Proceedings of the First International Conference on Language Variation in Europe* 90–100. Barcelona: Universitat Pompeu Fabra, Institut Universitari de Lingüística Aplicada, Unitat de Investigació de Variació Lingüística.
- Grondelaers, Stefan, Dirk Speelman and Dirk Geeraerts
2008 National variation in the use of er “there”: Regional and diachronic constraints on cognitive explanations. In: Gitte Kristiansen and René Dirven (eds.), *Cognitive Sociolinguistics. Language Variation, Cultural Models, Social Systems* 153–203. Berlin/New York: Mouton de Gruyter.
- Harder, Peter
2003 The status of linguistic facts: Rethinking the relation between cognition, social institution and utterance from a functional point of view. *Mind and Language* 18: 52–76.
- Harder, Peter
Forthcoming *The Social Turn in Cognitive Linguistics*. Berlin/New York: Mouton de Gruyter.
- Hopper, Paul
1998 Emergent grammar. In: Michael Tomasello (ed.), *The New Psychology of Language: Cognitive and Functional Approaches to Language Structure* 155–175. Mahwah, N.J.: Lawrence Erlbaum.
- Itkonen, Esa
2003 *What is Language? A Study in the Philosophy of Linguistics*. Turku: Åbo Akademis tryckeri.
- Kövecses, Zoltán
2005 *Metaphor in Culture: Universality and Variation*. Cambridge/New York: Cambridge University Press.
- Kristiansen, Gitte
2003 How to do things with allophones: Linguistic stereotypes as cognitive reference points in social cognition. In: René Dirven, Roslyn Frank and Martin Pütz (eds.), *Cognitive Models in Language and Thought: Ide-*

- ologies, Metaphors, and Meanings* 69–120. Berlin; New York: Mouton de Gruyter.
- Kristiansen, Gitte and René Dirven (eds.)
2008 *Cognitive Sociolinguistics: Language Variation, Cultural Models, Social Systems*. Berlin/New York: Mouton de Gruyter.
- Oostdijk, Nelleke
2002 The design of the Spoken Dutch Corpus. In: Pam Peters, Peter Collins and Adam Smith (eds.), *New Frontiers in Corpus Research* 105–112. Amsterdam: Rodopi.
- Palmer, Gary B
1996 *Toward a Theory of Cultural Linguistics*. Austin, Tex.: University of Texas Press.
- Paris, Gaston
1888 Les parlers de France. Lecture faite à la réunion des sociétés savantes le 26 mai 1888. *Revue des patois gallo-romans* 2: 161–175.
- Plevoets, Koen
2008 Tussen spreek- en standaardtaal: Een corpusgebaseerd onderzoek naar de situationele, regionale en sociale verspreiding van enkele morfosyntactische verschijnselen uit het gesproken Nederlands [Between colloquial and standard language: A corpus-based investigation of the situational, regional and social distribution of morphosyntactic features of spoken Dutch]. Ph.D. dissertation, KU Leuven.
- Schleicher, August
1850 *Die Sprachen Europas in systematischer Übersicht*. Bonn: H.B. König.
- Schmidt, Johannes
1872 *Die Verwandtschaftsverhältnisse der indogermanischen Sprachen*. Weimar: Hermann Böhlau Verlag.
- Schuchardt, Hugo
1885 *Über die Junggrammatiker: Gegen die Lautgesetze*. Berlin: Oppenheim.
- Sinha, Chris
2007 Cognitive linguistics, psychology and cognitive science. In: Dirk Geeraerts and Hubert Cuyckens (eds.), *The Oxford Handbook of Cognitive Linguistics* 1266–1294. New York: Oxford University Press.
- Speelman, Dirk, Stefan Grondelaers and Dirk Geeraerts
2003 Profile-based linguistic uniformity as a generic method for comparing language varieties. *Computers and the Humanities* 37: 317–337.
- Tomasello, Michael
2003 *Constructing a Language: A Usage-Based Theory of Language Acquisition*. Cambridge, Mass.: Harvard University Press.

- Tummers, José
 2005 Het naakt(e) adjectief: Kwantitatief-empirisch onderzoek naar de adjectivische buigingsalternantie bij neutra [The naked adjective: A quantitative empirical study of the inflectional variation of adjectives with neuter nouns]. Ph.D. dissertation, KU Leuven.
- Tummers, José, Kris Heylen and Dirk Geeraerts
 2005 Usage-based approaches in Cognitive Linguistics: A technical state of the art. *Corpus Linguistics and Linguistic Theory* 1: 225–261.
- Tummers, José, Dirk Speelman and Dirk Geeraerts
 2004 Quantifying semantic effects. The impact of lexical collocations on the inflectional variation of Dutch attributive adjectives. In: Gérald Purnelle, Cédric Fairon and Anne Dister (eds.), *Le poids des mots. Actes des 7es Journées internationales d'Analyse statistique des Données Textuelles* 1079–1088. Louvain-la-Neuve: Presses Universitaires de Louvain.
- Van Gijsel, Sofie
 2007 Sociovariation in lexical richness: A quantitative, corpus linguistic analysis. Ph.D. dissertation, KU Leuven.
- Van Gijsel, Sofie, Dirk Speelman and Dirk Geeraerts
 2008 Style shifting in commercials. *Journal of Pragmatics* 40: 205–226.
- Verhagen, Arie
 2005 *Constructions of Intersubjectivity: Discourse, Syntax, and Cognition*. Oxford: Oxford University Press.
- Wang, William S.Y.
 1969 Competing changes as a cause of residue. *Language* 45: 9–25.
- Wang, William S.Y. (ed.)
 1977 *The Lexicon in Phonological Change*. The Hague: Mouton.
- Zlatev, Jordan
 2005 What's in a schema? Bodily Mimesis and the grounding of language. In: Beate Hampe (ed.), *From Perception to Meaning: Image Schemas in Cognitive Linguistics* 313–342. Berlin/New York: Mouton de Gruyter.

More tiles on the roof: Further thoughts on incremental language production¹

J. Lachlan Mackenzie

1. Introduction

The serial production of hierarchically organized structures under time pressure has been recurrently described in the literature as “incremental”. In this article, I shall focus on the use of this notion with regard to the production of language,² in response to two recent contributions by Harder (2007a, 2007b) which have sought to circumscribe its applicability in linguistic analysis. The incremental approach to language production (or generation, to use the term preferred by computer scientists) involves a combination of “immediate verbalization” and parallel processing (Neumann and Finkler 1990): each segment is viewed, in their words (1990: 288), “as an active unit which tries to verbalize itself as fast and as independently as possible”. While the linguistic module is operative, the conceptual module is working in parallel, but running ahead, deciding “what to say next” and benefiting from feedback from the linguistic module. The resulting picture is one of overlapping processes, like “tiles on a roof”, to re-employ a trope picked up by Harder (2007a) from Levelt (1999: 88). The purpose of my contribution to this celebratory volume, now borrowing Lakoff and Johnson’s (1980: 47) AN ARGUMENT IS A BUILDING metaphor, is to add some more tiles to the roof of the debate by engaging with Peter Harder’s thoughts on the matter, and in particular the implications of the relevant issues for constructing a psychologically realistic approach to grammar.

The general background to the discussion will be the theory of Functional Discourse Grammar (FDG; Hengeveld and Mackenzie 2008), which seeks in its architecture to reflect processes of language production, but without pretending to offer a model of how those processes play out in real time. Peter Harder has followed the emergence of FDG with a critical eye (Harder 2004, 2007a, 2007b), discouraging the wholesale integration of a processing notion like incrementality into FDG’s account of structure while not denying its relevance in the description of usage. Section 2 of this article surveys a range of psycholinguistic work on incrementality in language production, moving on to consider some proposals

for its integration into grammatical work. After a discussion in Section 3 of Harder's critique of incrementalism as a grammatically relevant notion, Section 4 reviews some pertinent new work on language production which analogously points to a reduced role for incrementality, and Section 5 offers discussion of a model of dialogue production that has promising correspondences with the architecture of FDG. This leads to a brief conclusion.

2. Incrementality in language production

There is a sense in which incrementality is an obvious, indeed almost trite property of our linguistic communication. The idea that what comes later builds upon what has gone before is a commonplace in the analysis of the characteristics of any creature endowed with memory. From a purely information-theoretic perspective on semantics, each increment is informative in the sense of narrowing down the universe of discourse (Seuren 2006: 85). Equivalently, each new increment contributes to a reduction in information entropy, where entropy is measured as the information content the recipient is lacking at any one point. Incrementality in the transmission of information has accordingly inspired a range of approaches to discourse meaning that fall under Dynamic Semantics. What characterizes all such approaches is that "[t]he meaning of a sentence is the change in information that it brings about: meaning is 'information change potential'" (Groenendijk and Stokhof 2006: 29). Prominent among these is Discourse Representation Theory, in which "the interpretation of a discourse – a sequence of sentences – takes the form of an incremental construction of a discourse representation structure" (Groenendijk and Stokhof 2006: 29); and closely related is the theory of file-change semantics (Heim 1988), which sees each new contribution to a discourse as an update on what has preceded.

All these approaches are concerned with the *post hoc* analysis of imaginary discourses, seeking to explain in formal-semantic terms which sequences are well-formed and which are ill-formed. In comparably static accounts of syntactic structure, too, the sooner-to-later dimension of the real-time production and comprehension of speech is re-interpreted as left-to-right ordering. Chomsky (1956) famously re-oriented syntactic interest towards the hierarchical nature of sentence structure, arguing for the presence of abstract syntactic knowledge. The result has been to privilege the clustering of co-constituents under a higher node rather than their left-to-right sequence. The results are well-known, including the danger of assuming such configurationality to be universal; however, since Hale's (1983) analysis of Warlpiri, it has been increasingly accepted that there are languages in which there is little evidence for constituent hierarchy (but see

Legate 2003 for a configurational analysis of Warlpiri). Mixed systems are also possible: Kathol (2000), which revives the topological clause analysis that was prominent in the German tradition,³ shows that there is a central segment of the German clause that is ordered linearly rather than hierarchically. All in all, there is an improving balance between the horizontal and vertical dimensions in current syntactic thinking. As we shall see later in this section, left-to-right is the driving principle behind an increasing number of developments in grammatical theory.

This re-orientation towards linearity has certainly been influenced by the tentative *rapprochement* in recent years between certain branches of linguistics and some of the psycholinguistic work on speech production (see Van Valin 2006 and Ferreira 2005 for enthusiastic calls for greater cooperation, and Jackendoff 2007: 257–258 for less sanguine but no less strenuous urgings). The psycholinguistic study of both language production and language comprehension takes incrementality (as defined above) as a given, and any linguistic theory that strives to be cognitively adequate (Butler 2008a, 2009a) will certainly have to prioritize this linearity in some way: “we would do well” (Butler 2008a: 6) writes, “(. . .) to construct a dynamic theory of language which is incremental and constraint-based”. As mentioned above, language production involves parallel processing:⁴ in the simplest conceptualization of this parallelism, there is overwhelming evidence (see Ferreira and Slevc 2007 for an overview) that the cognition that underlies speech and the resultant phonation are processed in parallel (i.e. we think ahead as we are speaking). This mental multi-tasking therefore implies staggered processes, i.e. the onset of the two processes is separated in time, with cognition always leading phonation. In addition there is feedback from speech to cognition through the speaker’s self-monitoring (Levelt 1989). Language comprehension similarly involves overlapping but chronologically distinct processes of parsing and interpretation, possibly with multiple parses and interpretations under consideration at once, and with feedback to correct or suppress uninterpretable parses. However, as Levelt (2001: 242) reminds us, “the aims of the two systems are deeply different: attaining completeness⁵ is a core target of production; ambiguity is hardly ever a problem. Attaining uniqueness in the face of massive ambiguity is a core target of speech perception; completeness of parsing should definitely be avoided – it would make the system explode”.

As linguists will immediately insist, the aim of attaining completeness in production involves many more levels than just those of cognition and phonation. In FDG, for example, four levels of analysis are distinguished, each of them with its own requirements for completeness: the interpersonal, representational, morphosyntactic and phonological levels. The need for several levels

is understood and implemented on the psycholinguistic side too: Levelt (2001: 242), quoting from an earlier work of his, writes that “the pragmatics should be precisely tuned to the discourse situation. The words, phrases and sentences should be accurate and precise renditions of the information to be expressed.⁶ Syntax and morphology have to be complete and well-formed and the same holds for the segmental and suprasegmental phonology of the utterance. Finally, the phonetic realization has to conform to the standards of intelligibility, rate, formality of the speech environment”.

If the aim of comprehension is to find a unique satisfactory interpretation, the speaker’s goal in production is to formulate a complete expression, although she⁷ may of course be interrupted by the hearer as soon as he has reached a satisfactory interpretation. It is this forward-looking aspect that has led researchers to characterize the incrementality of speech production as “dynamic” (cf. the Dynamic Semantics mentioned above and the Dynamic Syntax discussed below). While the speaker is working on the parallel tasks of cognition and expression at the various levels, she is also projecting the end-point of the respective units. She may not yet know precisely what will precede that end-point (because that cognitive work has still to be done), but is committed by the syntactic construction she is employing to certain types of continuance and closure. This anticipatory aspect of speech production has been examined, initially for English, in Conversation Analysis (e.g. Schegloff 1987: 71), where projectability is seen as a core aspect of how speakers manage their turns in a conversation and also of how hearers anticipate moments at which they may take over as speaker (“transition relevance places”, TRPs), possibly interrupting the speaker before she achieves formulation of the intended complete expression.

Interestingly, in studies on the interpenetration of grammar and conversation (cf. Fox, Hayashi and Jaspersen 1996, Tanaka 2000, Thompson and Couper-Kuhlen 2005), differences have emerged in projectability according to the syntactic typology of the language being used. Whereas in English the predicate occurs relatively early in the clause, in Japanese the predicate is clause-final, although it may be followed in speech by “afterthoughts” of various kinds. Tanaka (2000) shows that in their turn-taking Japanese hearers orient strongly to the predicate, with any overlap of the interlocutors being encountered above all during the production of post-predicate material. The speaker can thus reckon with a certain freedom from interruption up to the predicate, with the hearer adopting a “wait and see” attitude mitigated by a frequent interposition of backchannels. Like Warlpiri, Japanese has been characterized as a non-configurational language and one may suppose that there is some connection between languages with a lack of hierarchical structure and such “delayed projectability” (Tanaka 2000: 4).

Whereas the incrementality of speech production entails forward projection of possible conclusions and TRPs, there is also a backward orientation. “A key implication of incremental language processing is the need for grammatical memory” (Pienemann 2003). The creation of a coherent surface form implies that the relevant processor at any one point has access to what has been produced so far, the intermediate state of the utterance. Pienemann (1998) argues that in incremental language generation there is a sequence of procedures allowing the creation of ever more structure from left to right, each with its own processor, and applying in a fixed order: (a) lemma access; (b) identification of syntactic category; (c) the phrase-making procedure; (d) the sentence procedure; (e) the subordinate clause procedure (if applicable).⁸ As the hierarchy is constructed (lexical units within phrases, phrases within sentences, subordinate clauses within sentences), so the information about the output of earlier procedures is stored – this is the grammatical memory – in the higher nodes created.

The characteristics of incremental production that we have reviewed help us to understand its efficiency: its orientation towards completeness; the grammatical memory that links the independent processors; and the principle of “What *can* be uttered *must* be uttered immediately” (Hoenkamp 1983: 18), which relieves that memory from overcapacity. Yet, as Pechmann (1989) has shown, the system is also prone to error. In experimentation designed to elicit descriptions of an object that differed in size, shape and colour from other objects, speakers of English were asked to provide descriptions that would distinguish the object from its rivals. The results showed that speakers would produce over-specified descriptions as well as descriptions that deviated from the standard size–shape–colour order of attributive adjectives. Speakers were sensitive to the piecemeal availability of the features, and this was reflected in their – economically and grammatically – non-optimal planning. Pechmann interprets this as coming from an overhasty verbalization of conceptualization and as supporting the incrementality of speech production.

The findings from the psycholinguistic study of incremental processing have had their effects on computational work on language generation (for an overview, see De Smedt, Horacek and Zock 1996). Among the many initiatives that might be mentioned, SYNPHONICS (Abb, Herweg and Lebeth 1993: 3) is highly explicit about its desire to link “psycholinguistic insights into the nature of the human natural language production process with well-established assumptions in theoretical and computational linguistics concerning the representation and processing of grammatical knowledge”. SYNPHONICS assumes that cognition provides a series of conceptual increments⁹ which are converted into a series of data structures, the last being the phonological output. This

is achieved through the cooperation of a range of declarative and procedural components. The declarative components comprise a lexicon of lemmata, semantic/syntactic/phonological (SSP) schemes, dynamic SSP structures and grammatical principles; the procedural components, in order of application, are a semantic encoder, a pair of scheme and lemma selectors, a functional inspector, a structure licenser, an integrator, another structure licenser and a phonological encoder. Abb, Herweg and Lebeth (1993) show how their generator can produce German passive sentences like *Peter wird gebissen* ('Peter is being bitten') on the basis of a conceptualization that dispenses with an agent through extreme agent backgrounding.

Whereas SYNPHONICS works unidirectionally from conceptualization to phonological output, POPEL (Neumann and Finkler 1990) divides into a POPEL-WHAT (the conceptual module that determines "what to say") and a POPEL-HOW (the linguistic module that determines "how to say it"), such that there is feedback from the latter to the former. The linguistic module demands missing information from the conceptual module, in this way modelling the way in which the speaker projects the remaining part of the utterance. POPEL-HOW can also handle another prominent aspect of incremental production, namely reformulation, where a produced segment conflicts with the segments already in the grammatical memory and needs to be replaced. The aim of POPEL is to map from one representation to another as quickly as possible in order to reflect the rapidity of spontaneous speech.

The relationship between psychological and grammatical concerns is prominent in the psycholinguistic model known ultimately as Performance Grammar (Kempen and Harbusch 2002). This work aims "to describe and explain intuitive judgments and other data concerning the well-formedness of sentences of a language, but at the same time it hopes to contribute to accounts of syntactic processing phenomena observable during language comprehension and language production" (Kempen and Harbusch 2002: 148). It differs from the aforementioned models in assuming late linearization, i.e. the linear ordering of constituents is implemented only after the functional and grammatical relations among them have been established. Arguing that errors in linearization (cf. the discussion of Pechmann 1989 above) are rare (cf. also Bock 1995: 183 for a similar finding), the proponents of Performance Grammar introduce mechanisms to block "premature utterance release" (Kempen and Harbusch 2002: 149). Linear order is represented as a sequence of slots, some of which are absolute positions. For example, the initial position in a subordinate clause in English would be absolutely associated with the subordinator, which would prevent release of any other item into that slot, should there for any reason be delay in producing the subordinator. Although both strongly inspired by and feeding into the psy-

cholinguistic work on the incremental production of utterances (Levelt 1989), Performance Grammar is, in having a circumscribed linearization component, not so much a model of production as a grammar (as its name signifies), tackling such typical problems of static syntax as verb clustering in Dutch and German.

This brief discussion of Performance Grammar brings us to a consideration of various approaches to grammar that in different ways seek to reflect the linearity of language production. Linear Syntax (Kathol 2000) is mentioned by Kempen and Harbusch (2002: 160) as “coming close” to their own approach, but without making its psychological claims. Here too, there are separate hierarchization and linearization components, the latter being inspired by a long-standing tradition in German grammar, that of “topological fields” (*Stellungsfelder*). Linear Syntax employs the framework of Head-Driven Phrase Structure Grammar, which of course prioritizes hierarchical combinatorics. But Kathol argues that a significant set of syntactic properties of German are best understood in terms of an ordered left-to-right series of “topo” positions, such that each domain element of a particular topo has to be ordered before each domain element belonging to a class further to the right in the series. The presence of such series is also briefly illustrated for such other Germanic languages as Swedish and Yiddish, which show language-specific variations on the same theme (Kathol 2000: 262–284). Languages are further characterized as being strongly topological, such as German, or weakly topological, such as English (which however retains “vestiges of strong topological organization”, Kathol 2000: 285).

Whereas Linear Syntax makes no explicit reference to the incremental production of utterances, the proponents of Dynamic Syntax (Cann, Kempson and Marten 2005) wish to elevate real-time dynamics to a central property of their theory. “Despite increasing psycholinguistic evidence of incrementality in language processing, both in parsing (...) and in production (...) there is almost universal agreement that this should not be reflected in grammar formalisms which constitute the underlying model of language”, write Purver and Kempson (2004: 74), rejecting that consensus and pointing out that disregard for incremental phenomena complicates the grammarian’s task of accounting for such phenomena as shared utterances, fragmentary answers to *wh*-questions, and “alignment” (see the discussion of this concept in Section 5 below). Dynamic Syntax opposes the standard position by offering “a grammar formalism which directly reflects the time-linearity and context-dependent growth of information governing natural language parsing” (Cann, Kempson and Marten 2005: 3). It does not provide a performance model, despite its concern with on-line language processing, but rather aims to explain – using formal semantics – the intrinsic patterns displayed in natural language in terms of the dynamics of how an interpretation is built up in real time (Cann, Kempson and Marten 2005: 24–25).

A recent contribution to incremental grammar is that of the Emergentist Approach to Syntax proposed by O’Grady (2005, 2008). This is more truly a performance model in assuming that “the mechanisms that are required to account for the traditional concerns of syntactic theory (...) are identical to the mechanisms that are independently required to account for how sentences are processed from ‘left to right’ in real time” (O’Grady 2008: 139–140). In this approach to syntax, trees are built up in a rightward direction, with dependencies being resolved as soon as possible to mimic the short-termism of working memory. The syntactic trees have no lasting status in this approach, but are provisional and evanescent and thus not subject to any well-formedness constraints or the like. O’Grady addresses an extensive range of issues in English syntax (agreement, pronoun interpretation, raising, control, contraction, etc.), arguing in each case that the phenomena in question can and should be understood as resulting from considerations of efficient processing. Language acquisition, too, is seen as being driven above all by an “efficiency-driven linear computational system” (O’Grady 2008: 158) in an approach that entirely dispenses with any innate language faculty; instead the child is seen as learning routines from its interlocutors’ usage.

Whereas O’Grady focuses on questions of syntax, a broader view, also encompassing semantics, is taken by Van Valin (2006) in his discussion of the possible contribution of Role and Reference Grammar (RRG) to understanding the relation between processing and grammar. Language production must, he maintains (2006: 264), “involve at least in part (...) a semantics-to-syntax linking” of the type proposed in RRG, and Van Valin shows the point-by-point parallelism between RRG mechanisms and the processes identified in Levelt (1989). He concedes, however, that for language comprehension a simple reversal of directionality is insufficient, because the result would fail to take account of the fact that interpretation starts before the entire utterance is “in” (2006: 283), i.e. interpretation is incremental in nature. Van Valin divides the comprehension task into two components, the first of which yields a “pseudo-syntax” (sufficient to achieve the uniqueness mentioned by Levelt 2002 – see above – as the goal of comprehension) and argues that an augmented version of RRG is well equipped to handle this pseudo-syntax. One augmentation of the theory is the proposal to weight each of the different “logical structures” of verb with multiple macrorole assignments (i.e. highly generalized semantic frames) for the statistical likeliness of its occurrence. RRG is thus an example of a grammatical theory whose exponents are open to interaction with psycholinguistic work on comprehension.¹⁰

It is striking that Van Valin (2006) focuses on comprehension and does not address the incrementality of language production. This challenge is taken up by

Butler (2007b), who shows in detail how the production of a number of examples from English may be understood by using the RRG algorithm. The position he adopts is that of “moderate incrementality” (Ferreira 2000; see also Section 4 below), which entails – to put it simply and with reference to English – that nothing is passed on to the articulator until the verb has been established. This causes Butler (2007b: 288) to propose a buffer in which to hold pre-verb units, another augmentation of the theory occasioned by psycholinguistic insights. Butler shows how the “logical structure” of the verb automatically determines the macroroles, the identification of “privileged syntactic arguments” (in English, Subject and Object), and the overall syntactic structure of the clause. He also insists, however, that semantics-to-syntax linking is in itself insufficient, adducing examples found in corpora that cannot be predicted with syntax and semantics alone; an additional pragmatic dimension is needed to account for the impact of the topic-focus distinction. At the initiation of a speech act, both topical and focal information fall into the class of “highly activated” material, but these are held in the buffer until the retrieval of the verb, which together with other language-specific rules, scaffolds the overall structure, which in turn predicts the order in which clause elements are incrementally produced.

Butler assumes a conceptual representation that is complete in all relevant detail at the moment formulation begins (2007b: 287). In their “dynamic expression model” for Functional Grammar (FG; Dik 1997), the precursor of FDG, Bakker and Siewierska (2004) make a similar assumption that “the point of departure is a fully specified underlying representation (UR), with all the predicates and operators present” (2004: 342). They show that not only psycholinguistic findings on incremental production but also facts about language structure argue for an interleaving of the generation and linearization of forms. This leads them to propose an algorithm for the expression rules of FG that starts from a complete UR but reflects the order in which the expression elements would be “uttered by the speaker in a live setting” (2004: 345). This is shown to have knock-on effects on how the UR should be constituted, another example of the impact of an incremental implementation on linguistic theory. They go on to consider the model of FDG as it was understood at the time of writing (cf. now Hengeveld and Mackenzie 2008), which Bakker and Siewierska would have liked to see develop as a “model of the speaker” (2004: 353), and make proposals for the relation between levels and components of FDG on the one hand and different types of memory structure on the other. Their argument culminates in an extensive treatment of how the time course of a brief extract from a conversation might be understood from the viewpoint of a dynamic FDG.

As things have turned out, Hengeveld and Mackenzie (2008: 2) concede that their presentation of FDG “in progressing from formulation to encoding

and within encoding from morphosyntax to phonology, clearly mimics the sequence found in production”. But they retreat from any claim to offer a model of language production, instead characterizing FDG as a “model of encoded intentions and conceptualizations” (2008: 2). They do not yield to the “seductive analogy” (the expression is common to both Hengeveld and Mackenzie 2008: 2 and Harder 2007a: 310) between the psycholinguistic and the linguistic, but leave unanswered the question of the nature of the relationship between the two. It is into this breach, frequently with reference to FDG, that Harder (2007a, 2007b) leaps, addressing the question of “the close association between the descriptive system and the online production process” (2007a: 309) – an association which in the preceding paragraphs we have seen interpreted in various ways.¹¹ It is to a consideration of his reflections that I shall now turn.

3. Harder’s stance on incrementalism

Harder (2007a, 2007b) responds to the growing interest in the relation between incrementality and grammar I have sketched above, observing “several converging developments towards upgrading the dynamic dimension” (2007b: 9) but critiquing any overhasty attempt to import notions of incrementalism from production and comprehension processes into a grammatical model such as FDG. The central issue is the relation between process and pattern (cf. also Fortescue 2001, Butler 2008a, 2009): the increasing commitment to process, i.e. the dynamic, real-time emergence of language constructs, does not impair – he insists – the validity of pattern (the stable description of grammatical knowledge); in fact they are two sides of the same coin.

Harder is sympathetic to FDG, but questions whether any grammatical model should, in its desire to be “psychologically adequate”, attempt to incorporate well-established observations about the processes of language production or comprehension into its mechanisms. He concedes that incrementation is the fundamental principle of the advance of discourse, but sees grammar as a “complication, something that spoils the nice and simple relationship between encoding and interacting” (Harder 2007a: 332). This is essentially also the position taken by Mackenzie (2004), who argued – in the framework of an incrementalist interpretation of the then emerging FDG formalism – that the representational level of FDG should serve to constrain the real-time workings of the other levels. Harder’s repost to this proposal is that the grammar-as-spoilsport view underplays the specific functional contribution of grammar as a socially recognized procedure for encoding and decoding. In the debate about the relationship between usage and grammar, there are two extreme positions (cf. also Newmeyer,

this volume): (a) grammar and usage are incommensurable, even if the embeddedness of syntactic units in discourse may affect the form of those units; (b) grammar is discourse analysis writ small, i.e. the principles determining the sequencing of discourse units in usage apply, with at most inessential mutations, within the clause and the phrase. Harder's position is, I believe, an intermediary one that seeks to do justice to the specific functional contributions of usage and of grammar to our communicative abilities. As a result, his reflections can help us sharpen our reactions as grammarians to the data and to the findings coming in from psycholinguistic research.

For Harder, the internal structure of the clause emerged phylogenetically in response to the inadequacy of the primitive holophrase as a means of communication, in co-evolution with the increasing sophistication of our cognitive and social abilities (cf. Deacon 1997; Heine and Kuteva 2007). As the clause arose with its increasingly complex internal relations, the nature of these relations could not but be different from the connection between successive discourse units. Although such usage factors as "communicative dynamism" (in the Prague School sense) may still impinge upon internal clause structuring, these always remain "secondary to the hierarchical order reflecting the division of labour between the semantic constituents in the clause" (Harder 2007a: 320). This of course implies that the full set of semantic relations expressed by the clause are at any given moment available to the language user, a position similar to that taken in their grammatical implementations of incrementality by Bakker and Siewierska (2004) and Butler (2007b). For Harder, this stance is taken for reasons not of convenience but of principle. The grammar is seen as a set of procedures that exist "out of time". It relates to an event of language production in much the same way as a recipe relates to an event of cooking (Harder 2007b: 22–23) by instructing the cook how to proceed.

This instructional view stands in contrast to, for example, Mackenzie's (2004) attempt to understand the usage–structure nexus by conceiving of the grammar as a declarative set of constraints that acts as a brake on incremental "first come, first served" production. The distinction between the procedural and the declarative is ultimately based on the opposition between two types of memory systems, now recognized as having distinct neural substrates (cf. Ullman 2008). Whereas declarative memory pertains to knowledge about facts and experienced events, with the possibility of being generalized beyond specific instances and the property of being partly explicit, procedural memory is relevant for perceptual-motor and cognitive skills. Procedural memory involves repeated exposure to data, "subserve[s] rule-governed knowledge" (Ullman 2008: 192), and is not accessible to conscious monitoring. The two are, however, not mutually exclusive; in fact, in cases of neural dysfunction, one can take over from the other. Both

systems subtend our language abilities, with declarative memory being good for arbitrary relations (such as our memory of lexical items or of morphological irregularities), while procedural memory underlies our implicit knowledge of regular sequential and hierarchical combinations. Frequently employed complex units from procedural memory may be stored in declarative memory, resulting in a balance in language structure between “computed” and “ready-made” elements respectively (see also Harder 2007a: 317, 327–330 and 2007b: 10 for further discussion).

Harder’s view goes beyond this distinction between two memory systems, of course, in seeing procedures not just as knowledge of combinatory potentialities but as instructions for action. Instructions are there to be carried out, and it is here that he inevitably makes the move from timeless knowledge to real-time operations, with his argument taking us from “input” to “output” in a “dynamic sequence”. Thus we read how, in terms that are highly reminiscent of accounts of language production, “the dynamic process of constructing a (clause-formed) utterance goes from situational input at one end via a series of coding operations in which each step re-functionalizes the output of the previous step, to the final, situationally interpreted ‘output’” (Harder 2007b: 18). The actual procedures are illustrated not for production, however, but for the grammatical analysis of a simple clause (*He smiled*). The procedures relate to each other in very much the same way as do the nested layers of RRG (Van Valin 2006, Butler 2007b) or FDG (Hengeveld and Mackenzie 2008), except that the direction taken is exclusively bottom-up, from participant NPs upwards and outwards to illocutions. The ordering of the procedures, in keeping with Harder’s underlying principles, is dictated not by the clause’s “horizontal” sequence properties, i.e. by considerations of incremental processing, but by the “vertical” relations among the four layers that form a core aspect of procedural knowledge – these four layers are essentially identical to those proposed for FG by Dik (1997), whose direction of analysis is also bottom-up. In practice, the procedures cannot get under way until the entire clause has been perceived (even if it is much longer than the example given). Since the input is a complete clause and the output is a skeleton semantic representation, the process that comes closest to the procedure exemplified is that of comprehension (Harder 2007b: 18).

Where difficulties arise, as I see it, is in the relation between the procedures proposed and the actual behaviour of language users. Harder himself comments (2007b: 18) that “no instructions are ever carried out to the letter”, and indeed we saw in Section 2 above that comprehension is not a process that even aims at completeness. Yet this comment, as do others *eodem loco*, entails that the instructions are not merely virtual, but that they are really carried out. Possibly faultily, certainly in combination with others, primarily at a subconscious

level, and often in harmony with declarative knowledge of formulaic units, but carried out they are. Harder (2007b: 19) retreats from “execution” to “compilation”, but the fact remains that a view of language as processing instructions (from the speaker) for the construction of a mental representation (by the addressee) cannot withdraw entirely from the arena of actual, time-consuming interaction.

Harder (2007a: 317) explains that a procedure has “the interesting feature of being neither an event in time nor a wholly inert construct”. But it cannot very well be neither dynamic nor static: it is surely better to return to the above-mentioned notion of process and pattern as being two sides of the same coin. Any procedure is chronological when implemented, and foreshadows chronological sequence when latent. The question can then arise of how to build up the procedure with regard to that sequence. Harder somewhat sidesteps this issue by focusing on the vertical dimension (the question of top-down versus bottom-up organization), but then returns to it (Harder 2007a: 319–321) in a discussion of incrementality, which he accepts as a property of discourse processes, even within the sentence, but denies for the clause. As an example of the simultaneous availability of the whole clause meaning, the case affixes of the “free word-order” Slavic languages are briefly mentioned, the implication being that these are typically dictated by the verb of the clause, which simultaneously dictates the case affixes on any other noun phrases the clause may contain.

However, from an incrementalist standpoint, this is not the only way of seeing the occurrence of case affixes. Mackenzie (2004) defends the hypothesis that the various units of conceptualization that correspond to the components of the discourse act as a unit of communication will have different onset times for activation, such that some come “on line” before others. More specifically, the claim is that every discourse act has a focus, which corresponds to the most important component (or “subact”) of that discourse act. The focus embodies the point of the discourse act, being that which triggers the speaker to break her silence, and thus reasonably can be taken to be activated first. The utterance of no more than the focus can in many cases (i.e. given enough already activated contextual information) constitute a fully satisfactory discourse act. Such one-subact discourse acts may be known as “holophrases”, a term adopted and adapted from the first-language acquisition literature, where infants’ one-word/one-morpheme productions always correspond to the focus of a fuller utterance that an older child or adult might have produced under parallel circumstances. This incrementalist perspective on utterance production implies, on the typically well-justified assumption that each discourse act contains only one focus, that more complex utterances will involve various non-focal elements.

These include “topics”, which may be taken to be already cognitively active but not highlighted at that particular moment of speech production, and “settings”, which represent backgrounded elements of information that nevertheless are felt to be indispensable in the context. There may also be elements that are in contrast or under emphasis. And it is always possible for there to be more informationally neutral elements whose presence in the utterance is dictated by other factors, such as morphosyntactic requirements, considerations of politeness, etc.

Let us consider the following example from German, which like the Slavic languages to which Harder alludes, has flexible word order and case-marked noun phrases:

- (1) *Einen Kaffee, bitte!*
 INDF-ACC.M coffee please
 ‘A coffee, please!’

Example (1) could be used as an initiating move to order a coffee in a bar.¹² It consists of a single discourse act, which in turn contains a subact of reference and an additional subact (*bitte*) whose presence is occasioned by considerations of politeness. What is of interest in (1) is the (obligatory) use of the accusative case in the discourse act that constitutes the initiating move.¹³ From the viewpoint that such case affixes are dictated by the verb, there is the considerable problem that no verb is present. As has been shown by Stainton (2006: 107), however, the case of noun phrases in such German utterances is also not dictated by what might be imagined to be the verb. Rather the accusative case here is directly justified by the conceptualization, namely of the coffee as the object of the speaker’s desire. The bartender can infer from the customer’s presence at the bar that she wishes to order something, and the speaker’s use of the accusative case fits perfectly into that pattern of expectation.

Example (1), rather less politely, could have been formulated simply as *Einen Kaffee!*. In the technical sense explained above, a discourse act consisting of a single focal subact is termed a holophrase. Since a holophrase may be regarded as interactionally abrupt (possibly connoting a lack of attention to the hearer’s face), the speaker may feel a need to expand upon it by producing more (necessarily non-focal) subacts, possibly to the extent of a full clause. The use of the accusative case commits her, however, to an expansion that accords grammatically with the choice initially made:

- (2) a. *Ein-en Kaffee hätte ich gern!*
 INDF-ACC.M coffee have.2NDSUBJ.1SG 1SG willingly
 ‘I’d like a coffee.’

- b. *Ein-en Kaffee hätte ich gern*
 INDF-ACC.M coffee have.2NDSUBJ.1SG 1SG willingly
von Ihnen!
 from 2.POL.DAT
 ‘lit. I’d like a coffee from you; I’d like you to give me a coffee.’

The order is placed by the initial accusative; the remaining material is strictly speaking redundant but, like *bitte* in (1), serves the subsidiary goal of achieving pleasant interhuman relations: the use of the deferential 2nd subjunctive mood, the politeness particle *gern* and in (2b) the specific, face-anointing mention of the hearer, with the prepositional phrase introduced by *von* dictated by the choice of *haben* ‘have’ as verb.

Harder (2007a: 326) mentions an attested utterance from the strictly V2 language Danish, repeated here as (3):

- (3) *Matematiker er NN.*
 Mathematician be.PRS NN
 ‘A mathematician NN is.’

He analyses this as a case “where the speaker blurts out what is in his mind, and is then “constrained” to construct an utterance that allows that phrase to occupy [clause-initial] position”. The speaker had previously said NN was a physicist, and then immediately corrected himself with (3). The word order in (3) is possible in Danish, but not normal for a more restrained act of self-correction; it is permitted by the rules of grammar, but is infrequent in usage. Harder (2007a: 327) considers the initial placement of the (corrective) focus to show how pressure to produce linguistic material quickly, motivated for example by the desire not to lose face, can win out over the regular demands of syntax,¹⁴ but he sees (3) as in effect an exception that proves the rule of procedural knowledge, i.e. there is a momentary suspension of regular service. The canonical corrective utterance, as in (4), would have started with the already active topic NN and progressed after the communicatively neutral copula to the focus:

- (4) *NN er matematiker.*
 NN be.PRS mathematician
 ‘NN is a mathematician.’

On the surely unassailable assumption that *matematiker* is the sole point of utterance (3) (*er NN* could doubtless have been omitted), the canonical utterance (4) would thus involve buffering the focus until its utterance is permitted by the grammar, i.e. after the finite verb. The non-canonical, but actual, utterance (3)

is like (2) in commencing with the focus and then progressing to satisfy clausal grammar. In incremental production terms, we can thus understand (3) as arising from a simpler process than (4) and thus lending itself to situations in which the impulsiveness of “blurring out” is called for. My point is that in the analysis of utterances like (1)–(3) it is not necessary to assume that the entire “grammatical recipe” is activated from the very start. In the situations in which such utterances are encountered, the speaker verbalizes the focus of her communicative intention first and then later, as shown in (2) and (3), uses the resources of grammar to achieve syntactic completeness. The whole clause meaning need therefore not be simultaneously available, and the contribution of incrementality cannot be entirely dispensed with in a procedural view of grammatical knowledge.

This brief consideration of Harder’s (2007a, 2007b) thoughts on incrementalism and grammar cannot end without mention of a crucial point in his argument which is borne out by findings from psycholinguists, as we shall see in Section 4. This relates to the presence in languages such as English, Danish and German of the syntactic function subject, i.e. the function borne by *ich* in (2) and *NN* in (3) and (4). Harder stresses that none of the primary notions of the incrementalist position (neither topic/focus nor any fixed position in a template of linearly ordered slots) correlates in any straightforward way with the irreducibly syntactic notion of subject; nor, as he points out, can subject be brought into correspondence with agency or any other semantic notion (2007a: 322). If the identification of a subject is part and parcel of moving from holophrastic to clausal complexity of expression, it must be conceded that this “obligatory choice”, this necessary property of the product, heavily constrains the options for continuation beyond the first subact.¹⁵

To conclude this section, then, we have seen that Harder’s view induces a strict separation of usage and grammar, with the latter entailing its own specific kind of procedural knowledge. The argument has suggested, however, that process and pattern are mutually defining and co-present aspects of these grammatical procedures, an insight which has guided us away from any assumption that the linearity of morphosyntactic structures straightforwardly mirrors any sequence of cognitive events. This has rendered the incrementalist view more sophisticated, without destroying its fundamental role in contemporary psycholinguistic and grammatical research. In the following section, I will consider some approaches to the piecemeal construction of grammatical units that promise to take better account of the multiple factors at work.

4. Further insights into incrementality

As we noted in Section 2 above with reference to the projection of TRPs, speakers and hearers operate in anticipation of possible continuations from the current position and in readiness for predictable termination points. It has emerged from our consideration of Harder (2007a, 2007b) that language users continuously have available to them grammatical knowledge in the form of procedures that guide the succession of subacts within each discourse act. In this section, I shall consider some psychological evidence for the guiding role of grammatical knowledge.

Let us begin by considering Prat-Sala and Branigan's (2000) examination of the production of sentences in English and Spanish. Their fundamental assumption is one that is fully familiar to functional linguists: that where there is a choice between syntactic structures, there are multiple rivalling factors determining that choice. They distinguish "inherent" features such as animacy, concreteness and prototypicality as favouring accessibility (and by implication early realization in a clause); but there are also "derived" features which are determined by the context of utterance such as semantic priming, informational givenness and the manner of original introduction into the discourse. Prat-Sala and Branigan's experiments elicited answers to simple "What happened?" questions about line drawings of events after presenting verbal contexts that were manipulated to engender different degrees of inherent and derived salience. Both English and Spanish have active and passive structures, involving differential assignments of subject to actor and patient respectively, with the subject occurring clause-initially. However, Spanish has the additional possibility of an active construction which preserves the initial positioning of the patient:

- (5) *A la mujer la atropelló el tren.*
 OBJ DEF woman 3SG.OBJ.F run.over-PST.3SG DEF train
 'The woman was run over by the train.'

The results showed that in English active vs. passive (i.e. differential choice of subject) correlated very strongly with givenness and less strongly with animacy, with the former derived feature overriding the inherent one with significant frequency; in Spanish, there were similar results but the construction in (5) was often used under the same circumstances as the passive. In Spanish, then, pragmatic and semantic properties do not necessarily translate into voice as they do in English. Yet the role of at least a schematic syntactic structure for the entire clause is evident from the presence before the initial NP of the particle *a*, required before [+human] syntactic objects used in specific reference. After

such a start, the clause must continue with an active verb and a subject, in that order.

There may seem to be a chicken-and-egg problem here: does the presence of an object-marked NP in initial position dictate the active form of the verb (a passive continuation **A la mujer fué atropellada* (...) being impossible), or is the verb already retrieved but not yet verbalized, enforcing the object-marking of the preceding NP? The work reported in Ferreira (2000) suggests that, for English at least, the choice of subject – and thereby by implication of much of the rest of the clausal structure – “depends critically on the verb” (2000: 309). For examples in situations where Mary likes Tom or where Mary frightens Tom, speakers are 3 times more likely to produce *Tom* in clause-initial position followed by a passive verb with *frighten* than with *like*, and 6 times more likely if the phenomenon causing the fright is inanimate. Notice that this is independent of all inherent and derived features of “Tom”, which are held constant. The role of the verb in subject selection leads Ferreira (2000) to a position she characterizes as one of “moderate incrementality” (cf. also Butler 2007b, 2008a), rejecting the “radical incrementality” (cf. Ferreira and Swets 2002) involved in assuming the occupant of clause-initial position to determine what follows (as in our discussion of examples (1) to (4) above).

One might imagine that the role of verb retrieval in determining syntactic structure is enforced by the strictness of English word order. Christianson and Ferreira (2005) consider to what extent moderate incrementality might also be found in a language very different from English, the Algonquian language Odawa, which is said to have “free” word order. Where word order is free, i.e. less constrained by the overall control of procedural instructions, we could expect pragmatic and semantic considerations to be the beneficiaries of the freedom, i.e. permitting radical incrementality, and this does seem to be partially borne out by various recent investigations. We saw the role of givenness in claiming clause-early position in English and Spanish in Prat-Sala and Branigan (2000); and Yamashita and Chang (2001), considering the relatively free positioning of NPs before the predicate as well as the presence of subject in Japanese, find a balance between a preference for early positioning of subject and early positioning of syntactically complex material (according to a long-before-short principle that prefers early placement of semantically more specified NPs).

What, then, of Odawa? In a two-argument clause with a verb, there is head-marking on the verb indicating “direction” (similar to but distinct from voice, and either direct or inverse) as well as head and dependent marking indicating “obviation” (relative centrality/saliency of participants), as in (6) (from Christianson and Ferreira 2005: 8):

- (6) *Gwiizens* \emptyset -*jiismabin-aa-n* *kwezens-an.*
 boy 3-pinch.3OBV.AG>3PROX.PAT-DIR-OBV girl-OBV
 ‘The boy is pinching the girl.’

There is also a “passive”, which forbids mention of the agent:

- (7) *Kwezens* \emptyset -*jiismabin-igaazo.*
 girl 3-pinch-PASS
 ‘The girl is being pinched.’

Any of the six possible orders of the three constituents in (5) or either of the two orders of the two constituents in (6) is possible without change of semantic import.¹⁶ In an experiment, subjects were asked to describe pictures in much the same way as in the work reported by Prat-Sala and Branigan (2000). The expectation was that under radical incrementality word order would be used to reflect different contextual conditions, with little effect on verb form; but if it were to be the verb form that reacted to context, with word order as a secondary factor, then that would argue for moderate incrementality. What was found was that where the patient was contextually salient, speakers significantly preferred to use the marked passive verb form; and even where a direct or inverse construction was used in such contexts, there was no significant tendency to front the patient. The conclusion is that, despite the freedom it offers its speakers to produce incrementally, Odawa reacts to salience of the patient by choosing a passive verb form that marks it as subject rather than going for its early verbalization. More generally, Christianson and Ferreira’s (2005) results point to the relevance of functional hierarchies elaborated by linguists (for animacy, agency and topicality) to the planning of utterances, specifically for the selection of subject, wherever it may occur in the sequence. The matter is complicated by the fact that Odawa is a head-marking language (27.7% of the responses consisted of the verb only), so that the status of “subject” in English and Odawa is somewhat different.

Nevertheless, the evidence from the work of Ferreira and her collaborators points in the same direction as Harder’s claims concerning subject as a primary factor in determining the process of clause construction. To the extent that incrementality is a factor in the process of language production, the evidence suggests that its workings, certainly in languages with the grammatical relation “subject”, are not free but constrained by morphosyntactic procedural knowledge. Pattern and process are working in tandem.

5. Towards an FDG of dialogue

In the preceding sections – following in the footsteps of syntacticians, discourse analysts and language production specialists alike – I have concentrated on the speaker in isolation, for example in interpreting Harder’s notion of instruction as involving procedures that apply within the individual language user. However, he himself (2007b: 12–13) insists that “the text as ‘processing instructions’ (...) can be interpreted as (...) basically a way of influencing [people] (...) Building a representation is a partial goal, integrated in a larger interactive intention, and should be understood as such”. We mentioned in Section 2, specifically with reference to Dynamic Syntax, how the production of a single utterance can be achieved as a joint activity between interlocutors (one finishing the other’s utterance), but this is still regarded as something exceptional by the mainstream in both linguistics and language psychology.

This is not true, however, of Pickering and Garrod (2004), who specifically predict that “it should be more-or-less as easy to complete someone else’s sentence as one’s own” (2004: 186). They make a strong case for a very close coupling between the contributions of the two interlocutors in a dialogue. They see the six mental representations underlying a dialogue (the situation model and the semantic, syntactic, lexical, phonological and phonetic representations) as being essentially the same in both participants, the similarities arising through continual automatic alignment of each of the six. This alignment results from the occurrence of repetitions, routines and temporary formulae that they find to be endemic in casual dialogue and which have empirically verifiable priming effects. These serve to greatly reduce the complexity of language production and comprehension, with representations used in comprehension being immediately recycled for production purposes, and vice versa. The model goes quite some way towards explaining the rapidity and fluency of dialogic speech and the phenomenon of shared utterances by providing short cuts through the multi-layered sequences of obligatorily activated processes assumed in work on monologic speech production.

In line with their desire to minimize the computational load of processing, Pickering and Garrod (2004: 183–184) express approval for the notion of incremental production of utterances, even stating with regard to (constructed) utterances with fronted subjects or objects from embedded clauses (*Pictures I think please you* and *Pictures I think you like* respectively) that “it may be possible to utter a phrase before assigning it a grammatical role”, much as I proposed in Section 3 – although, as we have just seen, this view has been relativized by Ferreira and her co-workers. Yet there are many aspects of Pickering and Garrod’s approach that suggest it provides good opportunities for fruitful interaction

between psycholinguistic work on language processing and procedure-oriented functional grammars such as FDG. As the authors themselves point out, their “interactive alignment model assumes independent but linked representations for syntax, semantics, and phonology (at least)” (Pickering and Garrod 2004: 186), as does FDG, which has an additional representation for the interpersonal dimension, so central to dialogue. Their model shares FDG’s ambition to make explicit the mechanisms that underlie language structure, expressly wishing to transcend the traditional boundary between language-as-action and language-as-product, very much in keeping with the direction of the discussion in Section 3 above. Where these psycholinguists differ, of course, is in their orientation to dialogue, FDG having so far, as has been normal for grammatical models, oriented itself to monologic conceptions of the speaker (Hengeveld and Mackenzie 2008: 6–7), in accordance with what Pickering and Garrod (2004: 176) call the “autonomous transmission model”.

Nevertheless, I believe that moving FDG forwards to a dialogic stance might not only open avenues towards the translation of grammatical architectures into processing terms (a challenge for the immediate future identified by Jackendoff 2007: 258), but also help clarify a possible anomaly in the wider theory of verbal interaction currently assumed by FDG. Whereas FDG’s Conceptual and Output Components model the speaker’s intention and articulation respectively, and the Grammatical Component itself (the FDG proper) is neutral between speaker and addressee, the Contextual Component is by implication shared by the interlocutors (Hengeveld and Mackenzie 2008: 9–11). This component, which has links to each of the representations within the Grammatical Component, offers a site for the “implicit common ground” (Pickering and Garrod 2004: 178) that is built up automatically during interaction. If this is so, then the Contextual Component in an FDG re-oriented to dialogue could come to play a much greater role in understanding the procedural mechanisms at work in verbal interaction, including many of those mentioned by Harder (2007a) as factors additional to and interwoven with discrete encoding.

Prominent among these are “formulaic sequences” (Harder 2007a: 327–329), referred to by Pickering and Garrod as “routines”, whose omnipresence in dialogue as “semi-fixed complex expressions” (Pickering and Garrod 2004: 188; they cite a figure of 70%) “leads to a need for a radical reformulation of accounts of sentence production” (2004: 181). Whereas FDG has hitherto concentrated on, and developed intricate treatments of, compositional structure in pragmatics, semantics, morphosyntax and phonology, it has still to develop a view of those aspects of language usage that are less amenable to codification (as pointed out by Butler 2003 and 2008b). As things stand, FDG also has no account of the thorough-going repetitiveness of dialogue (but see Pickering and Ferreira

2008: 453–454 for criticism of all existing linguistic models on this score). Nevertheless, these psycholinguists do concede that cooperation with linguists is essential. Rejecting Chomskyan architectures as inappropriate for their needs, they see great compatibility with “approaches in which syntax, semantics, and phonology form separate but equal parts of a multidimensional sign” (Pickering and Garrod 2004: 186), and FDG – given relevant augmentation (see Mackenzie in prep. for some proposals in this regard) – appears to fit the bill very well. Indeed, the fact that FDG has a “mechanistic” Interpersonal Level, where the interchange of Moves models dialogic interaction, makes it particularly suitable for the task.

If psycholinguistic accounts of sentence production are indeed currently being radically reformulated in the light of discoveries about the nature of dialogue and probably also the expression of emotion (which Van Lancker Sidtis 2008 associates closely with formulaic speech), then FDG, too – to remain cognitively adequate – needs to respond by developing its Contextual and Conceptual Components to reflect the mimetic and emotional aspects of dialogic interaction respectively and to give an account of their impact on linguistic form. If FDG as presented in Hengeveld and Mackenzie (2008) was heavily inspired by Levelt’s (1989) intention-to-articulation approach, then it now has an opportunity to move on (just as Pickering and Garrod see their work as a refocusing rather than a rejection of what went before) by developing the Contextual Component as a locus for interactive alignment and priming.

Models such as FDG have been neutral with respect to their relation with production and comprehension (Hengeveld and Mackenzie 2008: 2). This neutrality can be turned to advantage in possible collaboration with psycholinguists who stress the close association between speaker and hearer in dialogic interaction. In more recent work, for example, Pickering and Garrod (2007) have assembled evidence for an intimate link between production and comprehension, pointing out that production uses comprehension for monitoring and (more innovatively) that language comprehension is accompanied by covert imitation, i.e. silent production. The rapid incrementality of both production and comprehension are now seen as arising from an “emulator” which carries out probability-weighted forward modelling of the utterance, both in production and in comprehension-as-silent-production. It is perhaps not going too far to see the emulator as akin to Harder’s procedures, as sets of instructions for the real-time production of utterances. In practice, the emulator is involved in monitoring performance in production and also for predicting during comprehension, facilitating the processes of parsing and interpretation.

6. Conclusion

This article has confirmed that incrementality is an essential attribute of human language production. It has examined the implementation of this notion in a range of psychological, computational and grammatical proposals, emphasizing how the cognitive adequacy of their theories has been a central concern of both the computer scientists and the linguists (Section 2). Where these scholars have gone too far, neglecting pattern in their enthusiasm for process, they have been called to order by Harder (2007a, 2007b), whose balanced critique, particularly with regard to FDG, was examined in Section 3. His rejection of unfettered incrementalism is borne out by psycholinguistic investigation, as was shown in Section 4. In Section 5, finally, a proposal was made to re-orient FDG towards recent work on the psychological processes underlying dialogue, using the Contextual Component and the various layers of the Grammatical Component to model the alignment and priming that characterize dialogic interaction. Such an augmented model will be better equipped to enter into discussion with psycholinguists about the range and theoretical implications of incremental production.

Abbreviations

1	first person	OBJ	object
2	second person	OBV	obviative
3	third person	PASS	passive voice
ACC	accusative case	PAT	patient
AG	agent	PROX	proximate
DAT	dative case	PRS	present tense
DEF	definite	PST	past tense
DIR	direct	SBJV	subjunctive mood
INDF	indefinite	SG	singular
M	masculine gender		

Notes

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2. At times I will also have occasion to mention the incrementality of language comprehension. The more general applicability of incrementality to human cognition is apparent in its relevance to the production of music, a “quintessential example of serial-ordering abilities because of its complexity, length, and temporal properties” (Palmer and Pfordresher 2003: 683).
3. And in the Danish tradition, too, of course; Kathol (2000: 256–258) refers explicitly to Diderichsen (1966).
4. The presence of parallel processing has been supported by speech error results (De Smedt 1994).
5. What Levelt means here is morphosyntactic completeness. Thompson and Couper-Kuhlen (2005) have shown that in everyday conversation in both English and Japanese, speakers and hearers orient strongly to the clause (“speakers organize their interactions around the completion of clause formats”, 2005: 485), even if the considerable divergences between clause formats in the two languages mean that English- and Japanese-speakers’ behaviour is quite different in detail.
6. Levelt is referring here to the relation between what in FDG terms are the processes of formulation and encoding. How a message is formulated may of course differ from what the speaker intends to communicate (as in the case of ironic or polite utterances, or indeed any others than involve implicature).
7. The speaker will be pronominalized as *she* and the hearer as *he*.
8. Characteristic properties of the subordinate clause procedure are verb-final position in German, negative-before-verb in Swedish, and suppression of inversion in both English and Swedish. Pienemann concentrates on these Germanic languages, and presumably has utterance-final subordinate clauses in mind.
9. The incremental nature of conceptualization is worked out in detail, developing the SYNPHONICS framework, by Guhe (2007).
10. Further evidence of RRG’s potential in this regard is offered by Butler (2007a), who argues that RRG offers a suitable grammatical front end for two prominent theories of text comprehension.
11. The foregoing overview of the role of incrementality in studies of language production/generation in psycholinguistic, computational and linguistic work makes absolutely no claim to completeness: for example, among many others, I have passed over Auer’s (2007) claim that speech is necessarily incremental while writing is “two-dimensional”, Sinclair and Mauranen’s (2006) syntagmatically oriented Linear Unit Grammar, and the account of sentence processing in the Competition Model developed by Elizabeth Bates and Brian McWhinney, which McWhinney (2008: 354) finds to be very close to O’Grady’s (2008). I also have had nothing to say about connectionist models of sentence production (e.g. Chang 2002). For excellent surveys of relevant psycholinguistic and computational work respectively in the eighties and nineties, see Bock (1995) and De Smedt (1996); for more recent work, see Ferreira and Slevc (2007).
12. It could also be used as a reactive move in answer to a question (or even an inquiring look) from the bartender: *Was hätten Sie gern?* (what.ACC have.2NDSBJV.2.POL

- willingly; ‘what would you like?’). The accusative case in (1) could in that context be seen as primed by the (implicit) accusative case of the question word.
13. This also applies to Slavic languages: in Polish, for example, we find *Kawę proszę!* (coffee.ACC please).
 14. Ferreira and Swets (2002) analogously find that speakers are more likely to produce incrementally when under a deadline. See also Mackenzie (2005) on the effects of time pressure on the grammar of football commentaries.
 15. For various ‘look-ahead’ phenomena whereby incrementally earlier forms are constrained by the presence and/or form of markedly later forms, see Fortescue (2007), who is led to totally reject linearity in cognition in favour of overall holistic control of the entire production process.
 16. In the ‘general question’ condition, i.e. in answer to the question *Aaniish e-zhiwebag zhinda?* ‘What’s happening here?’, all six orders were encountered. This is quite different from the answers in Spanish in Prat-Sala and Branigan (2000), where only the orders SVO and OVS were encountered under analogous circumstances.

References

- Abb, Bernd, Michael Herweg and Kai Lebeth
1993 The incremental generation of passive sentences. In: Steven Krauwer, Michael Moortgat and Louis des Tombe (eds.), *Sixth Conference of the European Chapter of the Association for Computational Linguistics: Proceedings of the Conference*, 3–11. Utrecht: Association for Computational Linguistics.
- Auer, Peter
2007 Syntax als Prozess. In: Heiko Hausendorf (ed.), *Gespräch als Prozess: Linguistische Aspekte der Zeitlichkeit verbaler Interaktion*, 95–142. Tübingen: Narr.
- Bakker, Dik and Anna Siewierska
2004 Towards a speaker model of Functional Grammar. In: J. Lachlan Mackenzie and María de los Ángeles Gómez González (eds.), *A New Architecture for Functional Grammar*, 325–364. Berlin/New York, NY: Mouton de Gruyter.
- Bock, Kathryn
1995 Sentence production: From mind to mouth. In: Joanne L. Miller and Peter D. Eimas (eds.), *Handbook of Perception and Cognition*, Vol. 11, 181–216. Orlando, FL: Academic Press.
- Butler, Christopher S.
2003 Multi-word sequences and their relevance for recent models of Functional Grammar. *Functions of Language* 10(2): 179–208.

- Butler, Christopher S.
 2007a Towards a cognitive-functional model of text comprehension. In: Christopher S. Butler, Raquel Higaldo Downing and Julia Lavid (eds.), *Functional Perspectives on Grammar and Discourse: In Honour of Angela Downing*, 41–80. Amsterdam/Philadelphia, PA: John Benjamins.
- Butler, Christopher S.
 2007b Notes towards an incremental implementation of the Role and Reference Grammar semantics-to-syntax linking algorithm for English. In: Mike Hannay and Gerard J. Steen (eds.), *Structural-Functional Studies in English Grammar: In Honour of Lachlan Mackenzie*, 275–307. Amsterdam/Philadelphia, PA: John Benjamins.
- Butler, Christopher S.
 2008a Cognitive adequacy in structural-functional theories of language. *Language Sciences* 30: 1–30.
- Butler, Christopher S.
 2008b Formulaic sequences in functional and cognitive linguistics. *Revista Canaria de Estudios Ingleses* 57: 67–90.
- Butler, Christopher S.
 2009 Criteria of adequacy in functional linguistics. *Folia Linguistica* 43: 1–66.
- Cann, Ronnie, Ruth Kempson and Lutz Marten
 2005 *The Dynamics of Language: An Introduction*. (Syntax and Semantics 35.) Amsterdam etc.: Elsevier.
- Chang, Frank
 2002 Symbolically speaking: A connectionist model of sentence production. *Cognitive Science* 26: 609–651.
- Chomsky, Noam
 1956 Three models for the description of language. *IRE Transactions on Information Theory* 2(3): 113–124.
- Christianson, Kiel and Fernanda Ferreira
 2005 Conceptual accessibility and sentence production in a free word order language (Odawa). *Cognition* 95: 105–135.
- Deacon, Terrence
 1997 *The Symbolic Species: The Co-Evolution of Language and the Human Brain*. Harmondsworth: Penguin.
- De Smedt, Koenraad J.M.J.
 1994 Parallelism in incremental sentence generation. In: Geert Adriaens and Udo Hahn (eds.), *Parallelism in Natural Language Processing*, 421–447. Norwood, NJ: Ablex.
- De Smedt, Koenraad J.M.J.
 1996 Computational models of incremental grammatical encoding. In: Anton Dijkstra and Koenraad de Smedt (eds.), *Computational Psycholin-*

- guistics: *AI and Connectionist Models of Human Language Processing*, 279–307. London: Taylor and Francis.
- De Smedt, Koenraad J.M.J., Helmut Horacek and Michael Zock
1996 Architectures for natural language generation: Problems and perspectives. In: Giovanni Adorni and Michael Zock (eds.), *Trends in Natural Language Generation: An Artificial Intelligence Perspective*, 17–46. (Springer Lecture Notes in Artificial Intelligence 1036.) Berlin: Springer.
- Diderichsen, Paul
1966 *Helhed og Struktur* (Totality and structure). Copenhagen: C.E.C. Grads Forlag.
- Dik, Simon C.
1997 *The Theory of Functional Grammar*. 2 parts. Edited by Kees Hengeveld. Berlin/New York, NY: Mouton de Gruyter.
- Ferreira, Fernanda
2000 Syntax in language production: An approach using tree-adjoining grammars. In: Linda Wheeldon (ed.), *Aspects of Language Production*, 291–330. Cambridge, MA: MIT Press.
- Ferreira, Fernanda
2005 Psycholinguistics, formal grammars, and cognitive science. *The Linguistic Review* 22: 365–380.
- Ferreira, Fernanda and Benjamin Swets
2002 How incremental is language production? Evidence from the production of utterances requiring the computation of arithmetic sums. *Journal of Memory and Language* 46: 57–84.
- Ferreira, Victor S. and Slevc, L. Robert
2007 Grammatical encoding. In: M. Gareth Gaskell (ed.), *Oxford Handbook of Psycholinguistics*, 453–469. Oxford: Oxford University Press.
- Fortescue, Michael
2001 *Pattern and Process: A Whiteheadian Perspective on Linguistics*. Amsterdam/Philadelphia, PA: John Benjamins.
- Fortescue, Michael
2007 The non-linearity of speech production. In: Mike Hannay and Gerard J. Steen (eds.), *Structural-Functional Studies in English Grammar: In Honour of Lachlan Mackenzie*, 337–351. Amsterdam/Philadelphia, PA: John Benjamins.
- Fox, Barbara A., Makoto Hayashi and Robert Jasperson
1996 Resources and repair: A cross-linguistic study of syntax and repair. In: Elinor Ochs, Emanuel A. Schegloff and Sandra A. Thompson (eds.), *Interaction and Grammar*, 185–237. Cambridge: Cambridge University Press.

- Groenendijk, Jeroen and Martin Stokhof
 2006 Dynamic Semantics. In: Keith Brown (ed.), *Encyclopedia of Language and Linguistics*, 2nd Edition, Vol. 4, 28–33. Oxford: Elsevier.
- Guhe, Markus
 2007 *Incremental Conceptualization for Language Production*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Hale, Kenneth L.
 1983 Warlpiri and the grammar of non-configurational languages. *Natural Language and Linguistic Theory* 1: 5–47.
- Harder, Peter
 2004 Comment clauses, Functional Discourse Grammar and the grammar–discourse interface. In: J. Lachlan Mackenzie and María de los Angeles Gómez González (eds.), *A New Architecture for Functional Grammar*, 197–210. Berlin/New York, NY: Mouton de Gruyter.
- Harder, Peter
 2007a Grammar, flow and procedural knowledge: Structure and function at the interface between grammar and discourse. In: Mike Hannay and Gerard J. Steen (eds.), *Structural-Functional Studies in English Grammar: In Honour of Lachlan Mackenzie*, 309–335. Amsterdam/Philadelphia, PA: John Benjamins.
- Harder, Peter
 2007b Shaping the interactive flow: Meaning as input, process and product. In: Kasper Boye (ed.), *Language and Comprehension: Input, Process, Product*, 7–36. (= *Acta Linguistica Hafniensia* 39). Copenhagen: Linguistic Circle of Copenhagen.
- Heim, Irene
 1988 *The Semantics of Definite and Indefinite Noun Phrases*. New York, NY: Garland.
- Heine, Bernd and Tania Kuteva
 2007 *The Genesis of Grammar: A Reconstruction*. Oxford: Oxford University Press.
- Hengeveld, Kees and J. Lachlan Mackenzie
 2008 *Functional Discourse Grammar: A Typologically-Based Theory of Language Structure*. Oxford: Oxford University Press.
- Hoenkamp, Edward
 1983 Een computermodel van de spreker: Psychologische en linguïstische aspecten (A computer model of the speaker: Psychological and linguistic aspects). Doctoral dissertation, University of Nijmegen.
- Jackendoff, Ray
 2007 A whole lot of challenges for linguistics. *Journal of English Linguistics* 35(3): 253–262.
- Kathol, Andreas
 2000 *Linear Syntax*. Oxford: Oxford University Press.

- Kempen, Gerard and Karin Harbusch
2002 Performance Grammar: A declarative definition. In: Anton Nijholt, Mariët Theune and Hendri Hondorp (eds.), *Computational Linguistics in the Netherlands 2001*, 148–162. Amsterdam: Rodopi.
- Lakoff, George and Mark Johnson
1980 *Metaphors We Live By*. Chicago, IL: University of Chicago Press.
- Legate, Julie Anne
2003 The configurational structure of a non-configurational language. In: Pierre Pica (ed.), *Linguistic Variation Yearbook*, Vol. 1 (2001), 61–104. Amsterdam/Philadelphia PA: John Benjamins.
- Levelt, Willem J.M.
1989 *Speaking: From Intention to Articulation*. Cambridge, MA: MIT Press.
- Levelt, Willem J.M.
1999 Producing spoken language: A blueprint of the speaker. In: Colin M. Brown and Peter Hagoort (eds.), *The Neurocognition of Language*, 83–122. Oxford: Oxford University Press.
- Levelt, Willem J.M.
2001 Relations between speech production and speech perception: Some behavioral and neurological observations. In: Emmanuel Dupoux (ed.), *Language, Brain and Cognitive Development: Essays in Honor of Jacques Mehler*, 241–256. Cambridge, MA: MIT Press.
- Mackenzie, J. Lachlan
2004 Functional Discourse Grammar and language production. In: J. Lachlan Mackenzie and María de los Ángeles Gómez-González (eds.), *A New Architecture for Functional Grammar*, 179–195. Berlin/New York, NY: Mouton de Gruyter.
- Mackenzie, J. Lachlan
2005 Incremental Functional Grammar and the language of football commentary. In: Christopher S. Butler, María de los Ángeles Gómez-González and Susana Doval-Suárez (eds.), *The Dynamics of Language Use: Functional and Contrastive Perspectives*, 113–128. Amsterdam/Philadelphia, PA: John Benjamins.
- Mackenzie, J. Lachlan
In prep. The study of semantic alternations in a dialogic Functional Discourse Grammar. In: Pilar Guerrero Medina (ed.), *Morphosyntactic Alternations in English: Functional and Cognitive Perspectives*. London/Oakville, CT: Equinox.
- MacWhinney, Brian
2008 A unified model. In: Peter Robinson and Nick C. Ellis (eds.), *Handbook of Cognitive Linguistics and Second Language Acquisition*, 341–371. New York, NY/London: Routledge.

- Neumann, Günter and Wolfgang Finkler
1990 A head-driven approach to incremental and parallel generation of syntactic structures. In: *Proceedings of the 13th Conference on Computational Linguistics*, Vol. 2, 288–293. Helsinki.
- Newmeyer, Frederick J.
This volume What conversational English tells us about the nature of grammar: A critique of Thompson's analysis of object complements.
- O'Grady, William
2005 *Syntactic Carpentry: An Emergentist Approach to Syntax*. Mahwah, NJ: Lawrence Erlbaum Associates.
- O'Grady, William
2008 Language without grammar. In: Peter Robinson and Nick C. Ellis (eds.), *Handbook of Cognitive Linguistics and Second Language Acquisition*, 139–167. New York, NY/London: Routledge.
- Palmer, Caroline and Peter Q. Pfordresher
2003 Incremental planning in sequence production. *Psychological Review* 110(4): 683–712.
- Pechmann, Thomas
1989 Incremental speech production and referential overspecification. *Linguistics* 27: 89–110.
- Pickering, Martin J. and Simon Garrod
2004 Toward a mechanistic psychology of dialogue. *Behavioral and Brain Sciences* 27: 169–226.
- Pickering, Martin J. and Simon Garrod
2007 Do people use language production to make predictions during comprehension? *Trends in Cognitive Sciences* 11(3): 105–110.
- Pickering, Martin J. and Victor S. Ferreira
2008 Structural priming: A critical review. *Psychological Bulletin* 134(3): 427–459.
- Pienemann, Manfred
1998 *Language Processing and Second Language Development: Processability Theory*. Amsterdam/Philadelphia, PA: John Benjamins.
- Pienemann, Manfred
2003 Language processing capacity. In: Catherine J. Doughty and Michael H. Long (eds.), *Handbook of Second Language Acquisition*, 679–714. Oxford: Blackwell.
- Prat-Sala, Mercè and Holly P. Branigan
2000 Discourse constraints on syntactic processing in language production: A cross-linguistic study in English and Spanish. *Journal of Memory and Language* 42: 168–182.

- Purver, Matthew and Ruth Kempson
2004 Incremental parser or incremental grammar? *Proceedings of ACL Workshop on Incremental Parsing*, 74–81.
<http://acl.ldc.upenn.edu/W/W04/W04-0312.pdf>.
- Schegloff, Emanuel A.
1987 Recycled turn beginnings: A precise repair mechanism in conversation's turn-taking organisation. In: Graham Button and John R.E. Lee (eds.), *Talk and Social Organisation*, 70–85. Clevedon: Multilingual Matters.
- Seuren, Pieter A.M.
2006 Presupposition. In: Keith Brown (ed.), *Encyclopedia of Language and Linguistics*, 2nd Edition, Vol. 6, 80–87. Oxford: Elsevier.
- Sinclair, John McH. and Anna Mauraanen
2006 *Linear Unit Grammar: Integrating Speech and Writing*. Amsterdam/Philadelphia, PA: John Benjamins.
- Stainton, Robert J.
2006 *Words and Thoughts: Subsentences, Ellipsis, and the Philosophy of Language*. Oxford: Oxford University Press.
- Tanaka, Hiroko
2000 Turn-projection in Japanese talk-in-interaction. *Research on Language and Social Interaction* 33: 1–38.
- Thompson, Sandra A. and Elizabeth Couper-Kuhlen
2005 The clause as a locus of grammar and interaction. *Discourse Studies* 7(4–5): 481–505.
- Ullman, Michael T.
2008 The role of memory systems in disorders of language. In: Brigitte Stemmer and Harry A. Whittaker (eds.), *Handbook of the Neuroscience of Language*, 189–198. Amsterdam etc.: Elsevier.
- Van Lancker Sidsis, Diana
2008 The relation of human language to human emotion. In: Brigitte Stemmer and Harry A. Whittaker (eds.), *Handbook of the Neuroscience of Language*, 199–207. Amsterdam etc.: Elsevier.
- Van Valin Jr., Robert D.
2006 Semantic macroroles and language processing. In: Ina Bornkessel, Matthias Schlesewsky, Bernard Comrie and Angela D. Friederici (eds.), *Semantic Role Universals and Argument Linking*, 263–301. Berlin/New York, NY: Mouton de Gruyter.
- Yamashita, Hiroko and Frank Chang
2001 'Long before short' preference in the production of a head-final language. *Cognition* 81: B45–B55.

Reconciling structure and usage: On the advantages of a dynamic, dialogic conception of the linguistic sign¹

Maj-Britt Mosegaard Hansen

1. Introduction

Throughout his academic career, in a large number of publications and lectures, Peter Harder has championed the view that language is above all a communicative tool. An act of intentional communication will by default constitute an instance of usage of some semiotic system, however rudimentary, and if such usage is held to be the prime *raison d'être* of the underlying system, then it is not unreasonable to think that the former may have a non-negligible (and possibly considerable) impact on the latter. Consequently, Peter has always maintained – in my view quite rightly – that language structure cannot be properly accounted for without taking language usage into account.

Moreover, as demonstrated in a great many of his publications, but perhaps most forcefully in his monograph *Functional Semantics* from 1996, Peter takes a keen interest in foundational issues within linguistic theory. Now, there is probably no issue that is more foundational to linguistic theory than that which concerns the nature of the linguistic sign itself, and my aim in this paper will thus be to propose an alternative to the accepted Saussurean conception of the linguistic sign as fundamentally dyadic, i.e. as involving two – necessary and sufficient – components, a formal manifestation (in French, *le signifiant*) and an associated content (in French, *le signifié*) (cf. Saussure 1972[1916]: 99).

While perfectly well suited to the Structuralist framework within which it was formulated, the essentially static sign function inherited from Saussurean linguistics is useful only if one wishes to account for *langue* (or linguistic structure) as an abstract, supra-individual and, above all, stable relational system, “où tout se tient” (Meillet 1964[1922]: ix; see also Saussure 1972[1916]: 124), that is, where different signs mutually determine one another’s value within the system, explicitly without any reference to anything outside the system itself (Saussure 1972[1916]: 116).² Such a view of the sign function has, however, little explanatory value in the study of phenomena such as language variation

and change, where *langue*/structure interfaces with *parole*/usage. Indeed, synchronic variation and diachronic change (where the latter is generally acknowledged to depend on the former) remain essentially mysterious entities within Structuralist semiology.

Recognizing the problems inherent in strict structure/usage dichotomies such as Saussure's *langue/parole* or Chomsky's related competence/performance (later I-language/E-language) distinction (Chomsky 1965: 4, 1986: 19ff), dichotomies which moreover put theoretical and descriptive emphasis on language structure to the virtual exclusion of usage, some scholars have in recent decades taken up a position which may be described as almost diametrically opposed to the former: in their view, only usage is real and can have any theoretical status, whereas that which we conceive of as language structure is merely an emergent property, constantly in flux. Prominent exponents of this view are, of course, Paul Hopper (1987, 1988), Sandra Thompson (2002), and Joan Bybee (e.g. Bybee & Hopper 2001).

Like Peter Harder, I believe that facts about *parole* must be integrated into linguistic description, and I am confident of the potential that such integration has to explain a number of facts about *langue*. But, again like Peter, I am concerned not to throw out the structural baby with the Structuralist/Generativist bath water. What I will explore in this paper is thus the possibility of reconciling structure and usage through a conception of the linguistic sign as triadic rather than dyadic.

2. A Peircean conception of the linguistic sign

The semiotics of the American pragmatist Charles S. Peirce proposes precisely such a conception.

Peirce's semiotics is closely connected to his phenomenology, which posits three fundamental categories through which reality is conceived: 1^o Firstness is quality or feeling, indivisible and mere potentiality (e.g. CP1.418)³, independent of any actual instantiation. Thus, for instance, the notion of "the color green" is a First. 2^o Secondness is fact or relation, in the form of action and reaction (e.g. CP1.419), such as when a quality (e.g. "the color green") is instantiated in, hence delimited by, some entity (e.g. someone's eyes). 3^o Thirdness, finally, is mediation of the former two, or representation, in the form of law or habit (e.g. CP1.328), for instance, the precise criteria we use in determining that something is green.

Although Secondness depends on Firstness, and Thirdness on Secondness, Firstness and Secondness can only be isolated via a specific type of abstraction,

called precession (CP1.353), which involves “thinking of a nature *indifferent*, or without regard to the differences of its individuals” (CP2.428). Thus, we understand a quality (or firstness) like “color” as such by disregarding the spatially determined entities in which it is necessarily instantiated. Similarly, when apprehending, say, someone’s eyes as being green (a fact, or secondness), we disregard the differences between those eyes and other things in the world which we would also describe as green.

For Peirce, all signs, in their capacity as signs, consist not of two, but of three elements: a “representamen”, i.e. the expression or vehicle of the sign; an “object”, i.e. that which is represented by the sign (in a sense to be developed below); and an “interpretant”, i.e. an interpreting thought, or further equivalent sign, evoked in the mind of the comprehender (CP2.228). Phenomenologically speaking, the representamen is a First, the object a Second, and the interpretant a Third.

Importantly for the argument pursued below, a sign does not represent its object in all its aspects, but only with respect to a so-called “ground”, i.e. a particular frame of reference (CP2.228–229). This is illustrated in Figure 1 below. Note, however, that Peirce does not make the notion of ground very clear in his writings, and indeed appears to have abandoned it in his later work. It is therefore open to a considerable degree of interpretation. My interpretation, which will be laid out in sect. 3 below, is largely compatible with those of Hookway (1985) and Dinesen (1991), but develops the notion further.

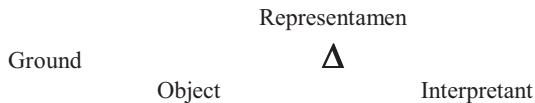


Figure 1. The sign according to Peirce

Now, in his theory of signs, Peirce draws a basic distinction between three different types of signs: icons, indices, and symbols (CP2.275). Unlike the former two types, whose signifying capacity is a function of inherent characteristics of their expression side (or “representamen”), symbols signify via rules, conceived of procedurally as habitual modes of action. Being, in the first instance, conventional, linguistic signs are hence of a fundamentally symbolic nature, although they may, of course, contain elements of iconicity and/or indexicality.⁴ In the remainder of this paper, I will be concerned only with symbolic, and more specifically linguistic, signs. Such signs can be of any size, from morphemes and words, through constructions, and up to entire utterances and texts. In the

latter case, one may, if need be, speak of “macro-signs”, to distinguish them from more elementary semiotic units.

While a sign has only one representamen, both objects and interpretants come in different guises. Starting with the former, the object – despite its name – is not necessarily a thing, or even an event or situation (Deledalle 1979: 66). In a manner reminiscent of Frege’s (1993[1892]) well-known distinction between the sense and the reference of a sign, Peirce distinguishes two types of object: 1° an Immediate Object, which inheres in the sign itself, and is described as a “*seme*” (CP4.539), and 2° a Dynamic Object, which exists outside the sign and determines it (CP4.536). As the latter can never be expressed, but only indicated, by the sign (CP8.314), it will not concern us further.

As for the interpretant, the need to distinguish more than one type is fundamentally a consequence of the fact that the sign is seen as constituting an action precept (CP2.330). In line with the instructional view of semantics that Peter Harder has always defended (e.g. Harder 1996, 2007, Harder & Togeby 1993, see also Ducrot et al. 1980, Hansen 1998, 2008b) the representamen may thus be seen as conveying a set of instructions (corresponding, on the present interpretation, to the Immediate Object) which the hearer must carry out in order to grasp the intended meaning of the sign. The interpretant can then be understood as the result of the hearer’s having carried out these instructions, i.e. as a mental representation in the form of a new and more developed sign, which itself has the status of an action precept.

What this means is that the action of the sign (or *semeiosis*), as manifested in interpretation, does not necessarily stop when a first interpretant has been arrived at – theoretically, it can continue indefinitely (CP1.339). Furthermore, in as much as any given instruction can, in principle, be carried out in a variety of different ways (Ducrot et al. 1980: 33), the representamen cannot determine a unique interpretant that is valid for all contexts, but should rather be seen as offering a more or less restricted range of possible interpretations. The interpretant being itself subject to potential further interpretation, the correctness of different possible understandings of the sign is thus open to intersubjective evaluation. Peirce therefore operates with the following three types of interpretants (CP8.343):

1° An Immediate Interpretant, constituted by the conventionally established range of potential interpretations of the sign as such. In other words, this is the level of what we might call “literal” meaning, determined by language structure.

2° A Dynamic Interpretant, which is the effect actually produced by the sign on its recipient in a given context. In other words, it represents what the comprehender actually understands. This is not a matter of mere decoding, but of active, partly inferentially-driven construction of the presumed intended

meaning of the sign. Andersen (1984: 38) describes the Dynamic Interpretant as the result of an abductive process, hence as having the status of a hypothesis. Thus, the situated comprehension of signs involves a form of inference that is analog and context-dependent in nature, and which may rely on information from a variety of sources, not just linguistic input, but also situational and encyclopedic knowledge.

The distinction between the Immediate and the Dynamic Interpretant will be exemplified in sect. 3 below.

Given that hypotheses may, by definition, be modified or even rejected in the light of subsequent information, a third type of interpretant must be posited:

3° The Final Interpretant, or the effect that would be produced by the sign in question on any recipient whose circumstances were such that s/he was able to grasp the full meaning of the sign. This Final Interpretant can only be reached through a process of intersubjective negotiation. In other words, the Peircean sign function incorporates the insight that meanings are not given, but are interactionally negotiated, as argued by a great many contemporary researchers in the field of verbal interaction (e.g. Bange 1992: 105, Vion 2000: 33).

The triadic relation between representamen, object and interpretant is irreducible to any complex of dyadic relations (CP2.274), hence nothing is a full-fledged sign unless all three are present. Because the sign, according to the fundamental maxim of pragmatism, is equal to the effects that it can be seen to have (CP5.402), a relation between a representamen and an object, where no interpretant is present, may at most constitute a sign potential. Reality does not, as it were, make signs to us; rather, being oriented towards communication and towards extracting information from our environment, we impose interpretations on certain aspects of reality, thereby turning them into signs. The idea of a sign that might never be the object of an interpretation simply cannot be understood within the Peircean framework. In this way, usage is incorporated directly into the sign function. At the same time, the interpretant, by itself constituting a new sign complete with representamen, object and interpretant, forges a direct link between semantics (i.e. meaning derived from linguistic structure) and pragmatics (i.e. meaning derived from the usage of language), and explains why there can be no interpretation, hence no sign, that completely bypasses pragmatics.

This does not mean that it is meaningless to try to distinguish between structure and usage, or between semantics and pragmatics, within the Peircean framework. Although structure cannot be divorced from usage, nor semantics from pragmatics, in the sense that the former can never be directly observed, they can be prescinded from the latter, enabling us, for theoretical purposes, to suppose one without the other. Nor does it mean that the Peircean conception adds nothing to the instructional view of semantics that both Peter Harder and I (among

others) have defended for a number of years (see above): on the contrary, because of the dialogic relation that obtains between the elements composing the sign, the Peircean sign function provides a natural account of how erstwhile pragmatically determined meanings may over time become semanticized, an example of which will be offered in sect. 4 below.

3. Developing the notion of “ground”

The Peircean understanding of the semiotic process is in line with the view, held by a variety of contemporary scholars, that the creation of meaning includes the active construction of a context of interpretation by the interlocutors. Thus, with respect to the strictly linguistic level, representatives of approaches such as frame semantics (Fillmore 1982, 1985) or the Theory of Language-Inherent Argumentation (Anscombe & Ducrot 1983) have long argued that speakers choose their words and grammatical constructions, not simply for their referential potential, but also with a view to suggesting specific types of context within which the referential contents of their utterances should be interpreted.

A few simple examples will show what is meant. For instance, while either of the nouns *salt* and *sodium chloride* may typically be used to truthfully describe one and the same substance, they clearly suggest different frames of interpretation. Thus, (1) would be natural in a chemistry lab, but is unlikely to be uttered during a dinner party:

(1) *Could you pass me the sodium chloride, please?*

In a prominent subset of cases, frames of interpretation consist in the specification of non-referential, argumentational properties of terms that cannot be derived from the strictly referential properties of the words concerned, and which, in some instances, can even override the latter. Take a pair of approximators such as *almost* and *barely*: referentially, the former is negative, in that it is paraphrasable by “not quite”, whereas the latter is referentially positive, being paraphrasable by “only just”. From an argumentational point of view, however, statements with *almost* support the same types of conclusions as the corresponding plain positive statement, while statements with *barely* support conclusions similar to those supported by the corresponding negative statement, cf. the contrasts in (2)–(7) (adapted from Anscombe & Ducrot 1983: 80):

(2) *It's dark: you'd better turn on your headlights!*

(3) *It's **almost** dark: you'd better turn on your headlights!*

- (4) *It's not dark: you need only turn on your sidelights.*
 (5) *It's **barely** dark: you need only turn on your sidelights.*
 (6) *??It's **almost** dark: you need only turn on your sidelights.*
 (7) *??It's **barely** dark: you'd better turn on your headlights!*

Moving to the level of the concrete speech-situational context, Relevance-theorists have convincingly argued that addressees do not process every conceivable aspect of the “objective” contexts in which utterances are produced. Instead, they are continually constructing and updating *ad hoc* mental contexts of interpretation by selectively directing their attention to a restricted set of situational features and/or propositions held in short- or long-term memory, based on an assessment of which features or propositions seem likely to have the more interesting communicative yield.

For instance, Blakemore (1988: 240–241) points out, firstly, that (8) (her (14)) “would have a rather different import in the event of an electricity cut than it would in the situation in which the hearer is preparing to decorate the Christmas tree”. Secondly, in either context, the hearer would in principle have access to a large number of “objective” facts about the situation. In the case of the electricity cut, one such fact would be that the freezer would have stopped working, yet it is unlikely that that particular bit of situational information would be brought to bear on the interpretation of (8):

- (8) *There's a packet of candles in the kitchen.*

The Peircean model is able to incorporate insights such as these using the notion of “ground”. Corresponding to the first two types of interpretant defined by Peirce and described in sect. 2 above, I will argue that we may posit two different types of ground, as illustrated in Fig. 2 below:

1^o At the level of the Immediate Interpretant, we may speak of an Immediate Ground, understood as the linguistic code or system. This code or system crucially contains an encyclopedic, and in many cases non-referential, dimension, namely the interpretative frames evoked by signs “as such”. While these frames may be non-truth-conditional, they are nevertheless fully conventional in nature, and will thus be evoked across contexts of usage.

2^o Corresponding to the Dynamic Interpretant, the Dynamic Ground in Fig. 2 represents the *ad hoc* context constructed by the addressee, and in which the sign is actualized. Thus, an (initial) Dynamic Interpretant is arrived at through a dialogic interplay between the sign, its place in the linguistic system, and its specific context of appearance.

Now, the “literal” meaning (in the present framework, the Immediate Interpretant) of B’s utterance would be simply “B has had breakfast at some point in her life prior to the moment of speech”.⁶ In the context sketched, this does not seem to comply with either of Grice’s (1975) maxims of Quantity and Relation, and so the utterance can be assumed carry at least two implicatures, the initial Dynamic Interpretant in (10), and a further Dynamic Interpretant (recall that *semeiosis* is unlimited), represented by (11):

(10) “B has had breakfast earlier on the day the utterance is produced.”

(11) “B doesn’t want a croissant with his/her coffee.”

In many cases, we would probably expect *semeiosis* to stop at this point, but crucially, nothing prevents A from deriving a potentially unlimited series of further Dynamic Interpretants, some or all of which may not be intended, or even assumed to be intended, by A. Such a series might, for instance, consist in the following propositions: “B is concerned about his/her calorie intake” > “B is someone who obsesses about his/her figure” > “B is vain and shallow”; or alternatively, but just as plausibly (indeed, quite possibly even simultaneously), “B is concerned about his/her consumption of trans fats” > “B is health conscious” > “I, A, should be more like B in this respect”, ...

4. Synchronic variation and diachronic change

I noted above that structuralist semiology leaves the phenomenon of variation essentially unaccounted for. Indeed, as argued by Harris (1987: 219ff), variation is strictly speaking an impossibility if the notion of *valeur* is taken seriously, for if any sign is uniquely determined by the position it occupies within a larger network of interrelations, with no reference to anything outside that network, then language users cannot be allowed to operate with anything other than exactly similar values for the signs that they use. If they do not, then the idea of *langue* as a supra-individual system collapses.

On a Peircean understanding of the semiotic process, the phenomenon of variation is demystified, because the triadic sign function, as laid out above, directly incorporates the incessant dialectic between social norms and conventions, individual cognition, and individual *praxis* that is at the root of variation. Figure 3 represents an attempt to make these connections explicit.⁷

On the one hand, speakers are free, within limits, to play around with the relations between the sign, its Immediate and its Dynamic Ground, thus allowing for innovative uses. On the other hand, because the Dynamic Interpretant is

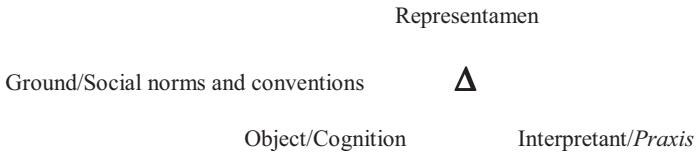


Figure 3. The sign according to Peirce

generated by a comprehending subject with his or her own unique experiences and epistemic horizon, it can never be fully determined in advance. Addressees may – and will – therefore occasionally arrive at unintended interpretations.

As an example of the former, Hansen (2009) and Hansen & Visconti (2009) suggest that bi-partite clause negation (i.e. *ne...pas/mie*, as opposed to the simple preverbal *ne* that was the canonical form at the time) in Old and Middle French was originally constrained to appear in propositions that were discourse-old in the sense defined by Birner (2006). In (12), for instance, the negated clause is highly inferable from the immediately preceding co-text:

- (12) “... *Par noz dous cors me mande la bataille, Et je sui juvenes et de petit eage, Si ne puis pas maintenir mon barnage. ...*” (*Le coronement de Loois*, 12th c.)
- “... He demands that we engage in single combat, and I’m young and of tender age, so I can’t [*pas*] hold my own. ...”

The data base used in these studies contained, however, a small number of examples displaying what Hansen & Visconti (2009: 157) call a “cataphoric” quality, in the sense that the preceding discourse did not on its own seem to fully warrant the proposition expressed in the negated clause; rather, both the preceding and the immediately following discourse had to be taken into account, as in (13):

- (13) *Icele tere, ço dit, dun il esteit, Soleill n’i luist ne blet n’i poet pas creistre, Pluie n’i chet, ruse n’i adeiset, Piere n’i ad que tute ne seit neire: (La chanson de Roland, 11th c.)*
- ‘In that country, it is said, where he was from, the sun doesn’t shine, corn can’t [*pas*] grow, the rain doesn’t fall, the dew doesn’t touch it, there is no stone that isn’t all black:’

If the proposed analysis of Old and Middle French bipartite clause negation is correct, this type of use can be explained as having represented, synchronically,

a small *ad hoc* extension of the conventional range of uses of the bi-partite negators.⁸

The second type of scenario mentioned above, where the Dynamic Interpretant represents a misunderstanding on the addressee's part, can be exemplified by a handful of so-called "Janus-faced" words found in contemporary Danish. In the space of a couple of generations, these words have gained new meanings that are, in each case, more or less diametrically opposed to their older meanings. Take the noun *bjørnetjeneste* (lit.: 'bear favor'): to most people of middle age or above, this refers to an act carried out with the intention of benefiting another person or persons, but which, in reality, turns out to be harmful to the intended beneficiary(-ies). To a great many younger Danes, however, *bjørnetjeneste* refers to a very large and/or important favor. Now, where two such clearly incompatible meanings are concerned, it is unlikely that anyone who has acquired the original, negatively-loaded meaning of the word as part of their mental grammar, and assumes their addressee to have done the same, would intentionally use it innovatively with the positively loaded meaning. Instead, we must assume that the newer meaning has arisen because language users unfamiliar both with the term as such (and hence with its Immediate, negatively loaded, Ground), and with the La Fontaine fable in which it originates, first encountered it in contexts that were insufficiently transparent, and that they therefore constructed Dynamic Grounds containing propositions such as "Bears are large, powerful animals", "Bears are cute and cuddly" or the like, resulting in a metaphorical interpretation of the word *bjørnetjeneste*.

When isolated instances of usage extension or misunderstanding are repeated often enough to turn into stable variation, a linguistic change has taken place. Thus, the formerly monosemous word *bjørnetjeneste* is now recognized by standard dictionaries as polysemous in contemporary Danish, and although few, if any, language users will actively use both senses of the word, many, if not most, will by now be passively aware of their existence. In other words, a subset at least of the speaking community has established a new interpretative habit, which henceforth forms part of the meaning range of the sign *bjørnetjeneste* as such. In Peircean terms, a dialogic process has taken place between the level of the sign "as such" and that of the Dynamic Interpretant, such that, thanks to its frequency of occurrence, a particular kind of Dynamic Interpretant, which was originally part only of the actualized sign has, by abduction, become absorbed into the conventionally established range of the sign as such (cf. Andersen 1973).

By explicitly incorporating a pragmatic dimension, the Peircean sign function thus also incorporates the seeds of both synchronic variation, triggered by *ad hoc* usage-related factors, and diachronic change (including the rise of stable patterns of variation) which impacts on the linguistic system itself.

5. Conclusion

As Peter Harder (2007: 9) writes, there is “a complex, but non-random relation between what we put into utterances [. . .] and what others get out of them”. I venture (and I believe Peter would agree) that the non-randomness is largely attributable to structure while the complexity is to a great extent due to usage. It is not unreasonable to expect the science of language to account for both, preferably in as integrative a manner as possible. Indeed, a great many scholars appear to be increasingly moving towards an understanding of language as a fundamentally dynamic entity, and this therefore seems a propitious time to revisit the sign function that is one of the cornerstones of our thinking about language and linguistics. A dynamic conception of language calls for a dynamic conception of linguistic signs, and the present paper is intended as a contribution towards that goal.

Notes

1. The present paper relies to some extent on Hansen (2002, 2008b).
2. “[L]a langue est un système de pures valeurs que rien ne détermine en dehors de l'état momentané de ses termes.” (‘Language is a system of pure values determined by nothing outside the momentary state of its terms’ – my translation.)
3. As a matter of convention, references to Peirce’s works are given in the form “CP” for *Collected Papers*, followed by the volume number, a full stop, and an indication of the relevant paragraph.
4. Icons, indices, and symbols represent, respectively, firstness, secondness, and thirdness, in the following sense: The signifying potential of an icon is due to its perceived resemblance with something else, which it can thus be seen to signify. Such purely formal qualities of the icon would be retained even if it in fact had no object. An index, on the other hand, signifies via a relation of contiguity to its object, which would, of course, be lost if that object were removed. The relation of contiguity, however, remains even if no interpretation takes place. Finally, the signifying potential of a symbol being based on convention, symbols cannot signify without being understood to do so. In other words, in the absence of an interpretant, this type of sign simply ceases to exist. (CP2.304)
5. Moreover, Saussure’s understanding of *valeur* has inherent problems in dealing with linguistic variation, to which I turn presently (see sect. 4 below).
6. Readers who disagree with this interpretation are invited to consider the following utterance (quoted from memory from the British 1990s TV sitcom *Absolutely Fabulous*): *I’ve had breakfast. I think it was in 1972.* See also Hansen (2008a).
7. Note that individual cognition represents secondness because it can only be prescinded (i.e. arrived at via a process of pre-scission, cf. sect. 2 above) from *praxis* (thirdness).

Indeed, that is the essence of the Pragmatic Maxim: “Consider what effects that might conceivably have practical bearings, we conceive the object of our conception to have. Then, our conception of these effects is the whole of our conception of the object.” (CP5.402)

8. As explained in Hansen (2009) and Hansen & Visconti (2009), this particular extended use also lends itself to reanalysis, thus potentially bridging the gap between the marked use of bi-partite negation in older stages of French and its canonical status as the unmarked form of negation in Modern (standard) French.

References

- Andersen, Henning
1973 Abductive and deductive change. *Language* 49(4): 765–793.
- Andersen, Henning
1984 Language structure and semiotic processes. *ArbejdsPapirer fra Institut for Lingvistik ved Københavns Universitet (APILKU)* 3.
- Anscombre, Jean-Claude and Oswald Ducrot
1983 *L'Argumentation dans la Langue*. Brussels: Mardaga.
- Bange, Pierre
1992 *Analyse Conversationnelle et Théorie de l'Action*. Paris: Hatier/Didier.
- Birner, Betty J.
2006 Semantic and pragmatic contributions to information status. In: Maj-Britt Mosegaard Hansen and Ken Turner (eds.), *Explorations in the Semantics/Pragmatics Interface*. Special Issue of *Acta Linguistica Hafniensia* 38: 14–32.
- Blakemore, Diane
1988 The organization of discourse. In: Frederick Newmeyer (ed.), *Linguistics: The Cambridge Survey*, vol. IV, 229–250. Cambridge: Cambridge University Press.
- Bybee, Joan and Paul Hopper
2001 Introduction to frequency and the emergence of linguistic structure. In: Joan Bybee and Paul Hopper (eds.), *Frequency and the Emergence of Linguistic Structure*, 1–24. Amsterdam: John Benjamins.
- Chomsky, Noam
1965 *Aspects of the Theory of Syntax*. Cambridge, MA: MIT Press.
- Chomsky, Noam
1986 *Knowledge of Language: Its Nature, Origin, and Use*. New York: Praeger.
- Deledalle, Gérard
1979 *Théorie et Pratique du Signe: Introduction à la Sémiotique de Charles S. Peirce*. Paris: Payot.

- Dinesen, Annemarie
 1991 *C.S. Peirce – Fænomenologi, Semiotik og Logik*. Aalborg: Nordisk Sommeruniversitet.
- Ducrot, Oswald et al.
 1980 *Les Mots du Discours*. Paris: Editions de Minuit.
- Fillmore, Charles J.
 1982 Frame semantics. In: Linguistic Society of Korea (eds.), *Linguistics in the Morning Calm*, 111–137. Seoul: Hanshin.
- Fillmore, Charles J.
 1985 Frames and the semantics of understanding. *Quaderni di Semantica* VI(2): 222–254.
- Frege, Gottlob
 1993 [1892] On sense and reference. In: A.W. Moore (ed.), *Meaning and Reference*, 23–42. Oxford: Oxford University Press.
- Grice, H. Paul
 1975 Logic and conversation. In: Peter Cole and Jerry L. Morgan (eds.), *Syntax and Semantics*, vol. 3, 41–58. New York: Academic Press.
- Hansen, Maj-Britt Mosegaard
 1998 *The Function of Discourse Particles: A Study with Special Reference to Spoken Standard French. (Pragmatics and Beyond New Series 53)*. Amsterdam: John Benjamins.
- Hansen, Maj-Britt Mosegaard
 2002 Sémiotique peircéenne et analyse des interactions verbales. In: Hanne Leth Andersen and Henning Nølke (eds.), *Macro-Syntaxe et Macro-Sémantique*, 361–381. (*Sciences pour la communication* 68). Bern: Peter Lang.
- Hansen, Maj-Britt Mosegaard
 2008a On the availability of “literal” meaning: Evidence from courtroom interaction. *Journal of Pragmatics* 40: 1392–1410.
- Hansen, Maj-Britt Mosegaard
 2008b *Particles at the Semantics/Pragmatics Interface: Synchronic and Diachronic Issues. A Study with Special Reference to the French Phasal Adverbs. (Current Research in the Semantics-Pragmatics Interface 19)*. Oxford/Bingley: Elsevier/Emerald.
- Hansen, Maj-Britt Mosegaard
 2009 The grammaticalization of negative reinforcers in Old and Middle French: A discourse-functional approach. In: Maj-Britt Mosegaard Hansen and Jacqueline Visconti (eds.), *Current Trends in Diachronic Semantics and Pragmatics. (Studies in Pragmatics)*. Bingley: Emerald.
- Hansen, Maj-Britt Mosegaard and Jacqueline Visconti
 2009 On the diachrony of “reinforced” negation in French and Italian. In: Corinne Rossari, Claudia Ricci and Adriana Spiridon (eds.), *Gram-*

- maticalization and Pragmatics: Facts, Approaches, Theoretical Issues*, 137–171. (*Studies in Pragmatics* 5). Bingley: Emerald.
- Harder, Peter
1996 *Functional Semantics: A Theory of Meaning, Structure and Tense in English*. Berlin: Mouton de Gruyter.
- Harder, Peter
2007 Shaping the interactive flow: Language as input, process and product. In: Kasper Boye (ed.), *Language and Comprehension: Input, Process, Product*. Special issue of *Acta linguistica hafniensia* 39: 7–36.
- Harder, Peter and Ole Togeby
1993 Pragmatics, cognitive science and connectionism. *Journal of Pragmatics* 14: 119–140.
- Harris, Roy
1987 *Reading Saussure: A Critical Commentary on the “Cours de linguistique générale”*. London: Duckworth.
- Hookway, Christopher
1985 *Peirce*. London: Routledge.
- Hopper, Paul
1987 Emergent grammar. *Berkeley Linguistics Society* 13: 139–157.
- Hopper, Paul
1988 Emergent grammar and the A Priori grammar postulate. In: Deborah Tannen (ed.), *Linguistics in Context: Connecting Observation and Understanding*, 117–134. Norwood, NJ: Ablex.
- Meillet, Antoine
1964 [1922] *Introduction à l'Étude Comparative des Langues Indo-Européennes*. University, AL: University of Alabama Press.
- Parret, Herman
1983 *Semiotics and Pragmatics: An Evaluative Comparison of Conceptual Frameworks*. (*Pragmatics and Beyond* IV:7.) Amsterdam: John Benjamins.
- Peirce, Charles Sanders
1931–35 *Collected Papers*, vols. 1–6. Charles Hartshorne and Paul Weiss (eds.). Cambridge, MA: Harvard University Press.
- Peirce, Charles Sanders
1958 *Collected Papers*, vols. 7–8. Arthur W. Burkes (ed.). Cambridge, MA: Harvard University Press.
- de Saussure, Ferdinand
1972 [1916] *Cours de Linguistique Générale*. Paris: Payot.
- Thompson, Sandra A.
2002 “Object complements” and conversation. *Studies in Language* 26(1): 125–164.
- Vion, Robert
2000 *La Communication Verbale*. Paris: Hachette.

Methodology

Ten unwarranted assumptions in syntactic argumentation

William Croft

1. Introduction

Much debate over grammatical theory, when it is not merely polemical, centers around two things: theoretical assumptions and relevant data. One can compare the theoretical assumptions of various formalist and functionalist theories of grammar, that is, what linguistic entities each theory assumes to exist, for example phrase structures, dependency relations, symbolic units, movement operations, taxonomic hierarchies linking grammatical structures, and so on. One can also compare what counts as relevant data for evaluating grammatical theories, such as grammaticality judgments, naturally occurring conversation, judgments in psycholinguistic experiments, frequency patterns, etc.

In contrast, methods of syntactic argumentation are much less often discussed in debates over grammatical theory. I have become convinced, however, that differences in methods of syntactic argumentation are at least as important, if not more important, than theoretical assumptions in distinguishing grammatical theories and in advancing our understanding of the nature of language. Radical Construction Grammar (Croft 2001, 2004a) emerged mostly from a critique of widely used methods of syntactic argumentation, rather than any a priori theoretical assumptions about the nature of syntactic structure. The theoretical assumptions of Radical Construction Grammar emerged from the abandonment of unwarranted assumptions in syntactic argumentation, and from the empirical data that forced that abandonment.

In this chapter, I describe and illustrate ten unwarranted assumptions that are commonly found in syntactic argumentation. Before delving into these methodological assumptions certain caveats must be issued. These are unwarranted assumptions, not necessarily fallacies. They are assumptions taken for granted, that is, they are often hidden premises in syntactic arguments. Even if they are made explicit, it is assumed that these principles of argumentation are automatically valid: the linguist can – indeed, must – invoke the principle wherever possible. The criticism here is that these methodological principles cannot sim-

ply be assumed; they must be defended, with empirical evidence demonstrating their applicability on a case by case basis. Nevertheless, some of the methodological principles are in fact likely to be fallacies, that is, invalid under any circumstances. I will discuss the status of each of them in §2.

Second, these unwarranted or hidden assumptions can be found in the arguments of syntacticians of a wide variety of theoretical persuasions. Some of them are characteristic of formalist syntactic argumentation, or more specifically Chomskyan argumentation. Several of the assumptions in this paper will be illustrated by examples from Adger (2003), a textbook on Minimalism. (I should hasten to add that I chose this textbook because I believe it is a very good introduction to recent Chomskyan theory, even if I disagree with the theoretical and methodological assumptions of that theory.) But others are found in the argumentation of nontransformational formalists, cognitive linguists, functionalists, typologists and “descriptive linguists” who do not follow any particular linguistic theory, or at least minimize reference to theory-specific categories and structures. These more widely employed unwarranted assumptions often have their roots in American and/or European structuralism, or in traditional grammar.

Third, the rejection of these methods of syntactic argumentation does lead to the rejection of certain theoretical assumptions and the adoption of others. Based on lectures I have given where I have critiqued various of these unwarranted assumptions, I have found that some assumptions are fairly widely recognized and rejected (at least among non-Chomskyan linguists, or among functionalist linguists). Others are more controversial, probably in part because they would require the abandonment of widespread and deep-seated theoretical assumptions about the nature of grammar and syntactic representation that are shared by many linguists no matter what contemporary syntactic approach they follow. I will survey the methodological assumptions in an order that roughly represents the degree to which rejection of the methodological assumption would lead to the abandonment of relatively widely held or long held theoretical assumptions.

Finally, where does the “empirical evidence” come from that would actually warrant making these assumptions in particular cases? That empirical evidence comes from the most important and soundest methodology in syntactic analysis, the distributional method. The distributional method is simply a careful examination of the actual range of occurrence of words or phrases in all constructions. The distributional method was first explicitly described in American structuralism (Bloomfield 1933; Harris 1946, 1951). The distributional method as originally described does have to be modified. Distributional analysis must take into consideration the meaning/function as well as the morphosyntactic form of linguistic expressions. This point is fairly widely accepted in contem-

porary syntactic argumentation. Even formal syntacticians, who strictly separate formal and semantic properties of sentences in separate modules, employ differences in semantic interpretation in justifying syntactic analyses.

Distributional analysis should also take into consideration distribution patterns in actual language use, not simply acceptability or unacceptability in introspective judgement. This point is widely accepted in functionalist syntax, but much less so in formalist syntax, which is based largely on introspective judgements; nevertheless, formalist argumentation increasingly makes use of evidence from electronic corpora. Distributional analysis is, or should be, the link between language use and language structure: it begins with the product of language use, utterances produced in discourse, and ends with language structure, a representation of the grammar of the utterances. But there are many steps of argumentation from a corpus of utterances (or its artificial equivalent, a set of sentences with grammaticality judgments) to the structures that are said to be manifested in those utterances. This chapter addresses what the steps from language use to language structure should, and should not, be.

2. The methodological assumptions

2.1. The Free Ride Principle

My formulation of the Free Ride Principle is given below:

FREE RIDE PRINCIPLE. If a theoretical construct has to be stipulated to solve an analytical problem in a construction in a language, it can be used wherever the categorization it provides appears to occur in other constructions in the language, or in another language. It can also be assumed to be universal.

The Free Ride Principle was first formulated and named in Zwicky (1970). He describes a slightly different sort of questionable methodological principle, but it rests on the same basic assumption as the principle formulated here, which reflects a more widespread contemporary use.

Zwicky's Free Ride Principle refers to the case of choosing between two analyses that are descriptively equivalent: choose the analysis that makes use of a theoretical construct that has already been employed elsewhere in the grammar. Zwicky gives the example of Lees' analysis of agent nominalizations such as *seller* (Lees 1960: 69–71, cited in Zwicky 1970:573). Lees chooses an analysis of the derivational morpheme *er* preceding the root *sell* over an analysis where *er* follows *sell*, because the former analysis makes use of the Affix Hopping transformation, proposed by Chomsky (1957) in his analysis of the auxiliary

system of English. In this case, the preposed *er* analysis takes a free ride on the Affix Hopping transformation, in Zwicky's terms.

This example of the Free Ride Principle strikes me (and Zwicky) as particularly implausible. The invocation of the independent theoretical construct (Affix Hopping) seems completely gratuitous: one could generate *seller* just as easily with a postposed *er*. However, another less obviously unnatural employment of a similar methodological assumption is quite widespread, at least in generative syntactic analyses.

Consider for example the use of case checking in Minimalism. Minimalism, among other things, posits a syntactic category T, mnemonic for "Tense", which is employed to represent a finite tensed verb form in English. The empirical question is how does one analyze the obligatory nominative case form of subject pronouns in English:

- (1) *She has kissed her.*
- (2) **Her has kissed her.*

The Minimalist analysis is that (finite) T checks the case of the subject pronoun, in particular, it checks that case to be nominative (Adger 2003: 211–214). Thus, a theoretical construct, case checking by T, is employed to explain why the subject pronoun form is what it is in English.

Adger later turns to the problem of nonfinite complements. Here, the empirical question is how does one analyze the obligatory accusative case form of pronouns in nonfinite complements such as the one in (3)–(4) (Adger 2003: 308):

- (3) *Jason intended for him to learn magic.*
- (4) **Jason intended for he to learn magic.*

Adger analyzes this by invoking the already existing theoretical construct, nominative case checking by T, and proposing that the accusative case of *him* is checked by the complementizer *for*, i.e. by the category C of *for* (Adger 2003: 308). This is an example of the Free Ride Principle: case checking is available, and can be used to solve an analytical problem.

Adger's analysis of (3) is not simply a generalization of case checking to cover case government in other constructions than finite clauses. This is because in Minimalism, *to* in (3) is a (nonfinite) T, and so case checking by T has to be blocked in nonfinite complements. Adger solves this problem by assuming that nonfinite T has no case feature, leaving C to check the case of *him* (Adger 2003: 308–309). Thus the free ride obtained by extending case checking from T to C is paid for by a stipulation of the absence of the case feature on a nonfinite T.

In this version of the Free Ride Principle, it is not a situation where there are two analyses, one of which invokes an independently established theoretical construct and one that does not. In this version, under the assumptions of the theory in question, the construction in question cannot be correctly analyzed without invoking some independently established theoretical construct to fix the analysis. The question is, how plausible is it that the theoretical construct in question should apply to the problematic construction? In the case of Lees' analysis of agent nominalizations, it seems quite implausible: what do participial and infinitival suffixes have to do with the agent nominal suffix? In the example of case checking, it is a bit more plausible: after all, in both cases, the case of a pronoun needs to be determined.

The Free Ride Principle appears to be a case of an unwarranted assumption. In some cases, invoking the "independently motivated" theoretical construct to solve a particular analytical problem seems plausible because our intuition is that the theoretical construct is doing the same kind of analytical work in the two situations. In other cases, it is not. My point is simply that when one invokes an "independently motivated" theoretical construct to solve an analytical problem, then one must explicitly justify why that theoretical construct and not any other should be invoked in that situation, and in what sense the theoretical construct is doing the same kind of work in the problematic analysis as it does in the construction where it was originally posited. Otherwise it appears to be simply a *deus ex machina* brought in to save an essentially wrong analysis.

2.2. Universal Extension of Language-Specific Analyses

This methodological assumption is given below:

UNIVERSAL EXTENSION OF LANGUAGE-SPECIFIC ANALYSES. An analysis that one has justified for a construction in one language applies to the counterpart constructions in all other languages, even for languages in which the relevant evidence is not available.

This methodological assumption is common in Minimalism, if Adger's frequent use of it is representative. For example, Adger poses the question of how to analyze constructions such as (5) (Adger 2003: 131):

(5) *Emily showed Benjamin himself in the mirror.*

Adger compares the construction in (5) to the French causative in (6) (Adger 2003: 132):

- (6) *Pascale fait manger Georges.*
 ‘Pascale makes Georges eat.’

The French construction places the verb *manger* ‘eat’ before its subject *Georges* ‘Georges’. Thus an analysis of predicate conflation (*faire* + *manger*) is plausible for French. This is of course a language-specific analysis for French. What Adger then does is extend the French analysis to the English sentence in (5): there is an underlying “causal” verb, of category (little) *v*, combining with a noncausal verb, e.g. *show* = *cause to see*. The English verb *show* is moved and conflated with the null causal verb, leading to *show* coming before the “subject” of *see*, namely Benjamin.

This is an instance of Universal Extension of Language-Specific Analyses. It is assumed that the syntactic analysis for one language, based on the empirical facts of that language, should be applied to a parallel construction in another language, or all other languages, even though the empirical facts are different. In this case, English does not have the complex predicate causative construction of French, illustrated in (6). It has either a monoclausal causative, as in (5), or the biclausal construction in (7) in which the noncausal verb follows, not precedes, its “subject”:

- (7) *Pascale makes Georges eat.*

In other words, English does not have the empirical constructions that French does, which justifies the analysis for French. Instead, it appears to be assumed that all languages have the same syntactic structure for a particular construction; but the analyst is free to choose the language with the data to support the syntactic structure s/he prefers.

There are numerous other examples of Universal Extension of Language-Specific Analyses in Adger. The positing of a separate syntactic tense node T (and its accompanying projection) in English, even though tense is a morphological affix there, is justified by appealing to Mauritian Creole and Sranan, which have separate words indicating tense (Adger 2003: 165–166). The postverbal NP in English *There*-constructions is assigned nominative case, even though pronouns (the only NPs in English with distinct case forms) do not occur in that position, because the parallel construction in Icelandic has a nominative NP in postverbal position (Adger 2003: 214–215). The existence of two separate preverbal positions for the sentential subject construction in English, even though there are never two preverbal elements, is justified by the occurrence of the pronoun *dat* after the sentential subject in Dutch (Adger 2003: 298–99).

However, Universal Extension of Language-Specific Analyses is by itself an unwarranted assumption. It appears to be motivated by the theoretical as-

sumption in Minimalism that all languages have basically the same syntactic structures. There is an alternative, of course: that languages differ in their syntactic structures for expressing the same state of affairs, e.g. a causative event. This is the simplest analysis for each language. Rejecting Universal Extension of Language-Specific Analyses, and instead allowing – even expecting – languages to differ in their syntactic structures, is the basis for the typological approach. Typological variation in syntactic structures is generally the case for most non-transformational formal syntactic theories as well. Once one has identified the typological variation in syntactic structures for a particular construction (such as the causative), then universals about the syntax of the causative can be formulated. But such universals are usually in the form of implicational universals, not a uniform syntactic structure for all languages. Thus, I conclude that Universal Extension of Language-Specific Analyses is unjustifiable in almost all cases, and should be regarded as a methodological fallacy.

One might ask, why does this methodological fallacy appear attractive? The attraction is the idea that all languages have basically the same syntactic structure for parallel constructions. What makes the constructions in different languages parallel? Essentially, they have the same meaning (if we include the “information packaging” of a state of affairs as part of the meaning or function of a particular construction). For example, the reason that French causatives are compared to English causatives is because they are semantically equivalent. But that leads to an alternative hypothesis: that similarities in the behavior of parallel constructions in different languages, to the extent that they are similar, are due to semantic equivalence, not syntactic equivalence. In other words, we do not have to posit identical syntactic structures for causative constructions across languages in order to explain their similarities. And we don’t really want to, because the syntax of causatives is in fact not identical across languages.

Accepting that Universal Extension of Language-Specific Analyses is an unwarranted assumption entails that we accept crosslinguistic variation in grammatical structures. This is of course the foundation of the typological approach to language, and is accepted by many other linguistic theories.

The rejection of Universal Extension of Language-Specific Analyses does not entail the rejection of crosslinguistic comparison. Crosslinguistic comparison is of course the foundation of typological linguistic theory (and Radical Construction Grammar). One must be very careful in establishing a valid basis for crosslinguistic comparison (see Croft 2009). But that basis does not require or presuppose that all languages will have the same morphosyntactic structures for those constructions. More important, the typological approach demonstrates that there are universals of language that govern crosslinguistic grammatical variation, which cannot be captured if crosslinguistic variation is

denied (for examples of universals of causative constructions, see for example Comrie 1989, chapter 8; Song 1996).

2.3. Global Extension of Construction-Specific Analyses

This methodological assumption is the single-language, constructional version of the previous assumption:

GLOBAL EXTENSION OF CONSTRUCTION-SPECIFIC ANALYSES. An analysis that one has justified for one construction automatically applies to other constructions in the language, even if the other constructions do not exhibit the relevant evidence.

I begin with a Minimalist example from Adger which has been adopted in many other approaches. Adger, like virtually all syntacticians, analyzes the complex sentence in (8) as introducing the complement clause with a complementizer (Adger 2003: 289):

(8) *I claimed that she was pregnant.*

The question, then, is how to analyze (9):

(9) *I claimed she was pregnant.*

Adger argues that the analysis of (8), where the subordinate clause is introduced by a complementizer, should be extended to (9). This analysis requires positing a null complementizer in (9). The null complementizer analysis of (9) is the result of the Global Extension of Construction-Specific Analyses. The term ‘global’ here is used to refer to the assertion of the crossconstructional validity of a particular syntactic analysis (in contrast to ‘universal’, which refers to the crosslinguistic validity of a particular syntactic analysis).

This analysis is not entirely implausible. Minimalism is not the first syntactic theory to have posited a null syntactic element in a construction, in comparison to another construction with an overt element performing the same function. But it is not a necessary analysis. It could be that (9) simply is a different construction, one in which complement clauses simply are not introduced by a complementizer. There are many languages in which complements lack a complementizer (in many of these, the verb form indicates the subordinate status of the clause). In this analysis, (8) and (9) are similar in function, but not in syntactic structure (in this respect).

In fact, as Adger notes later, unwarranted application of Global Extension of Construction-Specific Analyses leads to a problem in this case. If *she was preg-*

nant in (9) has a null complementizer, then does the main clause sentence *She was pregnant* also have a null complementizer? Adger notes that the Minimalist community is divided on this question (Adger 2003: 294). Such an analysis would not even be considered without unwarranted employment of this assumption.

A second example of the use of Global Extension of Construction-Specific Analyses is found in Kroeger's textbook on Lexical-Functional Grammar. Kroeger analyzes topic constructions such as the following constructions in Chinese:

- (10) *zhèi-ge zì wǒ bù rènshì*
 this-CLF character I not recognize
 'This character [i.e., word] I don't recognize.' (Kroeger 2004: 148)
- (11) *shǔiguǒ wǒ zuì xǐhuan xiāngjiāo*
 fruit I most like banana
 '(Among all) fruits, I like banana best.' (Kroeger 2004: 149, from Chen 2000: 401)

Kroeger argues that examples (10) and (11) actually represent two different topic constructions, syntactically at least. His reasoning is that one can form a relative clause in Chinese parallel to example (10), as in (12) below; but one cannot form a relative clause in Chinese parallel to (11) – see (13) below (Kroeger 2004: 148–50):

- (12) *[*wǒ bù rènshì de*] *zì*
 I not recognize REL character
 'the character I don't recognize' (Kroeger 2004: 148)
- (13) *[*wǒ zuì xǐhuan xiāngjiāo de*] *shǔiguǒ*
 I most like banana REL fruit
 *'the fruit that I like bananas best' (Kroeger 2004: 149, from Chen 2000: 401)

Kroeger then provides a syntactic analysis of examples like (10) which is like that of relative clauses, where the initial topic NP bears a grammatical relation to the predicate. In contrast, in the syntactic analysis for (11), the topic NP bears no grammatical relation to the predicate, except a special TOPIC relation (Kroeger 2004: 150).

The extension of the syntactic analysis of relative clauses to a subset of topic constructions in Chinese, namely those that are like (10), is an example of Global Extension of Construction-Specific Analyses. It is an unwarranted as-

sumption that must be defended; in this particular case, however, there is reason to believe that such an extension cannot be defended. The analysis breaks up two constructions that are structurally and functionally similar, namely the topic constructions in (10) and (11). An alternative analysis is simply that the constraints on the distributions of the topic construction and the relative clause construction are different. Chen (2000) argues against a common syntactic analysis for relative clauses and topic sentences: not only do some topic sentences lack parallel relative clauses, but some relative clauses lack parallel topic sentences. Example (14) lacks a parallel topic sentence, because the NP ‘two samples’ is indefinite (Chen 2000: 401):

- (14) *qǐng huànyàn yí-xià wǒ gāng cǎijí de liǎng-ge biāoběn*
 please analyze a-bit I just collect REL two-CLF sample
 ‘Please analyze two samples I just collected.’

In other words, although the distributions of relative clauses and topic sentences in Chinese overlap, they are by no means the same, nor is one distribution pattern a subset of the other. Chen argues for a unitary analysis of Chinese topic sentences that is independent of the analysis of relative clauses in Chinese.

The final example of the Global Extension of Construction-Specific Analyses has to do with a syntactic analysis of certain noun phrase constructions, which makes unwarranted use of this assumption as well as two others to be described later (see §§2.7-2.8). The empirical problem is how to analyze noun modifiers.

In many languages, it has been argued that noun modifiers are not syntactically modifiers dependent on the verb, as they are analyzed for most European languages. Instead, they are analyzed as noun phrases in themselves, standing in apposition to another NP containing the “head noun” (as it would be described in the standard syntactic analysis of noun modifiers). For example, Foley argues that in a particular noun modifier construction in Yimas, in which all elements carry affixes indicating noun class and number, “The latter construction is a scrambled paratactic construction, with the two nominals in apposition to each other” (Foley 1991: 182).

Among the pieces of evidence that Foley provides is that a putative modifying expression such as a possessive pronoun may occur discontinuously with its “head noun”, and that it may occur in a “headless” construction, that is, in the absence of any “head noun”:

- (15) *patn wayk-k ama-na-kn wa-n*
 betelnut.CLV.SG buy-IRR 1SG-POSS-CLVSG go-PRES
 ‘Go buy my betelnut.’

- (16) *ama-na-kn* *wayk-k* *wa-n*
 1SG-POSS-CLV.SG buy-IRR go-IMP
 ‘Go buy my (betelnut).’

The examples in (15) and (16) are examples of the Discontinuous NP construction and the Headless NP construction respectively. In both of these constructions, the modifier *amanakn* ‘mine [class V singular]’ is normally analyzed as an NP. In the Discontinuous NP construction, the “head noun” is separated from the modifier, and therefore cannot form a syntactic grouping with it. In the Headless NP construction, there is no “head noun”, and the modifier forms an NP by itself.

Foley, however, also applies the modifier-as-NP analysis to the putative modifier in the contiguous, “headed” NP construction in (17), in which both elements carry the class-number affix (Foley 1991: 180):

- (17) *ama-na-kn* *patn*
 1SG-POSS-CLV.SG betelnut.CLV.SG
 ‘my betelnut’

As the quotation above indicates, Foley analyzes *amanakn* as an appositive NP in the construction in (17) as well as in the constructions in (15) and (16). It is this analysis that represents an example of Global Extension of Construction-Specific Analyses. The analysis of “modifiers” as NPs in the Discontinuous NP construction and the Headless NP construction is being extended to the regular (Contiguous) NP construction.

Although no evidence is explicitly provided in Yimas, there is good reason to believe that discontinuous and “headless” NP constructions are in fact different from contiguous NP constructions, in function if not also in structure. In those languages where discontinuous NPs have been examined in language use, the discontinuous NPs perform a different discourse or information-structure function than the elements in a contiguous NP construction (Croft 2007a: 27–28). The two parts in a discontinuous NP perform distinct discourse functions, whereas the modifier and head of a contiguous NP perform a single function. For example, in Polish, the initial part of a discontinuous NP is a contrastive focus, while the final part is a contrastive topic (Siewierska 1984). In Gooniyandi, the initial part is a theme, while the final part is an unmarked focus (if it is in the same intonation unit; McGregor 1997). In Wardaman, the initial part is thematic, while the final part is an information focus (Merlan 1994: 241–242). These facts indicate that discontinuous NPs are different constructions than contiguous NPs, and hence the syntactic analysis for one should not be extended to the other. It is possible that Yimas discontinuous NPs have the

same function as Yimas contiguous NPs, but this has not been demonstrated by Foley.

Headless NPs are also functionally different from regular headed NPs with contiguous modifiers. Headless NPs must always have a pragmatically highly accessible referent in the discourse context, usually one that was mentioned in the immediately preceding discourse. Regular headed NPs with contiguous modifiers, by contrast, have any degree of pragmatic accessibility, including an indefinite expression naming a new referent to the hearer in the discourse context. In other words, the headless NP construction is also distinct from the regular (contiguous) headed NP construction, and again, the syntactic analysis for one should not be extended to the other.

Global Extension of Construction-Specific Analyses is not a fallacy. I am not ruling out the possibility that the same analysis does apply to more than one construction, or to a family of constructions that share functional and formal properties. In a construction grammar model, for example, constructions may be related to each other as instances of a more general (schematic) construction. However, giving two constructions the same analysis has to be justified with empirical evidence. This includes evidence that the similarities are due to syntactic identity, not identity of function. For example, I suspect that positing null syntactic elements is a generally unwarranted employment of Global Extension of Construction-Specific Analyses, since the motivation for extending the analysis is actually similarity of function, not form – the form is not the same, because it is zero, not overt.

However, accepting that Global Extension of Construction-Specific Analyses is an unwarranted assumption entails that some, if not many, constructions in fact have unique or distinctive properties. The fact that the distributional patterns of different constructions are different strongly suggests that the best analysis of different constructions is as autonomous syntactic entities, each with its own constraints (in terms of structure and function). This sort of analysis is most easily represented in construction grammar.

Abandoning this unwarranted assumption and recognizing the existence of a range of autonomous constructions does question a deeply held assumption of many syntactic theories apart from construction grammar (or certain varieties of construction grammar). That assumption is that the constructions of a language can be described by a small set of grammatical categories and syntactic structures that is the representation language of the theory (and, in theory, the mental representation of the language speaker; see §2.10). The intricate differences in morphosyntactic form, function and distribution among the constructions of a language suggest that this theoretical assumption is incorrect. But the unwarranted use of Global Extension of Construction-Specific Analyses allows an

analyst to maintain this theoretical assumption in the face of evidence to the contrary.

2.4. Symmetry

This assumption and the following two are manifestations of a more general unwarranted assumption: that the “simplest” and “most elegant” analysis is the correct analysis of the facts (see for example Aarts 2007: 432). The general objection to this family of assumptions is that language is a social and psychological phenomenon, and in particular syntactic analyses are assumed to have some sort of psychological reality. Yet there is no psychological (or evolutionary biological) imperative that syntactic representations are “simple” or “elegant”.

Also, there are different ways in which syntactic representations can be “simple”. Which is simpler, a construction grammar or generative grammar? It depends on what yardstick is used. There is no precise definition of “simple” or “elegant”. I have grouped together several methodological assumptions that I believe are driven by “simplicity” and “elegance” under three broad headings: symmetry, nonredundancy in representation, and generality.

Symmetry, the topic of this section, is formulated as follows:

SYMMETRY. One should construct an analysis that possesses symmetry in the underlying linguistic system, or symmetry in crosslinguistic patterns, even if the data are asymmetric.

Symmetry is probably a descendant of the theoretical assumptions of structuralism. In structuralism, elements of a system are defined by their contrast with other elements in the system. Thus, there must be contrasting elements for each element within a system. Contrasts in multiple dimensions lead to a symmetric set of contrasting elements. An example of a symmetric system would be a phoneme segment inventory in which all consonant phonemes contrast with all other phonemes in voicing, place and manner of articulation.

A frequently cited example of a proposed symmetric system in syntax are the major category features of generative grammar. The three traditional major syntactic categories of Noun, Verb and Adjective are defined in terms of two binary features, N and V, such that Noun is [+N,-V], Verb is [-N,+V] and Adjective is [+N,+V]. This is an asymmetric system, in that there is no major syntactic category that is [-N,-V]. Generative grammar posits that Preposition is the “missing” category in this symmetric system (e.g., Adger 2003: 36). This is an example of assuming Symmetry.

In this case, however, it is not obvious that the system of major syntactic categories is symmetric. In particular, Preposition (or Postposition), the category that fills out the symmetric system of two binary features, is quite different from the other three categories. It is basically an intermediate stage in grammaticalization from a source structure – relational noun, serial verb, and/or directional adverb – to a target structure – a case affix. Grammatically, Prepositions or Postpositions in a single language are often quite diverse in their morphosyntactic behavior, reflecting the diversity of their diachronic sources and their being at different stages in the grammaticalization process. Functionally, Prepositions relate arguments (referring expressions) to predicates or to other referring expressions. In all of these respects, Prepositions or Postpositions differ from the major syntactic categories of Noun, Verb and Adjective.

It is also clear that Adjectives are not of the same status as Nouns and Verbs. To the extent that one can describe major syntactic categories as language-specific word classes (a position that I reject, see Croft 2001, 2005, 2007b, 2009), it is clear that the grammatical behavior of Adjectives is often similar or identical to that of Nouns or Verbs – or of both; as with Prepositions, Adjectives are frequently not a morphosyntactically uniform word class. Functionally, Adjectives differ from Nouns and Verbs in that the latter head up phrases that perform the major propositional acts of reference and predication respectively, while Adjectives perform the secondary function of modifying referring expressions.

Thus, there are significant asymmetries among Noun, Verb, Adjective and Preposition that are ignored or suppressed by placing them in a symmetric system based on the features $\pm N$, $\pm V$. This is not to mention the many other word classes that exist (at least in traditional and formal syntactic analyses), to which the N and V features are not applied.

Using symmetry to justify a syntactic analysis is an unwarranted assumption, not a fallacy. It is indeed possible that the best analysis of the empirical data happens to result from positing a symmetric system. Invoking symmetry in itself as the reason to choose one analysis over another one, however, is unwarranted. In other words, language systems can be, and in fact often are, asymmetrical, even at a “deep” level of analysis.

2.5. Nonredundancy in representation

This assumption is formulated broadly in order to cover several different assumptions, which all have in common the minimization of redundancy in representation (see also Croft 1998, in which this is called the redundancy fallacy):

NONREDUNDANCY IN REPRESENTATION. An analysis that minimizes redundancy in representation of syntactic units, syntagmatically or paradigmatically, must be chosen over an analysis with does not, even if the latter analysis is computationally more parsimonious.

The paradigmatic type of nonredundancy is what I have previously referred to as storage parsimony (Croft 2003: 61): minimize the number of different units to be represented. The Minimalist Program of generative grammar is the most extreme example of storage parsimony in the recent history of linguistic theory. All that is permitted is a relatively small number of categories and features, which are combined in syntactic trees with only binary branches, specifically branches functioning only as Specifiers or Complements (at least in underlying form prior to movement operations), and a strictly ordered set of projections (the Hierarchy of Projections; see §2.6).

However, the operations which combine these elements in the correct way (according to the principles of the Minimalist Program) are quite complex. Consider Adger's description of the generation of the clause structure for the French sentence in (18) (Adger does not analyze the noun phrase structures here, or the declarative mood of the sentence):

- (18) *Jean n'aime pas Marie.*
'John doesn't love Mary.'

Step 1. Merge *aime*, 'love', with the object *Marie*.

Step 2. Merge the result with little $v[u\text{Infl} : , uV^*]$, raise *aime* to adjoin to v (satisfying the uV^* feature on v), and then Merge in the subject *Jean*.

Step 3. Merge the negation *pas* with the output of Step 2.

Step 4. Merge $T[\text{pres}]$ with the output of Step 3. The tense feature on T matches the inflectional feature on v , and the inflectional feature on v which is valued as a tense feature is strong, so the whole little v complex raises to $T \dots$

Step 5. Still at the same node, the subject moves into the specifier of TP.

(Adger 2003: 182–183; note that the existence and position of the preverbal negative marker *n'* is not accounted for in this description)

In contrast, construction grammar, in any of its versions, is not parsimonious in storage. In construction grammar, a very large number of distinct constructions of varying degrees of specificity are stored in the representation of the grammar of the language. However, the process of generating a sentence such as (18) is quite simple: unify the negative construction [*ne* VERB *pas*], the argument structure construction [*SBJ*, *aimer*; *OBJ*], and the inflectional/agreement construction [*SBJ*, VERB-TNS.AGR_{SBj}] (as with Adger's analysis, we exclude the generation of the noun phrases and the declarative mood of the sentence).

The construction grammar model exhibits computing parsimony instead of storage parsimony: all that is necessary computationally is the retrieval of three constructions and their unification. In fact, *n'aime pas* is probably of high enough token frequency to justify positing it as a single construction [SBJ *n'aime pas* OBJ], in which case there is simply retrieval of [SBJ *n'aime pas* OBJ] – a maximally parsimonious computation.

These two approaches represent analytical extremes. My point here is simply that the analytical extreme represented by Minimalism is an unwarranted assumption, as would be an extreme version of construction grammar in which every utterance ever produced is stored and retrieved for reuse. Clearly, some utterances are computed, because they are novel. Equally clearly, many utterances, or large chunks of structure in those utterances, are simply retrieved, chiefly because they occur frequently enough to be stored autonomously (Bybee 1985 *inter alia*). The point is that an analysis that posits computation of a syntactic structure instead of simple storage and retrieval, or vice versa, must be justified empirically, via psycholinguistic evidence or other relevant evidence (see Croft 1998 for some sources of such evidence).

One subtype of the nonredundancy assumption is what Langacker calls the rule/list fallacy (Langacker 1987: 42). This is the assumption that a linguistic unit must be stored or must be computed, but not both: the option that a linguistic unit may be both stored and computed is excluded a priori. Langacker argues forcefully against the exclusion of the latter option. For example, if there is reason to posit a unitary construction [SBJ *n'aime pas* OBJ], on the basis of its high token frequency, phonetic reduction (compare Bybee and Scheibman 1999), or other evidence, this does not exclude the existence of the more general constructions [*ne* VERB *pas*] and [SBJ, *aimer*, OBJ], and the possibility that a speaker might compute example (10) from these latter constructions as well as retrieving [SBJ *n'aime pas* OBJ] directly.

Lastly, there is a syntagmatic variant of the nonredundancy assumption, which I believe originates in structuralist analyses. In the syntagmatic variant, an analysis in which certain syntactic or semantic properties of a construction are represented only once, in one element of the construction or its underlying form, is preferred over an analysis in which that feature is represented redundantly in more than one place in the syntactic structure of the construction. This unwarranted assumption is described as redundancy in expression in Croft (2001: 119–24). I will illustrate this assumption with a summary of an example described therein.

A large number of languages use classifiers when numerals modify nouns. An example of one such language is Yucatec Maya (Lucy 1992: 52):

- (19) 'un- túul máak
 one- CLF.ANIM man
 'one man'
- (20) 'um- p'éeh nàah
 one- CLF.GENL house
 'one house'

Lucy argues that the Yucatec construction is essentially the same as an English mass noun construction: one cannot say **two zincs* or **two cottons* in English, just as one cannot combine the numeral directly with the noun in Yucatec. Lucy then argues that the similarity of the Yucatec construction to the English construction indicates that nouns such as *máak* and *nàah* are actually mass nouns like the English nouns: the English example “suggests, by analogy, that all the lexical nouns of Yucatec are unspecified as to unit since they all require supplementary marking (i.e. numeral classifiers in the context of numeral modification)” (Lucy 1992: 73).

Lucy's argument actually uses three of the unwarranted assumptions described in this paper. Lucy extends the standard semantic analysis of English mass nouns to Yucatec nouns such as 'man' and 'house', by 'analogy' as he writes. This is an example of the Universal Extension of Language-Specific Analyses: extension of the analysis of an English construction to a Yucatec construction. It is also, arguably, an example of the Global Extension of Construction-Specific Analyses, since it extends an analysis of the English construction for 'zinc' and 'cotton' to the Yucatec construction for 'man' and 'house', not the Yucatec construction for 'zinc' and 'cotton'. Finally, Lucy's argument assumes Nonredundancy in Representation in that it supports the analysis of 'man' and 'house' as lacking unit semantics by invoking the obligatory presence of the numeral classifier which possesses unit semantics (analogous with English *two ounces of zinc* or *two bales of cotton*).

However, there is no a priori reason to assume that all representations of syntactic and/or semantic structure are syntagmatically nonredundant. In fact, there are good reasons to think that numeral classifier constructions do have redundant representation of unit status (for a more detailed argument, see Croft 2001: 120–123). The mass noun construction, even in numeral classifier languages, is different in a number of respects (i.e. Global Extension of Construction-Specific Analyses is unwarranted; Greenberg 1977). Mass nouns do not have unique classifiers for units, a variety of partitive and measure classifiers being used (*two bales of cotton*, *two pounds of cotton*, *two balls of cotton*, etc.). Sortal classifiers, unlike measure classifiers, describe the inherent state of the object (Berlin 1968: 175), form a closed class (De León 1987: 84, cited in Aikhenvald 2000:

116), and are often optional without changing the meaning of the construction (Aikhenvald 2000: 117).

Finally, consistent application of syntagmatic Nonredundancy in Representation would lead to nonsensical results in many cases. In *three books*, the obligatory number suffix encodes plurality and nothing else; a nonredundant analysis of *three books* would then have to conclude that plurality is not part of the meaning of *three*. Similarly, in *Yesterday I biked to work*, the obligatory past tense suffix encodes past time reference and nothing else. A nonredundant analysis of the sentence would then imply that past time reference is not part of the meaning of *yesterday* (Croft 2001: 122).

Syntagmatic Nonredundancy in Representation is an unwarranted assumption, not a fallacy. There probably are cases in which there is empirical evidence for nonredundancy of the representation of some piece of syntactic or semantic information in a grammatical construction. However, nonredundancy is not in itself a sufficient reason to endorse a particular analysis.

Not invoking this unwarranted assumption implies that some, probably many, syntactic structures are redundantly represented (absence of storage parsimony), and that some grammatical information is redundantly represented in morphosyntactic structures.

2.6. Generality

The last of the “simplicity”/“elegance” assumptions is Generality:

GENERALITY. An analysis that is more general, that is, is formulated to cover a larger number of cases, must be chosen over an analysis that covers a smaller number of cases.

This formulation is itself, ironically, quite general. Generality is the driving factor behind several of the assumptions described in this chapter, including Universal Extension of Language-Specific Analyses (§2.2), Global Extension of Construction-Specific Analyses (§2.3), Strong Form-Function Isomorphism (§2.8), and both Crosslinguistic and Language-Internal Methodological Opportunism (§§2.9-2.10). The Generality assumption is the main topic of Croft (1998), where it is called the generality fallacy (this is too strong a characterization). Scientists are trained to find the most general patterns possible in the data. But in the case of syntactic representation, the question is how general a pattern does a speaker of the language “find”? This may not necessarily be the most general pattern that a trained linguist can find. The generality of the pattern that is identified by a speaker is a function of several variables, including the type frequency of the pattern and the degree of similarity of the instances (Bybee 1995).

In many cases, however, highly general grammatical analyses run into a more prosaic problem: the data do not warrant the generalization. There are exceptions and idiosyncrasies that require the linguist to posit a more specific pattern as part of the representation of the grammatical construction.

An example of the assumption of Generality, and some of its problems, is the analysis of clauses and phrases in Minimalism. Clauses have been analyzed as possessing a Hierarchy of Projections: a functional projection, TP in Adger (2003, chapter 5), then little *v*P, then big VP (Adger 2003: 165). Certain constraints on linking, so that agents are linked to subject but not to object, are constrained by the Uniformity of θ -Assignment Hypothesis (UTAH; Adger 2003: 138). Minimalism then generalizes this analysis to determiner phrases, or what are traditionally called noun phrases. The Hierarchy of Projections for phrases is: a functional projection, DP; then little *n*P, then big NP (Adger 2003: 267). This analysis of phrasal syntax is an example of Generality, which is very highly valued in generative grammar: assume the most general analysis possible. (This analysis is also motivated by the Symmetry assumption: the same types and hierarchy of projections are found in phrases as in clauses.)

There are empirical problems with Generality in this case, however. Adger argues that UTAH applies also to phrases and accounts for why agents can appear as prenominal genitives in action nominal phrases but not as postnominal *of*-phrases:

- (21) a. *the government's imposition of a fine*
 b. **the imposition of the government of a fine*

However, agents in clauses are moved to preverbal position by a special EPP feature, while phrases lack evidence for such a feature. So an optional strong [gen] feature is posited on DP, which triggers the movement of the agent to preverbal position (Adger 2003: 270). (Also, agents in clauses are assigned the case feature [nom] while agents in phrases are assigned the case feature [gen], another non-generalization not highlighted or explained by Adger.) Finally, many phrases have nouns that do not have argument structures, and yet they may have possessors (e.g. *Jenny's cat*, *my penknife*; Adger 2003: 274). This anomalous difference between clauses and phrases does not have a consensus analysis in Minimalism (Adger 2003: 274).

The Generality assumption is unwarranted without a thorough empirical investigation. An alternative to the highly general Minimalist analysis of phrases and clauses is that they are simply different constructions, albeit with some similarities in structure as well as many differences. Again, a less general analysis of this type is more compatible with a construction grammar approach. Con-

struction grammar proposes that there are grammatical patterns that are regular but not predictable from more general syntactic patterns (such as general phrase structure rules) that have traditionally been posited in generative grammar and other formal syntactic theories.

The generality assumption is not itself a fallacy, however. Speakers do form general categories and schemas under certain circumstances. Even when a general analysis is justified in terms of formal (or functional) linguistic grounds, however, it must also be justified on psycholinguistic grounds: do speakers actually form the generalizations that linguists have been able to come up with (see Croft 1998)?

2.7. Weak Form-Function Isomorphism

The next two unwarranted assumptions, Weak and Strong Form-Function Isomorphism, represent a continuation of theoretical assumptions of structuralism. As noted in the discussion of Symmetry (§2.4), in the structuralist approach linguistic elements are defined solely by their contrast with other elements in the system. The most important properties in the structuralist model are therefore identity (noncontrast) and difference (contrast). This theoretical assumption motivates two unwarranted methodological assumptions about the relationship between form and function, the latter construed broadly. The first, Weak Form-Function Isomorphism, has to do with contrast:

WEAK FORM-FUNCTION ISOMORPHISM. Differences in form always entail differences in “underlying” structure or function.

The analysis of noun modifiers as appositive NPs discussed in §2.3 also provides an example of Weak Form-Function Isomorphism in some cases including Yimas. In §2.3, it was mentioned that one NP construction in Yimas, one in which both modifier and head possess class-number affixes as in (17), repeated below, was analyzed by Foley as an appositive NP construction.

- (17) *ama-na-kn patn*
 1SG-POSS-CLV.SG betelnut.CLV.SG
 ‘my betelnut’

Yimas also has another NP construction, in which the modifier lacks the class-number affixes (Foley 1991: 180):

- (22) *ama-na patn*
 1SG-POSS betelnut.CLV.SG
 ‘my betelnut’

Foley argues that this construction, unlike the NP construction in (17), is a modifier-head, single NP construction. Thus, the distinction in form between (17) and (22), namely the presence vs. absence of the class-number affixes on the modifier, entails a difference in the syntactic structure of the constructions, namely appositive NPs vs. single NP. This is an example of the application of Weak Form-Function Isomorphism.

In effect, a formal morphosyntactic distinction is taken to demand an underlying structural or functional distinction (in this case, just an underlying structural distinction). Since there is a difference as to whether the modifier takes the inflectional affixes or not, there must be a difference in their syntactic structure. Conversely, it is supposed that the underlying distinction “explains” the difference in formal morphosyntactic structure of the two constructions.

It is not obvious how the underlying distinction “explains” the difference in formal morphosyntactic structure (presence vs. absence of the class-number affixes on modifiers). A problem with this assumption is that the number of formal morphosyntactic distinctions can be quite large, and positing underlying structural (or functional) distinctions to match the formal morphosyntactic variation begins to look less plausible.

For example, Miraña appears to be similar to Yimas, and Seifart (2005) analyzes it in the same way. There is one construction with only class/number marking on the modifier, used for genitive modifiers, which Seifart analyzes as a single modifier-head NP (Seifart 2005: 147; example from Seifart 2005: 144):

- (23) *táhkórá-bá táhuuta*
 trap-CL3DIM bait
 ‘the bait of the *tahkoraba* trap’

There is a second construction, which includes case marking on the modifier as well as the head, which is used for other modifiers (Seifart 2005: 153):

- (24) *ó uhkú-ʔi ma:kíní-mu-βá-ke kuʔrí-mu-ke*
 1SG take-PRED three-ANIM.PL-PL-ACC pintadillo-ANIM.PL-ACC
 ‘I caught three *pintadillo* (fish, sp.)’

Seifart analyzes this construction as apposition, just as Foley analyzes the comparable Yimas construction, in contrast to the construction in which the modifier lacks some or all of the inflectional affixes. This underlying structural contrast is intended to “explain” the morphosyntactic difference in occurrence of affixes between the two constructions in each language. But in Miraña, not all non-genitive modifiers behave alike. Numeral modifiers may be discontinuous with the putative head noun, but they always precede it; while other modifiers

such as relative clauses may be discontinuous and may precede or follow the putative head noun (Seifart 2005: 154). Hence positing a distinction between the genitive and other modifier constructions in terms of underlying structure cannot “explain” the variation in the behavior of the other modifier constructions.

In fact, the discontinuous NP constructions of Miraña are probably better analyzed as autonomous constructions in their own right, for the reasons given in §2.3. The contiguous constructions, varying as to whether certain inflectional affixes are found with the modifiers or not, may or may not be best analyzed as separate constructions. They could be grouped together as a single construction with optional marking of the inflectional affix on the modifier. On the other hand, they may be distinct. McGregor (1989), for example, argues that NPs with contiguous modifiers with inflectional affixes (what he calls fractured NPs) in Gooniyandi are discourse-functionally distinct from contiguous modifiers without those affixes (in fact, fractured NPs have at least three distinct discourse functions in Gooniyandi).

There is insufficient data given in Foley (1991) or Seifart (2005) to decide which is the better analysis of contiguous modifiers with inflectional affixes: variants of a simple NP construction, or a distinct fractured NP construction. In neither case, however, is it required to posit distinct underlying syntactic structures. The constructional difference in the distribution of inflectional affixes across the head noun and its modifiers suffices to differentiate the construction, along with any discourse-functional difference. There is no reason to think that there is more than meets the eye, except a long history of a theoretical metaphor that “deep” differences exist and are more significant than “shallow” differences. This metaphor is based on theoretical assumptions that are not necessitated by the facts of languages.

2.8. Strong Form-Function Isomorphism

Strong Form-Function Isomorphism is the converse of Weak Form-Function Isomorphism:

STRONG FORM-FUNCTION ISOMORPHISM. Identity of form always entails identity of “underlying” structure or function.

Strong Form-Function Isomorphism is a special case of Generality: a general analysis is required to cover all forms that are identical. Strong Form-Function Isomorphism is frequently invoked to offer identical syntactic analyses of lexically or morphologically identical forms.

Strong Form-Function Isomorphism can be illustrated again with the analysis of noun modifiers in languages such as Yimas and Miraña (see §§2.3, 2.7). The motivation for extending the analysis of discontinuous NPs and headless NPs to contiguous NPs is the identity in morphological form of the modifier: the modifier takes the same inflectional affixes in the contiguous NP construction as it does in the discontinuous and headless constructions (in Yimas and Miraña, as discussed in §2.7, there is another contiguous NP construction in which the modifiers lack some or all of the inflectional affixes). The assumption, then, is that the contiguous NP construction with the inflectional affixes must have the same syntactic analysis as the identical modifier forms in the discontinuous and headless constructions. Since the latter constructions must be analyzed as NPs in their own right, then the contiguous NP construction must also be analyzed as containing modifiers as NPs in their own right, and in apposition to the putative head noun.

This is an example of reasoning based on Strong Form-Function Isomorphism. But the assumption is unwarranted; there must be independent evidence provided to demonstrate that the constructions are identical to the point that identical syntactic analyses must be given for them. We have already argued in §2.3. that there are reasons not to extend the analysis of a Discontinuous NP construction or a Headless NP construction to a Contiguous NP construction, even if the form of the modifiers is identical in all cases. The effect of extending the analysis also makes the contiguous NP construction identical in syntactic analysis to a “true” appositive construction such as *my brother, the poet*. A true appositive construction, unlike the Discontinuous and Headless NP constructions, consists of two contiguous coreferring NPs. (It should be pointed out that there is a range of so-called appositive constructions, in English at least; see Matthews 1981: 224–225.)

But there are significant differences between the paradigm case of a true appositive construction and an alleged appositive modifier construction (Croft 2007a: 28–29). True apposition involves two coreferring object words, as in *my brother, the poet*. “Appositive” modifiers always involve an object word and another kind of word – property word, deictic word, numeral word, etc. – that is analyzed as “coreferential” with the object word: ‘red book’ contains a property-word headed NP ‘red’ [one] that corefers with the object word ‘book’. True apposition may have independent grammatical specifications, as in French *mon plat préféré, une truite meunière* ‘My favorite dish [MASC], pan-fried trout [FEM]’. “Appositive” modifiers always share their grammatical specifications with the nominal NP. That is, in traditional parlance, they agree. Also, true appositive NPs almost always occur in separate intonation units; “appositive” modifiers overwhelmingly occur in the same intonation unit. In a study of into-

nation units and grammatical structure in Wardaman, an Australian aboriginal language, the distribution of the constructions across intonation units is almost complementary (see Table 1).

Table 1. Putative modifiers and true appositive phrases in Wardaman (Croft 2007a: 29, Table 21)

	Whole	Pct	Broken	Pct	Total
True appositive NPs	18	12.9%	121	87.1%	139
“Modifiers”	352	89.1%	43	10.9%	395
Total	370	69.3%	164	30.7%	534

Chi-square = 276.72, $p < .001$

The appositive modifier analysis demonstrates the interlocking employment of two unwarranted assumptions, Strong Form-Function Isomorphism and Global Extension of Construction-Specific Analyses. The identity of form of modifier expressions in Discontinuous and Headless NP constructions on the one hand and contiguous modifiers on the other motivates the Global Extension of Construction-Specific Analyses based on Strong Form-Function Isomorphism (identity of form). The result is a syntactic analysis of apposition, which in turn involves the extension of the appositive NP construction analysis to modifier+noun constructions. The latter is again an example of Global Extension of Construction-Specific Analyses. Both extensions of analyses, from Discontinuous and Headless NPs to contiguous modifier+noun constructions and from appositive NPs to modifier+noun constructions, are unwarranted.

Rejecting the Strong Form-Function Isomorphism assumption again points to a more constructional model of grammar. The forms of individual linguistic expressions may be the same, but they occur in different constructions which have distinct functions. If one looks at the constructions as a whole – Discontinuous NP, Headless NP, Contiguous Modifier-Noun NP, and Appositive NP – each construction is distinct both in morphosyntactic form, in distribution and in function, even if an element in one of those constructions is similar or identical to an element in another construction. There are certainly good diachronic reasons for the similarity of certain elements. But these historical explanations are not necessarily a part of synchronic representation. What matters is the distinctive combination or gestalt of morphosyntactic, semantic and discourse-functional properties that make up each construction, and individual speaker’s inductions of relations, if any, between the constructions.

2.9. Crosslinguistic Methodological Opportunism

The last two unwarranted assumptions, Crosslinguistic Methodological Opportunism and Language-Internal Methodological Opportunism, are probably the most deeply entrenched in syntactic argumentation, and therefore the most difficult to expose and abandon. I believe this is true for two reasons. First, both types of methodological opportunism are considered to be part of the distributional method, which is central to all syntactic argumentation (see §1). But it turns out that methodological opportunism is not a necessary part of the distributional method. Second, both types of methodological opportunism allow the analyst to maintain two extremely deep-seated theoretical assumptions: that all languages draw from the same set of grammatical categories and structures, and that the different constructions of a particular language are built from a single, construction-independent set of grammatical categories and structures. But these deep-seated theoretical assumptions are not necessary, and in fact are empirically untenable, as I have argued at length (Croft 2001, 2004a,b, 2005, 2007b, 2009). The only way these theoretical assumptions can be protected from empirical reality is by employing the unwarranted methodological assumptions of Crosslinguistic and Language-Internal Methodological Opportunism.

Crosslinguistic Methodological Opportunism is described below:

CROSSLINGUISTIC METHODOLOGICAL OPPORTUNISM. In each language, one may select any constructional test(s) to justify the positing of a universal (crosslinguistically valid) category, such as Noun/Verb, or not, in that language, thereby supporting the universality, or nonuniversality, of the category.

Crosslinguistic Methodological Opportunism is the unwarranted methodological assumption that allows one to maintain the theoretical assumption that all languages draw from a single set of grammatical categories.

An example of Crosslinguistic Methodological Opportunism can be found in Aarts' analysis of adjectives in English and German, and his reply to my critique of his analysis (Aarts 2004, Croft 2007b, Aarts 2007). Aarts' 2004 article is chiefly devoted to English (one of his English examples will be discussed in §2.10). He does give one crosslinguistic example, examining German adjectives. Aarts states that the German form *sprechend+er/en* in (25) and (26) 'has clear adjectival properties' (Aarts 2004: 34):

- (25) *ein mehrere Sprachen sprechender Mann*
 a.NOM several languages speaking: MASC.NOM.SG man.MASC.SG
- (26) *einen mehrere Sprachen sprechenden Mann*
 a.ACC several languages speaking: MASC.ACC.SG man.MASC.SG

Aarts argues that *sprechend+er/en* is ‘clearly’ adjectival because it occurs in prenominal position and agrees with the following noun in case and number. This is an example of distributional analysis: distributional analysis involves careful analysis of the occurrence of words or syntactic units in larger syntactic units, that is, constructions (see §1).

The problem with Aarts’ analysis is that Aarts uses distributional analysis selectively across languages. That is, Aarts selects the Agreement construction to define Adjectives in German but not in English. If one were consistent in applying the same constructions to define the same categories across languages, and then asks, which English words fit the criteria for Adjectives in German, the closest match is not a word like *thin*, but *this* and *that*: *this* and *that*, but not *thin*, agree in number (though not case) with the following noun (Croft 2007b: 417):

(27) **this** box/**these** boxes

(28) **that** chair/**those** chairs

These distributional facts across the two languages give us two options for analysis. Aarts takes the view that there is an English Adjective class, which includes *thin* but not *this* or *that*. This class is the same class that is illustrated in the German examples in (25)–(26). That is, Aarts uses one distributional criterion in one language (number-case agreement in German), another distribution criterion in another (prenominal position *inter alia* in English, but not number agreement) – and then says the resulting categories are crosslinguistically the same, namely adjectives. This is an example of Crosslinguistic Methodological Opportunism: using different constructions in different languages to establish categories that are then claimed to be the same crosslinguistically.

Alternatively, one can be consistent in using the same construction across languages, and say that English has only two Adjectives, *this* and *that*. If we take this option, we still have no basis for saying why agreement with the following noun is the criterion for Adjective class membership, rather than some other criterion. In other words, this approach also relies on Crosslinguistic Methodological Opportunism: although we are consistent in the construction we use across languages, we are still claiming that the same crosslinguistic category is being described here. In this case, it seems implausible that the categories are crosslinguistically the same, since the two language-specific categories have such different class membership. As we will see below, however, this second alternative is sometimes also taken. My main point here, though, is that either analysis is unwarranted.

In Aarts’ reply to my critique of this example (Aarts 2007: 435), he argues that there are other constructions that differentiate *this* and *that* (Aarts’ “determinatives”) from “true” adjectives in English, and differentiate their German

translation equivalents from “true” adjectives in German. This argument only supports the differentiation of English *this* and *that* from English “true” adjectives. It does not support the argument that English words like *thin* are to be assigned to the same word class as their German translation equivalents, despite their differences in grammatical behavior. Aarts writes only that ‘a separate mechanism will then be required to account for the fact that *this* and *that* agree with the head that follows’ (Aarts 2007: 435).

Aarts addresses the question of why we should give the English and German categories the same, putatively crosslinguistically valid, grammatical category Adjective in a footnote:

As for the perceived problem that the English and German adjective classes are not the same, if the aim is to arrive at a universally valid definition for adjectives, as Croft suggests, then the same aim might be expected to apply to constructions as syntactic primitives, in Croft’s sense [see Croft 2001, chapter 1]. But given the idiosyncrasies of constructions crosslinguistically, this is unlikely to be achieved. (Aarts 2007: 441, fn. 2)

Aarts is correct about the idiosyncrasies of constructions crosslinguistically – a point that has come up in earlier sections of this paper (see also part III of Croft 2001). But this only reinforces the point that calling both the English class and the German class “Adjective” is an unwarranted assumption, namely Crosslinguistic Methodological Opportunism.

Crosslinguistic Methodological Opportunism means that an analyst may choose whichever constructions s/he wants in order to justify the existence or nonexistence of a supposedly crosslinguistically valid grammatical category or structure in a language. The result of this unwarranted assumption is that disagreements about whether certain crosslinguistic categories exist in a language or not can never be resolved by argumentation that allows this assumption. I illustrate this point with an example of argumentation regarding the noun-verb distinction in Straits Salish (Croft 2001: 31–32).

There has been an ongoing debate about whether native American languages of the Pacific Northwest have a Noun-Verb distinction or not. Linguists on both sides of the debate appear to be employing distributional analysis to support their positions. How do two analysts come to opposing conclusions in applying the same method to the same languages?

For example, Jelinek and Demers argue that Straits Salish does not distinguish nouns, verbs and adjectives, because all can appear in the Predication construction as in (29a–c), with the enclitics =*lə*=*sx*^w ‘=PST=2SG.NOM’), and in the Determination construction as in (30a–c), with the Article *cə* (Jelinek and Demers 1994: 698–699):

- (29) a. *t'iləm=lə=sx^w* 'you sang'
 b. *si'em=lə=sx^w* 'you were a chief'
 c. *sey'si'=lə=sx^w* 'you were afraid'
- (30) a. *cə t'iləm=lə* 'the (one who) sang'
 b. *cə si'em=lə* 'the (one who) was a chief'
 c. *cə sey'si'=lə* 'the (one who) was afraid'

But van Eijk and Hess (1986) observe the same distributional facts for the closely related languages Lillooet and Lushootseed, and yet conclude that Lillooet and Lushootseed do distinguish Noun and Verb. Their argument is based on the distribution pattern of Possessive affixes and Aspectual inflection, which divide Lillooet and Lushootseed roots into Noun and Verb categories in their analysis (van Eijk and Hess 1986: 321–322).

Jelinek and Demers note that in Straits Salish also, only a subset of roots may take possessive affixes (Jelinek and Demers 1994: 699). But they point out that “Nouns” may occur in the predication construction, as in (29b), and then argue that the fact that “Nouns” with possessive affixes may occur in the predication and determination constructions is the deciding case: “they have the same syntax as any other predicate” (Jelinek and Demers 1994: 700).

This is a common pattern in syntactic debate. The distributional facts show that there are some similarities and some differences between two grammatical phenomena, in this case, the occurrence of different semantic classes of words in various constructions in Salishan languages. One set of analysts (here, Jelinek and Demers) takes a “lumping” approach, arguing that certain distributional differences are superficial compared to the underlying grammatical unity. That is, they select certain constructions as criterial for establishing a grammatical category or distinction. In this case, Jelinek & Demers select the Predication and Determination constructions as criterial, and ignore the different distribution pattern of the Possessive affixes.

This is Crosslinguistic Methodological Opportunism. What makes this Crosslinguistic Methodological Opportunism is that Jelinek and Demers are using distributional argumentation to identify the presence or absence of a putative crosslinguistically valid category or categories, in this case noun and verb, which are used in the syntactic analysis of English, Salishan, and other languages. However, they are using distributional argumentation selectively, choosing some constructions and ignoring others, in order to “prove” their analysis, namely that the noun-verb distinction does not exist in Straits Salish.

The selective use of distributional facts also characterizes the other side of the debate. The other analysts (here, van Eijk and Hess) take a “splitting” approach, arguing that the distributional differences with possession and aspect inflection

really are significant and requires a distinct analysis for the two phenomena. In this case, van Eijk and Hess use the possessive construction to distinguish Noun and Verb in Lillooet and Lushootseed. However, their analysis is selective in the opposite manner: they have no explanation for the similarity in distribution of words of all major semantic classes in the Predicate and Determination constructions.

There is no a priori way to resolve the question: the “lumper” overlooks the mismatches in distribution, and the “splitter” overlooks the generalizations. Without prior agreement or some principled means for specifying which constructions define a category across languages, analysts can use whatever constructions they wish in order to come to whatever conclusions they wish. The reason for this is the selective use of distributional facts to posit supposedly crosslinguistic categories in a particular language, namely Crosslinguistic Methodological Opportunism. This methodological assumption is always unwarranted, that is, it is a genuine fallacy.

Abandoning Crosslinguistic Methodological Opportunism has major consequences for syntactic theory. The reason that Crosslinguistic Methodological Opportunism is problematic as an assumption is the variability of distribution of words and constructions across languages. If all languages had the same constructions, and words (or other syntactic units) in all languages had the same distribution patterns across those constructions, then being selective about which distribution pattern (i.e. which construction) is used to define grammatical categories would not be a problem. But languages are not that way. This fact of crosslinguistic variability can only be ignored by disregarding empirical evidence, which is scientifically unacceptable. But recognizing this fact requires abandoning the theoretical assumption that there are crosslinguistically valid formal linguistic categories and syntactic structures.

Nevertheless, Crosslinguistic Methodological Opportunism is only a crosslinguistic version of the most deeply entrenched fallacy of all in syntactic argumentation, Language-Internal Methodological Opportunism, which is described in the last subsection.

2.10. Language-Internal Methodological Opportunism

Language-Internal Methodological Opportunism is described below:

LANGUAGE-INTERNAL METHODOLOGICAL OPPORTUNISM. In each language, one may select any constructional test(s) to justify the positing of a global (cross-constructional or constructionally independent) unit – a category like Direct Object, a constituent like PP, etc. – or not, thereby supporting the global ex-

istence of the unit, or the inapplicability of the unit in a particular construction.

Language-Internal Methodological Opportunism is a response to the variation in distribution patterns in a single language. This variation challenges the theoretical assumption that the different constructions of a particular language are built from a single set of grammatical categories and structures. If a single, relatively small, set of grammatical categories and structures define all constructions, then those constructions should have the same distribution patterns as defined by those categories. But they do not. Language-Internal Methodological Opportunism is the unwarranted methodological assumption that allows one to maintain this ultimately invalid theoretical assumption.

I have given many examples of Language-Internal Methodological Opportunism elsewhere, especially in *Radical Construction Grammar* (Croft 2001). Here I will discuss an example from my critique of Aarts (2004). The traditional analysis of a Preposition in English is that it governs an argument phrase:

- (31) a. *John arrived **before** the last speech.*
 b. *I haven't seen him **since** the party.*

Aarts, following earlier analyses, analyzes both *before* and *since* as Prepositions not only in (31a–b), but also in (32a–d), where the words introduce clauses, or introduce nothing at all (Aarts 2004: 19):

- (32) a. *I haven't seen him **since** the party began.*
 b. *John arrived **before** the last speech ended.*
 c. *I haven't seen him **since**.*
 d. *John arrived **before** (hand).*

In other words, the traditional analysis of Preposition takes occurrence with an NP complement as criterial, whereas Aarts does not: occurrence with a clausal complement or no complement at all are also acceptable for prepositions. Choosing – or not choosing – which constructions to be criterial for defining a category is Language-Internal Methodological Opportunism. I pointed this out in my critique of his analysis, and Aarts responds, “What we have [. . .] are prepositions which can take different types of complement (clause, NP) or no complement” (Aarts 2007: 439). But Aarts is merely downplaying the distributional difference that the traditional analysis takes to be essential. The real point is that both the traditional analysis and Aarts’ analysis are guilty of Language-Internal Methodological Opportunism.

The facts are that not every Preposition in either the narrow (traditional) or broad (Aarts) sense can occur in the contexts illustrated in (32), as seen in (33a–e):

- (33) a. **Joan is really **into** she flies in a balloon.*
 b. **Joan walked **into**.*
 c. **Randy looked **down** the bird looked up at him.*
 d. *Randy looked **down**.*
 e. *Randy walked **down** the hill.*

All of the forms in boldface in (31)–(33) can take NP complements (i.e., are Prepositions in the traditional definition of the term). In contrast, the word *while* takes a clausal complement, but not an NP complement, while the word *back* takes no complement, but cannot take an NP complement:

- (34) *She slept **while** I ate lunch/***while** my lunch.*
 (35) *I ran **back**/***back** my office.*

I do not know if Aarts considers *while* and *back* to be Prepositions that happen to take only a clausal complement and only no complement respectively (not unlike a verb that must take a clausal complement and an intransitive verb that takes no complement). That is in fact not relevant to the point here. What is relevant here is that there is inconsistency regarding how many or which constructions should be taken as criterial in establishing categories. Whatever choice is made for (34)–(35) is essentially arbitrary.

Who is right? How can one decide? In all cases, there are differences in distribution patterns for all of the constructions invoked to define the categories in question (Direct Object, Preposition). In all cases, linguists have selected which constructions should be used to define categories, and disregarded or downplayed mismatches in the constructions not considered to be criterial. This is Language-Internal Methodological Opportunism. As with Crosslinguistic Methodological Opportunism, the unwarranted assumption is that one can choose freely and selectively which constructions should be criterial for categories. This leads to different analyses of the same data, and no means to decide which analysis is better, as with Crosslinguistic Methodological Opportunism (see Croft 2001: 42–44).

The problem arises because of the conflict between a theoretical assumption and an empirical reality. The theoretical assumption is that there is a (ideally small) set of grammatical categories and structures, such as Direct Object and Preposition, that are used to analyze all constructions. The empirical reality is that the distribution patterns of different constructions varies, so that analyzing

all of them with the same set of categories and structures forces constructions to be defined using inappropriate categories. Language-Internal Methodological Opportunism selects certain constructions as criterial, so that the categories defined by them are assumed to apply to all constructions; mismatches are patched by ad hoc devices. In the examples here, ad hoc devices are required to explain why there are the gaps in distribution of Prepositions in the broad sense in (33a–c), (34) and (35); or alternatively why (34) and (35) have the distributions they do and yet are not Prepositions. But Language-Internal Methodological Opportunism is an unwarranted assumption. Why should any distribution pattern be ignored? Language-Internal Methodological Opportunism is in fact a fallacy.

Rejecting Language-Internal Methodological Opportunism leads to abandonment of the theoretical assumption that constructions are built from a single set of grammatical categories and structures. This assumption grounds virtually all syntactic theories: virtually all such theories posit a set of syntactic building blocks which are used to define more complex syntactic structures, namely, constructions.

Instead, I argue that we should begin with constructions. Constructions are the basis of the distributional method: the distributional method defines categories of words and larger syntactic units in terms of their occurrence in larger constructions. In fact, the facts in (31)–(35) tell us not about some construction-independent category of Preposition; they tell us something about the PP, adverbial subordinate clause, and verbal satellite constructions.

Aarts (2007) perceives my critique of traditional syntactic argumentation as a rejection of distributional analysis (his reply is titled ‘In defense of distributional analysis’). In fact, the method I advocate in my critique of Aarts is the only method that consistently applies distributional analysis, rejecting all of the unwarranted assumptions described in this paper. Aarts is defending certain untenable theoretical assumptions, not distributional analysis, from my critique.

One must take seriously all of the variation and mismatches that are revealed by careful distributional analysis. On the basis of that, one can develop a model of grammar in which constructions are basic and there is no fixed set of categories independent of constructions. I characterize this method as inductive. Aarts responds:

the problem with the inductive method is that to arrive at useful generalizations one cannot simply look at the data without having some preconceived ideas (hypotheses) as to how the data are organized. . . Without such preconceived ideas one doesn’t know what to observe, i.e. which data are (ir)relevant’ (Aarts 2007: 432–33)

It is true, of course, that nobody comes to data without any preconceptions. But the risk in the hypothetico-deductive method is that one does not always see that some preconceptions are indeed preconceptions, and may need to be jettisoned (and that this will change which data are relevant). No preconception is immune to rejection in the face of the data.

For instance, Aarts writes:

the categorization of formatives into form classes proceeds by hypothesizing the existence of a number of properties for the categories of grammar (noun, verb, adjective, etc.) and then seeing to what extent formatives in particular syntactic environments conform to these properties... Of course, there is no way we can know *in advance* which criteria are the correct ones. Perceived problematic distributions may lead one to find explanations for the putative recalcitrance, or posit new criteria or classes, which is an ongoing process (Aarts 2007: 432, 433; emphasis original)

Aarts' characterization of the hypothetico-deductive method applied to syntax here simply presupposes that formatives (words, morphemes, syntactic units) belong to general word classes (valid across many constructions). This is stated as fact in some linguistics and syntax textbooks (e.g. O'Grady et al. 1997: 164; Haegeman 1994: 36), and simply presupposed in others (Adger 2003: 33; Kroeger 2004: 43). But it is precisely this theoretical assumption that the empirical variability of syntactic distributions implies that we should abandon.

3. Conclusion

The road from language use – the utterances that speakers produce – to the positing of language structure can be a treacherous one. In this paper, I have described ten unwarranted assumptions in syntactic argumentation, and given reasons why we should abandon them. Many of them date back to structuralism; some of them, such as the two types of methodological opportunism, are still older.

It might appear that I have undermined all syntactic argumentation. That is, there is no justifiable way to arrive at language structures based on the empirical evidence found in what utterances occur (and do not occur) in a language. This is not the case. It is possible to construct genuinely rigorous syntactic argumentation without invoking any of these unwarranted assumptions. I describe genuinely rigorous syntactic argumentation in more detail in Croft (2009); a summary is provided here. Within a language, all distributional patterns must

be taken equally seriously, and generalizations must be recognized as generalizations about the constructions that define the distributional patterns – that is, no Language-Specific Methodological Opportunism. Differences in distributional patterns, including differences in function, among constructions must be respected – this means avoiding Global Extension of Language-Specific Analyses, Symmetry, Nonredundancy, Generality or Strong Form-Function Isomorphism unless independently justified. Any hypotheses of relations between constructions must be validated crosslinguistically – this means avoiding the Free Ride Principle and Weak Form-Function Isomorphism unless independently and crosslinguistically justified. Functionally comparable constructions must be used across languages for crosslinguistic comparison, and crosslinguistically valid criteria must be employed in comparison – that is, no Crosslinguistic Methodological Opportunism. Finally, differences in comparable constructions across languages should be respected – that is, no Universal Extension of Language-Specific Analyses.

Truly rigorous syntactic argumentation is not impossible. The result, however, will encourage the adoption of some theoretical assumptions and the abandonment of others. Careful syntactic argumentation favors a construction grammar approach. It also leads to the abandonment of overly general grammatical categories and syntactic structures, and favors the typological approach to language. Radical Construction Grammar shows that it is possible to develop a syntactic theory that is compatible with this critical reevaluation of syntactic argumentation. Nevertheless, I believe that the most important contribution of this paper is not to advocate any particular theory of syntactic representation, but to bring these methodological assumptions out into the open. In this way, they can be debated and made explicit in syntactic argumentation, and linguists can decide for themselves whether or not to accept syntactic arguments using – or avoiding – these assumptions. In this way also, the relationship between the empirical evidence of language use, and the language structures that linguists propose, can be made clearer.

Abbreviations used in examples

1	first person	FEM	feminine
2	second person	GENL	general
3DIM	three-dimensional object	IMP	imperative
ACC	accusative	IRR	irrealis
ANIM	animate	MASC	masculine
CLF	classifier	NOM	nominative
CLn	noun class n	POSS	possessive

PRED	predicator	REL	relative clause marker
PRES	present	SG	singular
PST	past		

References

- Aarts, Bas
2004 Modelling linguistic gradience. *Studies in Language* 28: 1–49.
- Aarts, Bas
2007 In defense of distributional analysis, *pace* Croft. *Studies in Language* 31: 431–443.
- Adger, David
2003 *Core Syntax: A Minimalist Approach*. Oxford: Oxford University Press.
- Aikhenvald, Alexandra Y.
2000 *Classifiers: A Typology of Noun Categorization Devices*. Oxford: Oxford University Press.
- Bloomfield, Leonard
1933 *Language*. New York: Hold, Rinehart and Winston.
- Bybee, Joan L.
1985 *Morphology: A Study into the Relation between Meaning and Form*. Amsterdam: John Benjamins.
- Bybee, Joan L.
1995 Regular morphology and the lexicon. *Language and Cognitive Processes* 10: 425–455.
- Bybee, Joan L. and Joanne Scheibman
1999 The effect of usage on degrees of consistency: the reduction of *don't* in English. *Linguistics* 37: 575–596.
- Chen, Dingxu
2000 Topic and topic-comment constructions in Mandarin Chinese. *Language* 76: 383–408.
- Chomsky, Noam
1957 *Syntactic Structures*. The Hague: Mouton.
- Comrie, Bernard
1989 *Language Universals and Linguistic Typology* (2nd ed.). Chicago: University of Chicago Press.
- Croft, William
1998 Linguistic evidence and mental representations. *Cognitive Linguistics* 9: 151–173.
- Croft, William
2001 *Radical Construction Grammar: Syntactic Theory in Typological Perspective*. Oxford: Oxford University Press.

- Croft, William
2003 Lexical rules vs. constructions: A false dichotomy. In: Hubert Cuyckens, Thomas Berg, Rene Dirven and Klaus-Uwe Panther (eds.), *Motivation in Language: Studies in honour of Günter Radden*, 49–68. Amsterdam: John Benjamins.
- Croft, William
2004a Logical and typological arguments for Radical Construction Grammar. In: Mirjam Fried and Jan-Ola Östman (eds.), *Construction Grammar(s): Cognitive and Cross-Language Dimensions*, 273–314. (Constructional Approaches to Language 3.) Amsterdam: John Benjamins. [Reprinted in: Vyvyan Evans, Benjamin K. Bergen and Jörg Zinken (eds.), *The cognitive linguistics reader*, 638–73. London: Equinox, 2007.]
- Croft, William
2004b Syntactic theories and syntactic methodology: A reply to Seuren. *Journal of Linguistics* 40: 637–654.
- Croft, William
2005 Word classes, parts of speech and syntactic argumentation. *Linguistic Typology* 9: 431–441.
- Croft, William
2007a. Intonation units and grammatical structure in Wardaman and in cross-linguistic perspective. *Australian Journal of Linguistics* 27: 1–39.
- Croft, William
2007b Beyond Aristotle and gradience: a reply to Aarts. *Studies in Language* 31: 409–430.
- Croft, William
2009 Methods for finding language universals in syntax. In: Sergio Scalise, Elisabetta Magni and Antonietta Bisetto (eds.), *Universals of Language Today*, 145–164. Berlin: Springer.
- Foley, William
1991 *The Yimas Language of New Guinea*. Stanford: Stanford University Press.
- Greenberg, Joseph H.
1977 Numeral classifiers and substantival number: Problems in the genesis of a linguistic type. In: Adam Makkai, Valerie Becker Makkai and Luigi Heilmann (eds.), *Linguistics at the Crossroads*, 276–300. Padua: Liviana Editrice. [Reprinted in: Keith Denning and Suzanne Kemmer (eds.), *On language: selected writings of Joseph H. Greenberg*, 166–193. Stanford: Stanford University Press.]
- Haegeman, Liliane
1994 *Introduction to Government and Binding Theory* (2nd ed.). Oxford: Basil Blackwell.

- Harris, Zellig S.
 1946 From morpheme to utterance. *Language* 22: 161–183.
- Harris, Zellig S.
 1951 *Methods in Structural Linguistics*. Chicago: University of Chicago Press.
- Jelinek, Eloise and Richard A. Demers
 1994 Predicates and pronominal arguments in Straits Salish. *Language* 70: 697–736.
- Kroeger, Paul R.
 2004 *Analyzing Syntax: A Lexical-Functional Approach*. Cambridge: Cambridge University Press.
- Langacker, Ronald W.
 1987 *Foundations of Cognitive Grammar, vol. I: Theoretical Prerequisites*. Stanford: Stanford University Press.
- Lees, Robert B.
 1960 *The grammar of English nominalizations* (International Journal of American Linguistics, Publication 12.) Bloomington: Indiana University Press.
- Lucy, John A.
 1992 *Grammatical Categories and Cognition: A Case Study of the Linguistic Relativity Hypothesis*. Cambridge: Cambridge University Press.
- Matthews, Peter H.
 1981 *Syntax*. Cambridge: Cambridge University Press.
- McGregor, William B.
 1989 Phrase fracturing in Gooniyandi. In: László Marác and Peter Muxken (eds.), *Configurationality: The Typology of Asymmetries*, 207–222. Dordrecht: Foris.
- McGregor, William B.
 1997 Functions of noun phrase discontinuity in Gooniyandi. *Functions of Language* 4: 83–114.
- Merlan, Francesca
 1994 *A Grammar of Wardaman*. Berlin: Mouton de Gruyter.
- O’Grady, William, Michael Dobrovolsky and Mark Aronoff
 1997 *Contemporary Linguistics: An Introduction* (3rd ed.). New York: St. Martin’s Press.
- Seifart, Frank
 2005 The structure and use of shape-based noun classes in Miraña (north west Amazon). (MPI Series in Psycholinguistics 32.) Ph.D. dissertation, Radboud Universiteit Nijmegen, the Netherlands.
- Siewierska, Anna
 1984 Phrasal discontinuity in Polish. *Australian Journal of Linguistics* 4: 57–71.

- Song, Jae-Jung
1996 *Causatives and Causation: A Universal-Typological Perspective*. London: Longmans.
- van Eijk, Jan P. and Thom Hess
1986 Noun and verb in Salish. *Lingua* 69: 319–331.
- Zwicky, Arnold
1970 The free-ride principle and two rules of complete assimilation in English. In: Mary Ann Campbell et al. (eds.), *Papers from the Sixth Regional Meeting of the Chicago Linguistic Society*, 579–588. Chicago: Chicago Linguistic Society.

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