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Editors

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Constructional
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to English Grammar

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Constructional Approaches to English Grammar

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Contents

3. Constructions and lexicalism

Constructional approaches to language-particular description

Nikolas Gisborne and Graeme Trousdale

Constructional approaches to linguistic description are defined by two key properties. Scholars working with constructional approaches agree that the units of grammar are symbolic, that is to say they are conventionalized relationships between form and meaning. They also agree that the whole of language is interesting and worth investigating, that there is no real distinction between "core" phenomena central to grammar and "peripheral" phenomena which are not so central. We think that these two properties make constructional approaches particularly relevant to the description of *languages*. In this way, constructional approaches are different from those theories of grammar which are concerned with *Language* – the human language faculty.

There are, of course, different conceptions of the constructional agenda, and a number of them are represented in this book. Some constructional approaches are to be found at the relatively non-formal and functionalist end of linguistic theorizing; others are highly formalized and do not have a great deal to say about functional pressures in language. Some constructional approaches restrict their assumptions to a willingness to admit non-compositionality to the ontology of their grammatical theories; others assume that language is usage-based, and that non-compositionality is not the only basis for taking a constructional approach.

However, these different background assumptions of scholars working with constructional approaches, and different views of what should be in a constructional theory of grammar, do not affect the utility of constructional approaches to language-particular description. Once it is agreed that grammar is symbolic, the issue becomes: what are the symbols of the grammar of the language being investigated? Framing the research question in this way is what makes constructional approaches particularly apt for language-specific description (and the description of particular varieties of a language).

To explore construction grammars, we should start by looking at some of the central claims. First, we can explore the claim that grammar is symbolic. It is obvious that words are relationships between forms and mean-

ing. A noun, for example, has a phonological shape, a syntax, a sense, and a referent. We can say that the phonology and the syntax are part of the word's form, and that the sense and the referent are part of its meaning. In some theories of Construction Grammar, morphemes are likewise constructions (Goldberg 1995, 2006). More centrally to the usual understanding of the Construction Grammar approach, a construction can be a unit of grammar larger than a single word. Croft and Cruse (2004) describe the situation nicely – for them, a clause, or a sentence, or the subject-of construction all instantiate form-meaning pairings which involve conventional units that are "larger" than individual words.

The second major claim follows from the observation that there are limits to compositionality. Perhaps the most famous early work in Construction Grammar was Fillmore, Kay and O'Connor (1988), which explored idiomaticity. In the case of idioms, it is clear that there is partial regularity, and partial compositionality. But there is also an element to the meanings of idioms which is not predictable, and which suggests that they are not simply compositional. It is the in-between status of a number of idioms that makes them such useful evidence for a constructional approach. As Nunberg, Wasow and Sag (1994) point out, it is not the case that idioms are fixed expressions with fixed meanings. The exploration of the constructionality of idioms takes us a long way to assuming constructions as basic in grammatical description. And as Jackendoff (2002: 167) observes, there must be close on as many idioms as there are adjectives – it is an odd theory of grammar that sees idioms as not relevant to the conception of grammar.

Given that idioms exist, and given that they have their own meanings, it follows that there are "constructions", that is, units of grammar which are larger than words, which are meaningful, and whose meaning is not regularly predictable from their parts. This observation is the second major motivation for construction grammars.

We can explore the relationship between constructional approaches and issues of compositionality by looking at an argument structure construction. For example, it has been argued that the range of meanings found in the ditransitive construction in examples such as (1) cannot be accounted for simply in terms of the verbs involved belonging in a family resemblance structure.

(1)　　a.　　*Jane gave Peter a cake.*
　　　　b.　　*Jane sent Peter a cake.*
　　　　c.　　*Jane faxed Peter a letter.*

In (1a), Peter's receiving the cake is entailed; it is not in (1b); and in (1c), it is the contents of the letter that are transmitted to Peter, not the (physical) letter itself. The constructional approach claims that the variability in the meanings of the construction in (1), and the fact that nonce words can fit the pattern if they have the appropriate semantics, suggest that the ditransitive construction itself should be recognized as a symbolic unit, bringing form and meaning together. In this way, implausible word senses are avoided. Instead of having to assume, for example, that SEND has multiple senses depending on the syntactic frame it occurs in, it is possible to assume that it has a relatively underspecified sense, and that the meaning associated with the ditransitive construction follows from the construction.

Construction grammars, then, have been developed for the area of argument structure, and they have delivered impressive results in that area of research. But there are other areas of research where construction grammars have been particularly successful. One of the advantages of the constructional approach is that it facilitates a language-particular approach to research. Form-meaning symbolic units will, of necessity, be found in particular languages. Construction grammars may be universally applicable, in as much as the majority of such theories adopt both cognitive and functionalist positions on the embeddedness of language in general cognition, and the communicative purpose of language, as in Goldberg's (1995: 5) claim "knowledge of language is knowledge", but it is not in the research agenda of construction grammars to establish a "universal grammar" which is an evolutionary specialization of the human race, which is informationally encapsulated from the rest of cognition, and which is responsible for the infant's acquisition of language.

A major motivation in putting this collection together was the observation that constructional approaches to grammar are particularly relevant to language-particular research, largely because of the research agenda and underlying assumptions of constructional approaches such as Goldberg (1995, 2006), Ginzburg and Sag (2000), and Croft (2001), which tend to focus on important phenomena within individual languages. This is because constructional approaches assume that languages are structured out of conventionalized form-meaning pairings at all levels of grammatical description: morphemes, words, idioms, phrasal constructions.

This book has a three-part structure: the first part looks at approaches to the English gerund construction; the second looks at constructions and corpora; the third explores the relationship between constructions and lexicalism. The articles on gerunds raise a number of issues which are central to constructional approaches. These include default inheritance as an orga-

nizing principle of grammar; the relationship of individual lexemes to larger constructions; the nature of gradience in constructions and word classes; and the processes by which constructions emerge.

In part 2 on corpus approaches, various new notions are introduced, such as the "subconstruction". This part sees the theme of theory comparison, which is introduced in the first part, being taken up and developed in comparisons between constructional grammar and constructional HPSG and also between Construction Grammar and Optimality Theory. This part of the book explores two other themes: the completist nature of Construction Grammar, where all facts of language are relevant to an investigation, and also constructions in diachrony. The corpora are used to explore different areas of grammar – relative clauses; future *shall*; and *a*-prefixed adjectives such as *aloof*.

The final part of the book, on constructions and lexicalism, also sees a discussion of theory comparison, where Construction Grammar is compared with Word Grammar. There is a discussion of various different argument structure constructions in this part: the middle and unaccusative patterns; raising and control patterns; and ditransitives. As in the earlier parts of the book, the common themes include inheritance, compositionality, and theory comparison.

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Part 1 The English gerund

Gerunds, categories and constructions

The articles by Bas Aarts and Graeme Trousdale are both concerned with English gerunds. Aarts's contribution is concerned with English verbal gerunds of the type *John having a sabbatical* in the sentence *We were talking about John having a sabbatical*. Aarts notes that such forms are analysed by Richard Hudson (2003) as involving a head *having* which is a type of noun (a gerund), as well as a type of verb at the same time. According to Hudson, the gerund's nominal characteristics pertain exclusively to its external distribution, while its verbal characteristics pertain to its internal structure. Hudson presents a number of data that Aarts considers to be problematic, some of which are dismissed as being historical relics. Hudson deals with other data by making use of the notion of multiple default inheritance (MDI). Aarts argues that MDI accounts, and accounts in terms of "mixed category constructions" in general, are problematic, and that English verbal gerunds can be dealt with without assuming that they belong to two classes at the same time. This can be done by appealing to the notion of Intersective Gradience which makes use of the concept of convergence. In this article and in other work (e.g. Aarts 2004, 2007), Aarts makes use of two different kind of gradience, Subsective and Intersective Gradience (of which only the latter is relevant here, because only it makes reference to more than one category or construction-type).

   In Aarts's model, there is no need to talk of a "mixed category": in cases of Intersective Gradience, the categories themselves remain distinct (there are no fuzzy boundaries), but they do converge, by virtue of the fact that certain instances of a category α display properties very like members of another, discrete category β: these properties form a set (γ), and the intersection takes place between γ and α-like properties on the one hand, and γ and β-like properties on the other. In other words, Intersective Gradience concerns not the categories themselves, but features or attributes of those categories. In examples like *I was sad about Betty leaving Phil*, *leaving* still belongs to the category "verb", but converges on the category "noun" because it has a number of noun-like properties; in examples like *I was surprised by Betty's slighting of her husband*, *slighting* is a member of the category "noun", although it has some verb-like properties: in other words, *leaving* is a nominal verb, *slighting* is a verbal noun. Like many other articles in this volume, Aarts's contribution is also concerned at least in part

with theory comparison, for example the differences between HPSG and Word Grammar accounts of the English verbal gerund: see further Hoffmann (this volume) for more on HPSG and Construction Grammar, and Gisborne, Hudson and Rosta (all this volume) for comparisons between Word Grammar and Construction Grammar. Aarts is concerned with laying out the significant differences between the opposing theoretical positions, and like the authors of the contributions in the second part of this volume, he uses corpus data (e.g. the ICE-GB corpus) in order to verify intuitions and falsify other claims made elsewhere in the literature.

Where Aarts's contribution is largely synchronic and concerned with "verbal gerunds", Trousdale's contribution is largely diachronic and concerned with "nominal gerunds". Trousdale discusses principles involved in constructional grammaticalization. Unlike Aarts, Trousdale argues that multiple default inheritance is essential in accounting for the diachronic evolution of a particular subset of gerund constructions with senses involving physical harm or verbal castigation, exemplified by strings like *He gave John a thorough dressing down*; unlike Hudson (this volume), he argues that the schematic construction has a specific meaning (i.e. it is a construction in the sense of Goldberg 1995). Using a constructional taxonomy established by Elizabeth Traugott (2008; see also Bergs, this volume), and the notion of MDI referred to by both Aarts and Hudson, Trousdale argues that the development of *give*-gerund constructions is part of a larger process of the grammaticalization of composite predicate constructions in the history of English (see also Brinton and Traugott 2005): other examples include forms like *take a walk* 'walk' and *have a bath* 'bathe'. The light verbs in such constructions, like *take*, *have* and *give*, develop aspectual properties, but in the *give*-gerund construction, this general aspectual property works in concert with a durative or iterative sense derived from the deverbal noun (compare *give someone a kick* to *give someone a kicking*). Furthermore, the schematic construction becomes increasingly productive as it sanctions new instances (including variants with deverbal nouns derived from verbal phrases such as *give someone a talking to* 'reprimand someone'). Trousdale argues that a full analysis of the syntax and semantics of the construction must make reference to the other constructions with which it forms a network (such as the ditransitive construction and the gerund construction). Particularly, he suggests that constructions themselves are emergent, not fixed, and that the process of constructional emergence is implicated in more general issues of grammatical change, such as grammaticalization and lexicalization.

Taken together, these contributions by Aarts and Trousdale address many issues at the heart of work on constructions in English grammar, including the place of default inheritance, the relationship of individual lexemes to larger constructions, the nature of gradience (constructional or otherwise) and the process of constructional emergence.

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Approaches to the English gerund*

Bas Aarts

1.   Introduction

In a recent paper Hudson (2003) presents a Word Grammar (WG) analysis
of so-called gerunds, as in (1) below, that does not rely on what he calls a
"two-node analysis", i.e. an analysis in which a VP is dominated by an NP,
as in early TG.

(1)   *We were talking about **John having a sabbatical***.

Hudson refers to the highlighted string as a "verbal gerund", as opposed to
a "nominal gerund", such as e.g. *the reading of this article*. The latter is
outside the scope of Hudson's paper. In essence his proposal is to regard
the word *having* in (1) as belonging to the classes of noun and verb at the
same time. In this article I will argue that Hudson's account is problematic,
and I will present an alternative analysis in which gerunds, as defined by
Hudson, are verbs heading clauses. The fact that these clauses display
nominal properties is handled by appealing to the notion of *Intersective
Gradience* which is implemented through *convergence*.

2.   Some background

Transformational theory analysed "gerundives" like *Mary's loving her
sister (is touching)* as involving an S-node dominated by an NP-node
(Chomsky 1970), an analysis that became very influential. Jackendoff
(1977: 51f.) proposes adding the phrase structure rule in (2) to generate the
tree in (3).

(2)   N′ → ing – V″

(3)

N‴

N‴   N″

ing   V″

Noam   invent a new theory
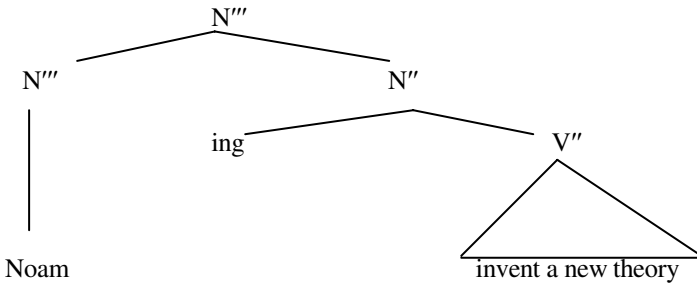
Positing (2) is not, he notes "an unprincipled exception", but such rules can be seen as being "part of a class of 'deverbalizing' phrase structure rules". In a later GPSG treatment, Pullum (1991) discusses a large number of properties of English gerunds, or *Nominal Gerund Phrases* (NGP), as he calls them, of the type *your breaking the record*. The most salient of these, as has often been observed, is that gerunds display both nominal and verbal characteristics; specifically, their external distribution is nominal, while their internal syntax is verbal. Pullum offers a solution to the categorial and representational problems posed by NGPs which posits that they are NPs headed by a VP. The NGP *your breaking the record* is analysed as in (4).

(4)

NP

NP[POSS: +]   VP[VFORM: prp]

V[VFORM: prp]   NP

Det   N′

N

your   breaking   the   record (Pullum 1991: 782)
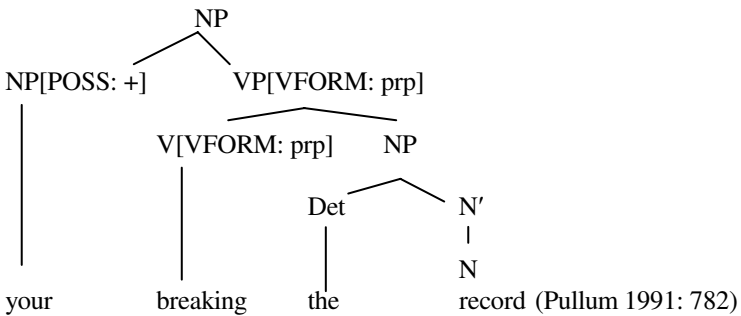
The fact that this structure violates the Head Feature Convention (HFC) of GPSG (which stipulates that the head features of a mother node must be the same as the head features on a daughter node functioning as head) is handled by the rule shown below (Pullum 1991: 779).

(5)   N[BAR:2] → (N[BAR:2, POSS: +1]), H[VFORM:prp]
      where N[BAR: 2] is an NP, and H[VFORM:prp] represents a present participle

An absolute Feature Coocurrence Restriction which says that VFORMs are verbs then overrides the HFC, and ensures that the head is a verb, not a noun. GPSG thus allows for "single-headed constructions with heterocategorial heads" (Pullum 1991: 789). However, heterocategoriality is constrained, as Pullum explains:

> [C]ontrary to what some have suggested concerning clines of properties from category to category (see for example Ross 1972, 1973), we would not expect to find arbitrary mixtures of syntactic characteristics from different categories in any constituent type. Instead, the phrasal head of some types of phrase may be sharply and consistently of different type from the type we would expect from the usual effects of the head-feature convention. In those cases where the grammar enforces a special value for N or V on a head, we would get not an odd blend of syntactic properties but rather a head with sharply and consistently different behaviour from what would be expected. (Pullum 1991: 790)

In the same spirit as Pullum's account, Blevins (2005) proposes an analysis that allows gerunds to be categorially underspecified in the lexicon. They are then "resolved" in the syntax, in such a way that signing surfaces as a noun in their signing of the treaty, but as a verb in their signing the treaty. However, both structures overall are nominal. The latter is represented as follows:

(6)
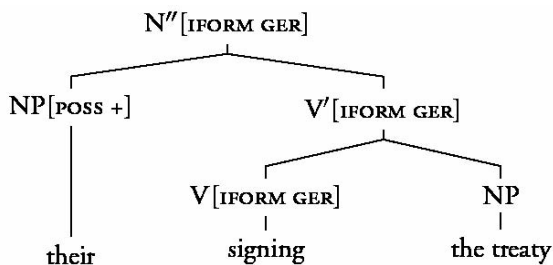
(Blevins 2005: 7)

A drawback of both Pullum's and Blevins's accounts is that they allow exocentric phrases. Blevins refers to this as "principled exocentricity".

Recent work in GPSG offshoot HPSG recognizes "mixed category constructions", that is, constructions that involve lexical items that belong to more than one category at the same time. Malouf (2000a: 153) treats the English gerund as a mixed category construction, and implements the insight that gerunds are nominal in their external syntax and verbal in their internal syntax through a cross-classification of head values (see also Malouf 2000b), as shown in (7).

(7)

head

noun ———————— *verbal*

common noun   *gerund*   *verb*   *adjective*
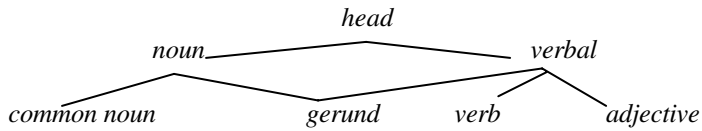
In this representation gerunds are both a subtype of "noun" and a subtype of the category "verbal". This ensures on the one hand that Verbal Gerund Phrases (VGerPs) behave syntactically like nominals; on the other hand this analysis will ensure that VGerPs are modified by adverbs (just like the other relational categories verb and adjective), not by adjectives which modify only common nouns. Also, the analysis brings out that VGerPs do not distribute like VPs, because the gerund is analysed as being a category in its own right, not as being a verb. In order further to account for the fact that verbal gerunds have the same complement-taking properties as the verbs from which they are derived, and to ensure that gerundial subjects are optional and can be in the genitival or accusative form, Malouf adds the following lexical rule (2000a: 153):

(8)

$$
\begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} \\ \text{VFORM } \textit{prp} \end{bmatrix} \\ \text{VALENCE} & \begin{bmatrix} \text{SUBJ} <|2| \text{ NP}> \\ \text{COMPS } |3| \\ \text{SPR} <> \end{bmatrix} \end{bmatrix}
\Rightarrow
\begin{bmatrix} \text{HEAD} & \textit{gerund} \\ \text{VALENCE} & \begin{bmatrix} \text{SUBJ} <|2|> \\ \text{COMPS } |3| \\ \text{SPR} <|2|> \end{bmatrix} \end{bmatrix}
$$
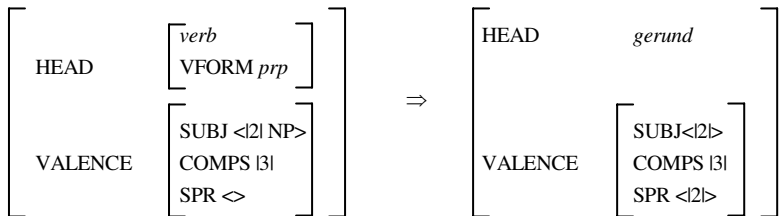
This rule changes the *-ing* form of a verb into a gerund.[1]

3.   Hudson's analysis

The analysis proposed by Hudson is one in which *have* in (1)

> must be a verb, in fact an example of the ordinary verb HAVE, because it has
> a bare subject and a bare direct object and it can be modified by *not* or an
> adverb (2003: 580)

At the same time,

> it must also be a noun because the phrase that it heads is used as the object
> of a preposition (*about*), and could be used in any other position where plain
> noun phrases are possible. (2003: 580)

More specifically (2003: 599):

> As nouns, gerunds contrast with common nouns, proper nouns and pro-
> nouns, all of which are word-classes – i.e., classes of lexemes. The same is
> not true of their relationship to verbs, where gerunds differ from other verbs
> in their inflections. Any verb which can be non-finite (i.e., any verb other
> than a modal and a handful of full verbs such as BEWARE) can be a gerund,
> but gerunds are distinguished by their inflectional suffix *-ing*. In WG [Word
> Grammar], "Inflection" and "Lexeme" are sub-categories of "Word", so an
> inflected lexeme inherits from both an inflection and a lexeme (Creider and
> Hudson 1999).

The above is illustrated in the diagram in (9).

(9)
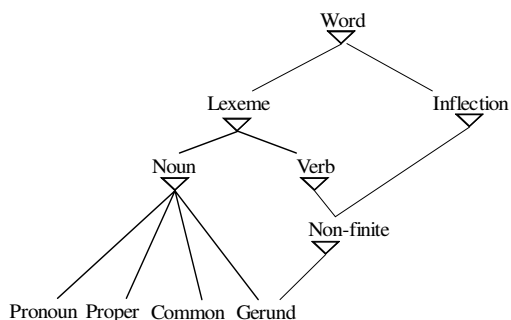
Hudson goes on to say:

> At the same time, of course, a gerund is an instance of whatever lexeme
> provides its stem – *having* is an instance of HAVE, *walking* is an instance of
> WALK, and so on – which means that *gerunds are basically verbs being used*
> *as nouns, rather than nouns being used as verbs*. It is the verb lexeme that
> determines its meaning and its possible dependents as well as its stem. The
> fact that the verb lexeme is a verb has implications for the kinds of modifier
> that are possible – in particular, a verb may be modified by an adverb but
> not by an adjective, which is why the same is true of gerunds. *All the noun*
> *classification contributes is the possibility of being used as a dependent*
> *where a noun is required*. The explanation, then, for why gerund phrases
> have the internal structure of clauses is that they are clauses (i.e., phrases
> headed by a verb). (2003: 600; my emphasis)

The analysis relies on the concept of *multiple default inheritance* (MDI)
which stipulates that subcategories inherit properties from supercategories,
unless they are overridden by other, more specific, properties. This account
has obvious affinities with Malouf's treatment outlined above. In (9) "Ger-
und" inherits properties from the nodes "Noun" and "Non-finite". MDI is
said to work well in the grammar of English because the properties of
nouns and verbs are orthogonal, as the generalization in (10), claimed by
Hudson to be "almost true" (2003: 583), is intended to reflect.

(10)   A phrase headed by a gerund is:
          a. an ordinary clause as far as its internal structure is concerned,

          but

          b. an ordinary noun phrase (or DP) in terms of its external distribu-
             tion.
          (2003: 583)

This generalization is worded more strongly later on in the paper. Thus we
read: "nominal features are *exclusively* concerned with relations external to
the gerund phrases, and verbal features with its internal patterns" (2003:
611; my emphasis).

    It should be borne in mind that in Hudson's WG framework dependen-
cies between words are primary, and phrases are epiphenomenal. In his
paper the claim is upheld that strings headed by nouns have their external

distribution in common, but there is no such thing as NP-internal structure. Conversely, nothing distributes externally like a VP. In this way gerunds can be internally like VPs and externally like NPs.

In the excerpt cited above I have highlighted two passages which require comment. First, notice that the statement "gerunds are basically verbs, being used as nouns, rather than nouns being used as verbs" is at odds with (9). It suggests that gerunds are essentially verbs with a modicum of nouniness (to borrow a term from John Ross) attached to them, rather than belonging to the category noun and verb at the same time. The second sentence – "[a]ll the noun classification contributes is the possibility of being used as a dependent where a noun is required" – suggests that if an element possesses merely one nominal characteristic then this is sufficient evidence for allowing it to be a member of the class of nouns. I believe that Hudson is right in claiming that gerunds (as he defines them) are essentially verbs, but he is wrong in assuming that a formative's possession of one nominal characteristic is sufficient for assigning that element to the class of nouns, as I will argue in what follows.

4.   Troublesome data

Hudson notes that there are three sets of problem areas for his account. They concern the structures in (11)–(17).

(11)   *We were talking about John's/his having a sabbatical.* [Hudson's (4)]

(12)   *No playing loud music!* [Hudson's (6a)]

(13)   *It's/There's no use telling him anything./*It's no use a big fuss.* [Hudson's (8a)/(9a)]

(14)   *There's no point telling him anything./*There's no point anything else.* [Hudson's (8b)/(9b)]

(15)   *It's scarcely worth(while) you/your going home/*It's scarcely worthwhile a lot of work.* [Hudson's (8c)/(9c)]

(16)   *It's pointless buying so much food/*It's pointless purchase of food.* [Hudson's (8d)/(9d)][2,3]

(17)   *They prevented us from finishing it/*its completion.* [Hudson's (10)]

Sentences (11) and (12) are serious counterexamples to Hudson's claim that the properties of nouns and verbs are always orthogonal, because they

are exactly the type of structure that make the claim about orthogonality untrue. After all, in (11) and (12) nominal features (possessive *'s* and the determiner *no*, respectively) have infiltrated what Hudson would like to see as a purely verbal domain. For (13)–(16), which involve extraposition of the gerund, and (17), which involves a "verb of negative causation" (Postal 1974; Aarts 1992), the problem is that if the external syntax of gerunds is like that of NPs, why can't we have an NP in these examples? In the next section we look at Hudson's treatment of these data.

5.   How Hudson deals with the problem

It is commendable of Hudson to discuss these problematic examples "out in the open", but the way he handles them is unsatisfactory. Thus, although he acknowledges that the data discussed in the previous section are problematic, he says that

> it would be wrong to take these exceptions too seriously. After all, it is *almost true* that gerund phrases are verbal inside but nominal outside, so we must not abandon this generalisation just because of the exceptions just noted. (2003: 583–584; my emphasis)

It is often sound methodology to temporarily put aside problematic data if they don't fit one's account, rather than immediately discard the analysis (a strategy often referred to as "naïve falsificationism"), but it seems to me that the reason given by Hudson for not taking the possessives and negative determiner data seriously is problematic, as we will see in greater detail below. In any case, little-known, infrequent, but potentially crucial data may affect our theories.

5.1.   Prenominal dependents

Hudson briefly discusses the historical development of the possessive constructions mentioned above and offers an analysis in terms of which *'s* is a pronominal clitic (labelled POSS$_{gerund}$) which takes two dependents in the sentence *John's knowing the answer surprised us*, namely a subject *John*

and an obligatory complement *knowing*. At the same time *John* is the sub-
ject of *knowing*. All of this is shown in the following diagram:

John   's   knowing   the   answer   surprised   us.
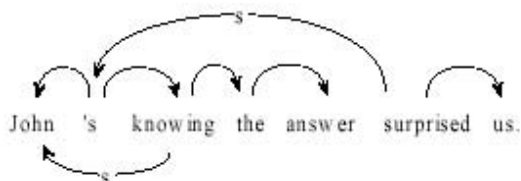
Here the possessive is regarded as the head of *John's knowing the answer*.
For Hudson,*'s* is a pronoun. While Hudson offers a WG treatment of ger-
unds, to my mind he does not solve the difficulty posed by the problematic
data for his MDI analysis. He writes:

> In diachronic terms, it is easy to see how possessive subjects formed a nec-
> essary stage in the development of modern gerunds from ordinary nominali-
> sations, whose "subjects" must be possessives rather than bare noun phrases.
> It is in this sense that I describe possessive subjects as "the debris of his-
> tory". (2003: 605)

The possessives are regarded as exceptions, as are the examples involving
no and *any* on the grounds that they are out-of-the-ordinary, as the follow-
ing passage makes clear.

> [H]owever understandable their origins may be, the fact remains that these
> patterns, like the possessive subjects, are exceptional and special uses of
> gerunds which cannot be explained as simply as was possible with ordinary
> gerunds [i.e. structures like (1)]. (2003: 607)

Hudson offers a sketch of how the present-day patterns came about. He
stipulates that these structures are "special" and the fall-out of historical
development. A specific detail of this is that he claims that the reason we
can say *my watching TV regularly*, but not **my regular watching televi-
sion*, is that possessive*'s, no* and *any* are exceptional: they are "single lexi-
cal items – just three specific determiners. In each case gerunds were men-
tioned in a stipulation about the determiner's complement – a very ordinary
instance of valency detail" (2003: 607). But this cannot constitute an ex-

planation of the problematic facts in the absence of a definition of what is meant by "exception".

Further unease with regard to Hudson's analysis occurs in footnote 15 of his paper, cited here in full (2003: 605):

> As Malouf has pointed out to me, it is unfair to possessive subjects to lump them together with the much more marginal *no* and *any* as the "debris of history". However if my analysis is correct, they really are a relic from an earlier stage of the language *where they made better sense than they do now*. [emphasis added]

What is meant by "made better sense than they do now"? This is only meaningful if we accept Hudson's view that the possessive data are exceptional. In the British component of the International Corpus of English (ICE-GB), I found two examples involving genitival subjects, shown in (18) and (19). Because ICE-GB is small corpus by current standards, it is reasonable to say that this is indicative of the pattern being productive.

(18)   *The aim of all developments since has been to ameliorate the big problems of blobbing and of **the indian ink's drying and clogging the nib**, and to obviate the irritating need to keep stopping and shaking the pen in order to keep the ink flowing evenly.* <ICE-GB: W2D-016 088>

(19)   *Sir Leon Brittan, the senior European Commissioner, tried to throw the Conservative Party a European lifeline yesterday when he suggested other community countries would accept **Britain's delaying a decision on joining a single currency until after the next election***. <ICE-GB: W2C-006 004>

As regards the structures containing *no/any*, Hudson concedes that they are productive, "so they cannot simply be listed as archaic relics of an earlier stage of the language (comparable with *come what may* or *if you please*)" (2003: 582). Given that they are perfectly productive and natural in present-day English, the onus is on Hudson to explain why he thinks they are exceptional, other than pointing to the fact that they don't fit the pattern of "regular" gerunds. To my mind the possessive data and those involving *no* and *any* remain as problems, and undermine the MDI approach adopted by Hudson.

5.2.   Gerund extraposition and verbs of negative causation

Let us turn now to the sentences in (15) and (16), repeated here, which purportedly don't allow NP-extraposition.

(20)   *It's scarcely worth(while) you/your going home/*It's scarcely worthwhile a lot of work.*
(21)   *It's pointless buying so much food/*It's pointless purchase of food.*

Why do gerunds extrapose, but NPs headed by common nouns do not? Hudson's answer is to regard gerunds as a special type of noun along with the more familiar pronouns, proper nouns and common nouns. This is reflected in diagram (9). Extraposition is then unproblematic because gerunds are a special type of noun, and behave differently from other types of nouns.

    The same explanation is then used by Hudson for the data in (17), where it would seem that verbs of negative causation indeed obligatorily involve a gerund phrase, and can't take an NP. There are quite a few such verbs in English, among them are *discourage (from), keep (from), stop (from)*, etc.

    However, these data appear not to be reliable. First of all, according to Quirk *et al.* (1985: 1064) and Huddleston and Pullum (2002: 1407), not all gerunds extrapose equally felicitously. They appear to pattern like NPs headed by common nouns.

(22)   *?It was stupid telling my parents.*
(23)   *?It would make things worse calling in the police.*

What's more, Huddleston and Pullum (2002: 1407) reject outright extraposed gerunds with overt (especially non-pronominal) subjects, as in (20), as their example in (24) shows.

(24)   **It had taken us all by surprise Kim and Pat getting married.*

The distinction between NPs headed by common nouns and gerunds is thus seen not to be as clear as is suggested by Hudson.

    What about the verbs of negative causation? It is not at all obvious that these fit into the patterns that Hudson has been discussing. After all, the element *from* intervenes between the subject and the *-ing* form. There is evidence that this word is an inflectional element, much like infinitival *to*,

as argued in Aarts (1992). Be that as it may, what is clear is that we can't simply ignore *from* and argue that structures involving verbs of negative causation involve a gerund in the way the other structures do.

6.   Theoretical implications

What are the consequences of these data for an analysis like Hudson's? Given the unexplained data concerning the prenominal dependents of gerunds and their erratic behaviour (some gerunds extrapose, while others do not; some of them behave like NPs, while others do not), their treatment in terms of MDI is called into question.

In view of the discussion in the preceding section, it will be interesting to see if there are any other structures for which we cannot maintain a complementary distribution of external and internal features. If such structures exist, they further undermine the multiple default inheritance account of mixed categories. In fact, they do exist. Borer (1990: 100) discusses the following examples.

(25)   a.   *the **moved** car*
        b.   *the **unmoved** car*
(26)   a.   *the **crushed** resistance*
        b.   *the **uncrushed** resistance*
(27)   a.   *the **occupied** city*
        b.   *the **unoccupied** city*

The highlighted words in the a-sentences are in attributive position inside NPs. This makes them look distributionally like Adjective Phrases (at least in this respect, but notice that they cannot be preceded by *very*, and are not gradable). By contrast, the *-ed* inflection is clearly verbal, and we find that these words can take verbal modifiers, cf. *the quickly moved car, the violently crushed resistance* and *the illegally occupied city*. It would appear then, that the *-ed* words above are internally verbal, but externally display at least one adjectival property, and as such are good candidates for a treatment in terms of MDI. However, as Borer has noted, these words can be prefixed by *un-*, a typical adjectival property, as (25b)–(27)b) show. So it seems that here again, we have an example of a particular kind of word that displays features of more than one category, but the features don't distribute neatly into a phrase-external set and a phrase-internal set.

Also problematic are constructions like (28), from Schachter (1976), cited in Pullum (1991: 771).

(28)   *This burning the midnight oil of yours has got to stop.*

Interestingly, it does not seem to be possible to add prenominal dependents to *burning*.

(29)   **This reckless burning the midnight oil of yours has got to stop.*
(30)   **This recklessly burning the midnight oil of yours has got to* stop.

Pullum dismisses this construction under the rhetorically laden heading "Facts not relevant to the synchronic status of the NGP [Nominal Gerund Phrase]" (1991: 771f.). It needs "special mention" in the grammar of English and is "a nonproductive construction in which a gerund verb phrase is used AS IF it were an N^1 denoting an activity (especially a characteristic or repeated one)" (Pullum 1991: 773; emphasis in original). He goes on to say that "I cannot say that I understand it fully, but perhaps it should be compared to the hyphenated-compound-adjective construction seen in phrases like *the easy-to-please image has been adopted*" (Pullum 1991: 773). What makes (28) so troublesome, of course, is the for Pullum unwelcome fact that there is a construction-internal PP here (*of yours*), which is unexpected if his analysis of NGPs as NPs with VP-heads is correct. Like the data in (25)–(27), the construction in (28) further undermines Hudson's MDI approach. It also undermines Pullum's analysis and that of Ackema and Neeleman (2004). The latter regard English gerunds as mixed categories, and argue that a zero nominalizing affix is attached at different levels in their structure. In their example *John's constantly singing the Marseillaise* the affix is attached at a higher level than in *John's constant singing of the Marseillaise*, as (31) and (32) show.[4]

If these structures are correct, how can we explain the presence of the PP *of yours* in (28) which can only modify a noun, but which would have to be attached in a tree *below* the nominalizing affix?

(31)

```
                          DP
           D _____ NP
                      VP _____ nominalizing AFFIX
          Adv _____ VP
           |       V-ING _____ DP
           |         |           /‾‾‾‾‾‾‾‾‾‾\
        constantly  singing      the Marseillaise
```

(32)

```
                          DP
           D _____ NP
                   AP _____ N′
                    /|        N _____ PP
                   / |    V-ING ___ nominalizing AFFIX
                  /  |      |                 /‾‾‾‾‾‾‾‾‾\
              constant  singing           of the Marseillaise
```
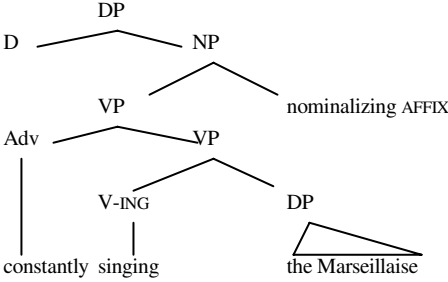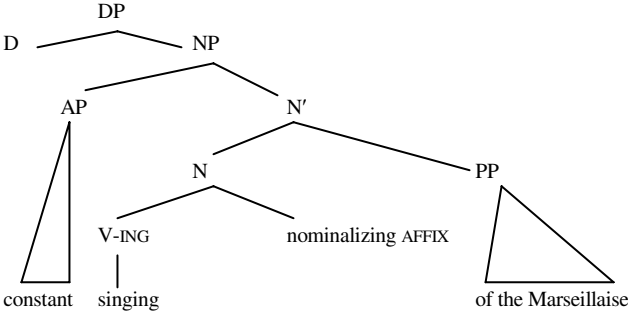
7.   An alternative approach

A question that is related to the issues discussed in the previous sections is the following: do we really want to say that *having* in (1) belongs to two word classes at the same time in the face of data that suggest that it is overwhelmingly characterized by *verbal* morphosyntactic properties? In order to answer this question, let's again look at (1), repeated here.

(1)   *We were talking about **John having a sabbatical**.*

In Aarts (2004, 2007) I discuss structures of this type in detail. Regarding the morphosyntactic properties of the highlighted string we can agree with Hudson that there is a mixture of nominal and verbal properties here. However, there is in fact only *one* nominal property for *having*, namely:

− *having* is the head of a phrase that is positioned in an NP position.

By contrast, there are at least nine verbal properties, in random order:

− *have* takes a (non-genitival) subject;
− it takes a verbal *-ing* ending;
− it takes an NP object;
− it can be preceded by a manner adverb, but not by an adjective: *We were talking about **John happily having a sabbatical/*John happy having a sabbatical**);*
− it can be preceded by *not*: *We were talking about **John not having a sabbatical***;
− voice modifications are possible: *We were talking about **a sabbatical being had by John***;[5]
− the addition of a perfective auxiliary is possible: *We were talking about **John having had a sabbatical***;
− a combination of a perfective and progressive auxiliary is possible: *We were talking about **John having been having a sabbatical***. (Slightly odd because of the two verbs *have*.)

Hudson mentions one or two of these properties in the passages quoted at the beginning of section 2, but not all of them.

    For sentence (11), repeated here, we find that the number of nominal properties has increased to two (note the genitival subject), and because of that the highlighted string can be said to be slightly more nominal than that in (1), though still predominantly verbal.

(11)   *We were talking about **John's/his having a sabbatical***.

Consider next (33):

(33)   *We were talking about **John's competent teaching of his students***.

This is an example of what Hudson called a "nominal gerund" (see above). In (33) further nominal properties have crept into the highlighted portion of the sentence, namely a PP complement for *teaching* and a pre-head AP adjunct. It would be fair to say that most linguists would agree that the highlighted string is an NP/DP. Some linguists would argue that we now have a gradient such that (1) is verbal, (33) is nominal and (11) is some-

thing in-between (see e.g. Quirk *et al.* 1985: 1290f.). In the literature gradience is usually characterized as the phenomenon of fluid boundaries between two categories of form classes. The majority of elements belongs to one class or the other, but there is also said to exist a group of elements that belongs to a vague borderline area between the two categories. The word *having* in (11) would then be positioned in this borderline area.

My own approach to structures like (1), (11) and (33) is also in terms of gradience (see Aarts 2004, 2007). Here I will outline the essentials so that readers can compare my approach with that of Hudson. My conception of gradience differs from that mentioned above in the following way: while it recognizes that grammatical structures can display mixed properties, there is nevertheless a desire to maintain strictly bounded categories, in accordance with Aristotelian principles. Fuzzy boundaries are to be avoided, and elements should not be allowed to belong to more than one category at the same time. I distinguish between two types of gradience, *Subsective Gradience* (SG) and *Intersective Gradience* (IG). The former involves a single class of linguistic elements (or construction-types), whereas the latter involves two classes of elements (or construction-types). SG allows for a class of elements to be structured with a core and periphery in such a way that we can distinguish more or less prototypical members. By contrast, IG is a kind of *categorial resemblance* which involves two categories α and β, and occurs when there exist elements which are characterized by a set γ of elements composed of a subset of α-like properties and a subset of β-like properties. By virtue of the fact that there exist elements which display properties of both categories, α and β "converge". However, α and β are strictly bounded, and there is no overlapping: in particular syntactic configurations there are no elements that belong to both α and β at the same time.[6] The term "intersective" in "Intersective Gradience" refers to the intersection between γ and the set of α-like properties, as well as between γ and the set of β-like properties. In order to establish whether an element belongs to a particular class or a contiguous one morphosyntactic criteria are employed (of the type shown at the beginning of this section). The procedure is then to determine the nature and number of morphosyntactic features that apply to the item in question and decide on the basis of the outcome which class the element belongs to. An element "a" that predominantly displays the morphosyntactic features of class α will be assigned to α, while an element "b" that predominantly displays the morphosyntactic features of class β will be assigned to β. This approach raises a number of questions, such as whether perhaps the morphosyntactic features should be weighted. I deal with these issues in Aarts (2007: 225–228).

If we apply the approach I have just outlined to the examples in this article, we can say that in (1) and (11) the word *having* predominantly displays verbal features, and is hence in both cases a verb heading a clause. Comparing (1) and (11) on the one hand with (33) on the other we have a clear case of Intersective Gradience, such that in both (1) and (11) *having* is a verb converging on the class of nouns. In (33) we find that the "balance has tipped": *teaching* displays predominantly nominal characteristics, despite its verbal ending, and hence is a noun heading an NP. The difference between (1) and (11) is one of Subsective Gradience such that (11) is further towards the nominal end of the cline than (1). Note that I deal with structures like (1) as being projected upwards from the *-ing* form, and hence I do not recognize a "gerund-construction" as some kind of form-meaning pairing, aspects of which are not predictable from the components of the construction, in the way that e.g. Goldberg (1995: 4) does.[7]

Consider next the following set of examples.[8]

(34)   *I'm tired of **all that feeding the animals every day***. (Quirk *et al.* 1985: 1064)

(35)   ***This smoking your pipe on every possible occasion*** *will ruin your health*. (Quirk *et al.* 1985: 1064)

(36)   *Let's have no more of **this bringing food into the computer room***. (Huddleston and Pullum *et al.* 2002: 1189)

(37)   *So although I could imagine that we could, uhm, on our joint salary, get perhaps quite a high mortgage, it's **the paying it back at the beginning** that's going to be difficult.* (Survey of English Usage, DL-C030625)

(38)   *The days had been very full: the psychiatrist, the obstacle courses, **the throwing herself from the hold of a slowly chugging plane***. (Sebastian Faulks, *Charlotte Gray* [1998; Vintage, 1999] x.111; cited in Denison 2001)

In (34)–(37) the nominal and verbal properties are balanced: there are two nominal properties (the highlighted strings take determiners and occur in typical NP positions), as well as two verbal properties (the *-ing* inflection and the NP object). Although possible at one time, up to around 1900, today these examples sound decidedly odd. An explanation for this judgement could be that languages appear to disfavour what I have elsewhere called "true hybrids" (Aarts 2004, 2007), in the same way that true synonyms are disfavoured. True hybrids are structures where different types of

categorial morphosyntactic properties are in a perfect balance. I have speculated elsewhere that cases where the categorial scales are truly balanced might pose processing problems.

In Aarts (2004, 2007) I work out a formalization of SG and IG in detail. A major advantage of dealing with structures like (1), (11) and (33) in this way is that none of the problems signalled by Hudson rears its head. A further advantage is that the notion of "gerund" can be dispensed with, a welcome result, given the endless confusion this term has caused. Instead, we can use the traditional label "nominal verb" for *having* in (1) and (11), and "verbal noun" for *teaching* in (33). These labels have the additional advantage that they do not add to the inventory of existing categories. Finally, the present approach to "mixed categories" can account for the disproportionate contributions made by the nominal and verbal morphosyntactic properties. MDI accounts like Hudson's cannot.

8.   Conclusion

English verbal gerunds of the type shown in (1) are analysed by Hudson (2003) as involving a head element which is at the same time a type of noun, as well as a type of verb (see (9) above). Hudson makes use of the notion of multiple default inheritance which is said to be unproblematically operative in English because "nominal features are exclusively concerned with relations external to the gerund phrases, and verbal features with its internal patterns" (2003: 611). This claim is, however, undermined by a number of problematic data presented by Hudson himself. While an account of these data is offered, in the end they are dismissed as being merely historical relics. Other data presented by him are simply not reliable, and thus also invalidate the MDI approach. I have shown in this article that English verbal gerunds can be analysed in such a way that there is no need to assume that they belong to two classes at the same time, nor to a "mixed category construction". This can be done by appealing to the notion of Intersective Gradience which makes use of the concept of convergence.

Notes

*   I would like to thank Dick Hudson for a valuable interchange of ideas, and two anonymous readers and the editors of this volume for valuable comments.

1. Similar to mixed categories are Lapointe's (1993) *dual lexical categories* of the form $<X|Y>^0$ where both X and Y are lexical categories, and where X determines

the external syntax of the phrase headed by X|Y, while Y determines its internal syntax (see Malouf 2000b: 59–60 for discussion). See also Bresnan (1997). For further earlier treatments of the gerund, see e.g. Schachter (1976) and Abney (1987: 105ff.).

2. These are only a subset of the examples cited by Hudson.
3. Example (16) is not a good example to use to demonstrate the impossibility of NP-extraposition because what has been extraposed is in fact an N-bar in the classical X-bar theoretical sense, or alternatively an Abneyan "NP" (i.e. a complement of "D"). This becomes obvious when we attempt to place the string *purchase of food* in other typical NP (DP)-positions:

   (i)   *Purchase of food is illegal here.*
   (ii)   *The authorities here do not tolerate purchase of food.*
   (iii) *This is a book about purchase of food.*

4. The trees that follow do not actually appear in Ackema and Neeleman's book, but are adapted from the trees they supply for examples of the Dutch "nominal infinitive" (2004: 176).
5. This sentence is less than optimal, but this is due to the nature of the verb *have* used in Hudson's original example. In other cases such passivization is fine: *We were talking about **John being examined by his doctor***.
6. The phrase "in particular syntactic configurations" is necessary here because it is of course possible for elements to belong to more than one word class in different configurations, e.g. the word *bank* is a verb in *I bank with Barclays*, but a noun in *I put the money into the bank*.
7. Though see Aarts (2007: 164ff.) on "Constructional Gradience".
8. Hudson discusses similar examples (2003: 608f.)

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Constructions in grammaticalization and lexicalization: Evidence from the history of a composite predicate construction in English*

Graeme Trousdale

1.   Introduction

Recent work discussing diachronic construction grammar and grammaticalization (e.g. Diewald 2006; Hilpert 2007; Noël 2007; Rostila 2006; de Smet 2007; Traugott 2008a, b, forthcoming; Trousdale 2007, 2008) has highlighted both insights and potential problems in accounting for grammaticalization phenomena within a constructional framework. Traugott (2008a, b, forthcoming) and Trousdale (2008) argue that grammaticalization can involve constructional emergence at a schematic level, and particularly that constructional taxonomies may shift during the process of grammaticalization: constructions as one level in the taxonomy may become more entrenched, with increased schematicity at higher levels in the taxonomy. In what follows, I continue the debate concerning the place of constructions in grammaticalization by examining the development of a particular subset of composite predicate (CP) constructions in the history of English. The history of CPs in English has been thoroughly researched by a number of scholars (see, for instance, the contributions in Brinton and Akimoto 1999; and also Brinton forthcoming; Claridge 2000; Iglesias-Rábade 2001; Matsumoto 2000; Moralejo-Gárate 2003); however, the particular construction which I consider has not been the subject of a great deal of attention.

Composite predicates are of interest in grammaticalization studies for many reasons, not least of which concerns the relationship between grammaticalization and lexicalization. As Brinton (forthcoming) has argued, some CPs display properties of lexicalization, while others undergo grammaticalization. The focus of the present discussion is on grammaticalization, though some reference is made to patterns of lexicalization where relevant, and the relationship between grammaticalization and lexicalization is discussed in section 4.2. Indeed, part of the thesis developed here is that constructions may be subject to both grammaticalization and lexicali-

zation, and not merely as the context in which a morpheme grammatical-izes or a string undergoes lexicalization. Rather, constructions themselves may be subject to grammaticalization and lexicalization. In sum, I suggest that some of the changes affecting CPs might be considered to be instances of grammaticalization, while yet others should be considered instances of lexicalization, and that a construction-based account of grammaticalization and lexicalization provides a clear and comprehensive formalism within which to understand the changes.

The article is structured as follows. In section 2, I give a brief account of Modern English composite predicates generally, and then provide a detailed discussion of the particular syntactic and semantic characteristics of the subset of CPs on which I intend to focus. This section also contains a justification for treating (subsets of) CPs as constructions, following Gold-berg (1995, 2006), as well as a description of the constructional status of the CP that is the main focus of this article. Section 3 contains an outline of the history of a particular subset of CP which to my knowledge is not dealt with in detail in the literature. Section 4 provides a discussion of the framework of constructional taxonomies and grammaticalization, along with the main analysis, in which the framework is applied to the data dis-cussed in earlier sections. Section 5 is the conclusion.

2.   Composite predicates in Modern English

2.1.   Overview

Brinton (forthcoming), in a discussion of the historical evolution of com-posite predicates, identifies two different sets of CPs in English.[1] The first set contains constructions where there is minimally a light, or semantically bleached, verb (*give*, *make*, *have*, *take* or *do*), followed by a deverbal noun (e.g. *give thanks*); while it is possible to have examples of this set where there is simply the light verb followed solely by a deverbal noun, such constructions often involve a noun phrase of greater complexity, i.e. one with an article and/or pre- or post-modifiers (e.g. *have a drink, give some-one the fright of their lives*). The second set contains another, more diverse, set of verbs and often a prepositional phrase following the deverbal noun (e.g. *pay heed to*).

My main focus is on the first of these sets, with occasional reference to the second; specifically, I examine the place of constructions such as those

in (1) within a larger discussion of the grammaticalization and lexicalization process involved in the development of CPs in the history of English.

(1)   *I gave him a kicking*.

(1) is an example of a construction which I will call the *give*-gerund construction.[2] *Give*-gerund constructions share characteristics with a number of other constructions (particularly the ditransitive construction), and indeed, as I argue in section 2.3, inherits properties from such constructions. It is partially idiomatic, in that (in some instances of the construction at least) the meaning of the whole is not derivable from the meaning of the parts. Consider in this regard (2) below:

(2)   *I'll give her a seeing to*.

This can either mean 'I'll have sex with her' or 'I'll physically harm her'.[3] Only the second of these is derivable from the meaning of the prepositional verb from which the gerund derives, *see to*, as in (3):

(3)   *I'll see to her*.

However, another meaning of (3) is 'I'll attend to her', and it is possible that the sexual sense of (2) derives from this as a euphemism.[4] Nonetheless, it is clear that to some degree the *give*-gerund CP is partially idiomatic, and therefore a construction.

2.2.   The syntax and semantics of the *give*-gerund construction in
        present-day English

Brinton (forthcoming) provides a series of syntactic and semantic criteria which she uses to establish whether or not a particular CP displays characteristics of grammaticalization or of lexicalization. CPs which are productive are likely to have undergone grammaticalization, while those which are non-compositional and fossilized are legitimate instances of lexicalization. In what follows, I propose that the *give*-gerund construction displays both grammaticalization and lexicalization: the light verb *give* in this construction (and notably in contrast with its prototypical use in other ditransitive/double object constructions) has developed a telic aspect (cf. Brinton and Akimoto 1999; Brinton and Traugott 2005; Brinton forthcoming), a

property which it shares with the *give* of some other light-verb CPs, as in (4) and (5) below:

(4)   *The shadow chancellor said that borrowing would be higher in every year than Mr Brown forecast in this year's budget. "And how on earth can he give a report on the state of the economy without mentioning the biggest rise in unemployment in the developed world?" he asked.*[5]

(5)   *Obviously the BBC does not want to give offence to anyone on either side of this debate.*[6]

However, the degree of idiomaticity in such constructions (arising in part from their very status as constructions) suggests some lexicalization. There is an element of non-compositionality with regard to the *give*-gerund constructions when compared to other light-verb constructions (compare the similarity of *look* and *have a look* with the difference between *see to* and *give someone a seeing to* discussed in section 2.1). Furthermore, some *give*-gerund constructs (i.e. specific instances of the *give*-gerund construction: see further section 3 below) have undergone further semantic change (specifically, generalization) since their first use. Thus in (6), *give me a kicking* means simply 'punish me'.

(6)   *"People can give me a kicking one last time on my way out of the door," he [Tony Blair: GT] said* (*Glasgow Herald*, 14 April 2007).

Syntactically and semantically, *give*-gerunds are not 'idiomatic phrases' in the sense of Nunberg, Wasow and Sag (1994), but rather 'idiomatically combining expressions'. This can be illustrated by applying the five criteria (adjectival modification, quantification, topicalization, ellipsis and anaphora) that Nunberg, Wasow and Sag (1994: 501–502) identify:

(7)   a. Adjectival modification

       Give-gerunds allow a range of adjectival modification, as in the following examples from the BNC:

i.   *I hung the carpets out and gave them a good beating.*
ii.   *I think I'll go out with the next patrol and give these mar-shalling yards a thorough going over.*
iii. *Elsie was delighted I rang, but gave me a terrible dressing down for not ringing before or sending a postcard.*

This allows for extensions such as the following:

iv.   *on the road they have failed to win in the league but the [sic] did give Beccles a 31-3 thrashing in October in the Powergen Vase*[7]

Note here again the semantic generalization of the deverbal noun (cf. (6) above).

b. Quantification

Give-gerunds allow for quantification of the deverbal noun (e.g. *Not that I think refs should lecture at all. But he gave Smit plenty of talkings to*).[8]

c. Topicalization

Give-gerunds appear in various kinds of topicalized sentences (e.g. *"Fricasseed by French!" cries Harry; "the best troops of the world! Englishmen! I should like to see them fricasseed by the French!–What a mortal thrashing you will give them!"* (Thackeray, *The Virginians*, 1857–59)

d. Ellipsis

VP ellipsis is possible with *give*-gerunds: *My mother gave John a talking to, and my father did too*.

e. Anaphora

There is some variability here, especially when we compare the use of *give* in *give*-gerund CPs to the use of *give* in other constructions. For instance, (i) is well-formed, but (ii) is not.

(i)   *My father gave a book to my sister, then my sister gave it to her friend.*

(ii)   **My father gave a thorough dressing down to my sister, then my sister gave it to her friend*

This is true of any clause with *give* where the direct object is an abstract noun (*give NP hope/confidence/reassurance* etc.).[9]

2.2.1.   Grammatical properties of the give-*gerund CPs in Modern English*

In order to establish the precise syntactic and semantic properties of the give-gerund construction, I discuss in this section the grammatical features which Brinton (forthcoming) adopts in her discussion of CPs (the features (a)–(h) are taken from Brinton (forthcoming), with some variation in phrasing); and in the next section, I consider the semantics of such constructions.

(8)   Grammatical properties of *give*-gerund CPs (cf. Brinton forthcoming)

a. Variation in the light verb used (e.g. *have a nap* vs. *take a nap*). With the *give*-gerund CPs, it is not possible to replace *give* with another light verb (**I had/took/made/did him a kicking*). It is however possible to use other verbs of transfer to profile different aspects of the scene (i.e. when the recipient is made subject), especially though not exclusively in metaphorical use, e.g. *The government had/got/took/received a kicking from the press over its asylum policy*).

b. Definiteness. Some CPs can appear only with an indefinite article (*give a nudge*), some only with a definite article (*do the washing up*) and some with neither (*take offence at*). If there is no further modification within the phrase, the direct object in the *give*-gerund construction must be indefinite (*he gave him a kicking* vs. **he gave him the kicking*).[10, 11]

c. Postmodification of the deverbal noun by a prepositional phrase (e.g. *take a drink* vs. *take pity on*). The *give*-gerund CP does not specify a following PP.

d. Adjectival premodification (e.g. *have a quick wash* vs. **do the quick washing up*). The *give*-gerund CP does allow for adjectival premodification (*he gave him a thorough beating*).

e. Passivization and topicalization (e.g. *the washing was done* vs. **a nibble was had*). In the *give*-gerund construction, promotion of the indirect object to subject under passivization is grammatical (*He was given a kicking*) but promotion of the direct object is perhaps more marginal (*?A kicking was given to him*).[12]

f. Pluralization of the deverbal noun (e.g. *make promises to* vs. **show respects to*). The *give*-gerund construction allows such pluralization: *he gave him several beatings*.

g. Existence of a non-light-verb variant (e.g. *have a laugh ~ laugh* vs. *do the housework ~ ø*). This variable is discussed in more detail in section 2.3 below. The situation is rather complex with *give*-gerund CPs for a number of reasons. First, while *give*-gerund CPs do have a non-light-verb variant (*he gave him a spanking ~ he spanked him*), sometimes there is a clear meaning difference (*he gave him a talking to* does not simply mean 'he talked to him' but rather 'he berated him'), while sometimes the difference is more subtle (e.g. the very slight difference between *he gave him a beating* and *he beat him*). Second, a meaning difference may exist as a result of semantic change which has affected the *give*-gerund variant, but not in the ordinary transitive clause to which the *give*-gerund construction is related. For instance, *Bob gave John a kicking* does not (in my variety of English at least) necessarily imply that Bob used his feet, nor even that there has been a physical assault, while a physical assault with the feet is clearly entailed in the clause *Bob kicked John*. A metaphorical use is particularly clear in (6) above, and in the following example: *Tony Blair also this week ridiculed the "ruling class". The Labour Roundheads are confident enough about the marginalisation of the aristocracy to give them a kicking.* (*The Daily Telegraph*, 2 October 2004).

h. Indirect object movement (*I'll give you a call ~ *I'll give a call to you* vs. *He gave my sister a dirty look ~ He gave a dirty look to my sister*). The *give*-gerund CP allows for indirect object movement (*He gave his children a ticking off ~ He gave a ticking off to his children*).

i. The eventive nature of the nominal form. Some CPs are accessed holistically as verbs (*give ground* 'concede'), but this is not the

case with the *give*-gerund CPs (see further section 3, especially section 3.2).

Brinton (forthcoming) suggests that the factors in (8) "relate to whether CPs should be seen as grammaticalized or lexicalized forms, that is, whether they are regular formations which are approached analytically or whether they are idiosyncratic formations that must be accessed holistically (Lehmann 2002: 2–3)". From the evidence presented above, it seems that *give*-gerunds are grammaticalized forms, since they are productive and *give* in such constructions has clearly developed the same kind of telic Aktionsart as it has in other kinds of CPs. The arguments in favour of a telic analysis are as follows. A verb like *kiss* depicts an atelic event, one which has no inherent temporal boundary, which can, following the classification of Vendler (1957), be described as an "event"-type verb (as opposed to a "state"-type verb like *believe*, also atelic). By contrast, a verb like *transmit* is telic: there is an endpoint in the process of transmission. It can be described as an "accomplishment", taking place over a period of time, unlike *smash*, which is instantaneous, and thus an "achievement" (see also Proctor and Rips 2006). As a light verb in a composite predicate construction, *give* allows the language user to transform an atelic event into a telic achievement: the difference between *I kissed Gwen* and *I gave Gwen a kiss* is one in which somethingthat is conceptualized as having no temporal boundary inherently is reconceptualized as taking place instantaneously. The same holds true for the relationship between *I kicked the burglar* and *I gave the burglar a kick*; but *I gave the burglar a kicking* is more complex: it denotes an "accomplishment" rather than an "achievement", and denotes an event which is either durative or iterative (a prolonged attack, involving a series of repeated kicks). This is a consequence of the form having inherited properties from both the light-verb construction, and the gerund construction. Furthermore, I believe that some of the historical evidence to be discussed in section 3, along with some aspects of the constructional nature of *give*-gerund CPs, also suggests an element of lexicalization, as I argue in section 4.2.

2.2.2.   *The semantics of* give-*gerund CPs in Modern English*

In her discussion of the semantics of constructions involving the light verb *give*, Kearns (2002) has suggested that CPs with *give* only take a gerund complement if the gerund denotes an action involving physical harm, as in

(1) above. However, the situation is more complex than this. First of all, there is a considerable subset of *give*-gerund CPs which involve not physical harm but verbal castigation, as in *he gave him a dressing down*. In both cases (i.e. those involving physical harm and verbal castigation), there is a suggestion that the referent of the indirect object, if animate, is affected negatively, and there is a further suggestion of substantial force being used. Second, there are further examples (which are perhaps more marginal) where the gerund does not denote an action involving physical harm or verbal castigation:

(9)   *He gave his shirt an ironing.*
        He gave his clothes a soaking.
        He gave the hedge a pruning.

In all cases in (9), the base form of the deverbal noun (i.e. *iron*, *soak*, *prune*) is also acceptable. While this is true of some gerunds involving physical harm (*give NP a kicking ~ kick*), there may be a meaning difference (*giving someone a kicking* does not have to involve the feet, for instance, while *giving someone a kick* does, as noted above); and not all *give*-gerunds allow for a base-form variant: the more regularly occurring double object construction blocks a light-verb interpretation of *we gave our opponents a hammer* (cf. *we gave our opponents a hammering*), while **he gave her a see to* is simply ill-formed. Finally, in terms of stylistic features, *give*-gerund CPs share a property with all other CPs, namely that the verb from which the noun in the CP derives is usually colloquial: thus, while one can *take a whizz*, *have a nibble* and *give someone a seeing to*, one cannot *take a urinate*, *have a mastication* or *give someone a copulating with* (cf. Hundt forthcoming).

What then is the semantic difference between giving someone a spank and giving someone a spanking, or giving the clothes a soak and giving them a soaking? The difference is clearer in the spank ~ spanking case: the base-form variant involves a single, unrepeated action, while the gerund involves a series of blows. In situations where this involves verbal castigation, this sense of a repeated or prolonged attack is carried over from the more prototypical physical instances to the verbal domain: giving someone a dressing down does not imply a brief conversation, but a rather more extended discourse. This is then further generalized to situations involving neither physical assault nor verbal castigation, while retaining a durative or iterative sense, and typically involving significant force. Such meanings are not provided by the verb, but rather are inherited from the construc-

tion.[13] Thus while Hurricane Jeanne did indeed go over the Virginia region, the meaning of the headline in example (10) from the Washington Post is derived more from the *give*-gerund construction than the verb and preposition from which the gerund derives:

(10)   *Jeanne Gives Region a Going-Over*. (*Washington Post*, 29 September 2004)

The fact that there seems to be a form-meaning mismatch, coupled with a partially idiomatic meaning, suggests that the *give*-gerund has constructional status. Section 2.3 provides a justification for treating such strings as constructions.

2.3.   On the constructional nature of the *give*-gerund CP

Constructions are variously defined in cognitive linguistics depending on the level of complexity and schematicity of the construction type involved (Croft 2001; Croft and Cruse 2004), but the simplest definition is that a construction is a conventionalized pairing of form and meaning. The definition of a construction provided by Goldberg (1995: 4) allows for aspects of form as well as meaning to be unpredictable. For instance, while it is not possible to derive the meaning of the idiom *by and large* in English even if one knows the meaning of *by*, *and* and *large*, there is in addition a syntactic anomaly here in what appears to be the co-ordination of a preposition with an adjective (cf. Taylor 2002). More recently, the constraint of non-compositionality of constructions has been loosened somewhat in some versions of Construction Grammar, with fully compositional strings being accorded constructional status as long as they occur with sufficient frequency to be recognized as entrenched forms (see Goldberg 2006: 64).

The partially idiomatic nature of CPs established in section 2.1 above, combined with the syntactic and semantic facts outlined in section 2.2, lend weight to the argument that *give*-gerund CPs should be considered as constructions in a narrow sense. However, for present purposes, I will use the more general definition of a construction supplied by Croft (2005) as a *conventional symbolic unit* (cf. Langacker 1987: 57–63): "Roughly, a construction is an entrenched routine ('unit'), that is generally used in the speech community ('conventional'), and involves a pairing of form and meaning ('symbolic')" (Croft 2005: 274). I will assume the "conventional" nature of the *give*-gerund can be taken for granted, and focus instead on

evidence that the *give*-gerund CP is a unit (i.e. that the structure has been routinized) and that it is symbolic (i.e. that the structure involves a particular pairing of form and meaning.) In order to show this, I will make use of a particular constructional taxonomy, which involves a particular kind of inheritance (default inheritance, see Hudson 1990; Goldberg 1995). I contend that one of the reasons that the *give*-gerund is idiomatic is that the construction inherits from three different supra-constructions, the ditransitive construction (in which *give* is the prototypical verb in English, cf. Goldberg 1995, 2006), the gerund construction and the composite predicate construction (where there is no prototype). In section 3, I show that the *give*-gerund construction emerges (cf. Traugott 2008 a, b, forthcoming; Trousdale 2008) in the late Modern English period. The emergence of this as a construction has two particular effects – the licensing of other micro-constructions (see below) and increased grammaticalization of the light-verb construction (by virtue of its increased schematicity). Here, I establish the nature of the constructional taxonomy in which the *give*-gerund takes part.

Specifically, following Traugott (2008 a, b; see also Bergs, this volume), I make use of the following levels of schematic constructions:[14]

(11)   Constructional schemas: a hierarchy (cf. Traugott 2008 a, b)

    a.   Macro-constructions (e.g. *CompositePredicateCxn*): highly abstract, schematic constructions (at both phonological and semantic poles).

    b.   Meso-constructions (e.g. *Light V + NP + PPCxn* vs. *LightV + NP + a + NomCxn*): representing a network of related construction types which are still fairly abstract, but which have similar semantics and/or syntax. A constructional network may have more than one meso-level.

    c.   Micro-constructions (e.g. *give rise to serious problems*; *give his opponent a thrashing*): individual construction types.

    d.   Constructs: instances of micro-constructions.

The proposed (partial) constructional hierarchy for the *give*-gerund construction is provided in diagrammatic form in figure 1.
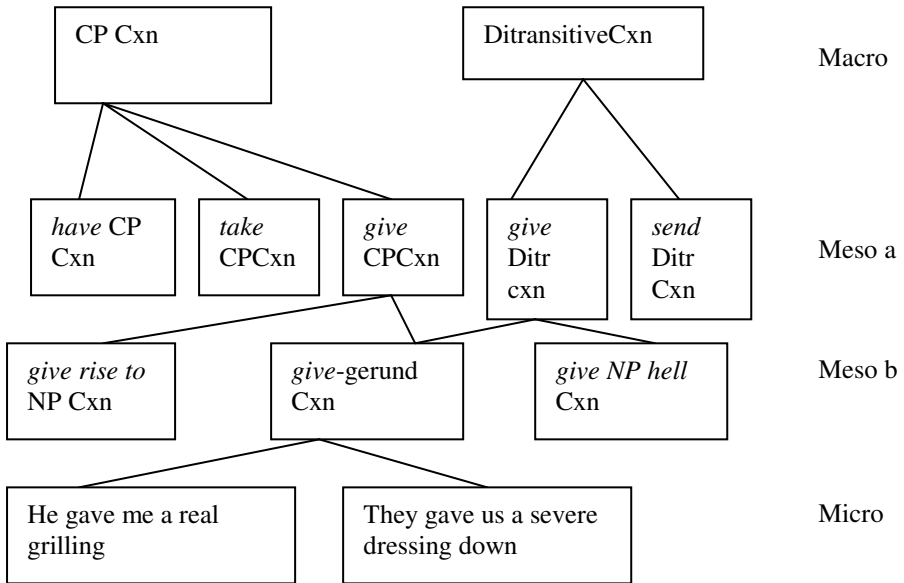
Figure 1. A partial constructional taxonomy

This is a partial constructional hierarchy because it does not include (for instance) the gerund construction, from which the *give*-gerund construction also inherits. The simplified version is provided in order to illustrate the following:

−   *Give*-gerund CPs have semantic and syntactic properties which are characteristic of both *give* CP constructions generally (e.g. the function of *give* is to mark telic aspect; the noun in the construction is deverbal) and *give*-ditransitive constructions generally (e.g. the finite verb enters into a syntactic relationship with three NPs, a subject, a direct object and an indirect object, etc.).
−   Other *give* CP constructions exist which do not have the properties of *give* ditransitive constructions. For instance, the *give rise to* construction does not involve transfer, *rise* cannot be promoted to subject under passivization, etc.. This is associated with the lexicalized nature of some CPs (cf. Brinton forthcoming, and section 3.2 below).
−   Other *give* ditransitive constructions exist which do not have the properties of *give* CP constructions. For instance, in *give NP an avocado*, *give* is a lexical verb of transfer, *avocado* does not derive from a verb, etc.

What figure 2 does not illustrate is the difference between micro-constructions such as *give NP a kick* and *give NP a kicking*, i.e. between variants which contain a deverbal noun in the base form, and those which contain a deverbal noun which is a gerund.[15] Figure 2 illustrates this (while ignoring other aspects of the constructional taxonomy already established in figure 1).
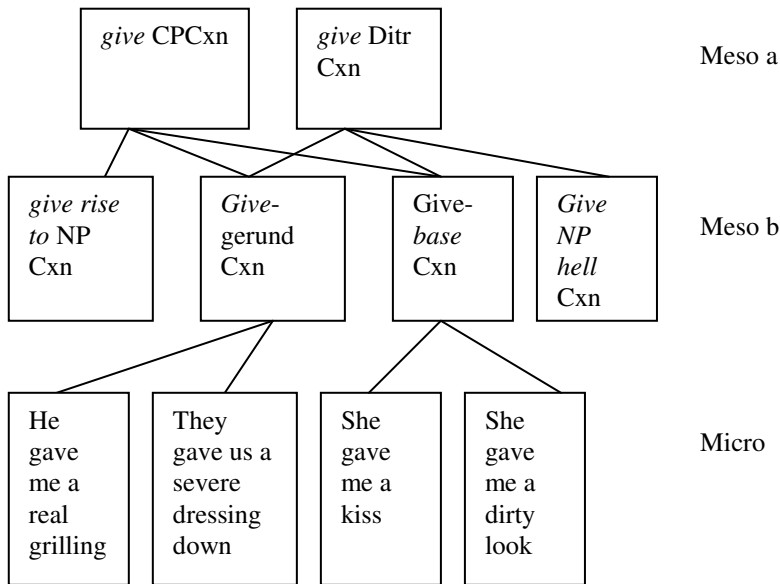

Figure 2. Constructions involving *give*, at different levels of schematicity

The difference between two of the meso-b constructions (that is, the *give*-base construction and the *give*-gerund construction) lies not in the properties they derive from other constructions, since both share some properties with both the *give*-CP construction and the *give*-ditransitive construction. The difference lies simply in the fact that one contains a gerund and the other a base form, and the reason that they are different constructions is that the *give*-gerund construction has an iterative and/or durative meaning which is lacking in the *give*-base construction. This iterative/durative meaning is true of the constructs of the *give*-gerund micro-construction (e.g. *give someone a spanking*), but given its schematic status it has the capacity to sanction new instances (through analogy)

which operate as extensions from a prototype (e.g. they may not involve physical harm or verbal castigation), as in the following example:

(12)   *The Devil take me if I hadn't a good mind to stop the horses, jump in, give her a good kissing, and agree to all she wanted* (Thomas Hardy, *The Dynasts*, 1903)

It is important to recognize that the constructional hierarchies in figures 1 and 2 are only partial representations of a speaker's knowledge of the constructions, and indeed of the structure of constructions themselves. Construction Grammar (like Word Grammar: see Gisborne, this volume; Hudson 2007, this volume) is essentially a network grammar, where language is conceived of as a network of knowledge (incorporating sociolinguistic and stylistic knowledge). This is the position taken by Goldberg (2006: 10) who argues (a) that register and dialect phenomena are included in what a speaker knows about a construction and (b) that any given expression "typically involves the combination of at least half a dozen different constructions". I assume that Goldberg is using "expression" here to mean an actual instance of language use, i.e. a construct (see (11) above), but it is possible that the combination takes place at a range of different levels of schematicity (see figure 2).

On the grounds established above, therefore, we can propose the structure of the prototypical give-gerund construction in Modern English in figure 3:

Semantics: Accomplish X_{action} (Agent   Patient X_{action} (durative/iterative))
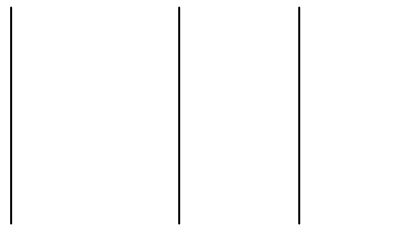
Syntax: give   (NP_i (Subj) NP_j (iO) [*a* [gerund]]NP_k (dO))

Figure 3. The *give*-gerund construction

3.   The historical evolution of *give*-gerund CPs

In this section, I provide a very brief overview of the history of *give* CPs generally (section 3.1), before providing a more detailed account of the emergence of *give*-gerund CPs (section 3.2).

3.1.   Verbs of giving in composite predicates in the history of English

As Akimoto and Brinton (1999) show, in Old English (OE), two verbs of giving appeared in CPs, *sellan* and *giefan*, though the two verbs were not identical, neither in their meaning, with *giefan* having the more specific sense of 'giving gratuitously', nor in their syntactic behaviour, since *giefan* was "not used as a light verb in the early and classical period", and there are only four instances of *giefan*-collocations in later OE, all with *answaru* (Brinton and Akimoto 1999: 35–6). Examples of both *sellan* and *giefan* in OE are given in (13) and (14), both cited in Akimoto and Brinton (1999):

(13)   *buton se abbod   him   geþafunge mid leafe sylle*
         Unless the abbot to-him consent   with leave give
         'unless the abbot should give consent to him with leave' [BenR 43.31]

(14)   *To þes mynstres   geate   beo gesett an eald mynecene and*
         To the monastery-gen gate-dat is   set   an old   nun   and

         wis, þe wel   cunne andsware   gyfe and underfo
         wise who well knows answer   give and receive

         'A wise old nun, who can return and receive messages well, should be placed at the gate of the monastery' [BenRW 66.1]

   In Middle English (ME), the semantics of *sellen* become more restrictive, meaning 'to give (sth. or sb.), present as a gift, bestow; also give away possessions' (*MED*, s.v. *sellen*, v.), and, according to Akimoto and Brinton (1999), becomes restricted syntactically to particular collocations with *on honde* and *to gisle*. From the OE period onwards, *give* CPs increase in frequency relative to other kinds of CPs; Traugott (1999) collates evidence from other studies showing that relative to *make*, *take*, *have* and *do* CPs, *give* is the least frequent in OE and ME, but in the early and late Modern

periods rises to the third most frequent, while Stein (1991) shows *give* CPs to be the most frequent type in her corpus of Modern English (cf. also Hundt forthcoming). Tanabe (1999: 103) finds that *give grace*, *answer* and *advice* are "among the higher frequency structures" in her analysis of CPs in the *Paston Letters*.

So the history of *give*-CPs suggests an increase in productivity over time, particularly from the early Modern period onwards. Some constructs (such as *give answer* and *give warning*) are particularly regularly attested.

3.2.   The history of the *give*-gerund CP

As mentioned in section 3.1, verbs of giving have occurred sporadically with gerunds since OE; but instances where the gerund derives from a verb of physical harm or verbal castigation are more recent. A construct with a fairly long history is *give warning*, of which the first attestation in the *Oxford English Dictionary* (*OED*) is c.1430:

(15)   *c***1430** Syr Gener. (Roxb.) 2279 *Of treason first I gaf him warnyng, Therfor I haue lost my living*.

But this is peripheral for present purposes, because the meaning of *give warning* is not necessarily one in which the verbal recipient is castigated in any way. In fact, in the construct without the definite article (i.e. *give warning*, as opposed to *give a warning*), there is perhaps even less likely to be a castigation interpretation.

The data below, all from the *OED* online (www.oed.com), illustrate some of the gerund forms which appear in the *give*-gerund CP. There are some sporadic instances in the eighteenth century, such as

(16)   **roasting: 1755** J. SHEBBEARE Lydia (1769) II. 145 *They would give Mr. Mathematic a roasting and humble him a little*.

(17)   **licking: 1756** W. TOLDERVY Hist. 2 Orphans II. 151, *I gave him such a licking, I question whether he didn't carry some of the bruises with'n to the grave*.

The real growth seems to occur from the mid-nineteenth century on, though a detailed corpus study is necessary to track the change in detail.

Most of these forms are regularly occurring in most varieties of English, though there are some (exemplified by *give someone a nointing*) which are dialectal:

(18)   **nointing** 'a thrashing or a verbal castigation':   **1794** T. HOLCROFT Adventures Hugh Trevor I. XIV. 195 *Shiver your soul, what are you about? Uncouple Jerry Sneak and Jowler, and give limping Jenny's ear a 'nointing.* **1887** T. DARLINGTON Folk-speech S. Cheshire 274 Nointin'…*An old man told me he had 'tacted' some women on some subject, but they had 'gen him a pratty nointin'.* **1900** W. DICKINSON & E. W. PREVOST Gloss. Dial. Cumberland (rev. ed.) 231/2 *He gev him a good nointin'.* **1995** J. M. SIMS-KIMBREY Wodds & Doggerybaw 206/2 Nointin, *a good hiding.*

(19)   **wigging** 'a severe rebuke': **1813** [see WIG *n.*[3] 4]. **1834** MARRYAT Peter Simple I. iv, *It was her idea, that I should have a confounded wigging and be sent on board.* **1895** Times Law Rep. XI. 204 *The clerk of the board gave these religious people a fine wigging, pointing out that in spite of their religious professions they were deliberate liars.*

(20)   **pasting** 'a beating':   **1851** H. MAYHEW London Labour I. 415/2 *He…gave me a regular pasting.* **1903** H. V. ESMOND When we were Twenty-One I. 8 *By Gad, what a pasting you gave the brute, Dickie!*

(21)   **paddling** 'a beating, typically with a paddle':   **1851** J. J. HOOPER Widow Rugby's Husband 96 *What a devil of a paddlin' the old woman gin him with the battlin' stick.*

(22)   **spanking: 1859** *Slang Dict.* 98 Spanking, *a good beating.* **1868** in Sat. Rev. (1869) 30 Jan., *I gave her what some American friends call 'a spanking', sharp, short and effectual.*

(23)   **going-over** 'a scolding': **1872** Chicago Tribune 23 Oct. 4/2 *The Cincinnati Commercial gives these male Mrs. Grundys a 'going over' in an article well worth reading.*

(24)   **doing** 'a scolding or a beating': **1897** W. S. MAUGHAM Liza of Lambeth xi. 209 *She 'as give yer a doin';...an' look at yer eye!*

(25)   **rollicking** 'a reprimand': **1938** F. D. SHARPE Sharpe of Flying Squad 332 A rollicking, *a telling off. ('He gave the copper a real rollicking.')*

In the following set, the gerund form is recorded in the *OED* in isolation much earlier than the instances with *give*, but there have clearly been some semantic changes (including specialization) between the first recorded instances, and the appearance of the gerund in the *give*-gerund CP, and it is interesting to note that the *OED* citations of *give*-gerund constructions, with a meaning of physical harm or verbal castigation, as glossed below, are all from the nineteenth century:

(26)   **talking (to)** 'a reprimand': *a***1300** Cursor M. 14760 *It es bot foli al þi talking.* ***c*1875** 'BRENDA' Froggy's Little Brother (new ed.) iii. 35 *I'd give him such a talking-to as never he had in his life before!*

(27)   **thrashing/threshing** 'a beating': **1382** WYCLIF Hos. x. 11 *Effraym a cow calf, taut for to loue thresshyng*; **1875** A. R. HOPE Schoolboy Friends 80 *I'll give you the greatest thrashing you ever had.*

(28)   **scolding** 'a reprimand': **1486** Bk. St. Albans f. vij, *A scoldyng of kemsteris*; **1875** W. S. HAYWARD Love agst. World 38, *I shall give him a good scolding after dinner.*

(29)   **trouncing** 'a beating': *a***1553** C. BANSLEY Treat. xii. (Percy Soc.) 5 *Tyll you tricke and trotte youre selfe, to the devyls trounsynge neste.* **1803** R. ANDERSON Cumberld. Ball. 64 *In a passion I flew, And gave her a trouncin.*

(30)   **hammering** 'a beating': **1563** W. FULKE Meteors v. (1640) 67 *Copper is most like to Silver in the waight, and in the hammering.* **1883** W. E. NORRIS No New Thing III. xxxv. 224 *I'll give you such a hammering that you won't do it again for a year.*

(31)   **leathering** 'a beating': **1791** <u>A. WILSON</u> Poems & Lit. Prose (1876) II. 33 *Ye deserve a leathering.* **1894** <u>BARING-GOULD</u> Kitty Alone II. 169 *Won't I only give that cursed beast a leathering*

(32)   **blowing up** 'a reprimand': **1772** Phil. Trans. LXIII. 44 *The blowing up of a magazine of gun-powder.* **1820** G. SIMPSON *Jrnl.* 18 Aug. in Hudson's Bay Record Soc. Publication (1938) I. 17 *Mr. Clarke gave him what is vulgarly called 'a good blowing up'*

Some twentieth-century coinings show the gerund appearing with a range of light verbs, as in (33) below:

(33)   **ticking off** 'a reprimand': **1950** <u>J. CANNAN</u> Murder Included ii. 16 *Iona's a little beast, but she knows how to take a ticking off — she's learned that at St. Olaf's.* **1977** <u>E. AMBLER</u> Send no More Roses ii. 36, *I gave him a ticking-off. Not that he cared. Too clever by half.*

Very recent examples of *give*-gerunds, which I have come across as a result of an internet search, include the following, which for me at least are of marginal acceptability:

(34)   **punching**: *Mr McFadden, he said, had insulted him and had chased him to give him a 'punching and kicking'* (http://news.bbc.co.uk/1/hi/scotland/452494.stm)

(35)   **shouting at:** *He gives short shrift to drinkers – 'If they come in drunk, I give them a shouting at and they get chucked out' – but warns against blaming the victims* (http://observer.guardian.co.uk/uk_news/story/0,6903,1168906,00. html)

(36)   **pushing:** *After you give the cuticle a thorough pushing, there might still be some little pieces of cuticle still sticking up, commonly referred to as hangnails* (Get A Buff Manicure: a step-by-step guide by celebrity nail expert Deborah Lippman) (http://beauty.ivillage.com/makeup/polishes/0,,7w8x1xh-p,00.html)

So the history of *give*-gerunds seems to suggest a pattern which becomes increasingly productive in the late modern period, especially from the mid-to-late nineteenth century onwards. Specifically, it ties in with the history of another more general subtype of CP, that in which the deverbal noun is derived from an idiomatic phrasal verb (for instance, *going over* in (23); other examples include *have a set to with* and *have a round up for*). Traugott (1999: 256) reports that such nouns (whether gerundival or not) developed "after the mid nineteenth century, sometimes in CP strings".

4.   *Give*-gerund CPs and grammaticalization

Having established the syntactic and semantic features of the *give*-gerund CP in Modern English, and having outlined its historical development, I turn now to the issue of grammaticalization. In this section, I relate the recent evolution of this construction to the place of constructions in grammaticalization and lexicalization as discussed, for instance, by Brinton and Traugott (2005), and more crucially, Traugott (2008, forthcoming a, b). In section 2.3 above, it was shown that the *give*-gerund CP forms part of a network of constructions. In this constructional network, constructions display different degrees of schematicity; constructions lower in the taxonomy may inherit properties from those higher in the taxonomy; and constructions intersect (in which case a construction may inherit properties from more than one 'supra'construction). The number of constructions in the taxonomy is not (and I would suggest cannot) be fixed, but there is clearly a hierarchy involved.

4.1.   Grammaticalization

Brinton and Traugott (2005) have suggested that the development of *give* in such constructions is an instance of primary grammaticalization, a move from more lexical to more grammatical status. They define grammaticalization as follows:

> Grammaticalization is the change whereby in certain linguistic contexts speakers use part of a construction with a grammatical function. Over time the resulting grammatical item may become more grammatical by acquiring

more grammatical functions and expanding its host-classes. (Brinton and Traugott 2005: 99)

Using this definition, we can see that *give* has indeed grammaticalized in some CP constructions (e.g. in *give NP a shove*, but not in *give rise to NP*, on which see further section 4.2 below), acquiring an aspectual function, one of telicity, which Brinton and Traugott (2005) observe in their discussion of composite predicates generally. The question then remains as to the effect of the relatively recent constructions involving the gerund on the grammaticalization of *give* as a telic aspect marker in the more general *give*-CP (meso)-construction, and the subsequent effect of that development on the structure of the Composite Predicate macro-construction (see figures 2 and 3 above). In other words, how specifically can a constructional account explain patterns of grammaticalization?

I have argued elsewhere (Trousdale 2008), in discussing the history of impersonal and transitive constructions in English, that grammaticalization can be said to apply to highly schematic constructions (i.e. macro-constructions[16]); particularly, as constructions at the meso-level begin to cohere as a set (syntactically and semantically), this can induce changes at a higher level. For the *give*-gerunds, we can hypothesize the following steps:

− The emergence of *give*-gerunds as micro- and meso-constructions: constructs involving *give* plus a gerund deriving from verbs denoting physical harm or verbal castigation appear sporadically pre-1800, but begin to be established as a set of micro-constructions in the nineteenth century; this set extends in the twentieth century to other verbs (like *kiss*, see example (12) above). *Give*-gerund constructions are both productive and partially idiomatic (cf. the discussion of "idiomatically combining expressions" in section 2.2 above, and the form-meaning correspondence outlined in figure 3). Their productivity serves to entrench the higher-level meso-schema: "the higher the number of instances, the more entrenched the superordinate category is … entrenchment (productivity) of a construction is proportional to the number of instances of the construction at any level of schematicity" (Croft and Cruse 2004: 309).
− This *give*-gerund set is established as a construction vis-à-vis other CPs involving *give*, especially *give*-base constructions, since the members

of the *give*-gerund set denote an iterative/durative process. Thus there is a realignment of the *give* CP meso-construction

− As a result, *give* as a marker of telic aspect undergoes host-class expansion of the type $A_n \rightarrow A_{n+x}$ (cf. Himmelmann 2004), where n = deverbal nouns in base form, and x = gerund. The realignment of the *give* CP meso-construction also affects the distribution patterns of the CP macro-construction.

This morphosyntactic development is the latest stage in the general expansion of *give* CPs, which have been undergoing pragmatic and semantic expansion since the ME period. With the *give*-gerund having emerged as a (micro-)construction, therefore, we may ask whether the meso-construction functions as a cognitive reference point (or prototype) which serves to structure the constructional taxonomy as a whole (see Traugott 2008a, b). This seems to be the case, given the telic nature of *give*; and the macro-construction too is affected, since the development of the meso-construction reinforces the aspectual nature of all the light verbs in CPs (e.g. *make*, *have*, *take*); cf. Brinton and Traugott (2005: 130). Again, it is important to stress the constructional nature of the process of grammaticalization. It is not simply that the verbs which appear in the Composite Predicate construction form a set whose members are greatly productive *(have a walk/talk/laugh/drink*, etc), or that the verb has developed a particular kind of grammatical function, or that the noun which appears in the CP construction has undergone decategorialization. Grammaticalization applies not merely to the lexical verb, but to the construction as a whole. We can explore this in more detail by considering three relevant factors in the development of a construction, as noted by Langacker (2005a, b; see also Traugott (2008 a, b, forthcoming):

Generality: is the construction highly schematic (i.e. a macro-construction) or is it less schematic?

Productivity: does the construction sanction new instances? The more grammatical a construction, the more likely it will sanction new instances; the more lexicalized a construction, the less likely it will sanction new instances.

Compositionality: to what extent is the meaning of the construction compositional? Here it is important to stress that non-compositionality is not the same thing as conventionality (cf. Nunberg, Wasow and Sag 1994; Croft and Cruse 2004: 252; and section 2.3 above); *give* CPs, as idiomati-

cally combining expressions, are conventional but compositional; true idioms, such as *at sixes and sevens*, are both conventional and non-compositional; a construction at any level of schematicity is a "component structure" (in the sense of Langacker 2005b).

Applying this to the case of the Composite Predicate macro-construction, and its subvariants, we have:

Generality: the Composite Predicate Construction as a whole has become more generalized over time. It is not so much that the lexical verbs involved in the construction have changed: these have remained fairly constant from OE onwards (allowing for changes such as the substitution of *sellan* with *giefan*, as discussed earlier in section 3.1); what has changed has been the form of the deverbal complement. *Give* has expanded its host classes by incorporating both gerundival and non-gerundival forms of phrasal verbs in the Composite Predicate Construction: as we have seen, the complements are of varying complexity, sometimes involving relatively simple forms like *kicking*, but sometimes involving composite, and indeed idiomatic, forms deriving from phrasal verbs, like *dressing down* or *going over*.

Productivity: Within this particular constructional taxonomy, the Composite Predicate macro-construction (i.e. one involving any light verb, such as *take*, *make* and *give*), the meso-constructions (i.e. those involving *give* plus a deverbal noun of any morphological structure) and the micro-constructions (i.e. those involving *give* with a gerund complement like *a dressing down*) are all highly productive. Particularly, they have become established as productive schemas to sanction new instances. This productivity is especially relevant to the development of the *give*-gerund construction. The *give*-gerund schema has become increasingly entrenched in English since the mid-nineteenth century, initially with gerunds deriving from verbs of a fairly restricted semantic set (those involving physical harm or verbal castigation), but increasingly extending beyond this to other verbs (including *iron*, *prune*, *soak* and *kiss*). In the process of grammaticalization, as new constructs emerge in language use through analogy[17] with other constructs, new micro-constructions emerge; what were constructs at time t1 become micro-constructions at time t2; what were micro-constructions at t1 become meso-constructions at t2, and so on, resulting in yet further schematicity of the macro-construction. This notion of grammaticalization ties in with Bybee's position, namely that one aspect of grammaticalization is the "process of automatization of frequently occur-

ring sequences of linguistic elements" (Bybee 2003: 153); this automatiza-
tion is a direct result of the organizsation of linguistic material into levels
of schematicity, as described above.
Compositionality: the meso-construction is, by definition, less composi-
tional in meaning than is the case with the micro-construction. Both consti-
tute instances of idiomatically combining expressions, but at different de-
grees of schematicity. The semantic bleaching which we associate with
grammaticalization holds true not just of the increasingly aspectual *give*,
but possibly also of the gerund form (for instance, *hammering*, *thrashing*
and even *kicking* have generalized; some of the deverbal nouns come from
highly generalized/semantically bleached verbs to begin with, e.g. *give him
a doing*; *give him a going over*).

On these criteria therefore, there is a strong case for proposing the
grammaticalization of a set of composite predicate constructions at differ-
ent levels of schematicity in the history of English. In the remainder of this
article, I briefly consider other kinds of constructions involving light verb
give that seem to display properties of lexicalization.

4.2.   Lexicalization

Brinton and Traugott (2005) suggest that there is a need to differentiate
between constructions such as *curry favour with/lay hold of NP* on the one
hand, and *give a hand/kicking to NP* on the other. Examples in the first set
represent lexicalization: the verbs are not productive, there is significant
fixing of the syntax (**Favour was curried with*, etc.), the noun has under-
gone decategorialization, and the meaning of the construction has de-
creased in compositionality, so that the construction as a whole is rendered
more idiomatic. In what follows, I restrict the discussion to constructions
involving *give*.
Based on Brinton and Traugott's "cline of lexicality" (2005: 94), it is
possible to identify different degrees of lexical status for constructions
involving *give*. For instance, *Give over!* (with the meaning 'stop being
ridiculous, stop behaving foolishly'), as a maximally unanalysable form,
suggests lexicalization of this particular use of a phrasal verb imperative to
stage L3, while idiomatically combining phrases of the kind *not give tup-
pence for* and *give me five* are examples of Brinton and Traugott's L1. In
terms of the lexicalization of CPs, we are therefore able to distinguish dif-
ferent degrees of lexicalization (related to their position on the cline of
lexicality) with types of *give*-CP micro-constructions. Most lexicalized are

examples like *give NP short shrift* and *give NP one's best shot*. Such examples may display the following signs of increased lexicalization:

(a) Decategorialization[18] of the deverbal nominal (absence of articles; or co-occurrence restrictions to either the definite or indefinite article, but not both, or to just one subtype of determiner, such as a possessive). For instance, *a short shrift* 'a short period of time between sentence and execution to allow for penance and subsequent absolution' is attested in earlier English (see example (37)); but in collocation with *give* and *get*, the NP now lacks an article, and now means, among other things, 'pay little attention to' (see example (38)):

(37)   *Make a short shrift: he longs to see your head* (Shakespeare, *Richard III*, Act 3, scene iv, line 97)

(38)   *A tinker accosted me in the bar, asking for a glass of brandy, but I gave him short shrift* (BNC)

(b) Fossilization. *Give NP one's best shot* is fossilized to the extent that it does not have the grammatical properties of "ordinary" ditransitives with *give*, such as the ability to undergo passivisation (**NP was given my best shot*; **my best shot was given to NP*). This may be in part due to the fact that the NP here is often the pronoun *it*, but this is not always the case:

(39)   *Studs gave a stuffy business his best shot* (*The Observer*, 21 May 2006)

Increased fixedness in the position of indirect object may also be considered as an instance of fossilization. In present-day English, some *give* CPs do not appear in the double object construction (**give NP birth*), while some do not have indirect object movement (**give the sack to NP* with the idiomatic sense 'dismiss from employment'). More critically for the lexicalization argument, some *give* CPs which both appeared in double object constructions and could undergo indirect object movement now have a more restricted distribution[19] (cf. Richards 2001: 187). For instance, in the eighteenth century, *give chase* could appear in the double object construction, as it does in (40), but is now restricted to the construction involving indirect object movement, as in (41):

(40)   1722 Defoe. Col. Jack (1840) 324 *Two of the frigates gave us chase.*

(41)   1797 T. Bewick. Brit. Birds (1847) I. 60 *It gives chase to small birds on the wing.*

Other examples of fixedness include a lack of (or limited) variation in adjectival modification of the deverbal noun (which is linked to decategorialization), e.g. *give someone short/*long/*unreasonable shrift.* The lexicalization of this form is highlighted by a more recent variant *short shift* (an innovation which is discussed in some detail at: http://itre.cis.upenn.edu/ ~myl/languagelog/archives/003467.html).

    Other CPs involving *give* are less lexicalized, since they do not display the same degree of fossilization or decategorialization. The question then arises as to whether there are features of the *give*-gerunds which suggest that aspects of the constructions also constitute lexicalization as well as grammaticalization, and if so, how this can be modelled within a constructional framework. My proposal is that the micro-construction is an L2 in the formulation adopted by Brinton and Traugott (2005: 94): it is "a complex, semi-idiosyncratic form". It is complex because it is partly compositional (as a result of its inheritance from the ditransitive construction), but it is not fully compositional because its meaning is idiosyncratic, i.e. partially idiomatic, as was established in section 2.3 above. Another aspect of the semi-idiosyncracy is the fact that the *give*-gerund, by virtue of its being a composite predicate construction, is not wholly productive. Sociolinguistic[20] factors such as register may have a role to play here: recall that while one can *give someone a telling off*, one cannot *give someone a reprimanding*. This curious mixture of productivity and fixedness, of growth and fossilization, illustrates nicely the complexity of the relationship between grammaticalization and lexicalization. Of all of the composite predicates, it is perhaps the *give*-gerund CP that exemplifies most clearly the point at which "grammar and lexis meet" (Algeo 1995: 203).

5.   Conclusion

The history of the *give*-gerund CP is part of the general process of grammaticalization of the *give*-CPs as a whole. As a means of marking the accomplishment of a durative or iterative process (rather than a single event), the *give*-gerund forms part of a network of constructions in which a par-

ticular set of semantically light verbs has, over time, developed a particular aspectual meaning. At the same time, there is, in the schematic construction, a partly non-compositional meaning which suggests that the construction is accessed holistically: on these grounds, it is legitimate to group the *give*-gerund CPs with other lexicalized CPs like *give rise to* and *lose track of* (as well, perhaps, as phrasal verbs such as *give up*). Treating the verb *give* in isolation in such examples is not the most effective way of explaining the development of either its telic function or its occurrence in lexicalized phrases. By contrast, a constructional approach allows us to capture generalizations across a set of forms which display similar properties, and which have developed in a particular set of ways over time: as constructions grammaticalize, they become more schematic; as they lexicalize, they become more idiom-like. In order to do capture such generalizations, it is also necessary to stipulate a set of constructional levels at different degrees of schematicity: this is consistent with Goldberg's claim that, in language structure, "*it's constructions all the way down*" (Goldberg 2006: 18; emphasis in the original). As a complement to constructional approaches to language typology and linguistic theory, diachronic construction grammar allows us to track the development of constructions as they grammaticalize or lexicalize. The development of the *give*-gerund construction allows us to make the following predictions about constructions grammaticalization, and lexicalization, which can be tested against further data sets:

(a)   Constructions are emergent, not fixed. As language users begin to identify commonalities between constructs of a similar form and meaning (e.g. *He gave him a thorough beating*, *She must have given him a leathering*), a micro-construction emerges. That micro-construction denotes a fairly substantive form-meaning pairing (e.g. the verb from which the gerund derives is a verb involving physical harm). As this micro-construction entrenches, a new meso-construction emerges, to capture extensions from the original micro-construction (e.g. where the gerund does not denote physical harm, but verbal castigation (*dressing down*), or even simply a durative or iterative process (*kissing*, *stroking*) with overtones of force) and parallels between the newly emerged micro-construction and other similar constructions (e.g. the *give*-base construction, and even lexicalized forms like *give rise to*). This process then repeats, at a higher level of schematicity: speakers establish parallels between *give*-CPs and *have*-, *take*-, *make*- and *do*-CPs, all of which contain light verbs that develop an aspectual function.

(b)   As increasingly schematic constructions emerge, elements within the less schematic constructions acquire further grammatical properties (i.e. undergo grammaticalization): but note that there is a symbiotic relationship between the bleaching of the lexical item and the grammaticalization of the construction as a whole (cf. Langacker 2005c: "A lexeme's category membership is indissociable from its use in constructions"). As the meso-construction entrenches, the light verb functions increasingly as a marker of a particular grammatical category (here as an aspectual marker.)

(c)   Some constructions, while showing a degree of similarity to grammaticalizing constructions, may develop different syntactic and semantic features which lead them to be less productive and less schematic. Thus meso-constructions in late Modern English may undergo greater fixedness in syntax (*give NP chase* is no longer possible in modern English) or elements of the construction may be decategorialized. Decreases in productivity, analysability and schematicity suggest a more holistic access characteristic of lexicalization.

Notes

*   I gave a talk based on the material presented here at the Directions in English Language Studies conference at the University of Manchester in April 2006, and I am grateful to members of the audience at that talk for their helpful observations. I am very grateful to the following, for their detailed comments on an earlier version of this article: Rhona Alcorn, Laurel Brinton, Lynn Clark, Nik Gisborne, Amanda Patten, Anette Rosenbach and Elizabeth Traugott. All shortcomings are my own.

1.   Book-length discussions of CPs in Modern English include Allerton (2002) and Cattell (1984); discussions of CPs also feature in reference grammars of Modern English, e.g. Quirk, Greenbaum, Leech and Svartvik (1985) and Huddleston and Pullum (2002).

2.   *Give* is not the only verb which appears in constructions of this type: *I got/had/took/received a beating from him* are variants where the subject is the patient of the action denoted by the deverbal noun; for present purposes, I focus on *give*, where the subject is the agent of the action denoted by the deverbal noun.

3.   It is clear that there is significant diatopic and sociolinguistic variation regarding the use and acceptability of at least some of these forms. (A number of readers of earlier versions of this paper asked for glosses of a number of the examples.) As discussed in section 2.2 below, some of the *Oxford English Dictionary* citations involving *give*-gerunds specify either a "vulgar" or "northern

English" origin, but a more extensive corpus is required to track the origins and sociolinguistic distribution of such forms.

4. Thanks to Elizabeth Traugott for pointing this out to me.
5. Source: Guardian Unlimited website "Brown accused of burying bad news": http://politics.guardian.co.uk/economics/story/0,,1965461,00.html [6 December 2006]
6. Source: BBC News website "BBC's dilemma over cartoons": http://news.bbc.co.uk/newswatch/ukfs/hi/newsid_4670000/newsid_4678100/4678186.stm: 3 February 2006
7. Source: http://www.lionrugby.com/news-details.asp?ID=145
8. Source: http://www.ruggaworld.com/2006/11/20/is-this-the-end/
9. Anette Rosenbach (personal communication) suggests the interesting possibility that the difference between (7ei) and (7eii) may be due to the fact that *book* is a prototypical noun, while *dressing down*, as a gerund, has both nominal and verbal properties, making it less prototypical.
10. Brinton (forthcoming) suggests that *give NP the slip* occurs only with the definite article, and this is certainly the case in standard British and American English. There is some evidence of regional variation, however, with standard Indian English allowing for an indefinite variant (and also indirect object movement: see criterion (8i)). The following example comes from the online version of *The Hindu* newspaper (30 March 2007): *In a bid to give a slip to the police party, the alleged criminal hurled a bomb on to the police jeep* (http://www.hindu.com/2007/03/30/stories/2007033002580300.htm).

    Devyani Sharma (personal communication) has suggested that such unfreezing of idioms is not uncommon in Indian English, even in formal registers.
11. Note that this restriction is not operative if there is further modification within the phrase:
    (i) *He gave her the talking-to of a lifetime*
    (ii) *He gave her the severest talking to I'd ever heard*
12. Note however that internet searches provide examples like the following:
    (i) a scolding was given commensurate with the reported actions (http://newsblogs.chicagotribune.com/news_theswamp/2006/10/is_a_purge_of_c.html. *Chicago Tribune* blog, 11 October 2006)
    (ii) a strict telling off was given to the offending pupils (http://www.betterthinkers.co.uk/2007/01/index.html. *History People* website, 25 January 2007)

    As Anette Rosenbach (personal communication) has observed, the variable acceptability of forms such as *A kicking was given to him* may be due to "the general semantic restriction that passives are not particularly likely in the context of an indefinite inanimate subject NP and a pronominal recipient".
13. Laurel Brinton (personal communication) asked whether such forms are atelic for speakers who have such constructions. It is likely that there may be variation in acceptability regarding this (given the diatopic and sociolinguistic variation

mentioned in note 3), but in my idiolect, instances such as *He gave him a talking to for an hour* are fine.

14. Note that, as Traugott (2008a, b, forthcoming) argues, a micro-construction is an abstraction across specific constructs of the same form; thus the micro-construction *a kind of* is contrasted with the micro-construction *a bit of*, but both micro-constructions emerge as the language user abstracts a more schematic construction from naturally occurring constructs like *a kind of silence* and *a bit of fun*. Both here and in Trousdale (2007), I argue that there may be more than one meso-constructional level of relevance to the development of lexicalized possessive constructions: it is likely that we can posit a set of meso-constructions in any instance of change.

15. Figure 2 also does not give a representation of other idiomatic uses with *give* (e.g. *give someone an earful, give someone the creeps, give someone the (old) heave ho*), a detailed discussion of which are outwith the scope of this paper (though see section 4.2 for a brief discussion of lexicalization of constructions involving *give*).

16. For a discussion of the relationship between grammaticalization theory and diachronic Construction Grammar, and for a justification for keeping the two disciplines distinct, see Noël (2007).

17. Kiparsky (forthcoming) discusses the relationship between grammaticalization and analogy (and indeed considers the notion of grammaticalization *as* analogy, which is consistent with parts of what is proposed here).

18. Brinton and Traugott (2005: 107) note, however, that decategorialization is "not a characteristic of lexicalization in general".

19. This pattern also holds for other idioms with *give* that are not CPs, such as *give way*, which in PDE does not appear in the double object construction, but could in earlier stages of the language:
   1485 CAXTON *Chas. Gt.* 193 *They...made so grete bruyt that the moost hardyest of the paynyms gaf them waye*.

20. The emergence of the *give*-gerund is possibly an instance of a change from below, often the subject of over-classification as such (cf. (32)). There are also instances of the *give*-gerund appearing in representations of dialect literature, for instance in example (21), and the following representation of London speech from 1831, representing part of a fictitious conversation between the hangman in Punch and Judy shows, Jack Ketch, and the nineteenth-century violinist Paganini: *if as how you or any other 'b-y Frenchman', as Lord Byrum says, comes here a trying to take the bread out of my mouth, blow me tight if I don't give 'em a neck squeezing, and so you had better cut your stick, or I'll give you a benefit you vont like*. (*The Age*, 1831, p. 166)

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Part 2   Constructions and corpora

Corpus approaches to constructions

The articles in this section all consider the relevance of corpus data to constructional approaches to English grammar, arguing that corpora can provide empirical support to intuitions regarding the nature of constructions and the number of constructions in the constructional inventory.

Thomas Hoffmann's article examines variation in the placement of prepositions in English relative clauses of various kinds. Hoffmann's data come from two sources: a quantitative, variationist corpus (the ICE-GB corpus), and a collection of grammatically judgements from native speakers of English. His research concerns the placement of prepositions in relative clauses with respect to the relativizer – whether the preposition is stranded, or whether it appears before the *wh*-relativizer, i.e. whether it is pied-piped). The analysis considers the place of frequency in establishing whether or not a given string constitutes a construction in a speaker's mental grammar: while usage-based variants of Construction Grammar allow entrenched but compositional strings to be accorded constructional status, models which invoke "complete inheritance" allow only non-compositional constructions. Hoffmann is sympathetic to the usage-based model, but is keen to explore how entrenchment can be substantiated in a corpus-based approach to constructions, drawing on multivariate analyses of corpus data, and the "covarying collexeme" approach adopted by Stefanowitsch and Gries (2005). He is also sympathetic to the formalism of a constructional HPSG model (although he does not adhere to the principle of complete inheritance characteristic of the HPSG model). His argument is based around a combination of corpus data and introspective grammaticality judgements, which he considers to be complementary evidence on which to build a principled account of preposition placement in English relative clauses. Hoffmann's analysis of the ICE-GB data showed that stranding is favoured with free relative clauses and with questions (both direct and indirect), while pied-piping is favoured with *wh*-relatives (the most frequently occurring construction of the five types initially proposed by Hoffmann) and cleft relatives. Subjecting the data to further statistical tests reveals that stranding occurs in the first of these groups (free relatives and questions) irrespective of text-type, while stranding in the second of the groups is favoured only in informal texts (such as private correspondence), with formal discourse favouring pied-piping in these constructions. Simi-

larly, in constructions where specific prepositions are selected (as in phrasal-prepositional verbs of the kind *put up with*), stranding is favoured over pied-piping, whereas prepositions heading adjunct adverbials are more frequently pied-piped. Such statistical results lend weight to the hypotheses regarding processing, which Hoffmann discusses with regard to differences between usage-based and complete-inheritance variants of Construction Grammar.

Hoffmann goes on to argue, within an HPSG formalism, for a series of extra subconstructions which are warranted on empirical evidence (either from corpus data or from magnitude estimation experiments); he also points out that several adjunct types, including manner (*the way in which this works*) and degree (*the extent to which this works*), seem to involve obligatory pied-piping (or at least, stranding involves a significant processing cost and is a soft grammatical constraint). Their entrenchment (as a result of their frequent occurrence) suggests a further subconstruction which in turn has a series of lexically stored variants (including *the way in x*, *the ease with x*, and *the speed with x*), determined by a covarying collexeme analysis. Hoffmann concludes that some additional relative clause constructions must be posited for the grammar of English, irrespective of whether the complete inheritance or usage-based variant of construction grammar is adopted, while others need only be adopted in the usage-based model. Yet evidence from acquisition seems to support the usage-based model, which would militate in favour of a larger number of separately stored constructions.

The reduction in frequency of both positive and negative forms of *shall* is considered as an instance of "functional condensation" in the contribution by Alexander Bergs. This process of functional condensation occurs when constructions become increasingly restricted to particular contexts or types of discourse, or when they become subject to more systemic constraints (e.g. appearing only with certain kinds of subject). Having outlined the prescriptive "rule" regarding the distribution of *will* and *shall* with reference to function and subject-person, he turns to the actual distribution of such forms in corpora, including corpora of contemporary British English (BNC, FLOB), of contemporary American English (MICASE, FROWN), and of earlier material from English drama (Fries 1925) and the ARCHER corpus (Nesselhauf 2007). The contemporary corpora show that *shall* is used far less frequently than *will*, and that the difference is more marked in American English than it is in British English (where the use of *shall* with first-person singular subjects is not infrequent); the historical corpora suggest that the demise of *shall* occurred in three distinct stages:

with second-person subjects in the mid-eighteenth century; with third-person subjects in the mid-nineteenth century; and with first-person subjects in the mid-twentieth century. A similar pattern is described for the negative variants, but Bergs points out that the use of *shall ~ shan't ~ shall not* has not died out completely. Rather, they have become increasingly restricted in the written language to particular types of formal discourse, and in the spoken language to first-person interrogatives. His constructional analysis foregrounds the importance of co-text and context, and the relationship between simple and specific constructions like *shall*, and the larger, more complex constructions in which they appear. Like Trousdale (this volume), Bergs draws on the notion of a constructional taxonomy developed by Elizabeth Traugott (Traugott 2008), involving macro-, meso- and micro-constructions (all types of construction, at different levels of granularity), as well as constructs (specific instances of use), and considers the sociolinguistic context in which such constructional loss occurs. Like both the preceding and the following contribution, the issue of constructional frequency is seen as paramount.

While Hoffmann is concerned with the "internal debate" among construction grammarians regarding complete inheritance and the usage-based model, Julia Schlüter's article in part addresses the relationship between Optimality Theory and Construction Grammar; and while Bergs's contribution is concerned with the demise (or in his terms, the "deconstruction") of a construction in the history of the language, Schlüter is concerned with the growth of a construction in the evolution of English. She considers the syntactic, semantic and phonological constraints operative on "predicative-only" adjectives, like *alive*, *awake* and *aware*. Despite the category label, some of these forms can, in Present-day English at least, appear in attributive position if modified and/or co-ordinated. Schlüter points out different sources of the *a*-prefix of these forms in the history of English, noting that some of the adjectives are not Germanic in origin. Her quantitative analysis considers different kinds of constraints (phonological and semantic) which seem to prohibit or restrict the attributive use of these forms, and she is interested in analysing the different effects of the form and meaning constraints in such constructions. The corpora used in her study include a corpus of recent British newspapers and corpora of late Modern English fiction and drama. Thus Schlüter shows that attributive constructions have become increasingly complex, and have begun to accommodate additional premodifiers, in the past three centuries. Like Hoffmann, she is concerned with increased frequency and complexity of a construction, the mirror image of the functional condensation described in the contribution by Bergs.

Her careful discussion of the distribution of such forms in the Present-day English corpus (for example, the extent to which particular forms appear in attributive position without modification) enables her to point out the idiosyncratic nature of individual items. Her comparison of two *a*-adjectives in attributive and non-attributive position clearly shows the importance of premodification for the acceptability of attributive use for a large proportion of *a*-adjective forms, so her account deals with both individual differences and larger generalizations. Schlüter reviews existing accounts for this distribution, including a discussion of the historical origins of some of the forms (for example, from Old English prepositional phrases), and various proposed syntactic constraints, before moving on to other accounts involving semantic and phonological factors. It is at this point where a constructional account of the phenomenon is most clearly invoked (for example, in the discussion of meaning differences associated with attributive vs. predicative modification), where Schlüter highlights potential mismatches between inherent meanings of attributive vs. predicative constructions and the meaning of lexemes which appear in such constructions. Phonological factors (e.g. the avoidance of attributive *a*-adjectives because they bring about a disfavoured stress clash) are also outlined, and then both are subject to evaluation through an examination of data from the newspaper corpus. The data suggest that if both semantic and phonological constraints are violated, the frequency of use in attributive position is generally very low indeed, but that individual lexemes have very different degrees of sensitivity to the phonological and semantic constraints. Schlüter's data and analysis highlight similarities and contrasts between different theoretical models (here, as noted above, Optimality Theory and Construction Grammar), an issue considered elsewhere in this volume (e.g. Hudson's comparison of Word Grammar with Construction Grammar). Her data and analysis also provide a strong argument for an increased focus on the role of phonology in accounting for constructional patterns in English grammar.

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English relative clauses and Construction Grammar: A topic which preposition placement can shed light on?*

Thomas Hoffmann

1.   Introduction

Recently, the idea that all grammatical, including syntactic, knowledge is stored mentally as constructions has become immensely popular (cf. e.g. Fillmore and Kay 1996; Croft 2001; Goldberg 2003). In this article, I will demonstrate how the analysis of various sources of empirical data can offer important insights into the mental organization of the linguistic knowledge of a speaker of English, concerning the number as well as the internal structure of constructions.

Now, an interesting area of syntactic variation within the English language is the placement of prepositions. In relative clauses, for instance, the preposition can either precede the *wh*-relativizer ("preposition pied piping", as in (1a)) or the relativized gap ("preposition stranding", as in (1b)).

(1)   a.   *the place* [*in which*]$_i$ *I live* ___$_i$
         b.   *the place* [*which*]$_i$ *I live in* ___$_i$

Drawing on data from a quantitative variationist corpus study and online grammaticality judgement experiments, I will illustrate how a detailed empirical analysis of preposition pied piping and stranding has significant reverberations for (i) the number of constructions that have to be postulated for English relative clause constructions, (ii) the constraints applying to the general preposition stranding and pied piping constructions.

In the following I will first outline how the phenomenon of preposition stranding and pied piping can be captured within Construction Grammar approaches. As I will argue, the phenomenon is formally best described using Construction Grammar formalisms based on Head-driven Phrase Structure (HPSG; see Pollard and Sag 1994; Sag 1997; Ginzburg and Sag 2000). Then I will present data for various clause types from the British component of the *International Corpus of English* ICE-GB (Nelson *et al.*

2002) which will already indicate the need for a relative-clause-specific preposition placement construction. Since the corpus data show that the phenomenon of preposition placement mostly occurs in relative clauses, I will then point out further relative-clause-specific constraints on preposition placement exhibited in the ICE-GB corpus, which are corroborated by magnitude estimation introspection experiments.

2.   Construction Grammar and preposition placement

The basic tenet of all Construction Grammar approaches is that all levels of grammatical description (morphemes, words, idioms, abstract phrasal patterns) involve constructions (cf. e.g. Fillmore and Kay 1996; Sag 1997; Kay and Fillmore 1999; Ginzburg and Sag 2000; Croft 2001; Goldberg 2003; Tomasello 2003; Langacker 2005). In addition to this, all versions of construction grammars agree that language-specific generalizations should be captured by inheritance networks ("defaults"). Furthermore, most Construction Grammar theories also subscribe to the idea that

> [a]ny construction with unique idiosyncratic morphological, syntactic, lexical, semantic, pragmatic or discourse-functional properties must be represented as an independent node in the constructional network in order to capture a speaker's knowledge of their language. (Croft and Cruse 2004: 263)

Yet, while idiosyncratic properties lead to the postulation of an independent construction in virtually all approaches, there is disagreement as to the role of the frequency of constructions in language use: on the one hand, so-called "usage-based models" advocate that frequent use of a construction can lead to it being cognitively entrenched, even if its properties can be completely derived compositionally by the underlying subconstructions. These structures are therefore what Rosta (this volume) calls "u(sage)-constructions". In "complete inheritance models", on the other hand, only idiosyncratic properties justify the existence of a construction. Such structures roughly correspond to "g(rammar)-constructions" in Rosta's (this volume) terminology. One important point to note, however, is that Rosta's distinction of g- and u-constructions is ontological in nature, separating sound-meaning correspondences from other (sociolinguistic, stylistic or pragmatic) knowledge. This does not preclude the possibility of u-constructions being mentally stored as "non-grammatical" (in Rosta's sense of the term) knowledge. In contrast to this, in Construction Grammar approaches "grammar" means the mentally stored network of constructions.

Even most complete inheritance construction grammarians, for example, would argue that pragmatic or stylistic idiosyncrasies lead to a construction being part of this network, a.k.a. grammar (for an overview of the usage-based versus complete inheritance discussion, cf. Croft and Cruse 2004: 276–278; Goldberg 2006: 213–217).

As Tomasello (2003: 295–305, 2006) has shown, from a language acquisition point of view usage-based Construction Grammar approaches are much more psychologically plausible than complete inheritance ones: children acquire language based on specific lexical input. For example, they first acquire fully substantive constructions (i.e. structures in which all positions are filled such as *I wanna ball*). Only gradually do they then schematize these constructions by replacing a substantive lexical item by a variable slot (*I wanna ball* thus becomes *I wanna X* and *X* can then be filled by *doll*, *apple*, etc.). An important factor restraining the acquisition of both substantive and schematic constructions in this bottom-up process is input frequency: high input frequency leads to a construction being more deeply entrenched. This statement, however, needs to be qualified in that schematization only affects constructions with a high type frequency, i.e. structures that have been encountered with many different lexicalizations, all of which have something in common, i.e. they are semantically related (cf. Bybee 1985, 1995; Croft and Cruse 2004: 308–313; Goldberg 2006: 98–101). As Goldberg puts it: "a pattern is considered extendable by learners only if they have witnessed the pattern being extended" (2006: 99). If a construction has an exemplar with high token frequency, i.e. a particular lexicalization that is used over and over again, then this will only lead to the entrenchment of this particular substantive construction (such as, e.g., the fixed phrase *Well, what do you* [*whaddaya*] *know* [Rosta, this volume]; cf. also Croft and Cruse 2004: 292–295). Note that under this usage-based view, constructions with a high token frequency will become cognitively entrenched even if they are fully compositional.

Another advantage of usage-based approaches is that they can help explain how processing factors might affect the mental grammar of a speaker (i.e. his/her network of constructions): following Hawkins (2004), I take it that processing factors play an important role in the formation of abstract schemata. If the same content can be expressed by two competing structures and one of these is easier to process than the other, then the simpler structure will be preferred in performance. Consequently, it will be used more often with a greater range of lexicalizations, which increases its type frequency and ultimately leads to it being more cognitively entrenched than its alternative (cf. Hawkins 2004: 6). Furthermore, competition between

structures also entails that preemption will play an important role (cf. Tomasello 2003: 300): if on a particular occasion one construction is used instead of its alternative, then the hearer will assume that this choice reflects a functional difference between the two structures. Ultimately, this will lead to the functional differentiation of the two alternatives (i.e. the minimization of constructional synonymy). Finally, I adopt Hawkins's Performance-Grammar Correspondence Hypothesis, i.e. I take it that "[g]rammars have conventionalized syntactic structures in proportion to the degree of preference in performance, as evidenced by patterns of selection in corpora and by ease of processing in psycholinguistic experiments" (Hawkins 2004: 3). Thus usage-based Construction Grammars are able to show how processing effects affect the input that a learner is exposed to, and thus ultimately shape his/her mental grammar. In contrast to this, complete inheritance approaches normally uphold the competence-performance distinction, treating processing effects as non-grammatical (i.e. not being part of the information that is stored in the construction network).

Yet, while I take usage-based approaches to be correct, it remains to be seen how claims about cognitive entrenchment can be substantiated by empirical corpus and experimental data. In the following I will argue that carefully analysed empirical data can help to identify statistically significant type and token frequency effects in the input that speakers are exposed to. As I will show, multivariate corpus analyses and introspection experiments can be used to uncover significant effects that indicate the entrenchment of a particular schematic construction. In addition to that, I will present Stefanowitsch and Gries's covarying-collexeme analysis (2005: 9–11; more about this later) as one way of validating claims about the entrenchment of a frequent but perfectly compositional construction (basically by statistically identifying significant token frequencies).

Besides the issue of entrenchment, another important issue in all construction grammar theories concerns the question how individual constructions (e.g. NP or VP constructions) combine to give full sentences. HPSG-based Construction Grammar accounts (cf. Sag 1997; Ginzburg and Sag 2000) employ a fully-fledged grammar formalism that is both explicit and falsifiable and has widely been used for the description of a great number of grammatical phenomena. Due to this, I consider these superior to alternative accounts (such as e.g. Fillmore and Kay 1996 or Croft 2001). Note, however, that while I adopt an HPSG-based construction formalism, I do not subscribe to the complete inheritance model usually advocated by these approaches.

Nevertheless, the underlying complete inheritance model of HPSG accounts for the fact that preposition placement in such approaches is usually reduced to two general constraints. Take, for example, the pied-piped relative clause in (2), which in HPSG has the structure given in figure 1.

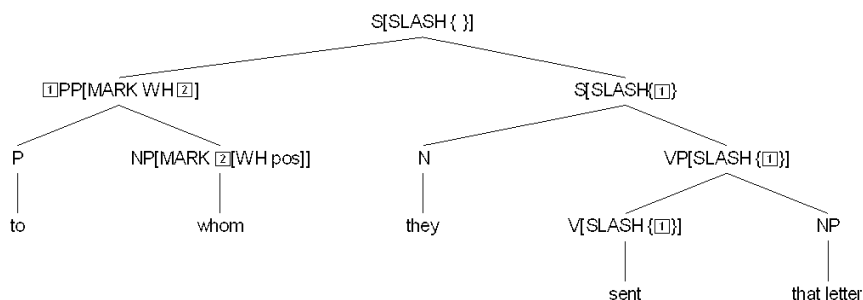(2)   *the man* [*to whom they sent that letter*]

Figure 1. Pied piping in HPSG (following van Eynde 2004)

A basic constraint on questions or relative clauses in English is the requirement that the non-head daughter (i.e. the position that corresponds to SpecC in the Principles-and-Parameters frameworks) carries a [WH pos] feature (following van Eynde 2004).[1] In pied-piped cases such as (2) where the lexical [WH pos] feature of a *wh*-word is embedded in a prepositional phrase the grammar must provide a mechanism that ensures the percolation of that feature to the entire PP node. Figure 2 gives van Eynde's (2004) formalism for pied piping in HPSG.
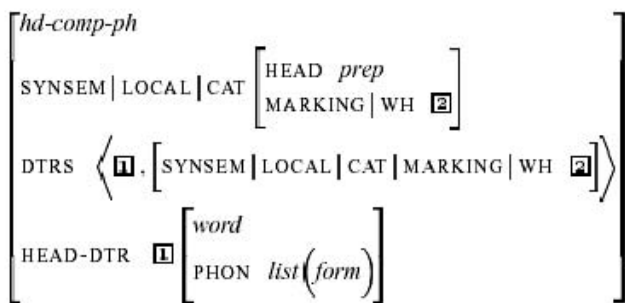
Figure 2. Pied piping in HPSG (van Eynde 2004: 329)

The co-indexation (i.e. ②) of the WH features in figure2 ensures that the WH feature value of the non-head daughter (i.e. the *wh*-word) percolates/is

inherited by the entire prepositional phrase. As figure 2 shows, the constraint makes no reference to a specific clause type (e.g. relative or interrogative constructions). Thus it is implied that all cases of pied piping in prepositional phrases in English can be captured by this single constraint.

Moving on to preposition stranding, it is important to understand how HPSG models displacement phenomena: instead of assuming movement of a *wh*-phrase, filler-gap dependencies are handled by the percolation of SLASH features (a special type of NON-LOC(AL) feature which indicates that a an element that is expected locally has been displaced; SLASH features thus have a function similar to traces in Principles-and-Parameters frameworks; for the precise technicalities, see Ginzburg and Sag 2000: 167–171; van Eynde 2004: 315–317). If a lexically specified argument such as the receiver PP in (2) is not in its canonical position, a non-empty SLASH feature percolates up the tree until an adequate filler phrase is encountered (in figure 2 this is modelled by the co-indexed feature ⬜).

(3)   *the man* [*who(m) he sent the letter to*]

Now in order to license stranded structures like (3), the grammar must simply allow SLASH features on the Argument-Structure of prepositions. As the German equivalent of (3) in (4) shows, however, this type of extraction is not licensed by all languages.

(4)   **der Mann* [*den er den Brief an geschickt hat*]

Finally note that the licensing of SLASH features for prepositions again is a single construction that assumes no further construction-specific constraints.

In the following I will first give an overview of the data sources used for the present study together with the statistical analysis tools that were employed. Then I will show how the results of these data sources indicate that two general preposition placement constructions are not sufficient to account for the actual distribution of preposition stranding and pied piping in English.

3.   Empirical studies: Sources

As I have argued elsewhere (Hoffmann 2006), when analysing a particular syntactic phenomenon linguists should not limit themselves to only a single

data base. Corpus and introspection data, if carefully collected and statistically analysed, can be viewed as corroborating evidence which enables the researcher to argue a much stronger case. Consequently, for the present analysis I will adduce corpus as well as introspection data.

The empirical source for the variationist corpus study was the British component of the *International Corpus of English* (ICE-GB; Nelson *et al*. 2002). The corpus is fully tagged for part-of-speech and parsed for syntactic structure. In addition, the ICE-GB corpus comes with a retrieval software called ICECUP, which allows the researcher to search for individual words as well as abstract syntactic structures (Nelson *et al*. 2002). It is a one-million words corpus consisting of spoken (about 637,000 words) as well as written (about 423,000 words) material, and is intended as a representative sample of educated British English.

For the statistical analysis of the corpus data, I employed the Goldvarb 2001 computer program for Windows (Robinson, Lawrence and Tagliamonte 2001). Using stepwise logistic regression, Goldvarb identifies the factors that significantly influence the dependent variable (here: preposition placement) in the data (for an overview of the underlying statistics, see Sigley 1997; Paolillo 2002). The influence of factors is reported on the logistic/probability scale (cf. Paolillo 2002: 162). As a result, the neutral value for Goldvarb factors is 0.5, with factors ranging from 0 to <0.5 having an inhibiting and those from >0.5 to 1 having a favouring influence on the investigated variant of the dependent variable. In addition to this, Goldvarb also provides information on the fit of the model via two additional parameters: the "Fit: X-square" value indicates how well a chosen model "fits", i.e. describes the data (its *p*-value value must be >>0.05 so that the variation in the data can be said to be adequately explained by the model). In contrast to this, the "Significance" parameter indicates the impact of the last factor group added to a model (in order for the added factor group to make a significant contribution to the previous model this *p*-value value must be <0.05; for details see Sigley 1997, 2003; Hoffmann 2006). Finally, the best model was then always fed into the R 2.2.1 software to get the cross-validation parameter not provided by Goldvarb (cf. Maindonald and Braun 2003: 121–123, 209–210). This test assesses the predictive accuracy of a model by randomly splitting up the data into a number of subsets (so-called "folds"; I always use Maindonald and Braun's *cv.binary()* function for this test, which by default creates ten folds). Each fold then becomes a test set against which the model's accuracy is assessed. The advantage of this procedure is that individual tokens as well as undue influence of data from single speakers can be factored out.

The method used for the collection of the introspection data was based on the experimental paradigm of magnitude estimation (cf. Bard *et al.* 1996; Keller 2000). The data reported in this article stem from two earlier studies (for details on these, see Hoffmann 2006, 2007a). In both studies, subjects were asked to give numerical judgements on sentences proportional to a constant reference sentence. The experiments were conducted using the WebExp software[2] (cf. Keller *et al.* 1998), which includes a cross-modality (judgement of line length) as well as a linguistic training session and automatically randomizes the order of presentation of stimuli in the main experiment. In line with Cowart (1997), the stimuli for the experiments were created by crossing all tested conditions and then counterbalancing them so that every subject was exposed to all conditions, but never with the same lexical material. Furthermore, in order to preclude subjects forming implicit hypotheses about the goals of the experiment the number of fillers/distracters exceeded the number of stimuli. Finally, the set of fillers comprised an equal number of grammatical and ungrammatical fillers. Using SPSS 12.0 for Windows, the subjects' data were normalized by transformation to z-scores (cf. Featherston 2004, 2005) and then subjected to a repeated measures ANOVA analysis (cf. Hoffmann 2006, 2007a).

4.   Preposition pied piping versus stranding in the ICE-GB

As Pullum and Huddleston point out (2002: 627), in English the following four structures allow a choice between preposition stranding and pied piping:

(5)   a.   [*Stranding*]$_i$ *I've heard of*$_i$.   [preposing]
       b.   [*What*]$_i$ *is he talking about*$_i$?   [open interrogative]
       c.   [*What a great topic*]$_i$ *he talked about*$_i$!   [exclamative]
       d.   *the structure* [[*which*]$_i$ *he talked about*$_i$]. [*wh*-relative]

(6)   a.   [*Of stranding*]$_i$ *I've heard*$_i$.   [preposing]
       b.   [*About what*]$_i$ *is he talking*$_i$?   [open interrogative]
       c.   [*About what a great topic*]$_i$ *he talked*$_i$!   [exclamative]
       d.   *the structure* [[*about which*]$_i$ *he talked*$_i$]. [*wh*-relative]

One advantage of using ICE-GB for the present study was that all stranded prepositions could be extracted from the corpus due to the "stranded

preposition (PS)"-tag. Furthermore, the "Fuzzy Tree Fragment" option allowed searching the corpus for potential instances of preposition pied piping (e.g. by searching for PPs which contain a relativizer or question word). Since topicalized PPs, however, are not tagged in the corpus, it was not possible to investigate this phenomenon in detail. Furthermore, the corpus only contains 23 clauses tagged as "exclamative", of which only one displays the phenomenon in question (*What a mess she was in* <ICE-GB:W2F-003 #107:1>). Therefore, it was decided to focus on the interrogative and relative clause data, for which all instances of preposition stranding and pied piping could be extracted from the corpus.

After taking into consideration the relevant literature on the topic (Hornstein and Weinberg 1981; Van den Eynden 1996; Johansson and Geisler 1998; McDaniel, McKee and Bernstein 1998; Bergh and Seppänen 2000; Trotta 2000; Pullum and Huddleston 2002; Hoffmann 2005), it was decided to code the extracted ICE-GB data for the following factors:

− preposition placement (#1: stranded, pied piped),
− clause type (#2: *wh*-relative clause, cleft-relative clauses, free relative clause, direct question, indirect question)
− the type of displaced element (#3: *what*, *who*, *whom*, *which*, *whose*, *where*, *when*, *how*, NP, *wh-ever*[3]),
− the type of phrase in which the PP is contained in (#4: VP, AP, NP),
− text type (#5: the different ICE-GB text types; cf. Nelson *et al*. 2002: private dialogue, private correspondence, public dialogue, unscripted speeches, broadcast news, scripted speeches, non-professional writing, business letters, printed edited texts),
− "X-PP relationship" (#6: cf. table 2).

As the above shows, the coding of factor group #2 is slightly more explicit than that of Pullum and Huddleston. Under the term "relative clauses" the *Cambridge Grammar*, for example, covers finite and non-finite relative clauses, free relative clauses and cleft-sentences (Huddleston, Pullum, and Peterson 2002: 1034). Yet not all of these constructions behave alike with respect to preposition placement (free relative clause, for example, are generally considered to disallow pied piping; see Pullum and Huddleston 2002: 628–629 and below). Thus I opted for a more fine-grained classification which also allows distinguishing between embedded ("indirect questions") and free interrogative clauses ("direct questions"). For the sake of illustration, stranded as well as pied-piped attested corpus examples of

these five clause types are given in (7–11); (parentheses and coindexation TH):

(7)   *wh*-relative clauses (*Wh*-RC):

    a.   *But uh there's a there's a relevance theory workshop the following week since Sperber is over* [*which*]$_i$ *I shall go* [*to*]$_i$ <ICE-GB:S1A-005 #107:1:B>

    b.   *I'm going Tuesday uhm because there's the UCL Linguistics Society uhm Christmas dinner* [*to which*]$_i$ *one's in invot* [*invited*]$_i$ *as an honorary member* <laugh> <ICE-GB:S1B-012 #196:1:A>

(8)   cleft-relative clauses (Cleft-RC):

    a.   *It's* [*small cell tumours*]$_i$ *that I'll be talking talking* [*about*]$_i$ <ICE-GB:S2A-029 #7:1:A>

    b.   *It is* [*to those men and women serving our country in the Middle East*]$_i$ *that my thoughts* [*go out*]$_i$ *most tonight* <ICE-GB:S2B-030 #64:1:A>

(9)   free relative clauses (Free RC):

    a.   *I found myself confronted by uh what* [*what*]$_i$ *I looked* [*at*]$_i$ *as as the disabling effect that a wheelchair has on on a non-wheelchair user* <ICE-GB:S1A-001 #58:1:B>

    b.   *This has tended to obscure* [*to what extent*]$_i$ [*Beckett's early writings possess a coherent, though dislocated rhetoric of their own*]$_i$ <ICE-GB:W2A-004 #22:1>

(10)   direct questions (Direct Q):

    a.   [*who*]$_i$ *was I talking* [*to*]$_i$ <ICE-GB:S1A-015 #249:1:B>

    b.   *I didn't speak about faith as the answer to those inevitable recurring questions why am I here what is the meaning of my existence where am I going* [*to whom*]$_i$ *am I* [*accountable*]$_i$ <ICE-GB:S1B-028 #74:1:B>

(11)   indirect questions (Indirect Q):

    a.   *I know* [*where*]$_i$ *I got that one* [*from*]$_i$ <ICE-GB:S1A-007 #125:1:A>

    b.   *I felt like shouting out Fuck off as I know* [*to who*]$_i$ *it was* [*directed*]$_i$ *but decided it would be more prudent to keep quiet.* <ICE-GB:W1B-010 #56:2>

Above it was pointed out that free relative clauses are normally claimed to be categorical stranding contexts. Yet, as (9b) shows, the ICE-GB also contains free relative clauses in which pied piping clearly yields a grammatical sentence: (9b) corresponds to a relative clause with a pied-piped degree adjunct PP (i.e. *obscure the extent to which …*), in which the PP *to what extent* modifies the entire relative clause (which is indicated by the parentheses). The pied-piped preposition in this case can obviously be explained by the categorical effect of this type of PP (see Hoffmann 2005, 2006, and below). Nevertheless the sentence also shows that free relative clauses might not demand preposition stranding in all contexts regardless of the type of PP.

In addition to this, as argued elsewhere (Hoffmann 2005), a simple complement-adjunct dichotomy is insufficient for a functional analysis of PPs. Instead, I applied the classification of PPs given in table 1:

Table 1. Factor group "X-PP relationship" (adapted from Hoffmann 2005)

	"V-X-P" idioms (*make light of, get rid of*)
OBLIGATORY COMPLEMENT	prepositional "X" (subcategorized P: *rely on*)
	subcategorized PP(*put sth. in/on/over*)
	obligatory complement (*be/live in Spain*)
OPTIONAL	optional complements (*talk to*)
	affected location (*sit on the chair*)
SPACE	movement (*he rushed to the church*)
	direction (*he ran along the road*)
	position/location (*he stroked the cat in the garden*)
TIME	position in time (*He died on Saturday*)
	duration/frequency (*He slept for seven hours*)
	manner (*he ate the cake in a disgusting way*)
PROCESS	means/instrument (*He killed him with a knife*)
	agentive (*He was killed by John*)
RESPECT	accompaniment (*He came with Bill*)
	respect (*For him, something's always missing*)
CONTINGENCY	cause, reason, purpose, result (*as a result of which*)
DEGREE	amplification, diminution (*the extent to which*)

Furthermore, as expected from earlier studies (see e.g. Sag 1997; Bergh and Seppänen 2000; Hoffmann 2005), a preliminary analysis of the data had revealed categorical effects for the following factors:

−   all *that/∅*-RCs (e.g. **the man to that I talked*),
−   non-finite RCs (e.g. **a man whom to talk to*),
−   all manner, degree, respect PPs (e.g. **the way which he did it in*).

Due to their categorical effects these factors were excluded from the statistical analysis. However, corroborating evidence as well as explanations for these effects will be presented below. The descriptive analysis of the remaining 925 tokens then exhibited the following distribution of preposition placement across clause types:

Table 2.   Preposition placement in the ICE-GB across selected clause types

Type		Stranded	Pied piped	
Wh-RC	N	69	439	508
	%	14	86	
Free RC	N	148	2	150
	%	99	1	
Direct Q	N	118	5	123
	%	96	4	
Indirect Q	N	80	7	87
	%	92	8	
Cleft-RC	N	8	49	57
	%	14	86	
Sum		423	502	925

(light grey shaded cells indicate contexts favouring stranding;
dark grey shaded cells mark contexts favouring pied piping)

As can be seen in table 2, free relative clauses, direct and indirect questions seem to favour stranding strongly (with frequencies over 90%), while *wh*-relative clauses and cleft relative clauses favour pied piping (with frequencies of 86% each). In addition to this, the context with contributes the majority of tokens are *wh*-relative clauses (508/925 = 55%).

    Before turning to the statistical analysis, probably the most surprising finding in table 2 is the fact that the corpus contains two free relative clauses with a pied-piped preposition:

(12)   *It's almost like looking into water somehow uhm and as you say it*
        would vary enormously on what you put it <ICE-GB:S1B-018
        #40:1:B>

(13)   *I feel the most effective means of communicating the key results to respondents is to now enclose a survey summary which pinpoints what UCLi considered to be good practices from where we find ourselves at present.* <ICE-GB:W1B-029 #10:1>

Even after the exclusion of examples with categorical pied piping PPs such as the degree adjunct token in (9b), the ICE-GB corpus thus still exhibits pied-piped free relative clauses: both sentences (12) and (13) are parsed in the ICE-GB as free relative clauses with an initial PP. While the sentence in (12) sounds slightly odd, the examination of its context in the ICE-GB shows that it is a free relative clause whose intended meaning is 'that which [i.e. the surface] you put it [i.e. a painting] on'. (13), on the other hand, seems grammatical but it could be argued that the preposition *from* can also be parsed as belonging to the matrix clause. More experimental data thus appears to be needed to assess the precise grammatical status of the above examples. As the next section will show, however, the statistical analysis of the corpus data implies that free relatives basically behave like direct and indirect questions with respect to preposition placement in present-day British English.

4.1.   Statistically significant effects: Goldvarb analysis

The data from table 2 were then subjected to an inferential Goldvarb analysis which identified two factor groups as having a significant effect on preposition placement: an interaction between the factor groups "clause type" and "text type" as well as the type of PP, i.e. the "X-PP relationship" factor group. Table 3 provides a summary of the effects within these factors groups. Note that the Goldvarb factor weights are given with respect to their influence on pied piping: a factor weight below 0.5 thus can be said to inhibit pied piping (and, due to the binomial nature of the variable, favour stranding). In contrast to this, weights above 0.5 indicate a preference for pied piping (and an inhibition of stranding).

Table 3.   Best Goldvarb model for preposition placement in the ICE-GB

Factor group (significance relative to this model)	Factor	Pied piped/Total (% pied piping)	Goldvarb weight (full model)
Clause*Formal relationship (p = 0.000)	Free RC Indirect Q Direct Q	14 / 360 (4%)	0.030
	less formal * *Wh*-RC/Cleft-RC	7 / 34 (21%)	0.157
	more formal * *Wh*-RC/Cleft-RC	481 / 531 (91%)	0.921
X-PP relationship (p = 0.000)	prepositional "X" "V-X-P" idioms subcategorized PP obligatory complements	70 / 256 (27%)	0.172
	optional complements	148 / 324 (46%)	0.329
	movement accompaniment means/instrument cause/reason/result	89 / 136 (65%)	0.556
	position in time frequency affected location direction position/location	195 / 209 (93%)	0.947

Fit: X-square(7) = 3,600, accepted, p = 0,8224
Cross-validation estimate of accuracy = 0,925

First it should be pointed out that following the standard practice for multivariate analysis, several models were tested against the data.[4] As it turned out, the factor combinations provided in table 3 proved the best model for the ICE-data. Moreover, this model describes the distribution of preposi-

tion placement extremely well (with a Fit:X-square *p*-value > 0,82 and a cross-validation estimate of accuracy > 0,92).

As table 3 shows, the first group of factors with a significant effect on preposition placement is an interaction of the factor groups "clause type" and "text type": while free relative clauses, direct and indirect questions favour stranding regardless of the level of formality (inhibiting pied piping with a factor weight of 0.030), *wh*-relative clauses and cleft-relative clauses are clearly affected by the level formality. In informal contexts (i.e. the ICE-GB text types private dialogues and private correspondence) *wh*-relative clauses and cleft-relative clauses favour stranding (inhibiting pied-piping with a factor weight of 0.157). As the statistical analysis indicated, in the remaining, comparatively more formal text types, *wh*-relative clauses and cleft-relative clauses strongly favour pied piping (with a factor weight of 0.921).

In addition to this, the factor group X-PP relationship also has a significant effect on preposition placement: as expected, prepositions which head PPs which are specified as obligatory (prepositional "X", "V-X-P" idioms, subcategorized PP, obligatory complement PPs) or optional (optional complement PPs) by a predicate favour stranding (inhibiting pied piping with factor weights of 0.172 and 0.329, respectively). More adjunct-like PPs which can co-occur with a wide range of predicates (movement, accompaniment, means/instrument, cause/reason/result PPs) on the other hand already favour pied piping (weight: 0.556). Finally, temporal and locational adjunct PPs (position in time, frequency, affected location, direction, position/location adjunct PPs), which are prototypical adjuncts, strongly favour pied piping (with a factor weight of 0.947).

4.2.   Discussion

Cross-linguistically, preposition pied piping is far more common than stranding (cf. e.g. Hawkins 1999: 277). Hawkins (1999, 2004) argues that this is due to the fact that from a processing perspective preposition stranding is far more complex than pied piping. First of all, preposition stranding can give rise to garden path effects, while pied piping avoids such online misanalyses (examples taken from Hawkins 1999: 277):

(14)   a.   [*Which student*]$_i$ did you ask (O_i) Mary about O_i
         b.   [*About which student*]$_i$ *did you ask Mary O_i*

After having processed the main verb *ask*, the human processor is prone to assign *which student* as the filler of the object gap in (14a), which leads to a garden path effect once *Mary* is encountered. The pied-piped alternative in (14b), on the other hand, does not yield such an effect.

Secondly, as (14b) shows, pied piping also has the advantage that the filler only has to be identified with a gap within the VP, while in (14a) the gap is embedded within a PP that itself is embedded in the VP. Thus in (14b) the filler can be successfully integrated upon processing the main subcategorizer of the clause (i.e. the main verb), while in (14b) this integration is deferred.

Since preposition stranding is thus hypothesized to require more processing cost, it is to be expected that more complex clauses will lead to a preference for pied piping in order to reduce the underlying complexity. This claim has already received some empirical support (e.g. Deane 1992; Gries 2002) and is also borne out by the data in the ICE-GB: as Hawkins notes, prepositions which "are highly dependent on verbs for their interpretation and processing" (1999: 260, fn. 15) can be processed far more easily if they remain insitu. Furthermore, he assumes that "the ratio of stranding to pied piping in English should be proportional to the degree of dependency between V and P" (Hawkins 1999: 260, fn. 15). The effects of the "X-PP relationship" factor group in the ICE-GB corpus study clearly support this view: the PP types which are most prone to stranding are those in which the PP is obligatorily selected by the main subcategorizer. At the other end of the cline, temporal and locative PP adjuncts, which can co-occur with a wide range of predicates, strongly disfavour pied piping. Complete inheritance approaches would obviously treat such processing factors as not being stored in a speaker's construction network. Usage-based accounts, however, might argue that prototypical schemata (a stranded one for prepositional verbs and a pied-piped one for more adjunct-like PPs) have been entrenched as mental constructions due to their input frequency.

The interaction effect of "clause type" and "text type" in the ICE-GB corpus, however, is only partly explainable by processing factors. *Wh-*relative and cleft-relative clauses involve more processing effort than free relative clauses, direct and indirect questions since in addition to a filler-gap dependency the former also require their filler to be co-indexed with a clause-external antecedent (cf. Hawkins 2004: 200). While this might account for a higher frequency of preposition stranding in free relative clauses, direct and indirect questions, the data seem to indicate that stranding is in fact the default choice in English for these clause types (with only

14 out of 360 tokens exhibiting pied piping). Yet such an effect could not be captured by a single stranded preposition construction, as presented in section 2. Instead, clause type specific constructions appear to be required.

In contrast to this, the level of formality effect exhibited by *wh*-relative and cleft-relative clauses clearly warrants the postulation of an extra set of constructions. As the statistical analysis shows, free relative clauses, direct and indirect questions are not sensitive to such an effect of the level of formality. Thus it would be incorrect to associate the features [formal] and [informal] respectively with the general preposition pied piping and stranding constructions. In the following I will therefore first present Sag's (1997) Construction Grammar account of English relative clauses, and then I will outline how the above empirical results as well as further corpus and experimental data can be incorporated into this set of constructions.

5. English relative clauses and Construction Grammar

Working with an HPSG-based Construction Grammar approach, Sag assumes the following six types of restrictive relative clause constructions (1997: 464, 473):

1. three types of *wh-relative-clause* constructions:
   – the *wh-subject-relative-clause* construction
     (e.g. *the man … who left*)
   – the *finite-wh-filler-relative-clause* construction
     (e.g. *who they like*)
   – the *non-finite-wh-filler-relative-clause* construction
     (e.g. *on which to depend*)

2. three *non-wh-relative-clause* constructions:
   – the *bare-relative-clause* construction
     (e.g. *the man Sandy likes*)
   – the *simple-non-finite-relative-clause* construction
     (e.g. *the man to visit*)
   – the *reduced-relative-clause* construction
     (e.g. *the man standing on my foot*)

As the above shows, Sag's classification only incorporates one type of pied-piped preposition construction: the *non-finite-wh-filler-relative-clause* construction. All other properties of pied piping and stranding are assumed

to follow from the interaction of the above set of relative clause construc-
tions and the general constructions licensing preposition placement. The
postulation of the *non-finite-wh-filler-relative-clause* construction is justi-
fied by the idiosyncratic obligatory pied piping requirement of these
clauses:

(15)   a.   *the man on whom to rely*
        b.   **the man whom to rely on*

(16)   a.   *I wonder on whom to rely*
        b.   *I wonder whom to rely on*

While non-finite *wh*-interrogative clauses allow both stranding and pied
piping (see 16), preposition stranding is prohibited in non-finite *wh*-relative
clauses (see 11b; also Hoffmann 2005: 263). Sag captures this property by
a constraint which requires the filler in *non-finite-wh-filler-relative-clause*
construction to be of the type PP (i.e. [NON-HD-DTRS <PP>]; see Sag
1997: 462).

    Moreover, Sag analyses relative *that* as a *wh*-relative word (i.e. carrying
a *wh*-feature[5]). Accordingly, he considers *that*-relative clauses instantia-
tions of the *wh*-relative clause constructions. This is interesting since *that*
patterns with ∅-relativizers[6] with respect to preposition placement in only
allowing stranding (cf. Van der Auwera 1985; Huddleston, Pullum and
Peterson 2002):

(17)   a.   *the man that she relied on*
        b.   **the man on that she relied*

(18)   a.   *the man ∅ she relied on*
        b.   **the man on ∅ she relied*

Sag argues that the ungrammaticality of pied piping with *that* is in fact due
to case agreement, i.e. that *that* in Present-day English is a relative pronoun
which carries nominative case. Consequently, the ungrammaticality of
(17b) would be due to case misassignment on a par with the effect of pied
piping with nominative *who*, instead of *whom* (Sag 1997: 463). Note that
this explanation also accounts for the fact that *that* cannot occur in non-
finite relative clauses, where pied piping is obligatory (Sag thus formalizes
an idea already advocated in Van der Auwera 1985). Instead, the ungram-

maticality of (18b) follows from the fact that pied piping is impossible since in non-*wh*-relative clauses there is no filler carrying a *wh*-feature.

As outlined in section 4, the analysis of preposition placement across clause types shows that an extra *finite-P+wh-filler-relative-clause* construction is needed to account for the ICE-GB data. This construction is a subtype of the *finite-wh-filler-relative-clause* construction and thus inherits all properties of this supertype construction. In addition, as part of its idiosyncratic features, the construction obligatorily demands a PP filler. This requirement can be formalized in a similar way to the constraint on *non-finite-wh-filler-relative-clause* constructions:

(19)   *fin-P+wh-fill-rel-cl*   ⇒   [NON-HD-DTRS <PP>]

In addition to this the construction must also be marked as formal within the pragmatic information of its lexical entry:

(20)   *fin-P+wh-fill-rel-cl*   ⇒   [FORMAL]

Next I will turn to the question whether all empirical properties of preposition placement in relative clauses can be captured by this extended set of constructions or whether additional constructions are required.

5.1.   *That* relative clauses and pied piping

An important question with respect to relative clauses obviously concerns the status of *that*: while descriptive analyses tend to classify it on a par with the *wh*-relativizers as a relative pronoun (e.g. Biber *et al*. 1999; Quirk *et al*. 1985), generative approaches analyse *that* as a complementizer (e.g. Chomsky 1995; Pesetsky 1998). As illustrated in the preceding section, Sag (1997) is actually one of the few generative syntacticians who treats *that* on a par with *who* (i.e. as a relative pronoun). It remains to be seen, however, whether this approach proves adequate for the empirical preposition placement data.

In the ICE-GB all finite non-*wh*-relative clauses show the expected categorical stranding effect illustrated in (17) and (18): all 172 *that* tokens and all 178 Ø tokens only exhibit stranded prepositions (see Hoffmann 2005, 2006). Thus, while some dialects might license pied piping with *that* (see e.g. Van der Auwera 1985; Bergh and Seppänen 2000), in standard British English this option is not available.

This conclusion is corroborated by the results from the first magnitude estimation experiment, which indicate that pied piping in *that-* and ∅-relative clauses is considered a violation of a hard grammatical constraint (cf. Hoffmann 2006).[7] As can be seen in figure 3, pied piping with *that* and ∅ receives judgements similar to word order violations (e.g. *John's the one who **the does** training*.), subject contact clauses (e.g. *We visited **a wood in the morning was an oak wood**)* and subject-verb agreement errors (*There are so many **people who needs** physiotherapy*). (Note, however, the slightly increased ratings for P + that sequences with manner/degree PP adjuncts; more on this below.)
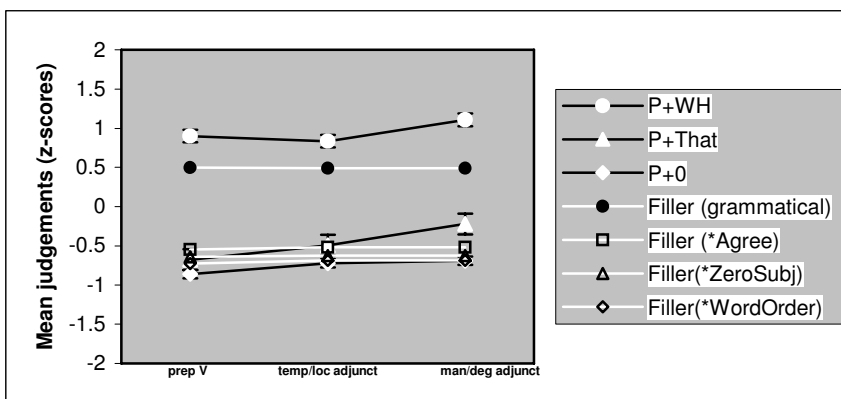
Figure 3. Pied piping across relativizers and PP types (from Hoffmann 2006: 186)

So far it might still be possible to attribute the ungrammaticality of pied piping with *that* to a case misassignment effect, as proposed by Sag. Therefore it was decided to carry out a follow-up study to test whether pied piping with *that* is in fact on a par with pied piping with *who* (i.e. a case misassignment effect). As one part of this study (the full details of the study can be found in Hoffmann 2007a), token sets such as (21) were designed in which prepositions of prepositional verbs were pied piped with *that*, *who*, *whom* and ∅.

(21)   a.   *I saw the teacher on that Jane relied.*
        b.   *I saw the teacher on who Jane relied.*
        c.   *I saw the teacher on whom Jane relied.*
        d.   *I saw the teacher on ∅ Jane relied.*

The stimuli for the experiment were then counterbalanced, a set of fillers was added (the overall filler-experimental ratio being 48:36; see Hoffmann 2007b) and all resulting material sets were randomized by the WebExp software.

Thirty-six native speakers of British English (28 female and 8 male; age range 19–65) took part in this study. Figure 4 presents the results for pied piping across the various relativizers and compares them with the subject contact clause filler *There's the waiter Ø insulted Jacqueline*, which received the lowest scores out of all fillers in the experiment (see Hoffmann 2007b):
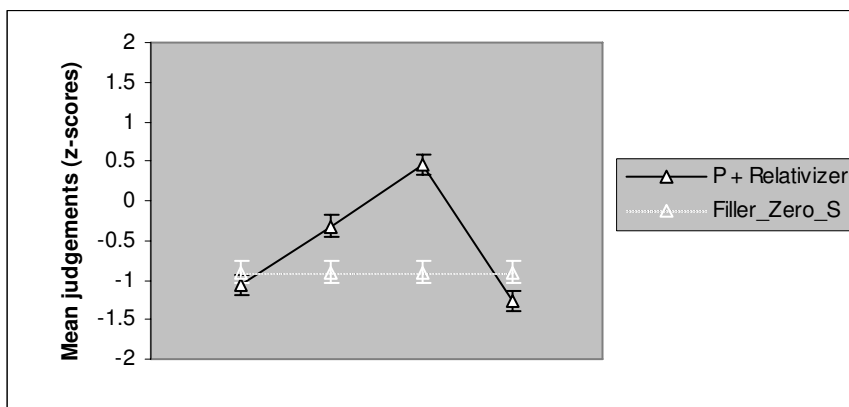
Figure 4. Pied piping across relativizers compared with subject contact clauses

Compared to P + *whom* structures, pied piping with *who* is clearly perceived to be less acceptable. However, as the non-overlapping error bars indicate, pied piping with *who* is significantly better than with *that*. Furthermore, pied piping with *that* and Ø receives scores lower than subject contact clauses, i.e. the most unacceptable filler in the entire experiment. In contrast to this, subjects rated pied piping with *who* significantly better than subject contact clauses. Thus the results from this second study imply that pied piping with *that* is not on a par with pied piping with *who* (i.e. it is not a case match violation). Instead, as figure 4 indicates, pied piping with *that* should be grouped together with pied piping with Ø.

All in all, the empirical data therefore suggest that *that*-relative clauses are more similar to non-*wh*-relative clauses (i.e. relative clauses without an overt relative *wh*-pronoun), a conclusion which is supported by various variationist studies on factors influencing the choice of relativizer: both *that* and Ø are restricted to restrictive relative clauses and both are pre-

ferred in more informal contexts (see e.g. Ball 1996; Guy and Bayley 1995). Consequently, it seems empirically more adequate to treat *that*-relative clauses as a special type of non-*wh*-relative clause with the following properties:

(22)   *that-non-wh-rel-cl*   ⇒   [HEAD-DTR   *that*]

$$
\begin{bmatrix}
\text{HEAD} & \begin{bmatrix} \text{MOD NP}_{\boxed{1}} \end{bmatrix} \\
\text{SLASH} & \{\,\} \\
\text{HD-DTR} & \begin{bmatrix} \text{SLASH} & \{\text{NP}_{\boxed{1}}\} \end{bmatrix}
\end{bmatrix}
$$

(23)   *that-non-wh-rel-cl*   ⇒

The first constraint of the *that-non-wh-relative-clause* construction in (22) ensures the presence of the *that* complementizer, which like all complementizers functions as the head of the (relative) clause CP (Sag 1997: 457). Due to the SLASH AMALGATION CONSTRAINT (Ginzburg and Sag 2000: 169), the head of the CP will inherit the SLASH features of its argument, i.e. the VP. This ensures that the information about the relativized gap is not lost. In a next step, the constraint in (23) then ensures that the SLASH feature is not percolated beyond the relative clause, but is bound off. Basically, (23) is similar to the constraint on non-*wh*-relative-clauses (Sag 1997: 468), with the only exception that *that* relative clauses modify NPs and not N'.[8]

Note that treating *that* as a finite complementizer in relative clauses also helps to explain why preposition stranding never extended to non-finite *wh*-relative clauses: since the finite complementizer *that* never appeared in non-finite relative clauses, these structures lacked an overt relativizer + P_{stranded} model. As a result, *wh*-relativizers retained their historically obligatorily pied piping constraint in non-finite *wh*-relative clauses (e.g. Allen 1980: 92; Fischer *et al*. 2000: 59).

Such an approach obviously also has repercussions for the analysis of *wh-subject-relative-clause* constructions. If *that* is not a regular *wh*-relativizer then sentences like (24) (taken from Huddleston, Pullum and Peterson 2002: 1047) cannot be captured by the *wh-subject-relative-clause* construction:

(24)   *I want a car that is safe*.

While an analysis of subject relative clauses is beyond the scope of the present article, it should be noted that an extra *that-subject-relative-clause* construction seems warranted. This construction would need to share certain properties with the *that-non-wh-relative-clause* construction (such as a

that HEAD-DTR and a mechanism that identifies the relative clause exter-
nal antecedent as the correct "filler" for the subject position). In addition,
any account of subject relative clauses would also have to account for the
fact that in non-embedded subject-relative clauses a Ø-relativizer is un-
grammatical (see 25a), while in embedded relative clauses this structure
becomes grammatical.

(25)   a.   *I want a car_i [__i is safe]*
         b.   *I want a car_i [I know [__i is safe]]*
        (taken from Huddleston, Pullum and Peterson 2002: 1047)

Therefore, despite the fact that English relative clauses are a well-studied
linguistic phenomenon, more research is clearly called for.

    As argued above, the empirical data on preposition placement in rela-
tive clauses indicates that Sag's classification of English relative clauses
needs to be extended by two additional constructions: the *finite-P+wh-
filler-relative-clause* construction and the *that-non-wh-relative-clause*
construction (and probably also the *that-subject-relative-clause* construc-
tion). These constructions are required due to their idiosyncratic properties,
and consequently will need to be integrated by both usage-based and com-
plete inheritance approaches. From a cognitive perspective, however, it
also seems likely that constructions such as *finite-wh-filler-P_{stranded}-
relative-clause* (e.g. *who I relied on*), *that-non-wh-P_{stranded}-relative-clause*
(e.g. *that I relied on*) and *non-wh-P_{stranded}-relative-clause* (e.g. *_ I relied
on*) are also deeply entrenched and stored. Yet, it remains to be seen how
such a claim can be supported by empirical evidence.

5.2.   The effect of the "X-PP relationship"

In addition to the level of formality and the choice of relativizer, it was
pointed out that the "X-PP relationship" has a significant effect on preposi-
tion placement across all types of clauses (see section 4). As argued there,
this effect can be explained by invoking processing factors, which from a
complete inheritance model perspective means that no additional construc-
tions would have to be postulated. However, in the ICE-GB relative clause
tokens there was also a group of PP types which seem to demand obliga-
tory pied piping: respect (e.g. *the conditions under which they had to
work*), manner (e.g. *the way in which she killed him*), frequency/duration
(*the period for which they slept*) and degree adjuncts (e.g. *the extent to*

which they accepted the pay cuts). These PP types do not only occur cate-
gorically pied piped in the corpus with *wh*-relativizers, they also never
occur in constructions in which stranding would be obligatory, i.e. *that* and
∅-relative clauses (cf. Hoffmann 2005, 2006). To investigate the nature of
these effects, the acceptability of preposition stranding across the follow-
ing three types of PPs was tested in a magnitude estimation experiment:
prepositional verbs, temporal/locative adjunct PPs and manner/degree ad-
junct PPs. As the experiment showed, all three types of relativizers be-
haved alike in the three contexts, thus figure 5 gives the mean judgements
for *wh*-, *that* and ∅-relative clauses:
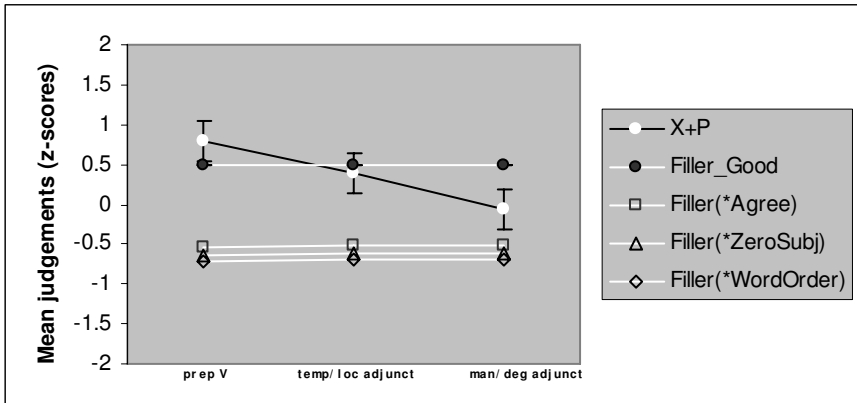
Figure 5. Stranding across relativizers (from Hoffmann 2006: 187)

As figure 5 illustrates, preposition stranding with prepositional verbs is
judged better than with the other two PP-type contexts. The stranded tem-
poral/location adjunct PPs in turn are judged better than the manner/degree
adjunct tokens. The most interesting effect in figure 5 concerns the man-
ner/degree adjuncts: while they are judged significantly less acceptable
than the set of grammatical fillers, they are still considered better than the
set of ungrammatical fillers and thus consequently also better than pied
piping with *that* and ∅ (which, as figure 3 showed, received judgements
similar to the ungrammatical fillers: for the statistics supporting this claim;
cf. Hoffmann 2006). Thus pied piping with *that* and ∅ violates a hard
grammatical constraint, i.e. they are structures not provided for by the
grammar. Preposition stranding with manner/degree adjuncts on the other
hand is judged as a soft grammatical constraint (see Sorace and Keller
2005 for a discussion of the hard-soft grammatical constraint violation):
the grammar can generate these structures, but the resulting output is se-

mantically difficult to process. Elsewhere I have argued (Hoffmann 2005, 2006) that this shows that an important constraint on preposition stranding concerns the semantic status of the affected PP: only a preposition which heads a PP which contributes interpretable thematic entities to the predicate can be stranded. The categorical pied piping with manner and degree adjuncts PPs can thus be explained by the fact that they do not add thematic participants to a predicate but compare events "to other possible events of V-ing" (Ernst 2002: 59).

In a complete inheritance model approach it could be argued that the above semantic constraint affects the general preposition stranding construction and thus does not require the postulation of any additional constructions. There is however also usage-based evidence that the pied-piped manner/degree adjunct PP relative clauses are deeply entrenched and lexically stored. First of all, pied piping in these relative clauses receives the highest judgement scores out of all stimuli (see Hoffmann 2006: 188–189). Secondly, pied piping with a *that* relativizer is still worse than the soft constraint violation of stranding in these constructions. Yet, compared to the other P + *that* scores, the judgements are considerably improved. This can be taken as in indication that English also has a lexically stored *finite-P+wh-filler-manner-adjunct-relative-clause* construction.

Furthermore, using Stefanowitsch and Gries's covarying-collexeme analysis (2005: 9–11) it also possible to identify specific antecedent + P sequences of the *finite-P+wh-filler-manner-adjunct-relative-clause* constructions whose co-occurrence seems to be stored lexically. In the covarying-collexeme analysis the association of two slots of a construction is tested via the Fisher-Yates Exact test. The results of this analysis are reported as log-transformed p-values with values of collostructional strength >1.30103 corresponding to p-values <0.05 (Stefanowitsch and Gries 2005: 7). Due to the considerable number of statistical tests carried out by the Coll.analysis 3 software, the significance value threshold for the following results was taken to be $p < 0.01$, i.e. results with a collostructional strength > 2.

Subjecting the ICE-GB manner adjunct PP tokens found in the relative clause data to a covarying-collexeme analysis (employing the Coll.analysis 3 software; cf. Gries 2004) yields the following results:

Table 4. Covarying-collexeme analysis of ICE-GB manner adjunct PP relative clauses

Attracted covarying-collexeme pairs in manner PP adjunct relative clauses	
antecedent + P	p_{log10}-value
way in	5.248
ease with	3.166
speed with	3.166

Coll.strength>3 => p<0.001; coll.strength>2 => p<0.01.

As table 4 shows, the co-occurrence of antecedent + P structures such as *way in*, *ease with* and *speed with* (all of which are followed by *which*) within the *finite-P+wh-filler-manner-adjunct-relative-clause* construction turns out to be statistically significant. All other combinations (such as *manner in* or *haste with*) were identified as nonsignificant in the corpus data. The covarying-collexeme analysis therefore supports the view that structures such as the ones in table 4 are lexically stored constructions.

Another type of PPs which exhibited categorical pied piping in the ICE-GB corpus was frequency/duration adjunct PPs. As I argued elsewhere, these PPs also do not contribute thematic participants to a predicate either, but instead have scope over the temporal information of an entire clause (Hoffmann 2005). Again, however, there also exists the possibility that the categorical effect of these PPs is simply due to a lexically stored *finite-P+wh-filler-frequency-adjunct-relative-clause* construction. In addition, the covarying-collexeme analysis for these tokens also identified a particular antecedent + P sequence as significantly associated:

Table 5. Covarying-collexeme analysis of ICE-GB frequency adjunct PP relative clauses

Attracted covarying-collexeme pairs in manner PP adjunct relative clauses	
antecedent + P	p_{log10}-value
frequency with	3.123

Coll.strength>3 => p<0.001; coll.strength>2 => p<0.01.

The data thus imply that along the abstract *finite-P+wh-filler-frequency-adjunct-relative-clause* construction (which leads to all frequency adjuncts being pied piped), the more substantive *frequency with which-finite-P+wh-filler-frequency-adjunct-relative-clause* construction is also lexicalized.

Interestingly, the ICE-GB non-relative clause data also contain seven frequency PP tokens with a stranded preposition: like (26) all of these are instances of a *how* (*much*) *long*(*er*) … *for*-question.

(26)   *How long did you do English for* <ICE-GB:S1A-006 #1:1:A>

Above I argued that stranding with frequency PPs should be avoided due to the resulting soft grammatical constraint violation. Yet cases like (26) are perfectly grammatical. This shows that particular lexicalized constructions can easily override such general constraints. For such sentences I would claim that the discontinuous sequence *how long … for* actually constitutes a lexicalized construction. Consequently, upon perceiving the filler *how long* the hearer will expect the stranded preposition *for*.

5.3.   Additional factors

In earlier studies on preposition placement in ICE-GB relative clauses (Hoffmann 2005, 2006, 2007b) two additional factors were identified as significant: the restrictiveness of the relative clause (a factor that was not included in the present study since it is only relevant for relative clauses but not questions or free relative clauses) and the type of phrase in which the affected PP is embedded. In the following I will address the relevance of these two factors for the English relative clause constructions.

As the statistical analysis of the ICE-GB data showed, non-restrictive relative clauses favoured preposition stranding (inhibiting pied piping with a factor weight of 0.200), while restrictive relative clauses favoured pied piping (with a factor weight of 0.610; see Hoffmann 2007b). This also can be interpreted as a processing effect: non-restrictive relative clauses are not necessary for the identification of the reference of the antecedent NP. Consequently, the filler-gap identification process in non-restrictive relative clauses is less complex than in restrictive relative clauses (Hawkins 2004: 240–242). This reduced complexity in non-restrictive relative clauses then allows the use of stranding, which in itself involves more processing load than pied piping (see section 4.2). From a complete inheritance model perspective there is thus no need to postulate an independent set of constructions to explain this effect. From a usage-based point of view it could be argued that in non-restrictive relative clauses *wh*-relativizers occur more frequently in contexts which in restrictive relative clauses favour both stranding and *that/Ø* (which are banned from non-restrictive relative

clauses). As a result, the factor non-restrictive itself might become inter-preted as favouring stranding leading to the entrenchment of an extra con-struction.

The same applies to the last factor identified as significantly affecting preposition placement in relative clauses: the type of phrase in which the PP is embedded (cf. Hoffmann 2007b). The Varbrul analysis showed that preposition stranding is slightly favoured by PPs which are embedded in VPs or AdjPs (factor weight for pied piping: 0.437). NP-embedded PPs, on the other hand, favour pied piping (with a factor weight of 0.964). This effect can also be explained by processing factors: since the filler-gap iden-tification mechanism in cases where a preposition is stranded in an NP would have to look into a phrase which is embedded in another phrase, the VP, in order to relate the filler to the correct gap site, pied piping is pre-ferred in these structures. Complete inheritance approaches would there-fore again see no need to postulate an extra construction to account for this phenomenon. Usage-based accounts, on the other hand, would argue that these processing effects lead to a higher input frequency of pied piping with NP-contained PPs, which results in the entrenchment of an abstract schematic construction.

6.   Conclusion

In this article I have tried to show how the phenomenon of preposition placement in English can be captured within a Construction Grammar ap-proach. The simplest account of preposition placement would obviously be one which only requires two constructions (one for stranding and one for pied piping). Yet, as the data showed, there were several phenomena that indicated the existence of additional constructions which due to their idio-syncratic properties have to be postulated by both complete inheritance and usage-based Construction Grammar approaches:

- Only *wh-* and cleft-relative clauses, but not (direct or indirect) ques-tions or free relative clauses are affected by the level of formality. The feature [FORMAL] is thus not associated with the general pied piping construction (figure 2), but an independent *finite-P+wh-filler-relative-clause* construction.
- As the data proved, pied piping with *that* is not on a par with pied pip-ing with *who*. Instead of treating *that* as a *wh*-relative pronoun, as Sag (1997) did, I therefore advocated the postulation of a *that-non-wh-*

relative-clause construction (and probably also a *that-subject-relative-clause* construction).

In addition to these, there were also effects that could be attributed to processing factors. As I have repeatedly pointed out, the precise theoretical interpretation of such empirical results depends on one's view of the role of the frequency of constructions in language use. Complete inheritance accounts would see no need for incorporating such effects in the construction network. All of the patterns in question could be generated compositionally by the combination of stored constructions (using, e.g., an HPSG-based formalism) and it would then only be during performance that processing factors would come into play. Usage-based approaches, however, would argue that such processing effects affect the input frequency with which a pattern occurs and as a result the probability with which a construction will become mentally entrenched. As pointed out in section 2, from a cognitive perspective I consider usage-based models superior to complete inheritance models. I thus claim that a descriptively adequate Construction Grammar account also needs to incorporate the following types of constructions:

- In free relative clauses, direct and indirect questions, the corpus data seem to indicate that stranding is in fact the default choice in English for these clause types. Again this implies that abstract, clause-specific *wh-filler-P$_{stranded}$*-constructions have been entrenched for each of these clause types.
- The corpus study as well as the first experiment showed that the degree of lexical dependency of verb and preposition affects preposition placement. From a usage-based perspective this indicates the existence of prototypical schemata (a stranded one for prepositional verbs and a pied-piped one for more adjunct-like PPs).
- Furthermore, there are also certain types of adjunct PPs for which even more concrete constructions exist: for manner adjunct PPs, for example, I argued that the experimental data corroborated the corpus findings that English also has a lexically stored *finite-P+wh-filler-manner-adjunct-relative-clause* construction. In addition to this, using Stefanowitsch and Gries's covarying-collexeme analysis (2005), I identified several specific antecedent + P sequences of the *finite-P+wh-filler-manner-adjunct-relative-clause*

     and the *finite-P+wh-filler-frequency-adjunct-relative-clause* that also appear to be cognitively entrenched.

–   Finally, the results from earlier studies on preposition placement in ICE-GB relative clauses (Hoffmann 2005, 2006, 2007b) also imply a stranded construction for non-restrictive relative clauses and pied-piped construction for relative clauses with NP-contained PPs.

From the viewpoint of parsimony, the postulation of the above completely compositional constructions might be considered undesirable and unnecessarily complex. As pointed out earlier, however, the input-dependent process of language acquisition clearly supports such a usage-based view. Furthermore, once the role of processing factors is taken seriously, it is actually possible to explain why certain patterns are more frequent than others and consequently why certain constructions are more likely than others to become mentally entrenched.

Regardless of the various points of view on entrenchment, however, the role of data for Construction Grammar analyses cannot be overemphasized. In the last decade a great number of advances have been made in the collection and interpretation of empirical linguistic data. As I maintained throughout this article, the strength of one's argument can be greatly improved by drawing on various, corroborating sources of data. Hopefully, one day these new ways of gathering and analysing data will enable researchers to come up with a set of constructions that allow a truly descriptively and explanatorily adequate analysis of a language like English.

Notes

1. Note that both Sag (1997) and Ginzburg and Sag (2000) postulate two differ- ent types of features for question and relative *wh*-words (QUE and REL / WH and REL, respectively). Should this distinction turn out to be necessary, the constraint in figure 1 simply has to be rewritten so that it explicitly mentions the marking features for both question and relative *wh*-words.
2. Source: http://www.hcrc.ed.ac.uk/web_exp.
3. This code included all free relative tokens ending in *-ever*, i.e. *whatever*, *who- ever*, *whomever*, *whichever*, *whosever*, *wherever*, *whenever* and *however*.
4. Simpler models, i.e. those in which two original factors had been combined into a single one, were tested against the more complex original models, i.e. those in which the two factors were kept distinct. Decisions about whether two factors should be combined were then based on G^2-test comparisons of the log-likelihoods of the two models (cf. Sigley 1997; Paolillo 2002).
5. As mentioned earlier, Sag actually distinguishes different types of *wh*-features for relative and interrogative *wh*-elements. Therefore he actually assumes that *that* has a REL feature (see fn 1).
6. Note that the term $\emptyset$-relativizer is simply used for expository purposes. In Sag (1997) no such underlying empty element is assumed. Instead the antecedent NP is identified as the "filler" in such relative clauses.
7. The statistical size of this effect turned out as follows: PREPOSITION PLACE- MENT*RELATIVIZER $F_1(2,66) = 9.740$, $p < 0.001$, $\eta^2 = 0.20$; $F_2(2,10) = 78.271$, $p < 0.001$, $\eta^2 = 0.27$ (see Hoffmann 2006).
8. This adjustment is important since $\emptyset$-relative clauses must precede *wh*- and *that*-relative clauses, while the order of *wh*- and *that*-relative clauses is fairly free (cf. Sag 1997: 465–468).

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Shall and *shan't* in contemporary English – a case of functional condensation*

Alexander Bergs

1.   Introduction

This article deals with the gradual deconstruction and eventual loss of morphosyntactic constructions from a Construction Grammar point of view. The exemplary case study is the development of *shall* and its related forms *shall not* and *shan't*. This article offers new ideas insofar as it particularly focuses on the special role of the latter two forms, which have often been neglected in previous studies. Moreover, while the phenomenon of erosion and loss is not new in historical linguistics and language change theory, the present article tries to evaluate the advantages of couching it in a Construction Grammar framework. On the basis of empirical data it will be shown that *shall* and its corresponding forms are no longer used productively[1] in contemporary English. It will be suggested that in the case of such deconstruction and eventual loss, constructions are often not simply eliminated and dropped from the constructional inventory; rather, they are gradually reduced in their paradigmatic forms and functions. This process can be characterized as the functional condensation of a construction. In the case of *shall, shall not* and *shan't* this process also interacts in a complex way with extralinguistic factors such as folk linguistic ideas, stylistic stigmatization and prescriptivism.

2.   *Will* and *shall*: Prescriptive and descriptive perspectives

In the following, we will first look at some prescriptive approaches, both past and present, to the "correct" use of *shall* and *will* and their corresponding negative forms *will not, won't* and *shall not, shan't*.[2] After that, we will turn to actual language use, and describe, on the basis of empirical data culled from major corpora of contemporary British and American English, the actual distribution and frequency of these elements.

2.1.   The prescriptive perspective

"The 'correct' use of *shall* and *will* has long confused English speakers. Codified by eighteenth-century prescriptivists, rules for the use of these auxiliaries – rightly or wrongly – have continued to appear in modern handbooks and grammars of the English language" (Arnovick 1997: 135). In contemporary English both *will* and *shall* can be used for the expression of futurity. Huddleston and Pullum (2002: 195) point out that "there is a well-known prescriptive rule that treats *shall* and *will* as complementary" and that, according to this rule, *shall* is used for futurity in the first person, whereas the second and third person take *will*. Some advocates of this rule (in more or less strong forms) include *The Oxford Dictionary and Usage Guide to the English Language* (1995), Murphy's *English Grammar in Use* (1994: 44), Alexander's *Longman English Grammar Practice for Intermediate Students* (1990: 134), the notorious Fowler's *Modern English Usage* (1983), *s.v. shall*, and the recent *Cambridge Grammar of English* (2006: 649, 880). Statements range from clear and simple rules to semi-descriptive rules couched in variationist pep-talk: "When we are referring to the future, we use *will* with all persons … but in British English, we **often** use *shall* with *I/we* …. Negative short forms are: *'ll not*, *won't* (= will not) or *shan't* (= shall not) …. In American English, *shall* and *shan't* with future reference are rare" (Alexander 1990: 134, emphasis added).[3] The history of this prescriptive rule, which dates back at least to the sixteenth century, has been the subject of many publications (e.g. Poutsma 1924: 222; Joos 1968: 161; Facchinetti 2000; Fries 1925; Tieken-Boon van Ostade 1985; Sundby, Bjørge and Haugland 1991: 190–191, 392; Arnovick 1997), so there is no need to rehearse this in greater detail at this point. As with most other modals, *shall* and *will* also have free (i.e. full) and contracted negative forms: *will – will not – won't* and *shall – shall not – shan't*.

Eventually, this means that, from a prescriptive point of view, the use of *shall / shall not / shan't* and *will / will not / won't* is actually quite clear and can even be outlined in two simple matrices (tables 1 and 2).

Table 1. The morphological paradigm of WILL/SHALL

	Positive	Negative full form	Negative contracted/inflected form
WILL	Will	Will not	Won't
SHALL	Shall	Shall not	Shan't

Table 2. WILL/SHALL differentiated by function (in declarative clauses)

	1st person	2nd and 3rd person
WILL	Volition	Prediction
SHALL	Prediction	Command

The "correct" use, according to these rules, is illustrated in examples (1)–(12) below.

(1)   *I will give you two thousands dollars worth of silver pesos.* (FROWN) [1st person, volition, *will*[4]]

(2)   *I hope I shall see you again quite soon.* (FLOB) [1st person, prediction, *shall*]

(3)   *You have [my] word – nothing will go wrong* (FROWN) [3rd person, prediction, *will*]

(4)   *Microsoft shall pay Inktomi for all Inktomi's services hereunder relating to the development and delivery of the Derivative Technology as follows*: (http://cobrands.contracts.findlaw.com/agreements/inktomi/micros oftsoftwaredev.html) [3rd person, command, *shall*]

(5)   *"We will not say that!" Cameron's voice shouted back.* (BNC, *King Cameron.* Craig, David. Manchester: Carcanet Press, 1991, pp. 15-113.) [1st person, volition, *will not*]

(6)   *I won't excuse or explain my conduct.* (BNC, *Authors.* Miller, Karl. Oxford: OUP, 1989, pp. 60–163) [1st person, volition, *won't*]

(7)   *"I promise," he told them, "that I shall not fail your trust and that I shall lead the country to free elections."* (BNC, *Guardian,* elect. edn. of 1989. Foreign material) [1st person, prediction, *shall not*]

(8)   *We shan't be having Fru Blicher's buffet until well after nine.* (BNC, *Tomorrow.* Taylor, Elizabeth Russell. London: Peter Owen Pubs, 1991, pp. 52–137) [1st person, prediction, *shan't*]

(9)   *'As I said earlier this year, there will not be enough of any one crop to give self-sufficiency, [but the contribution this small plot has made to the good budget has ten times repaid the outlay on seeds and materials.]'* (BNC, *Gardeners' World.* London: Redwood Pub., 1991) [3rd person, prediction, *will not*]

(10)   *It probably won't get us very far, but you never know, one of them might come up with something.* (BNC, *Part of the furniture.* Falk, Michael. London: Bellew Pub. Ltd, 1991, pp. 1-146) [3rd person, prediction, *won't*]

(11)   *Moustaches shall not extend below the vermilion border of the upper lip or the corners of the mouth and may not extend to the side more than one-quarter inch beyond the corners of the mouth …* (BNC, *An inside job: policing and police culture in Britain.* Young, Malcolm. Oxford: OUP, 1991, pp. 2–106) [3rd person, command, *shall not*]

(12)   *But he shan't stay! Make no mistake about it, he shan't stay!* (BNC, *Ruth Appleby.* Rhodes, Elvi. London: Corgi Books, 1992, pp. 109–226) [3rd person, command, *shan't*]

As can be seen in the examples, *shall* indeed signifies a wide range of meanings including prediction and determination/intention on the part of the speaker, mainly with first-person subjects, and permission or prohibition for the hearer (not) to do something, mainly with second- and third-person subjects. Note also that *shall* can express the speaker's wish to certify that something will be the case (e.g. "You shall receive…"). *Will*, on the other hand, can signal volition on the part of the speaker with first-person subjects, and fairly neutral prediction with all other subjects. (For a comprehensive discussion, see, e.g., Huddleston and Pullum 2002: 188–196.)

2.2.   The descriptive perspective

In this section we will now turn to actual language use regarding *will, shall* and their corresponding forms. Apparently, modern usage no longer follows the rules and paradigms outlined in section 2.1, and the examples in (1) to (12) are rather the exception than the rule. Examples like (13) where *will* together with a first-person subject can only be interpreted as simple prediction ("I will have to") are in fact the norm.

(13)   *I will have office hours next week. unfortunately as of this week i will have to leave a little early, next week probably, by twenty to four.* (MICASE SEM495SU111)

In terms of sheer frequency, *will*, for example, is in general much more common, as table 3 shows.[5] Here we see the number of occurrences of *shall* and *will* in the British National Corpus (BNC[6]) with pronominal subjects (irrespective of their interpretation as markers of volition or prediction[7]).

Table 3. *Will* and *shall* with pronominal subjects (in declarative clauses) in the BNC, per million words

	I	We	Other	Total
WILL	67.35	79.97	454.02	601.34
SHALL	54.90	50.30	8.87	114.07

As can be seen in table 3, *we will* is the most common combination in the British National Corpus (ca. 80 occurrences per million words), followed by *I will* (ca. 67 occurrences per million words). *Shall* is clearly lagging behind with only 50 (*we shall*) and 55 (*I shall*) occurrences per million words. With all other persons, the result is even clearer: ca. 455 occurrences of *will* clearly outweigh *shall* with only ca. 9 occurrences per million words. This leads to a distribution of about 600 occurrences of *will* versus 114 occurrences of *shall* per million words of running text in total. Also note that with first-person singular pronoun subjects, the difference between *will* and *shall* is actually smallest, with only 67 versus 55 occurrences per million words, respectively. In American English we find yet another situation. Here, according to most grammars, *shall* is used only rarely, if ever, for futurity (cf. Huddleston and Pullum 2002: 195; Carter and McCarthy 2006: 880) and almost exclusively carries permissive and prohibitive meaning. This can be seen in the frequencies of *will* and *shall* with pronominal subjects in the Michigan Corpus of Academic Spoken English (MICASE[8]) in table 4.

Table 4. *Will* and *shall* with pronominal subjects (in declarative clauses) in MICASE, per million words

	I	We	Other	Total
WILL	133.63	88.19	297.56	519.38
SHALL	2.77	2.77	0.54	6.08

In table 4 we can see that *will* outweighs *shall* almost 30 times in the first person plural, almost fifty times in the first person singular and more than 500 times in all other subject types. In fact, there is only one occurrence of *shall* with a pronominal subject that is not in the first person, a quotation from the Bible (Gen 3:16) during a lecture, which is given in example (14).[9]

(14)   *…um, in in th- Genesis in the Adam and Eve story when God pun-
ishes or curses Eve and says um you shall desire your husband and
he will um, be your master.* (MICASE, LES605SU080, Women in
the Bible Lecture, Speaker 6)

In total, we find ca. 520 occurrences of *will* versus only 6 of *shall* per
million words of running text in MICASE. None of the six clearly signals
futurity. This is of course partly due to the nature of the corpus. Here we
are dealing with academic spoken English only, whereas the BNC offers a
much more representative sample of registers and genres. Nevertheless,
even in academic spoken US English a much higher frequency of *shall*
could be expected if *shall* and *will* were still on par. In fact, the figures
given in tables 3 and 4 above clearly show that *shall* is generally less fre-
quent than *will* and practically non-existent in American English academic
discourse. A better comparison between British and American English can
be made on the basis of FROWN and FLOB.[10] These offer comparable text
type differentiation. The results are presented in tables 5 and 6.

Table 5. Will and *shall* with pronominal subjects (in declarative clauses) in FLOB,
per million words

	I	We	Other	Total
WILL	58	64	425	547
SHALL	65	61	5	131

Table 6. Will and *shall* with pronominal subjects (in declarative clauses) in
FROWN, per million words

	I	We	Other	Total
WILL	77	73	231	381
SHALL	27	28	6	61

Tables 5 and 6, derived from comparable corpora, essentially confirm
what has been said before. In both varieties, *shall* and *will* are not on a par.
In terms of sheer frequency, *will* is about five times more common than
shall. The clearest differences, however, appear in the context of first-
person subjects. This is also where the most surprising results can be
found. In British English (FLOB), *shall* is still used frequently here, in fact
even more often than *will*. In American English (FROWN), *will* is about
three times more common in this context. How can this be explained? It
can be argued that this difference is partly due to the fact that FLOB is
comparatively small compared to the BNC, and that it only contains writ-

ten genres, which, of course, has some bearing on the forms that are used. If *shall* is actually associated with formal, written genres then these results are to be expected. FLOB only contains written genres and thus shows a higher proportion of *shall* than the BNC, which also contains spoken, informal genres, which have a higher proportion of *will*. This is also confirmed by the general distribution of the forms, which is different for the two corpora. *Shall* is generally more common in FLOB than in the BNC. The bottom line thus remains. There are clear, discernible differences between BrE and AmE regarding the use of *will* and *shall*. BrE has a much higher proportion of the latter with first-person subjects, especially in the singular.

2.2.1. A historical excursus

The development and distribution of *will* and *shall* was also the topic of Fries's (1925) investigation. Here it was shown on the basis of data from American and English plays that the proportion of *will* and *shall* with first-person subjects remained almost stable until the early twentieth century (at a level of ca. 8:2, see figure 1), while there was a clear split with a dramatic increase of *will* with second-person subjects beginning in the middle of the eighteenth century (see figure 2), and with third-person subjects beginning in the middle of the nineteenth century (see figure 3).
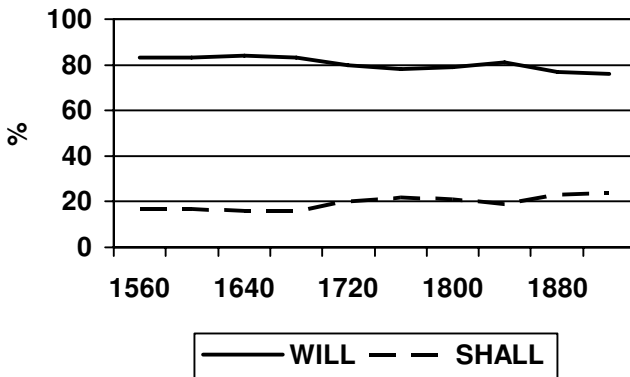
Figure 1. *Shall* and *will* (in %) in English and American plays (1560–c.1915), first-person subjects (Fries 1925: 995)[11]
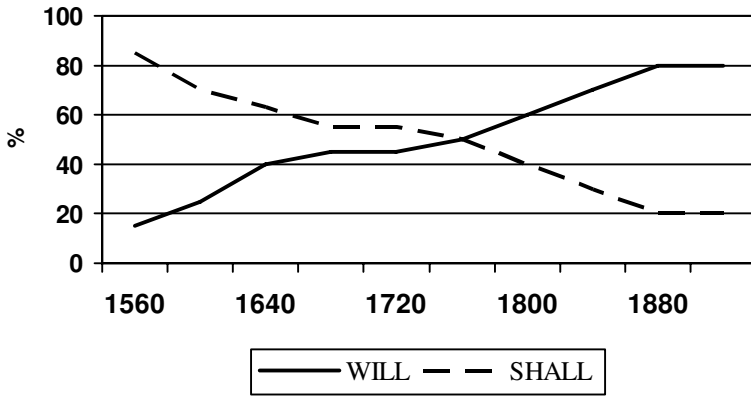
Figure 2. *Shall* and *will* (in %) in English and American plays (1560–c.1915), second-person subjects (Fries 1925: 996)
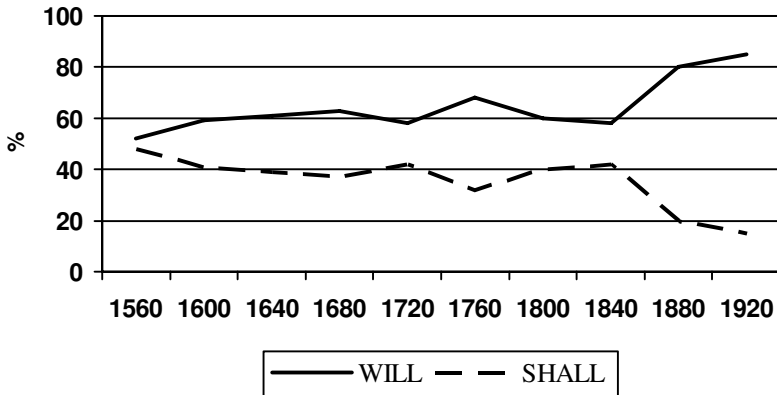
Figure 3. *Shall* and *will* (in %) in English and American plays (1560–c.1915), third-person subjects (Fries 1925: 997)

How do Fries's findings relate to the present-day situation as it was de-scribed above? On the basis of the data presented in figures 1–3 it can be concluded that the present-day situation is actually the third step in a mul-tiple level process that seems to have begun with second-person subjects. Here we see the earliest differentiation and the beginning erosion of *shall.* As a second step, we see the reduction of *shall* with third-person subjects, about one hundred years later. According to Fries, first-person subjects retained a *shall/will* ratio of about 1:4 until about 1915. This can, of

course, be explained by the fact that with first-person subjects *shall* is very often used in interrogative contexts: *shall I/we*? Compensation strategies for this function – apart from *should* – seem to be particularly complicated (see section 3.4. below). Interestingly, the data presented in tables 3 and 4 above show different results for contemporary English. The BNC has a ratio with first-person subjects of about 5:7, the MICASE of about 1:37. In other words: in contemporary mixed genres we find a higher frequency of *shall* than in early twentieth-century drama; in contemporary academic spoken discourse we find a much lower proportion of *shall.* These differences could certainly be due to genre or register factors. Also note that tables 3 and 4 exclusively show occurrences in main clauses with pronoun subjects. So the truth probably lies somewhere in between. In contemporary informal spoken American English we can expect a very low frequency of future *shall* and very few occurrences of *shall* with deontic (i.e. permissive/prohibitive) readings. This is, of course, due to register factors. On the other hand, a mixed register/genre corpus like the BNC also brings with it a frequency of deontic *shall*s that is perhaps higher than the average in a specific genre like drama.

A more recent and more comprehensive study than Fries's is Nesselhauf (2007). She investigates *shall* and *will* and their related forms in a nineteenth-century subcorpus of ARCHER and in a compilation of literary texts (WebFict) from the same period. In both ARCHER and WebFict she finds a modest decrease in *shall* (from about 25% to 20%) at the expense of *will.* At the same time, there is also a remarkable increase in *shall* with first-person singular pronoun subjects in declarative clauses (from 31% to 45%), and a decrease in all other persons, except for first-person plural subjects, which remain more or less stable. Quite interestingly, the increase in *shall* does not happen at the expense of *will* – which remains more or less stable at 33% – but at that of *'ll*, which drops in frequency in this context from 36% to 20%. Roughly the same results can be seen in WebFict, although here we see a drop in frequency of *will* with first person singular subjects, and a more moderate increase in both *shall* (from 30% to 35%) and *'ll* (from 27% to 32%). These findings support the results of the present study in so far, as we see the sharpest decrease in second-person subjects, followed by third-person subjects. First-person subjects tend to retain *shall* for the longest time, and can even show an increase in the nineteenth century. In how far the latter is due to the nature of the corpora investigated and/or influences from prescriptivism remains to be seen.

2.2.2.   *Negative forms*

One further complicating factor which has often been overlooked is that, being modal auxiliaries in terms of form, *will* and *shall* can be realized in full and reduced negative form: *will not, shall not, won't* and *shan't.* These, interestingly, again show quite different distributions. While *will not* and *won't* are common, *shall not* and in particular *shan't* are practically non-existent in most functional varieties of both contemporary American and British English. MICASE, for instance, contains 45 occurrences of *will not* per one million words and only 2 of *shall not* versus 196 *won't* and not a single *shan't*. In the BNC we find 108 *will not* per one million words of running text, 12 *shall not*, 154 *won't* and 12 *shan't*. The spoken section of the BNC leads to an interesting shift in proportions: here we find 49 occurrences of *will not* per one million words of running text, only 2 of *shall not*, 553 of *won't* and 14 *shan't*. By way of comparison, FROWN and FLOB give 124 *won't* per one million words, 208 *will not*, 2 *shan't* and 8 *shall not*. These results are summarized in table 7 below.

Table 7. Occurrences of *will not, shall not, won't, shan't* in three major corpora of contemporary English (per million words of running text)

	MICASE	BNC total	BNC spoken	FROWN & FLOB
Will not	45	108	49	208
Shall not	2	12	2	8
Won't	196	154	553	124
Shan't	---	12	14	2

The distribution of the different forms is quite illuminating, but hardly surprising. *Won't* is the preferred form in the spoken corpora, *will not* in the written ones. *Shall not* does exist, but it occurs mostly in the written section and in very special contexts. In MICASE, for example, one *shall not* comes from a quotation of a written text, and two from legal texts that are read out. In the spoken BNC, however, the contexts are more diverse and range from transcripts of legal texts, historical texts and quotations, to religious and literary texts. However, it practically does not occur in informal spoken discourse, even in British English. *Shan't* is again different. It is non-existent in academic spoken US English as represented in MICASE, and it is very rare in FROWN and FLOB. We find some occurrences in the BNC, with a strong bias towards the spoken section, where

fourteen occurrences in one million words of running text can be found. These are distributed across virtually all spoken genres, from political debate through classroom discourse and broadcast to informal conversation. Still, this should not distract us from the fact that even here in spoken English English, *won't* outnumbers *shan't* by almost 40 to 1. This might lead to the idea that *shan't* is actually an artefact of modern prescriptive grammars and that it was never actually used as a regular grammatical form. This, however, is not the case. The UVA (University of Virginia Text Archives) with English literary texts since 1500 contain 1,389 *won't* and a surprising 294 *shan't*.[12] Table 8 lists a few examples.

Table 8. Shan't in literary works of the nineteenth and early twentieth century (based on the UVA database)

Author, Title (Year)	*Shan't*
Anthony Trollope, *Can you Forgive her?* (1845)	34
D. H. Lawrence, *Sons and Lovers* (1913)	19
Charles Dickens, *Pickwick Papers* (1836)	11
Jane Austen, *Sense and Sensibility* (1811)	3

The *Oxford English Dictionary* (*OED*) cites example (15), from 1664, as the first written occurrence of *shan't*, next to Dryden's line from 1667, given in (16).

(15)   *My life and I sha'nt part* (1664, S. Crossman in Palmer *Bk. Praise* 1865, 167, *OED* s.v. *shall*).

(16)   *By this leg but you shan'not* (1667, Dryden *Secret Love,* I, ii, *OED*, s.v. *shall*)

Similarly, Mindt (1992: 232) in his study of mid-twentieth century English and American drama and conversation mentions an unusually high number of occurrences of *shall* and *shan't*. Apparently, *shall* and particularly *shan't* were used productively at one point, albeit mostly in literary discourse. Even in American English literature, a significant number of *shant*s can be found. Harriet Beecher Stowe's *Uncle Tom's Cabin* (1852) contains a surprising 11 instances. Nesselhauf's recent study (2007) also convincingly shows that both *shall not* and *shan't* are still part of nineteenth-century English. She finds 43 occurrences of *will not,* 20 of *won't,* but only 16 of *shall not* and 5 of *shan't* in her 1800–1849 part of ARCHER, in contrast to 28 *will not,* 29 *won't,* 12 *shall not* and 7 *shan't* in the 1850–1899 part. So there is even a slight increase here. This may be

statistically insignificant, but it shows that *shan't* certainly was part of nineteenth-century English. In her nineteenth-century WebFict corpus Nesselhauf comes to quite surprising results. Both *will not* and *shall not* show a significant decrease in frequency, whereas both *won't* and *shan't* show a significant increase, with the latter rising from 3 occurrences in 1800–1849 to 16 in 1850–1899. Obviously, Nesselhauf's results are in line with those presented here. *Shall* and *shan't* clearly seem to be part of literary style and discourse of the nineteenth and probably also the early twentieth century. The fact that *won't* also gained in frequency hints at the possibility that literary writers at the time deliberately tried to include seemingly "natural" spoken language and "informal" style in their works. However, whether their representation is actually accurate, remains an open question.

So, how can these findings be interpreted? Apparently, neither *shall* nor *shan't* nor its full counterpart *shall not* have completely died out. Both *shall* and *shall not* can be found in specific genres such as legal English, the language of religion and philosophy, and most of all literature. *Shall not* rarely, if ever, occurs in spoken discourse. A non-representative sample study of the BNC shows that *shall* (in a simple search including *shall not*) occurs with the following proportions per million words:

Written Miscellaneous: average 195 per million words
Admin: 1,232
Advert: 82
Biography: 132
Commerce: 341
Email: 42
Essay (school): 184
Essay (university): 53
Hansard: 1,088
Institutional: 155
Instructional: 18
Personal letter: 705
Professional letter: 196

Apparently, *shall* is most common in administrative, legal genres, in commerce and, surprisingly, in personal letters. While the latter remains to be explained, the other functions are confirmed by the findings in Coates's study (1983: 186) which shows that 77 occurrences (34%) of *shall* in the (written) Lancaster Corpus (N=225) are used with second- and third-person subjects in written "quasi legal contexts", signalling obligation. In the spo-

ken Survey Corpus, only 4 occurrences (2%) were used in the same func-
tion. The fact that in these functions *shall not* (and also *will not*) occur
proportionally more frequently is due to the fact that written, formal lan-
guage still does not allow contracted forms, which are generally considered
more informal, spoken forms. However, this leads to an interesting di-
lemma. *Shall* is generally seen as a very formal, written form, as Joos has
already pointed out:

> These nine are all the first-person uses of *shall* in *Trial*, and we have seen that
> this is even less of a "future" than *will*. This point is likely to be hard to grasp
> by people who, like Americans generally, have been taught to think that *shall*
> is a particularly solemn, impressive, and therefore presumably *forceful* word:
> they are apt to associate it with the proverbial "an Englishman's word is his
> bond" or with its archaic use in the drafting of documents and ordinances.
> (Joos 1968: 161)

Thus, *shall* is associated with written, formal genres, where only the full
form *shall not* is possible. This in turn means that the contracted form,
which is associated – qua being a contracted form – with informal, spoken
language, has no place in the linguistic system. This is in fact reflected in
the data presented above: *shan't* is practically nowhere to be found, except
maybe for certain literary genres and styles.

2.3.   Interrogatives

Another particularly interesting problem has not been discussed yet. As
modals, *will* and *shall* and all of their forms can also be used in interroga-
tive inversion, as in (17)–(21):

(17)   *Mm. A nig-nog! Um Will I get in the er if I sell them back?*
         (BNC)
(18)   *I'll keep you to that. Will it just be the two of us or will your
         harem be coming along?* (FLOB)
(19)   *"Shall I collect the key?" she offered.* (FLOB)
(20)   *Shall I still be the Me I've become and know better…?* (FLOB)
(21)   *But where shall the master himself go to sleep?* (BNC)

Shall in interrogatives usually asks for the addressee's volition or per-
mission, as in (19) and (20). Example (21) shows that in some cases this

reading might not be very strong, though, since in (21) the question could ask for general future events. *Will* in interrogatives can ask for general future events and state of affairs, as in (17) and (18). With first-person subjects, however, *will* can also be associated with the speaker's volition, resulting in somewhat awkward questions concerning the speaker's own thoughts and wishes. *Will I…?* could then be paraphrased as *Do I wish to…?* The latter is of course highly unusual in daily discourse, and would only be possible in contexts with speakers who do not possess full mental capabilities and free will. Consequently, in English Standard English, *will* with first-person subjects does not allow agentive verbs, since these would underline the (lack of) speaker's will and intention in this context (cf. Coates 1983: 188). Note, however, that *will*-questions with first-person subjects are not completely ruled out, but overall extremely rare; (17) shows an example with a non-agentive verb, which essentially asks for general predictions. In the BNC we only find 9.61 occurrences per million words (41% of which are plural subjects), FROWN only contains one instance (no plural), BROWN has six (66% of which are plural), FLOB shows four (75% plural), and LOB only three (66% plural). MICASE has 5.56 questions with *will* in the first person per million words (70% of which have plural subjects). The unusually high number of plural subjects might be due to the fact that with plural subjects the volitional reading is even further backgrounded and the question rather aims at some general future reading. On the other hand, certain complex phrases seem to be rather fixed, phrasal residues of *shall.* In MICASE, five out of 35 occurrences of *shall* are in the context of "shall we say (.)", another two in the context of "shall we say (?)". Note that the former apparently functions more like a discourse marker than an actual interrogative while the latter still has some interrogative flavour. Three occurrences are in "as we shall see", and three occur in the context of "shall we move on/begin". This means that at least fourteen out of 35, i.e. 40% of the occurrences, are in rather fixed contexts. Carter and McCarthy (2006: 880) note in a similar vein: "AmE does allow *shall* in first-person interrogatives, especially those functioning as suggestions and in **semi-fixed expressions** such as *How shall I say it?*" (my emphasis).

This situation has some important consequences for the linguistic system. If *shall* is dispreferred because of its association with formal registers and its lack of negative (contracted) forms, a compensation strategy needs to be developed. Some S-less varieties, like American English, turn to similar modals like *should* (which is also preferred because of its greater modal remoteness), or more complex constructions like *do you want me to V.*

Some other S-less varieties, like Scots for example, actually allow for *will* in first-person interrogatives, even with agentive verbs, as in (22).

(22)   SADIE: *Right. Will I fix her somethin?*
          MAGGIE: *Sadie's asking if you'd like something to eat, Beth?*
          SADIE: *Will I fix her somethin?*
          (Janet Paisley, *Refuge* (1997), *Scottish Corpus of Text and Speech*, SCOTS, www.scottishcorpus.ac.uk)

Summing up so far, a brief survey of the Corpus of London Teenage Speech (COLT) shows the distribution of declarative, negative, and interrogative constructions with *will* and *shall* in contemporary English English (table 9).

Table 9. SHALL/WILL in COLT (Corpus of London Teenage Speech)

D(eclarative) Q(uestion) Neg(ation)	Person (P): total (Percentage of plural)	Examples
D: *will*	1st P: 89 (17% plural) 2nd, 3rd P 412	*I will look like I'm scraping my knee… My dad will fuck with my head*
D: *shall*	1st P: 15 (20% plural) 2nd, 3rd P: 0	*I shall be getting the, I shall be getting the erm stolen goods, by the end of next week*
Q: 1st person *Will* *Shall*	8 (13) – (75% plural) 124 (48% plural)	*What will we do in the test? Mum! Shall I hit him?*
Neg: *won't*	1st P: 120 (13% plural) 2nd, 3rd P: 209	*I won't be able to have my pizza. [belch] cauliflower won't take long.*
Neg: *will not*	1st P: 3 2nd, 3rd P: 2	*I will not express my true feelings for you. If you work hard you will not be in that situation.*
Neg: *shan't*	1st P: 1 2nd, 3rd P: 0	*I shan't put the next one in the test I don't think*
Neg: *shall not*	1st P: 0, 2nd, 3rd P: 0	

Table 9 shows that in contemporary spoken English (especially in English English), *shall* still exists, but that it is largely restricted to first-person interrogatives. In simple declarative clauses, *shall* is still possible with first-person subjects, in a proportion roughly similar to that found by Fries (1925). In negative constructions, the full form *shall not* is practically non-existent in informal spoken language (just as *will not*, which shows that this is due to genre conventions). Interestingly, however, the contracted (and technically informal) form *shan't* is also not possible in informal, teenage language, and *won't* is the clearly preferred form here.

3.   Functional condensation and the loss of *shall*

In this section we will look at one possible route and explanation for the gradual loss of *shall* and *shan't* over time, in particular from a construction grammar point of view. It will be argued that the loss of *shall* in some of its functions and forms is a case of *functional condensation* which reduces the applicability of constructions in certain forms and functions, and thus gradually removes them from the constructional inventory of the language.

3.1.   Construction Grammar: A very brief sketch

(Vanilla) Construction Grammar (henceforth CG) assumes that language is essentially a structured inventory of constructions, i.e. conventionalized form-meaning pairings at all levels of linguistic structure. These form-meaning pairings, or constructions, may or may not be non-compositional or sufficiently frequent.[13] Constructions encapsulate both language-internal (semantic) and language-external (pragmatic, discourse-contextual) information. A schematic representation of constructions is given in figure 4.
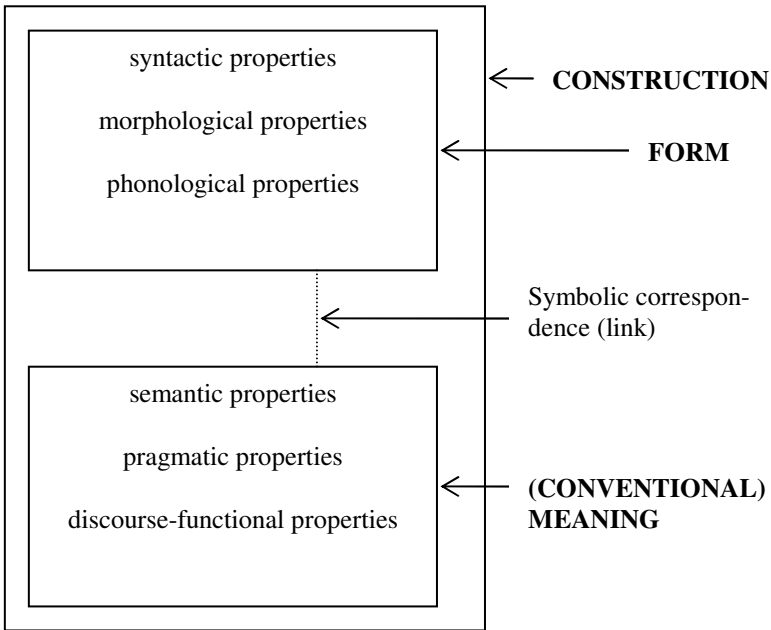
Figure 4. The symbolic structure of constructions (Croft and Cruse 2004: 258)

Constructions are to be found on different levels of granularity, both in terms of their complexity and abstractness. This means that we find at least a two-by-two matrix. There are very specific and simple constructions such as single lexical words, specific and complex constructions (e.g. complex idioms like *when push comes to shove*), abstract and simple constructions (e.g. word classes such as "noun") and abstract complex constructions such as the subject-predicate construction. At the same time, following Östman and Fried (2004), we also need to distinguish between constructions (abstract mental units, much like the traditional phoneme) and constructs (the concrete realization of constructions, comparable to allophones). Other current approaches distinguish between constructions and allostructions (Cappelle 2006, 2008) and micro-, meso- and macro-constructions (Traugott 2008; see also Trousdale this volume). "Macro-constructions" are defined as higher-level, more abstract functional constructions, "meso-constructions", encountered on the next level, are seen as groupings of similarly-behaving constructions, and finally, we find single, basic constructions ("micro-constructions") in which all elements are more or less fixed. This means that the traditional idiom just mentioned would be clas-

sified as a micro-construction, the subject-predicate construction, on the other hand, as a macro-construction. Meso-constructions are groups of constructions that behave in similar ways and thus, for example, contrast with other groups of similarly behaving constructions. As an example, Traugott (2008) mentions the *(a) kind of* set versus the *a bit (of)* versus the *a shred (of)* set of similar looking but notably different groups of (meso)-constructions. Traugott points out that all three levels are to be interpreted as abstractions, as types.

This raises the question what kind of construction(s) we have to deal with in the case of *shall, shall not, shan't, will, will not, won't* and how the granularity models just mentioned play a role in the loss of certain forms. It could certainly be argued, following Hilpert (2007), that *shall* + V, i.e. the modal verb followed by a bare infinitive, constitutes one particular semi-schematic construction, and so does *will* + V. However, the multitude of meanings associated with *shall* +V and *will* + V are difficult to capture in this case. The present article refers instead to another feature of CG, namely the explicit inclusion of co-textual and contextual information in constructions: "by *construction* I intend a conventional association of any or all of the following kinds of grammatical information: syntactic, semantic – including 'pragmatic', lexical and phonological" (Kay 2002: 1). Goldberg is even more explicit on this point: "Another notion rejected by Construction Grammar is that of a strict division between semantics and pragmatics. Information about focused constituents, topicality, and register is presented in constructions alongside semantic information" (Goldberg 1995: 7). Since English does not have a strictly grammaticalized element for futurity like Latin {– *b* –} or Turkish {– *eceg* –}, for example, expressions of futurity are heavily dependent on co- and context (see Bergs 2008a, b). Co-textual factors include intralinguistic information (e.g. syntagmatic alignment), contextual factors include extralinguistic information (e.g. style, register, encyclopaedic world-knowledge). It is, for example, not just *shall* + V which conveys the meaning 'futurity', it is *shall* + V in a specific morphosyntactic co-text or even, in some cases, extralinguistic context. Whilst with third-person subjects, for example, it has a deontic function in the sense of *have to*. So the actual constructions this article is concerned with are not just simple semi-abstract patterns with empty slots, but often much more complex configurations of various elements whose specific meaning in many cases is quite holistic. *Shall* with first-person subjects usually signals futurity, but with third-person subjects it conveys deontic aspects – where exactly should this meaning lie? With the verb or with the pronoun? And why is this quite different with *will*? The answer

can only be that both readings are holistic functions on individual constructions. While this is not the place to enter into a fully fledged discussion of the issue, it should at least be mentioned here that from this perspective, a number of constructions apparently share the same job, e.g. the expression of futurity (albeit in different nuances, perhaps). It could be argued that these constructions form a constructional family, united by similarity in function, but not necessarily in form (as in Michaelis 1998, for example). In so far, this approach somehow resembles Traugott's model with micro-constructions (here: the individual constructions with their specific configurations) and meso-constructions (here: groups, networks, and families of constructions united by form, function, or both). This might lead to two different networks of constructions: one based on meaning and one based on form. Both networks are, of course, susceptible to change. In CG, language is treated as the structured inventory of constructions. If we assume that the constructional inventory of a given language is essentially open, but finite (not unlike the lexicon), it follows that new constructions can be added or deleted from this inventory (again, not unlike the lexicon). On the questions of how new constructions may be added and thus enter the language, see the articles in Bergs and Diewald (2008a, b). In this article, we deal with how (micro-)constructions are deleted from the inventory, and how this loss of micro-constructions could eventually lead to the loss, or at least the re-organization of constructions on the meso-level. Note that the question of erosion and loss of linguistic forms is not new in historical linguistics (see below), but that it has never been couched in Construction Grammar terms before. This article is concerned with the details and consequences of modelling these processes in a Construction Grammar framework.

3.2.   Functional elaboration and condensation

Functional elaboration is a term coined by Einar Haugen in his 1972 paper on standardization. Haugen claimed that standardization processes typically consist of four individual steps: selection, elaboration, codification and acceptance. In order for a standard to develop, this new standard variety first needs to be selected from a number of possible alternatives. The selected variety needs to be functionally elaborated, i.e. it should be possible to use this variety in all language "functions" or domains: formal, informal, spoken, written, religion, law, music, sports, philosophy and academia, etc. A linguistic standard also needs to be codified, i.e. it needs

dictionaries, grammar books and pronunciation guides which define what is part of the standard and what is not. Finally, the new standard needs to be accepted by the speakers of the language. This article argues that there is also something like the reversal of functional elaboration. This process could be called functional condensation. Whereas in functional elaboration certain forms and structures are used in more and more contexts (domains, functions), functional condensation is the gradual reduction of possible contexts (domains, functions). In other words, a given form or structure first becomes marked in a given context in which it was unmarked before, and then eventually is no longer possible in that particular context. This means that the construction receives a more and more restrictive set of functional and grammatical constraints. The development of the English lexicon offers plenty of textbook examples: what we call a *dog* today used to be called a *hound* in the Old English period. At that time, the word *dog* meant a special type of dog, perhaps something like a boarhound or a mastiff. Today, the situation is reversed and *hound* is restricted in its use; it almost exclusively refers to foxhounds and harriers. The use of *hound* for dogs in general is deemed archaic or poetic by the *OED* (s.v. *hound*). Here we can see how the word *dog* underwent some kind of functional elaboration (i.e. expansion in its possible referents with concomitant use in a greater variety of contexts), while *hound* underwent exactly the opposite process, functional condensation, and is very limited in its applicability today.

Functional condensation is in a way very similar to functional elaboration, but there are also some important differences between the two concepts. Obviously, functional condensation, in contrast to Haugen's elaboration, is not involved in any straightforward way in standardization processes (though standardization, prescriptivism and linguistic stigmatization may play a role here, see below). Moreover, functional condensation also applies to grammatical items and structures. In such cases, it not only refers to the reduction of possible contexts in which the item or structure can be used, it can also mean that the associated grammatical forms are gradually limited and constrained. This can mean that the element in question gradually "fossilizes" and appears more and more often in a fixed form and in a fixed context, like the "how shall we say" construction mentioned above. When the two components of functional condensation move in tandem the end result of this process is very often – but not always – the marginalization and eventual deletion of the construction from the constructional inventory. Note that in historical linguistics, the phenomenon as such is not new. There are two alternative views on linguistic change. One states

that change proceeds quite simply as *A > B* (read: "*A* turns into *B*"). This means that at *t1* we find some item *A*, at *t2* we find some item *B* for the same function. *A* disappears once *B* is introduced. Alternatively, change is seen as *A > A/B > B* (read: "*A* is supplemented by *B*, finally *A* is lost"). This means that we have an intermediary stage (sometimes referred to as "layering") during which the old and the new forms co-exist. The new form can eventually win out over the old one. In many cases, however, old forms somehow survive in the linguistic system, either in their original form and function (e.g. *to go* still refers to physical movement from place A to place B despite the development of *gonna* as a grammatical marker of futurity), or as residues or exceptions (e.g. noun-adjective ordering, such as in *Lion Rampant* or *Secretary General*). Sometimes old forms end up as "linguistic junk" and are reused (in a process referred to as exaptation) for the different purposes (see Lass 1990; Hopper 1994). In some other cases, structures and rules actually disappear (e.g. the dual *wit* etc. in English). The present article does not deal with this basic principle of erosion and loss as such. Rather, it seeks to offer an account of how these fairly well-established phenomena could be described and accounted for in a construction grammar framework, where we do not operate with items and rules, as in mainstream generative syntax (for an early account of syntactic change in mainstream generativism, see, e.g., King 1969), but with constructions organized in a constructional inventory. In other words, we do not reorder rules, add them or delete them in Construction Grammar, nor do we simply add and delete items from the lexicon. Rather, we need to ask ourselves how exactly constructions move around in the inventory, how they are added and deleted from it, and how the inventory deals with these additions and losses, if at all. One mechanism that helps us to account for loss-related phenomena appears to be functional condensation. It will be suggested in the following that functional condensation leads to the marginalization (i.e. a lower degree of abstractness and generality, and possibly also lower token frequency), and thus eventually also to the loss of a construction in the constructional inventory.

3.3.   The development of *shall*: a case of functional condensation?

The current use of *shall* and *will* and their respective forms heavily depends both on co- and contextual factors, which can all be included in the constructional information. Today, *shall* and its forms are mostly restricted to rather specific form-function pairings (not unlike formulaic language

and idioms; cf. Wray 2002) and genres. The latter include legal English, the language of religion and philosophy, and certain forms of literature. The construction can be marked specifically for these functions. *Shall* also occurs in some interrogative contexts, and in the discourse-marker-like form *shall we say*. The negative form with full *not* is essentially restricted to legal language and the language of religion, where it mostly expresses laws, rules and commands. The reduced form *shan't* is practically non-existent. In CG, these facts can be described as the inclusion of contextual factors in the individual construction or as constraints on particular unifications with other constructions. Register, genre and style are also added as constructional information, i.e. constraints on the use for the construction. This means that we see the development of new constructions in some sense (or perhaps a functional shift in the construction), as the form is associated with new meaning. Moreover, the atomic, specific construction *shall,* and with it some of its more complex micro-constructions, also gradually cease to unify with other, more schematic constructions such as negatives and subject-predicate. This, of course, lowers its general frequency. Moreover, if it does unify with the negative construction, the fusion of forms does not seem to be possible in the same way as it is possible with *will.* How could that be captured? Again we can assume that the negative construction in English comes in at least two different forms, which can be treated as two related but technically independent constructions, one with a free negative form *not* and one with a fused form *n't.* The latter receives features such as *spoken, informal,* the former rather *written, formal, focal.* Note that these features do not necessarily mean that the constructions exclusively appear in these contexts. We do find *won't* in written and *will not* in spoken language. Nevertheless, they carry these features with them, so that *won't* in this case would be marked for *informal style* (and would therefore perhaps be changed by an editor at a publishing house), while *will not* is either very formal or expresses focus on the negation. Apparently, *shall* already carries the features *formal* and *written.* It thus cannot easily unify with the short negative construction since this is marked for *informal.*

The process which led to the current situation can be described as functional condensation on the functional and grammatical level as it was outlined above. Obviously, the range of genres and registers in which *shall* (and its forms) can be used was reduced. At the same time, within certain registers, *shall* is strongly preferred in certain syntactic configurations. In informal spoken language it almost exclusively occurs in interrogatives with a deontic reading. Moreover, *shall* also lost one of its forms, *shan't,*

completely; the full form *shall not* is reduced even further context-wise. The result is the marginalization and eventual loss of this construction. It may be speculated that a similar process can be expected in other rare or obsolete constructions, like the subjunctive.

What makes *shall* a particularly interesting case study is that apparently functional condensation in this case is in a feed-and-bleed relationship with the varietal stigmatization of *shall* and *shan't* on the basis of folklinguistic half-knowledge (for this concept, see Niedzielski and Preston 2000) and the confusion of forms and rules concerning deontic versus epistemic *shall/shan't* (cf. Joos 1968: 161, quoted above). Almost one hundred years ago, Poutsma (1924: 222) already pointed out that:

> It may also be doubted that the "true-born Englishman", even when he constantly moves in educated circles, strictly observes the rules … On the face of it, it seems incredible that he should be privileged, so to speak, with a sixth organ enabling him to tread unerringly in the maze of this bewildering problem [of *shall* and *will*; ATB] (Poutsma 1924: 222)

This means that speakers could never be sure what the "correct" form actually is. They seem to have opted for one quick and simple rule: when in doubt, *shall* is the formal, prestige form. Consequently, *shall* was the preferred form in writing, where *shan't* was not an option. So *shan't* was lost out of sight, which in turn advanced the special status of *shall* even further. Thus, linguistic stigmatization led to functional condensation, while functional condensation furthered linguistic stigmatization. Linguistically, functional condensation thus results in the reduction of both type and token frequency, but also in the retention of form(s) in certain stylistic functions and specific lexical constructions, i.e. it is one source of lexicalization and idiomatisation through phrasal fossilization as in the development of discourse-marker-like elements like *shall we say*. Berglund (2000) comes to a similar conclusion:

> It is not only the frequency of *shall* that has decreased; it also seems that the use of the expression has changed. In the FLOB corpus in particular, the expression is primarily found in a few texts, and it is often used in quoted contexts. This could be interpreted as the expression having become more marked, or less general. It is also interesting to note that the expression occurs to a relatively high degree in clusters in FLOB, a further indication that the expression is not generally used but found primarily in specialized contexts or constructions (Berglund 2000: 51)

3.4.   Compensation strategies

There is at least one more point that needs to be discussed with regard to the concept of functional condensation in general and the loss of *shall* in particular. When *shall* and its forms are stigmatized and finally lost, do speakers develop any compensation (or perhaps rather "avoidance") strategies that fulfil the same or at least some of the functions? Even without assuming that there are certain linguistic functions that always need to be fulfilled in any given language, it seems fairly safe to assume that asking for the addressee's volition, for example, is a fairly basic linguistic function, and that usually specific items (like *shall*) are used for that purpose. What happens now when *shall* is marked, fossilizes, or even disappears? In this concrete case, there is one very simple alternative: modal *should.* This also has the advantage of greater modal remoteness, which is of course very helpful for face-saving purposes. In MICASE, for example, we find 38.41 occurrences of *should I* per million words (and 39.49 of *should we*). In the BNC, there are only 11.42 and 6.66 occurrences per million words, respectively. In contrast to that, MICASE contains only two occurrences of *shall I* (per million words of running text), and 8.12 of *shall we.* The BNC has 13.51 of *shall I* and 14.29 of *shall we.* So the corpus of American English, which has few occurrences of interrogative *shall*, shows proportionally more interrogatives with *should*, while the corpus of British English, which still contains a rather high number of interrogatives with *shall*, contains a surprisingly small number of *should* interrogatives. This suggests that *should* is indeed one of the preferred compensation or avoidance strategies in S-less varieties like American English. Similarly, more complex constructions like *would you like me to V* or *do you want X* are also available. These might be less economical in the linguistic system, but essentially they do the same job. As regards deontic *shall* in declarative clauses, we can say that in legal text (where this structure is quite common) *shall* will probably be retained for the longest time. But even here we can identify alternatives such as *be to*. In declarative clauses expressing prediction, i.e. with first-person subjects, *will* has already taken over. A study of all these different strategies still needs be carried out.

   In sum, we can say that the loss of a construction through functional condensation – at least in the case of *shall* – does not severely endanger the constructional inventory and thus the language on the whole. Apparently, at least with the most central functions, there are always alternative constructions which are easily adapted into the vacant function. In fact, one could even speculate in how far this case of constructional deconstruction

is actually similar to the push or pull chain controversy in historical phonology. With the pull or push chain, scholars argue whether the Great Vowel Shift was triggered by the diphthongization of the close vowels (/i:/ to /ai/, /u:/ to /au/), which left a gap at the top of vowel space, which in turn "pulled the other long, stressed vowels up", or, alternatively, whether the raising of the open vowels (/a:/ to /æ:/, /ɔ:/ to /o:/) "pushed all other long, stressed vowels up" in the vowel space. Regarding the loss of *shall* one might ask whether it is the gap left by the loss of *shall* that is filled by alternative constructions such as *will* and *should*, or, perhaps, if these constructions pushed *shall* and *shan't* into the margins and finally out of the inventory?

4.   Summary and conclusion

This article described and discussed the status of *will, will not, won't* and *shall, shall not, shan't* in contemporary and historical Englishes. It was shown that the distinction of *will-shall* originated in the late Middle English period (Arnovick 1990) and that the distinction was codified between c. 1600 and c. 1900. The loss of *shall* and its forms took place in several steps. Declarative *shall* with second- and third-person subjects was gradually lost (in favour of *will*) in many genres between c. 1600 and 1900 (see Fries 1925). Until about 1900 both *shall* and *will* show full paradigms and uses in declaratives, interrogatives and negation, and there is no clear evidence for any genre or register distinction until c. 1900. *Shall* as a marker of futurity was present, but infrequent in earlier American English. Negative contraction was productive in spoken language and literature, both in American and British English, as can be seen from its uses in literature from earlier periods. From 1900 onwards we find a gradual loss of *shall* forms. *Shall* in declarative clauses is restricted to first-person subjects (with a future interpretation) and second/third-person subjects in legalese (with a deontic reading). There seems to be a gradual loss of first-person future *shall* even in English English, while in American English this form in this particular function is no longer available today. In interrogatives, *shall* is retained with first-person subjects. *Will* is possible, but clearly preferred with plural subjects and non-agentive verbs. There seems to be a growing tendency to use alternative strategies such as *should* in this context, especially in American English, a more or less S-less variety. In negative constructions, *won't* is by far the most frequent item; *will not* and *shall*

not are register specific due to full negation, and thus also less frequent. *Shan't* has practically disappeared in all contexts and varieties.

It was suggested that expressions of futurity in English, in particular *will* and *shall,* can be treated as constructions in the technical sense, since their form and function are heavily dependent on co- and contextual factors, which are explicitly included in CG frameworks, but very difficult to capture in traditional grammatical models. In CG, language is seen as a structured (finite, open) inventory of constructions. This means that in language change, new constructions can be added to the inventory, that existing constructions can change their form and function, and that they can also be deleted, i.e. disappear from the language. It was argued that one mechanism in the latter case is functional condensation – the gradual reduction of forms and functions of a particular construction. This may lead to a reduction both in type and in token frequency, and may also be the starting point for phrasal fossilization, i.e. the emergence of more or less fixed expressions. However, it can also first lead to marginalization and finally the deletion of the construction from the inventory. The use of a Construction Grammar approach thus offers a number of interesting new perspectives and ideas, including the integration of syntax and pragmatics in the widest sense, and the modelling of sometimes even very fine granularity in the development of constructions – a feature that is usually not available in other grammatical frameworks. Future work will have to show the extent to which other constructions, such as the subjunctive, the mediopassive, or *be*-perfects, have undergone similar developments. Also, it remains to be seen what factors can influence the process itself. When does a regular, frequent construction turn into a rare exception, when does it die out?

Notes

1.   The term "productively" here and in the following means that the forms are used frequently and/or in new contexts and morphosyntactic environments. Low productivity in this sense means that the item or construction in question

    no longer forms an integral part of everyday grammar, but rather occupies a more marginal position in the linguistic system which is usually associated with low token frequency.

2.   This paper does not deal with the reduced enclitic form *'ll* since this cannot be clearly categorized as belonging to either *will* or *shall* (pace Huddleston and Pullum 2002: 195). Moreover, the frequency of *'ll* does not seem to play any role in the distribution and relationship of the full forms *shall* and *will* and their negative counterparts

3.   Needless to say, rules like these only apply to contemporary "standard" varieties of English. Many other varieties, like Scots, for example, do not employ *shall/shan't* at all. We thus need to distinguish between S-full and S-less varieties. This paper is mainly concerned with S-full varieties, although occasional reference will be made to S-less varieties. Also, for the sake of clarity, we will restrict most of our discussion to simple declarative clauses

4.   Note that the interpretation of utterances such as these is usually not straightforward and unambiguous. In many cases, one could offer a different interpretation. The readings presented here only reflect the author's individual perspective on the utterance in context.

5.   Carter and McCarthy (2006: 650), and Biber (1999: 486) also come to this conclusion.

6.   The British National Corpus (BNC) contains 100 million words of British English, 90 million of which come from various written language genres, 10 million of which come from spoken language genres. The corpus can be searched online at www.view.byu.edu.

7.   For methodological reasons, the present study just investigates combinations of personal pronouns and verbs. Needless to say, slightly different figures can be expected for a full range study. However, the general tendencies and patterns observed here also seem to hold on a larger scale.

8.   The Michigan Corpus of Academic Spoken English (MICASE) contains 1,848,364 million words of 152 transcripts of spoken academic US English (see www.hti.umich.edu/m/micase/)

9.   Note that there is a total of only 38 occurrences of shall in MICASE. Of these 38 occurrences, only four are unambiguously with non-pronominal subjects, two of which in turn occur in rather fixed legal phrases ("[x] under the law shall not be denied or abridged"). The two remaining ones are "the death of Cicero shall haunt the memory…" and "all children shall enjoy the same, social protection…". One occurrence is in an interrogative context: "who shall our daughter marry?", one in a relative clause "[x], who shall remain nameless". This distribution underlines the previous claim that a more general picture can be derived from a study based on the context of personal pronoun subjects.

10.   The Freiburg-Brown Corpus and Freiburg-LOB Corpus are exact modern replications of the early LOB and Brown corpora, and offer 1,000,000 words

of exactly defined written genres of American English (FROWN) and British English (FLOB) (see http://khnt.hit.uib.no/icame/manuals/).

11. Fries's (1925) data are not very precise; the figures presented here thus only represent approximations. The approach and its findings are critically discussed in Arnovick (1997).

12. The data from the UVA corpus cannot be properly quantified since there is no total number of words available for the whole corpus or individual texts. Still, the proportions mentioned here can be seen as symptomatic.

13. There is an ongoing debate about whether constructions need to have non-compositional meaning or not. Goldberg and Jackendoff have recently suggested that constructions prototypically either have non-compositional meaning or are "sufficiently frequent" to be stored as separate units (Goldberg and Jackendoff 2004; cf. Goldberg 2006).

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Constraints on the attributive use of "predicative-only" adjectives: A reassessment*

Julia Schlüter

1. Introduction

This article focuses on a class of English adjectives that are subject to important restrictions on their syntactic placement. While core members of the adjective class freely occur in predicative or postnominal as well as in attributive positions, *a*-adjectives have been claimed to be virtually barred from attributive uses (cf. Biber *et al.* 1999: 508; Huddleston and Pullum 2002: 559). Thus, they have been referred to as "predicative-only" adjectives (Jacobsson 1996: 206) or as "never-attributive adjectives" (Huddleston and Pullum 2002: 559). It has however been noted that their acceptability in attributive position increases significantly when they are premodified or coordinated (cf. Bolinger 1965: 151; Quirk *et al.* 1985: 408–409; Bailey 1987: 149; Jacobsson 1996: 218; Huddleston and Pullum 2002: 559).

Despite superficial resemblances in their phonological form, the group of *a*-adjectives encompasses adjectives from heterogeneous sources. Following the etymologies given in the *OED 2 on CD-ROM*, the unstressed initial *a-* originates in the Old English preposition *on/an* 'in, on' in a substantial number of cases: *adrift*, *afloat*, *alive*, *aloof*, *asleep*, *awry* and possibly *askew*. In *akin*, it goes back to a different preposition, *of.* In other lexemes in the group, it stems from one of several Old English prefixes, namely *on-* in *awake*, *a(r)-* in *aghast* and *ashamed* and *ʒe-* in *aware* and (perhaps, additionally) in *ashamed*. Some other members of the group are loanwords from Latin or French that have entered English complete with their initial *a-*: *afraid*, *agog*, *alert* and *averse*.[1] Diverse as they may be in origin, the adjectives under consideration to some extent share the syntactic restriction against unmodified or non-coordinated attributive uses.

It is the aim of the present study to arrive at a detailed reassessment of the positional restrictions bearing on *a*-adjectives. One of the questions that will need to be answered is why premodification or coordination of the adjectives in question is such an important factor licensing their appear-

ance in a syntactic position from which they are barred when occurring in isolation. The argument involves a quantitative corpus-based study of a large set of *a*-adjectives and of the syntactic positions in which they can be found, which provides the basis for the subsequent analyses. In fact, the corpus search yields considerably more attributive uses than would have been expected of adjectives that have been described as "predicative-only". Besides unmodified uses as in example (1), numerous premodified uses of different types are found. These include prefixations, as in (2a), compounds, as in (3a), and adjectives premodified by adverbs, as in (4a). In addition, a sizeable number of *a*-adjectives occur in coordinations with other attributive adjectives, as in (5a). Notice that the corresponding (b) examples, without premodifiers and coordinates, turn out to be considerably less acceptable.

(1)　　*"Okay, no!" said the prodigy, turning on her Adidas-equipped heel and leaving the **aghast assemblage** in her wake. (The Times 1994)*

(2)　　a.　*Every movement seemed natural, as if the **unaware memory** of what to do and how to do it was hidden somewhere inside myself. (*The Guardian* 1992)*
　　　　b.　**… the aware memory …*

(3)　　a.　*It recommends a with-profit investment bond, ideally retained for five years, as suitable for this **risk-averse couple**. (*The Guardian* 1993)*
　　　　b.　**… this averse couple …*

(4)　　a.　*Daniel's life becomes enmeshed with that of the **similarly adrift Kate**, a cinema usherette. (*The Times* 1999)*
　　　　b.　**/?… the adrift Kate …*

(5)　　a.　*He was a lucid man; an **alive, happy soul**. (The Daily Mail 1998)*
　　　　b.　**/?… an alive soul …*

　　In the secondary literature, mainly two types of constraints have been argued to account for the positional restrictions bearing on *a*-adjectives as well as for the redeeming effects of premodification: on the one hand, a semantic constraint (cf. Bolinger 1952: 1133–1137, 1967: 3–4; Leisi 1985: 54; Ferris 1993: 49–52), and on the other, a phonological constraint (cf. Bolinger 1965: 143). In the most detailed study of *a*-adjectives published

to date, Jacobsson (1996: 217) ascribes a greater impact to the semantic effects than to phonological ones.

The bottom-line of Jacobsson's argument is in accordance with the frequently encountered view that syntactic phenomena are subject to underlying semantic motivations, or that syntactic structures and semantic meanings form a close symbiosis with a mutual dependency between them (cf. e.g. Wierzbicka 1988, 1991; Ferris 1993). This view also characterizes the family of approaches that have recently come to be referred to as Construction Grammar, so called due to their focus on constructions, which are defined as conventionalized pairings of form and meaning that are largely independent of the lexical elements filling them (cf. Goldberg 1995: 1–7, 2006: 3).

The bulk of the work presented in the empirical part of this article consists in teasing apart the semantic and phonological constraints and their relative contributions to the positional restrictions imposed on *a*-adjectives. This procedure will allow for a critical reassessment of the explanatory potential of the two (groups of) factors, respectively. It will result in a redressing of the balance between semantic and phonological preferences. The latter have frequently been neglected in the study of syntactic variation and in the linguistic modelling of grammar. Furthermore, the analysis will show that semantic and phonological preferences interact in an item-specific manner: individual adjectives exhibit different degrees of sensitivity to one or the other constraint. In line with recent trends to look for empirical data to confirm (or reject) theoretical claims (cf. Kepser and Reis 2005: 1–6), the study will conclude with some implications for a grammar model, constructionist or other, that is able to integrate the corpus findings.

The present contribution is organized in the following way: section 2 describes the database used for the empirical analyses and details the *a*-adjectives selected for study. Section 3 contextualizes the present-day situation of *a*-adjectives with regard to their history in attributive positions and on the background of attributive structures in general. In section 4, the raw data for Present-day English are laid out and systematized, with particular attention to attributive uses. Section 5 outlines the explanatory approaches that have been adopted in the previous literature. These are then evaluated in section 6 by means of a finer differentiation of the corpus data. Section 7, finally, summarizes the findings and returns to the question of their relevance for a model of grammar.

2.   Corpus and items studied

Since the group of *a*-adjectives includes many items with a relatively low textual frequency, the following corpus studies draw on an extremely large electronic database including 40 years of British newspapers and totalling almost 1.5 billion words. Some figures characterizing the newspaper corpus are detailed in table 1; full bibliographical information is provided in a special section towards the end of this contribution.

Table 1. The newspaper corpus

Title	Years	Number of Words
The Daily Mail	1993–2000	207 million words
The Daily Telegraph	1991–2000	371 million words
The Guardian	1990–2000	388 million words
The Times	1990–2000	478 million words
Total		1,444 million words

The diachronic section of this paper draws on a large collection of prose covering three centuries. The earlier corpora are subdivided according to the publication dates of the works included and combine a larger non-dramatic section with a smaller section of dramatic prose. The latest sub-corpus for the late twentieth century is provided by the fictional prose section of the *British National Corpus*. Details of the corpus are provided in Table 2.

Table 2. The diachronic corpus

Title	Years	Number of Words
Eighteenth-Century Fiction (ECF) + English Prose Drama (EPD)	1705–1780	16,100,000 words
Nineteenth-Century Fiction (NCF) + English Prose Drama (EPD)	1782–1903	50,300,000 words
British National Corpus (*BNC*) imaginative prose section	1960–1993	19,700,000 words

The selection of items for study was based on the newspaper corpus. A minor obstacle was provided by the fact that the distinction between *a-*

adjectives and *a*-adverbs is by no means clear (cf. Quirk *et al.* 1985: 408–409; Jacobsson 1996: 206–207). Yet, for the items *abed*, *abroad*, *afar*, *afield*, *afresh*, *ahead*, *aloft*, *apart*, *ashore*, *aside*, *askance*, *aslant* and *astray*, the adverbial status can be taken for granted. In order to obtain the largest possible number of results for the analysis, a list of *a*-adjectives was collected from the *OED* entries, from which those items that never occurred in attributive position in the newspaper corpus were subsequently discarded. This concerned the items *ablaze*, *afire*, *aflame*, *afoot*, *agape*, *aglow*, *ajar*, *akimbo*, *alight*, *alike*, *alone* and *astride*, which can be regarded as true "predicative-only" adjectives. The remaining items, at least some instances of which were found in attributive uses, entered the study, with the exception of *alert*, which occurred so unrestrictedly in this position that its inclusion would have involved little promise of new insights into restrictions bearing on *a*-adjectives in general. Thus, it forms a straightforward exception to the class of "predicative-only" *a*-adjectives (cf. also Quirk *et al.* 1985: 409; Huddleston and Pullum 2002: 559). In addition, its homonyms *alert* (n.) and *alert* (v.) were so frequent as to make a computer-aided search ineffective. The list of *a*-adjectives eventually included in the study is the following (in alphabetical order): *adrift*, *afloat*, *afraid*, *aghast*, *agog*, *akin*, *alive*, *aloof*, *ashamed*, *askew*, *asleep*, *averse*, *awake*, *aware* and *awry*. The set is the same for the synchronic and diachronic study. Note that this inventory lays no claim to exhaustiveness since the word formation pattern *a-* + verb enjoys a certain productivity (*ablaze*, *adance*, *aswim*, *atremble*, etc., are examples of this; cf. *OED 2 on CD-ROM*, s.v. *a*, prep.11).

3.   Time depth of the phenomenon

It is a well-established fact that prenominal modifiers in English are subject to important restrictions on their grammatical structure and are much more limited in length and complexity than, for instance, postnominal modifiers (cf. Quirk *et al.* 1985: 1238–1345). Recently, corpus-based diachronic research has however indicated that the syntactic possibilities as well as the use that is made of them have been extended in the past few centuries (cf. Biber and Finegan 1989: 490–491, 499–501; Biber and Clark 2002: 57). In a similar vein, I have shown elsewhere (Schlüter 2005: 143–146) that more numerous and more diverse types of nominal premodification have come into use since the sixteenth century, and that their frequency has increased continuously. More specifically, while Early Modern

English mainly had recourse to simple attributive adjectives, numerous complex attributive structures have since then developed.[2] In terms of Construction Grammar, this diachronic evolution can be viewed as the progressive establishment and increase in complexity of a construction (which constitutes the reverse of the process of functional condensation of a construction, exemplified in Bergs, this volume).

Independently of this, Jacobsson (1996: 143–149) argues that the avoidance of *a*-adjectives in attributive uses "is not as strong as it used to be" (cf. also Bolinger 1967: 12). While he provides no counts to support this quantitative claim, it can be shown that the increasing use of this group of adjectives in prenominal function is an empirical fact. Moreover, it can be hypothesized that there is a direct link between this change and the evolution of complex attributive structures: if *a*-adjectives depend crucially on the presence of a premodifier for their licensing in attributive position, and on the other hand, such complex attributes only gained currency in the course of the Modern English period, it may be assumed that the latter development was a precondition for the former. This furthermore suggests that the constraints (semantic, phonological or other) on the prenominal use of *a*-adjectives have remained very constant. As support for this argument, consider the data in figure 1, which are based on a search of the fifteen *a*-adjectives specified in section 2 in the diachronic corpus and a subsequent manual categorization into (unmodified and premodified) attributive and non-attributive uses.

The columns in this diagram represent the normalized frequencies of attributive *a*-adjectives per 1 million words, with the black column in each pair referring to adjectives occurring in isolation and the grey column referring to such instances that are themselves premodified (where premodification comprises the options illustrated in examples (2)–(4) above). Before the nineteenth century, there is only a single incidence of one of the fifteen *a*-adjectives in attributive position (*an all-alive apprehension*; Samuel Richardson: *Clarissa*, 1748). The relatively large nineteenth-century corpus, while containing only 9 unmodified examples, boasts 25 instances of premodified attributive *a*-adjectives.
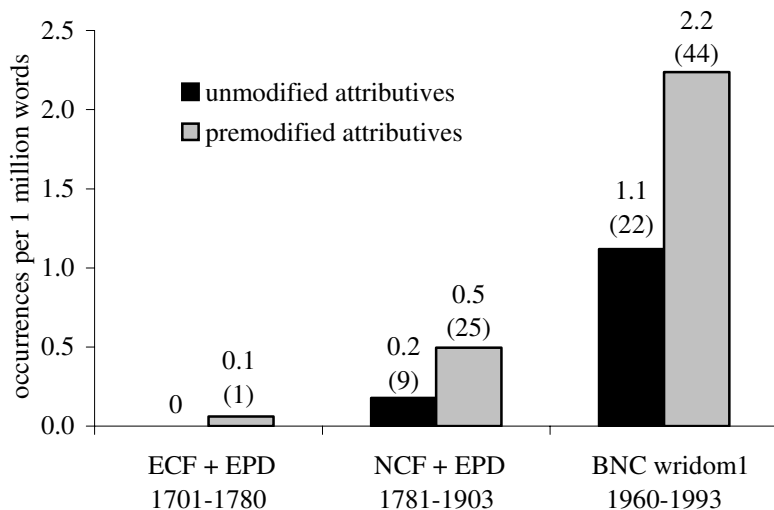
Figure 1. The textual frequencies of unmodified and premodified *a*-adjectives in attributive function from the eighteenth to twentieth centuries (figures in brackets indicate the absolute numbers of examples in the corpus sections)

This can be taken as evidence that premodification has now become an available option, which, in the case of *a*-adjectives, is more frequently resorted to than not. In other words, a premodified *a*-adjective stands a greater chance of being employed prenominally than an unmodified one. The same tendency is greatly enhanced in the data for the late twentieth century: premodified uses are thus heading the change towards prenominal usage, while the unmodified ones follow in their wake, but at a respectful distance.

Though the evidence presented here is only indirect, Jacobsson's intuition has been confirmed: the attributive use of *a*-adjectives is a fairly recent phenomenon. What is more, it can be brought into connection with the more general rise in the grammatical complexity of attributive constructions: this apparently created the favourable circumstances under which this long-avoided usage could establish itself. While the diachronic data described here underline the outstanding importance of premodification for *a*-adjectives, an analysis of the remarkably stable semantic and phonological constraints underlying this effect will have to wait until the present-day situation has been elucidated, which will be done in the next section.

4.   **Syntactic classification of *a*-adjectives**

The class of *a*-adjectives is heterogeneous, not only with regard to the ety-
mological sources of its members, but also concerning their individual
syntactic behaviours. This is why Jacobsson (1996: 218) distinguishes
three subgroups characterized by the gradually different propensities of
their exponents to occur in attributive position.[3] However, his insights are
based on informal observation rather than empirical evidence, which leads
him to slightly vague conclusions. For Present-day English, there is yet no
shortage of data: electronic editions of newspapers provide vast amounts of
text in which the actual use that is made of *a*-adjectives in different syntac-
tic positions can be determined. This task has never been undertaken in any
systematic way. The large dataset investigated in this section will thus be
used to arrive at an empirically founded classification of the set of adjec-
tives under discussion and will also be exploited (in section 6) to shed light
on the nature and strength of the constraints underlying their restricted
occurrence in attributive position.

   In the 40 years of British newspapers listed in table 1 above, the fifteen
a-adjectives that occurred in attributive uses at all (excluding *alert*; cf.
section 2) were subjected to an exhaustive search. Each of the items was
preceded by a wildcard so as to capture any prefixed forms (e.g. *unafraid*,
unashamed, *unaware*). The resulting hits were manually classified into
attributive and non-attributive instances. The latter comprise postnominal
and predicative instances as illustrated in (6). Among the former, a finer
distinction was drawn between three subtypes exemplified in (1) to (5)
above: firstly, unmodified attributive uses (including non-coordinated
ones);[4] secondly, premodified uses in which the *a*-adjective is preceded by
a prefix, by another free morpheme with which it forms a compound, or by
an adverbial modifier; and thirdly, cases in which the *a*-adjective does not
immediately precede the noun because it is followed by one or more at-
tributive adjective(s) with which it is coordinated.[5]

(6)   a. *Many are Americans, **agog at** life under these ancient beams*.
            (*The Daily Telegraph* 2000)
        b. *The new Royal Court is more eccentrically **askew than** ever*. (*The
            Times* 2000)

   For expository purposes, the fifteen *a*-adjectives under consideration
have been subdivided into three types according to their compatibility with
prenominal use. Adjectives of group I occur occasionally in unmodified

attributive uses; members of group II are sporadically used attributively even when they are unmodified, but are more frequently found in this position when premodified; group III adjectives only occur in attributive position on the strict condition that they are premodified. The subdivision thus reflects the degree to which the possibility of attributive uses hinges on the presence of a premodifier. The items assigned to each category are listed in table 3.

Table 3.   The syntactic classification of *a*-adjectives

Group	Attributive uses	Examples
group I	unmodified > premodified	aghast, agog, aloof, askew
group II	premodified > unmodified	adrift, alive, ashamed, averse, awake, aware, awry
group III	only premodified	afloat, afraid, akin, asleep

Note that to a large extent, this subdivision is only methodological in nature: while the three groups of adjectives thus distinguished fit into the rough framework set out in table 3, the assignment of an item to groups I, II or III is based on quantitative rather than absolute measures. There are no clear dividing lines between the groups; rather, the syntactic behaviour of each adjective is highly idiosyncratic and deserves to be studied and described on an individual basis. It is also noteworthy that the overlap with Jacobsson's (1996: 218) categorization is only minimal.

   The results of the count for group I adjectives (in alphabetical order) are displayed in figure 2. Each bar presents 100% of the occurrences of an adjective in the corpus and is labelled with the total number (N) of examples (across all syntactic uses). Notice that the bars are cut off after the 25% mark. This is because the focus of the discussion is on attributive uses, but over 75% of the occurrences of each item are non-attributive and of little interest for present purposes. Going from left to right, the black segments of the bars represent the share of unmodified (and uncoordinated) attributive uses, the hatched segments indicate the percentage of premodified (prefixed, compounded or adverbially modified) attributive uses, the white segments stand for coordinated attributive uses and the cut-off grey sections represent the large residue of non-attributive examples. Below each bar, the number of examples in each syntactic category and the corresponding percentage are given (except for the non-attributives, which account for the remainder adding up to 100 %).
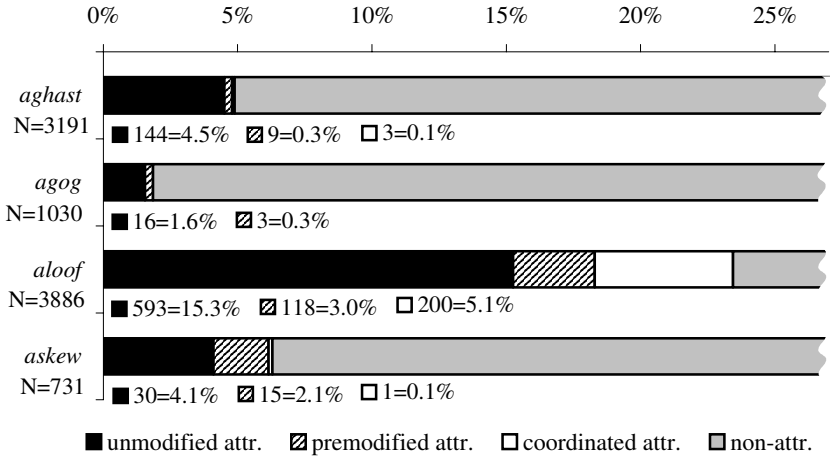
Figure 2. Syntactic classification of attributive and non-attributive uses of the adjectives of group I in a corpus of 40 years of British newspapers

Figure 2 reveals that for each of the four adjectives considered, the corpus contains a more or less considerable number of instances where the adjective occurs on its own in prenominal position (e.g. *aghast sympathy*, *an agog nation*, *an aloof woman*, *an askew stage*). Percentages vary between as much as 15.3% for *aloof* and 1.6% for *agog*, with *aghast* and *askew* ranging slightly above 4%. Thus, these adjectives do not only defy the label "predicative-only", but they also form exceptions to the general rule according to which they are not acceptable in attributive position unless they are premodified.[6]

In addition to unmodified instances, the search yields a restricted number of premodified uses, which for all four adjectives are mostly adverbially premodified cases (e.g. *a mildly aghast passage*, *permanently agog friends*, *a quietly aloof air*, *his pleasingly askew wit*). Moreover, *aloof* quite often occurs in combination with another attributive adjective (e.g. *the aloof, abrasive princess*). In sum, premodification does not seem to play an important role in connection with *aghast*, *agog*, *aloof* and *askew*. While attributive uses are by no means frequent in this class (except, to some extent, for *aloof*), all of them are more common as isolated attributes than as premodified or coordinated ones.
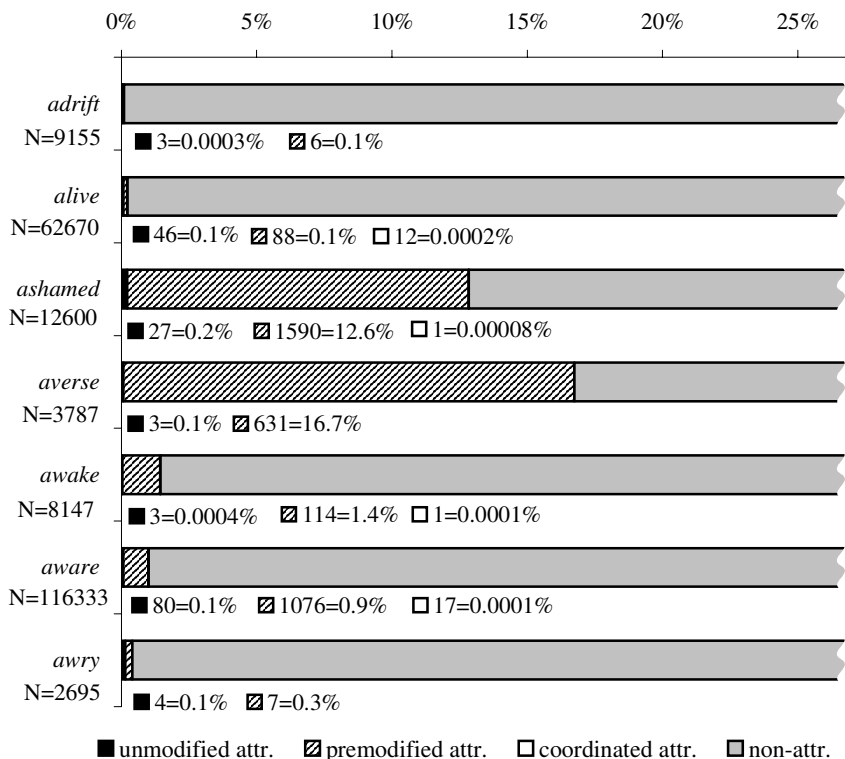
Figure 3. Syntactic classification of attributive and non-attributive uses of the adjectives of group II in a corpus of 40 years of British newspapers

The picture is reversed in group II, which comprises a larger group of 7 *a*-adjectives (see figure 3). None of these occurs in unmodified attributive uses in more than 0.2% of its total occurrences; the largest number of 80 hits in this category is attained by *aware*, which however account for no more than 0.1% of its numerous instances. For *adrift*, *averse*, *awake* and *awry*, the massive corpus yields not even a handful of unmodified attributive examples. In contrast, all of the seven adjectives considered occur in prenominal position somewhat more frequently when they are themselves premodified. In connection with *ashamed* and *averse*, premodification boosts the percentage of attributives well beyond the 10% mark, while for the other members of the group this syntactic position is still rare, depending heavily on the presence of premodifying material of some kind. The premodification types connected with individual adjectives differ widely:

adrift, *alive*, *awake* and *awry* mainly take adverbial premodifiers (e.g. *a curiously adrift Downing Street*, *vigorously alive characters*, *a wide awake Parliament*, *a slightly awry mixture*), *ashamed* typically occurs with a negative prefix (e.g. *an unashamed admirer*), *averse* is often part of a compound (e.g. *risk-averse accountants*), and *aware* occurs frequently either in a compound or with an adverbial modifier (e.g. *self-aware artfulness*, *socially aware policies*). The data in figure 3 thus provide strong support for the importance of premodification. Though premodification strategies vary with the particular adjective considered, they all produce comparable effects by increasing the acceptability of the items in prenominal position.
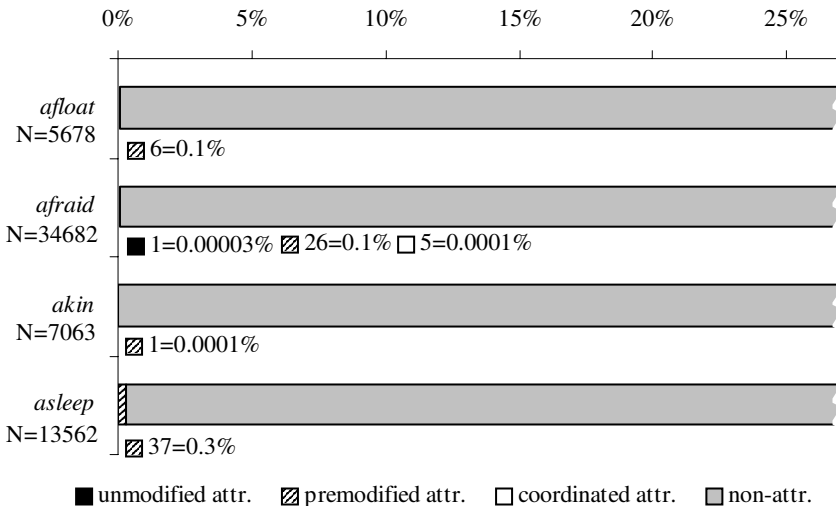
Figure 4. Syntactic classification of attributive and non-attributive uses of the adjectives of group III in a corpus of 40 years of British newspapers

Figure 4 contains the results for the remaining four adjectives, assigned to group III. In this group, there are virtually no unmodified attributive occurrences.[7] All of the adjectives function very rarely in prenominal position, and if they do, they depend obligatorily on the presence of a premodifier or, in five examples involving *afraid*, coordinated material. Prenominal *afloat* is accompanied by adverbial modifiers (e.g. *a barely-afloat growler*); *afraid* is usually prefixed with *un-* (e.g. *unafraid verve*), but also occurs in compounds (e.g. *girl-afraid white men*) or with coordinates (e.g. *afraid and wayward women*); the only attributive instance of *akin* is with

an adverb (*a nearly akin breed*); and *asleep* is always preceded by an adverb (e.g. *fast-asleep Harry*, *their half-asleep eyes*). In view of the extremely low shares of attributive uses, these adjectives might almost be considered as "predicative-only", like the lexemes that have been excluded from the present study (see section 2). However, their inclusion is justified on account of the fact that if they are used exceptionally as attributes, they have to be propped up by supporting material. The precise function of this material will be at the focus of the following sections. Suffice it to bear in mind at this point of the discussion that premodification or coordination is an indispensable precondition for the attributive use of the items *afloat*, *afraid*, *akin* and *asleep*.

   While the data from figures 2, 3 and 4 suggest that premodification plays a prominent role in attributive uses, one might suspect that it is exactly as frequent and important in non-attributive uses. That this is not the case can be shown by means of a comparison of attributive and other uses. Figure 5 picks out two group II adjectives, *ashamed* and *aware*.
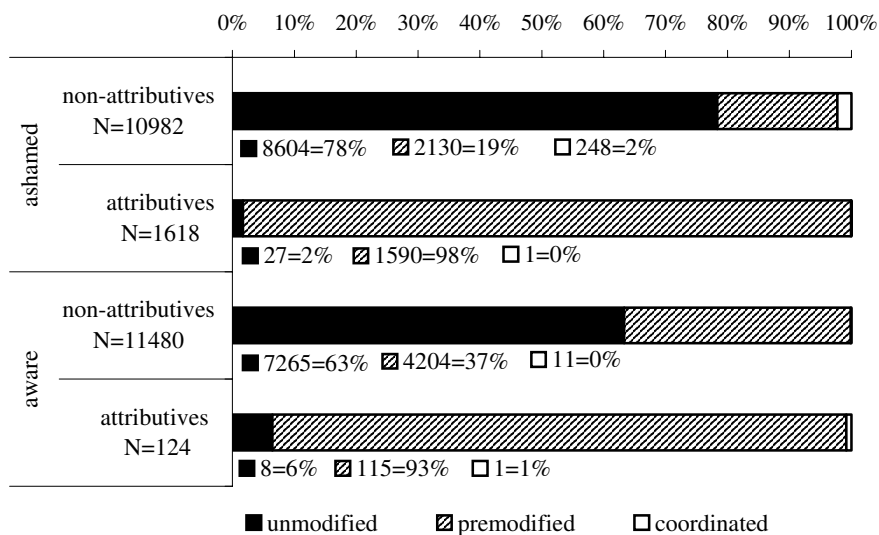
Figure 5. Premodification and coordination (or lack thereof) of non-attributive and attributive uses of two representative *a*-adjectives in a corpus of 40 years of British newspapers (for *aware*, only 1 randomly selected example in 10 is counted)

That these are representative is evident from an informal survey of the corpus data. For the extremely frequent *aware*, only about 1 randomly selected occurrence in 10 entered the count in figure 5. The two bars for each adjective represent 100 % of the non-attributive and attributive uses, respectively. As before, the black segments indicate the proportion of unmodified uses, the hatched segments that of premodified uses and the white segments that of coordinated uses. It is immediately apparent from this juxtaposition of non-attributive and attributive uses that unmodified and premodified uses are unevenly distributed: while non-attributives do without additional modifiers in 78% and 63% of the cases respectively, this is true of only 2 or 6% of the attributive uses. In turn, 98% of attributive *ashamed* carry the negative prefix *un-* and 93% of attributive *aware* are either prefixed, compounded or adverbially modified. The differences displayed in figure 5 are statistically highly significant.[8] Incidentally, the effect of coordination is not nearly so striking as that of premodification.

The results of the syntactic classification of *a*-adjectives can be summarized as follows: the presence of premodifying material is not only a frequent feature in attributive as opposed to non-attributive uses; what is more, it is also paramount to the acceptability of prenominal uses for the majority of the *a*-adjectives considered. While the relatively small group I (*aghast*, *agog*, *aloof*, *askew*) is largely independent of the presence of a premodifier, the largest group II (*adrift*, *alive*, *ashamed*, *averse*, *awake*, *aware*, *awry*) is obviously highly dependent on it, and group III adjectives (*afloat*, *afraid*, *akin*, *asleep*) do not occur without it (or a coordinate adjective) at all. What remains to be clarified are the reasons underlying this astonishing effect.

5.   Discussion of previous accounts

The literature provides a handful of different explanations that are proposed to account for the near-incompatibility of *a*-adjectives with unmodified attributive use. The two most wide-ranging ones will be discussed and contrasted in this section and the following. However, this does not preclude the possibility that the others contribute to making single *a*-adjectives preceding a noun so objectionable.

Firstly, for some members of this group, their etymological origin as prepositional phrases goes some way towards explaining their limitation to predicative and postnominal uses (e.g. *adrift*, *afloat*, *akin*, *alive*, *aloof*, *askew*, *asleep*, *awry* and many more; cf. Jespersen 1913: 332; Markus

1997: 490; for a critical assessment see Jacobsson 1996: 208–209). The syntactic restrictions attached to their provenance might thus be perpetuated in the modern lexemes despite their morphological opacity. However, it is not completely impossible to find prepositional phrases in attributive position (e.g. *an on-board camera*, *an in-depth analysis*, *an off-the-cuff answer*). Moreover, for those adjectives that derive from ancient participles formed with the Old English *ge*-prefix (e.g. *aware*, perhaps also *ashamed*), for those originating in adjectives carrying Old English prefixes (e.g. *aghast*, *ashamed*, *awake*), and for a number of Romance loanwords (e.g. *afraid*, *agog*, *averse*), no similar historical account is available. What is more, it is not obvious how this problem would be averted by the use of premodifying material.

A second account that likewise applies only to a subgroup of the *a*-adjectives considered hinges on the fact that certain adjectives obligatorily require a complement without which their interpretation remains incomplete (cf. Jespersen 1913: 332; Jacobsson 1996: 209). This is particularly true of *averse*, *aware* and *akin*, and also of *ashamed* and *afraid*, but it is less true of the other members of the class. Crucially, adjectives followed by complements are typically barred from prenominal position. The compounded and adverbially premodified uses found in the corpus to some extent take care of this problem by preposing the logical complement to the adjective in question (e.g. *risk-averse* 'averse to risks', *environmentally aware* 'aware of the environment').

A third contributing factor militating against the placement of an *a*-adjective immediately following a definite or indefinite article is the seeming contradictoriness of *the* preceding what looks like an indefinite article and the putative awkwardness of *an* followed by another unstressed *a*- (cf. Jespersen 1913: 333). This would explain why any premodifier intervening between article and adjective improves the situation. The explanatory force of this argument is however limited to collocations involving the two articles; other determiners or noun phrases without articles are not affected (e.g. *his aloof attitude*, *aware parents*).

Two more promising approaches involve factors that are situated outside the realm of syntax, one semantic and one phonological. On the semantic side, it has been pointed out by several researchers that attributive uses on the one hand and predicative or postnominal uses on the other have different meanings *qua* constructions. Thus, Bolinger (1952: 1133–1137; 1967: 3–4) shows that adjectives occurring in attributive position have a strong tendency to encode a permanent (characteristic or habitual) property associated with the referent of the noun. In contrast, the property desig-

nated by predicative or postnominal adjectives may apply to the noun's referent only temporarily, on a specific occasion. A similar distinction is described by Quirk *et al.* (1985: 1242–1243) and Leisi (1985: 54). More recently, Ferris (1993: 49–51) argues that attributive adjectives and their head nouns contract a meaning relationship of simple qualification, which serves to identify the referent of the noun. In contrast, predicative and postnominal adjectives share the function of assigning a property to the referent of their head, which amounts to a fully fledged predication about a referent that is independently identified. While Bolinger's and Ferris's views exhibit slight differences of detail, there is a large degree of overlap, which Ferris (1993: 53) motivates as follows:

> When one is aiming simply to identify an entity for a hearer, in the nature of things one will tend to find enduring characteristics more reliable as the means of doing so, although there will certainly be a proportion of cases where some "occasional" property is just as useful. But if it is desirable to *assign* a property to an entity, then that will far more frequently, although not invariably, be needed precisely when the property is *not* an inherent quality of the entity in question; … (italics in the original)

Crucially, many of the *a*-adjectives typically have a temporary, occasional meaning (which may in turn be due to their origin as prepositional phrases or participles). Thus, being *awake* or *asleep*, *alive* or dead, *ashamed*, *aware* or *afraid* of something, *aghast* at a scene or *agog* to do something are usually transitory states; someone who is *adrift*, *afloat*, *askew* or *awry* is displaced from his/her usual position. As a consequence, *a*-adjectives are typically inappropriate as characteristic or identifying properties of their referent expressions (cf. Bolinger 1967: 12). If an equivalent meaning is needed to qualify a referent permanently, the English lexicon offers several alternatives, for instance *afraid – fearful*, *alike – similar*, *alive – lively*, *aslant – slanting* (cf. Bolinger 1965: 146; Quirk *et al.* 1985: 409).

The underlying semantic reason behind the distributional restrictions bearing on *a*-adjectives can thus be described as a clash between syntactic meanings and lexical meanings, or in Ferris's (1993: 2) words, "the facts in question are natural consequences of interaction between the meanings of the syntactic constructions as constructions, and the lexical meaning of the individual items that appear in them." In this respect, Ferris's account can be seen as an early constructionist approach to grammar, focusing on the close interrelations between semantic and syntactic structures.

With regard to the question of what premodification does to avert this conflict, Jacobsson (1996: 211) observes that it shifts the focus of attention from the state expressed by the *a*-adjective to the material premodifying the adjective and thereby to the specific degree or quality of the state. Enlarging on this rather vague notion, it will be argued here that, more precisely, premodification often transforms a temporary meaning into a characterizing one. Consider the examples in (7).

(7)   a. *He admires writers of extremes, solitary, **unafraid individuals** who step outside conventional society in search of radical self-expression.* (*The Times* 1997)

        b. *Now we need a cultural analysis subtle enough to account for such **self-aware consumers**.* (*The Times* 2000)

        c. *The long dead John Wesley has something as important to say to his generation as the **very much alive Pope John Paul II**.* (*The Daily Mail* 1996)

When one is *afraid* of something, this property is usually confined to the limited period of time during which the potential danger persists, whereas being *unafraid* is a permanent trait of a fearless person. Similarly, the temporal extent of being *aware* of a problem depends on the possibly limited existence of that problem, but *self-awareness* is a characteristic of a person. Being (still) *alive*, though it lasts for a lifetime, is usually viewed in contrast to being (already) dead and is thus temporary, but together with the degree modifier *very much* it becomes an epithet of a personality used in a figurative sense.

However, not all a-adjectives that are premodified instantly convert to characterizing meanings. Thus, in (8a), the journalists mentioned were respectfully agog on that particular occasion, but may revert to their usual selves right after leaving the room. In (8b), the piece of advice itself indicates that even wide awake toddlers will at some point fall asleep if given the right treatment.

(8)   a. *The man all Australia believes has the Ashes at his fingertips addressed a roomful of **respectfully agog journalists** yesterday* (*The Daily Mail* 1997)

        b. *Drive **wide awake toddlers** round in the car until they sleep.* (*The Guardian* 1994)

The five exemplary cases given in (7) and (8) illustrate that the affinity between attributive adjectives and permanent meanings advocated by Bolinger (1952, 1967) is actually only a tendency that is not free from exceptions. But similarly, Ferris's (1993) alternative view is confronted with some counterexamples. Thus, Pope John Paul II in example (7c) certainly need not be identified, and similarly, *respectfully agog* in (8a), rather than disambiguating the roomful of journalists, ascribes an occasional property to them, which is part of the new information conveyed by the sentence. The overlap between Bolinger's and Ferris's approaches is however considerable: cases like (7a–b) satisfy both of them, while example (8a) runs counter to both.

With nouns referring to abstract concepts or attitudes instead of concrete persons or objects, the situation is entirely different. In instances like those in (9), the concepts of *outlook* and *regard* have no extension in time or space. As a result, the preceding *a*-adjectives automatically take on a characterizing meaning and thereby inherently satisfy Bolinger's criterion. In contrast, Ferris's (1993) distinction between referent identification and quality assignment has been developed with reference to concrete entities. Its transfer to the domain of abstract concepts is less than clear. It appears that abstract nouns like those in (9) do not lend themselves to referent identification; rather, the attributes seem to ascribe particular qualities to their referents, as would be the case in predicative uses.

(9)   a. *Although there is little to suggest a particularly **socially aware outlook** in breezy hit singles such as Pure, Perfect and Marvellous their lyrics have been quoted by both right and left wing politicians.* (*The Daily Telegraph* 1996)

   b. *Ten years of teaching history in Japan have left me with an **unashamed regard** for the country and its gentle people*, … (*The Times* 2000)

For the analysis described in section 6, the semantic criterion of permanent vs. temporary meaning, gleaned from Bolinger, has been applied to the corpus data. The adoption of Ferris' criterion might have led to slightly different results, but this was not pursued any further since a decision about identification vs. property assignment would have required consideration of a larger context. In an extensive dataset like the one investigated here, this would hardly have been feasible, especially in view of cases like (9), which defy an easy categorization.

Turning now to the phonological side, *a*-adjectives incur an additional problem. All *a*-adjectives included in the present study are disyllables (and there are only a few longer items in this group, e.g. *akimbo*, *atremble*). Since the initial *a-* cannot be stressed, the lexical stress in these words falls regularly on the second syllable. However, the overwhelming majority of English nouns are stressed on their initial syllables: according to a count outlined in Schlüter (2005: 63), this is the expected stress pattern of about 85 % of nouns in running text. Thus, in 85% of the cases in which an isolated *a*-adjective precedes a noun, this constellation gives rise to an adjacency of two stressed syllables, referred as a stress clash. It has been shown that such clashes are subject to a general avoidance tendency codified as the Principle of Rhythmic Alternation, i.e. the tendency for stressed and unstressed syllables to alternate with one another (cf. Couper-Kuhlen 1986: 60).[9] In many cases of attribute-noun sequences, in particular with most common monosyllabic adjectives, there is no easy way out; in cases where there is a convenient alternative, this may step into the breach; and in the case of particularly sensitive adjectives, this may result in a total avoidance of prenominal uses. Their rhythmic incompatibility has been argued to create an obstacle to the prenominal occurrence of *a*-adjectives, which accounts for their striking rarity in attributive uses (cf. Fijn van Draat 1912: 23–24; Bolinger 1965: 143; Minkova 1990: 327; Schlüter 2005: 79–85). The role of premodification as a factor alleviating these restrictions is illustrated in the examples under (10).[10]

(10) a. *As a hungover and **únaware Réinke** gave a master class to students in a kibbutz, …* (*The Daily Mail* 1996)
   b. ***Nutrítion-awàre rúgby plàyers** have long since eschewed a half-time orange in favour of a Jaffa Cake.* (*The Daily Mail* 1994)
   c. *Over the years, it has staged exhibitions and lectures and the staff have taken calls from **cúlturally-awàre tóurists** and Moore groupies planning pilgrimages.* (*The Daily Mail* 2000)

In (10a), *aware* is preceded by a negative prefix. While this does not alter the stress on the adjective in its citation form or in predicative position, in a rhythmically precarious context like this, followed by an initially stressed noun, the prefix provides an additional stressable syllable to the left. This is exploited by the English stress shift rule (cf. e.g. Giegerich 1985: 211–212; Couper-Kuhlen 1986: 61), which moves the stress leftwards from the clashing position to the prefix. (10b) illustrates a case where *aware* is part of a compound. By virtue of the ordinary English

compound stress rule (cf. e.g. Couper-Kuhlen 1986: 28; Hayes 1984: 43), the primary stress in this complex lexeme is located on the first element, so that *aware* itself retains only a secondary stress.[11] In (10c), finally, *aware* is premodified by an adverb, but would normally (i.e. in predicative position) remain more strongly stressed than its modifier. Adverb and adjective however form a sufficiently close unit for the stress shift rule to move the stress from right to left. In each of the cases exemplified in (10), the resultant structure is thus free from clashing stresses.

The presence of premodifying material is not the only way in which rhythmically acceptable attributive structures can be achieved. Coordinated uses in which the *a*-adjective is followed by another adjective (typically connected with it by *and*, *or*, *but* or a comma) are likewise apt to avert a stress clash, as indicated in example (11). In addition, even non-coordinated unmodified attributive uses do not lead to stress clashes if a noninitially stressed noun is involved, as in example (12). Before initially stressed nouns, however, single *a*-adjectives inevitably produce a stress clash, which is illustrated in (13). As in the case of the semantic constraint against temporary meanings, a given dataset of attributive *a*-adjectives will thus contain a yet-to-be-determined number of infractions of the phonological constraint.

(11)   *wondering how, with our widespread love of bawdiness, we ever came to accept the Puritan revolution, and finding the most **alíve and intélligent péople** in our industrial cities.* (*The Daily Mail* 1999)

(12)   *Part of the fun of this sort of programme is watching the victims' **aghást expréssions** as their cherished gardens are trashed in the name of art.* (*The Daily Telegraph* 1997)

(13)   *Until recently Tony Blair was like the **alóof pílot** of a U2 spy plane.* (*The Daily Telegraph* 1995)

The existence of counterexamples like (13) leads Jacobsson (1996: 213) to reject the phonological account as insufficient. As has already been shown, there is however no lack of counterevidence for the semantic approach, which is nevertheless favoured by Jacobsson. It remains to be seen which of the two turns out to possess more explanatory force.

The above discussion should suffice to detail the circumstances under which the semantic and phonological criteria for attributive use will be judged to be satisfied or violated. To recapitulate, among the corpus examples quoted in this section, all except those in (8) were considered to satisfy the constraint against temporal meanings in attributive position, as advocated by Bolinger (1952, 1967). By contrast, only example (13) was counted as an infraction of the rhythmic constraint against stress clashes within attributive structures. While the examples discussed so far represent an arbitrary selection from among the corpus data, the following section will lead up to a quantitative assessment of the relative constraint weights.

6.   Evaluation of semantic and phonological constraints

So far it has been shown that premodification enhances the statistical probability with which *a*-adjectives can be found before a noun, and two main factors have been discussed that have been proposed in the literature to account for the importance of premodification. Up to this point, the explanatory potential of these semantic and phonological constraints has however remained uncertain. In the following analysis, the cases in which these two constraints are satisfied or violated are quantified and brought into connection with the extent to which individual *a*-adjectives occur prenominally.

The study draws on the same dataset of 40 years of British newspapers as the counts in section 4, now including all attributive and excluding all non-attributive uses. As before, the *a*-adjectives considered are presented in three groups of decreasing affinity with (unmodified) attributive uses. Again, this subdivision only serves expository purposes since there are extreme differences between the adjectives making up one group.

Consider first group I, consisting of the four items *aghast*, *agog*, *aloof* and *askew*, all of which occur occasionally in attributive position even when unmodified. Figure 6 displays the results of the assessment of constraint satisfactions and violations according to the criteria presented in section 5. The black segments of the bars represent attributive uses in which the semantic constraint against temporary meanings is violated; the white segments refer to those uses in which the phonological constraint against stress clashes is violated; the hatched black-and-white segments stand for the cases in which both are violated; and the grey segments indicate the remaining cases in which neither constraint is violated.
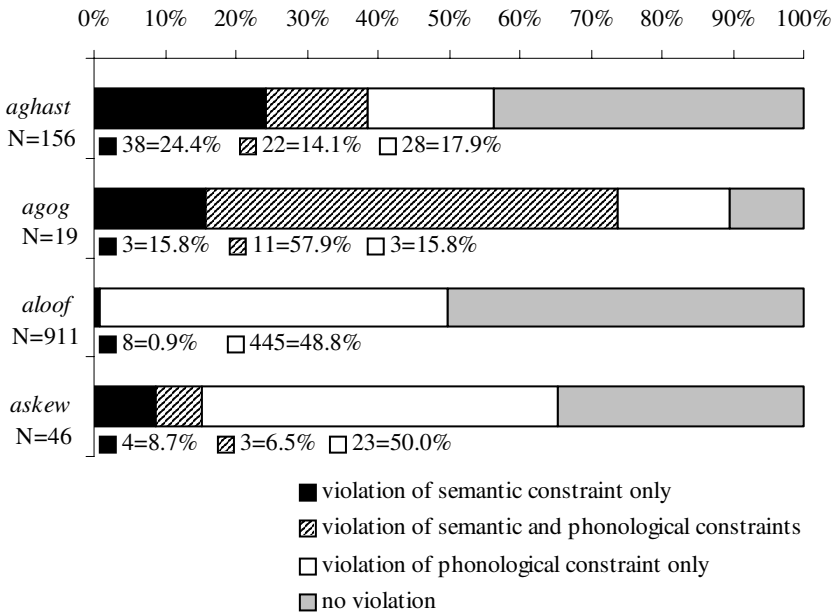
Figure 6. Violations of semantic and phonological constraints in the attributive uses of the adjectives of group I in a corpus of 40 years of British newspapers

The picture afforded by figure 6 is somewhat inconsistent. For a start, in three out of four adjectives we find simultaneous violations of both constraints in the same subset of examples. For *agog*, this is even the most typical case (e.g. *an agog nation*), though this adjective is rarely used as an attribute at all (only in 1.9% of its occurrences; cf. figure 2). This avoidance effect seems to be related to the fact that *agog* does not readily lend itself to premodification: only 3 of the 19 attributive uses are premodified by adverbs, which takes care of the rhythmic problem, and two of these cases are also characterizing (e.g. *permanently agog friends*). *Aghast* and *askew* are somewhat more common in attributive uses (4.9% and 6.3% respectively), but most commonly occur without a premodifier as well. In view of the frequent absence of a premodifier, the shares of 43.6% and 34.8% of conformity with both constraints are however considerable: the adjectives frequently take on a permanent meaning (e.g. *askew roofs*) and/or precede non-initially stressed nouns (e.g. *aghast officials*). The most exceptional *a*-adjective in this class, *aloof*, which has been found to be

particularly frequent in attributive uses (23.1% of its occurrences), is also special in that its meaning is usually one of characterization (e.g. *the aloof star*). Stress clashes are frequent, but if their share does not exceed 50% of the instances, this is due to the fact that *aloof* often occurs before non-initially stressed nouns (e.g. *an aloof observer*), and in coordinated attributive structures tends to appear in non-final position, presumably on account of its end-stress (e.g. *an aloof, mysterious figure*). Note that, thanks to its semantics, *aloof* never violates both constraints at the same time.

The latter effect is most typical of the largest group of *a*-adjectives (group II), which has been defined as sporadically attributive when unmodified, but more commonly when accompanied by premodifying material. Consider the results of the constraint assessment displayed in Figure 7. The results of this analysis are again highly heterogeneous for different adjectives. What unifies them is the fact that attributive uses violating both the semantic and the phonological constraint at the same time do not exceed 1% of the cases, if they exist at all. For instance, *adrift*, *alive* and *awry* are extremely rare in attributive uses (no more than 0.4 % of their total tokens), and are evidently licensed only if they happen to characterize the referent of the noun (often with a figurative meaning, e.g. *this adrift person*), if a stress clash is averted (e.g. *her barely alive baby*), or if both are the case (e.g. *a slightly awry mixture*). The latter adjective, *awry*, always takes on a characterizing function, suggesting that the semantic orientation of attributives is pre-eminent here. These findings suggest that with the three adjectives *adrift*, *alive* and *awry*, a single constraint violation is still tolerated while a twofold one is not: the semantic and phonological constraints work cumulatively.

The remaining four adjectives fall into two pairs: on the one hand, *awake* and *aware*, which have been found to occur in attributive position in 1.4% and 1.0% of their occurrences, occasionally violate the semantic constraint (for *awake* even in more than one third of all cases, e.g. *the half-awake town*), or the rhythmic constraint (e.g. *an aware feminist*), but very rarely both (e.g. *an aware brain*). Figure 3 above shows that premodification of attributive uses is not a very common feature with these adjectives. This entails that constraint violations cannot easily be avoided, and the persistence of violations can, in turn, be made responsible for the relative infrequency of *awake* and *aware* as attributes.
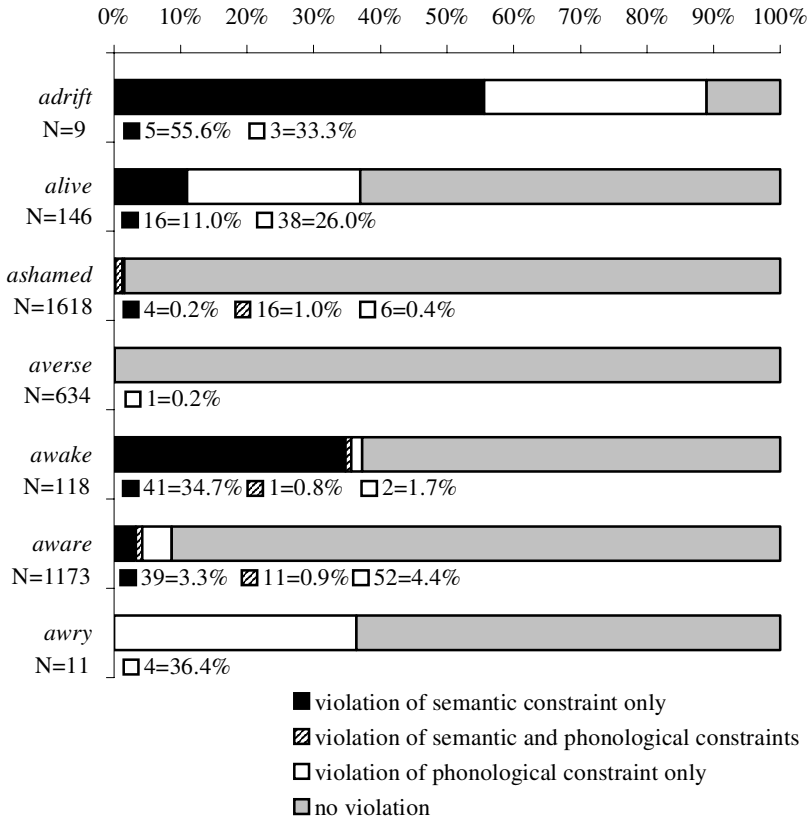
Figure 7. Violations of semantic and phonological constraints in the attributive uses of the adjectives of group II in a corpus of 40 years of British newspapers

The situation is completely different in the cases of *ashamed* and *averse*. Figure 3 indicates that the use of premodifiers is extremely widespread in connection with these adjectives when they occur in prenominal position. As a result of the phonological and semantic effects produced by the premodifiers, the relevant data in figure 7 contain very little evidence of cases incurring any constraint violations at all. And further, since they readily accommodate premodification, *ashamed* and *averse* boast strikingly high shares of attributive uses in figure 3.[12]

This brings us to the third and last group of *a*-adjectives, those that occur in attributive use virtually only when premodified. The results are displayed in figure 8.
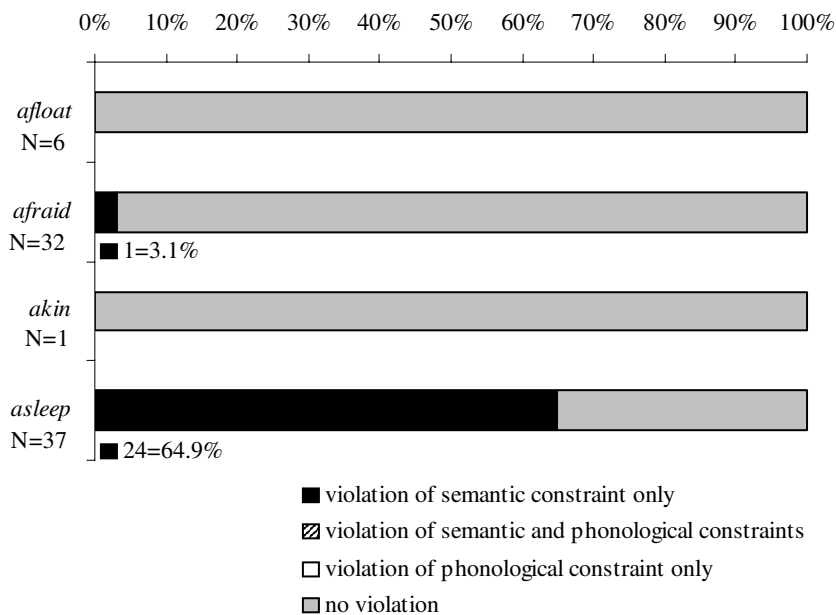
Figure 8. Violations of semantic and phonological constraints in the attributive uses of the adjectives of group III in a corpus of 40 years of British newspapers

First of all, the number of attributive uses is extremely low for all members of this group (cf. figure 4), so that the data underlying this figure are very sparse, in particular for *afloat* and *akin*. Since all attributive uses in this group are by definition premodified, we find no infractions of the rhythmic constraint among the four adjectives under consideration. What is more, the semantic constraint is likewise conformed to in all examples involving *afloat*, *afraid* and *akin* (e.g. *barely-afloat mini-icebergs*, *the unafraid Thomas*, *a nearly akin breed*).[13] In stark contrast, *asleep* is still temporary in about two thirds of its attributive occurrences (e.g. *some half-asleep editor*). In this respect, it is diametrically opposed to *aloof* and *awry*, which

override the rhythmic constraint quite freely, but hardly ever convey temporary meanings when in attributive position.

Incidentally, it is interesting to note that a disproportionately high number of single unmodified attributive *a*-adjectives is followed by nouns that have an unstressed initial syllable. While the ordinary discourse frequency of these nouns runs to 15% (see above), as many as 30% of the nouns collocating with uses of the fifteen *a*-adjectives that are neither premodified nor coordinated exhibit this exceptional stress pattern. This unusually high ratio should suffice to dispel any doubts about the relevance of stress clash avoidance as a factor constraining the prenominal use of *a*-adjectives.

The evaluation of attributive *a*-adjectives provided in this section has various implications that can be summarized as follows. The fifteen adjectives considered show widely discrepant degrees of sensitivity to the prohibition against non-permanent meanings and stress clashes in prenominal position – not just between the three syntactically defined groups, but also within them. Some adjectives easily tolerate infractions of only the semantic or only the phonological constraint, some tolerate neither, and some allow both. In principle, though, the two constraints considered have to be treated on an equal footing, with item-specific rankings rather than a predetermined priority, e.g. of semantics over phonology.

A question that remains open is if and how the specific behaviour of an item from the class of *a*-adjectives can be predicted. To a large extent, this seems to be a matter of the lexical information stored along with each item. One component of this is the phonological aspect: while the stress contour of all adjectives considered is identical, for *aloof* and *askew*, this does not seem to seriously hamper their occurrence in prenominal position; *asleep* and *awake*, on the other hand, depend strongly on the satisfaction of this constraint. The other component is semantic in nature and concerns the appropriateness of an adjective to take on permanent, characterizing meanings (in literal or figurative senses) or, alternatively, its tolerance of infractions to this requirement. *Aloof*, for instance, is typically characterizing when qualifying an individual; similarly, *alive*, *ashamed* and *aware*, while normally temporary in meaning, convert to permanent meanings when premodified. *Agog*, *awake* and *asleep*, in contrast, generally keep their temporary meanings even as attributes, but are by no means frequent in this position. Thus, while semantic and phonological constraints play a prominent role in licensing attributive *a*-adjectives, their importance is far from uniform across all items.

Above and beyond this variegated picture, one overarching generalization is however feasible. Aside from the items of group I (*aghast*, *agog*,

aloof and *askew*), which occasionally occur in attributive uses even in iso-lation, the frequency with which an *a*-adjective appears in this position by and large depends on its compatibility with premodifiers of different kinds. The adjectives of group II (especially *ashamed*, *averse*, *awake* and *aware*) stand out in this respect, while those of group III (especially *afire*, *afloat* and *akin*) are not very often premodified and are thus extremely rare as attributes. As has been shown, the semantic and rhythmic changes effected by premodification seem to be at the basis of this phenomenon.

The affinity with premodification is a better predictor of attributive uses than, for example the overall textual frequency of the adjective and its re-sultant entrenchment in the mental lexicon of language users. For instance, *aware*, *alive*, *afraid* and *asleep*, which rank highest in terms of overall frequency, do not even have 1% of attributive uses. In contrast, the moder-ately frequent *aloof* and *averse* boast shares of 16 % and more and even the least frequent item *askew* reaches more than 6% of attributives.

7.   Conclusion

Towards the end of his article, Jacobsson (1996: 218) remarks that in grammatical treatments of positional restrictions on adjectives, "*a*-words, or rather subsets of these, have traditionally been singled out for special attention – which is not to say that their distribution has been correctly described or adequately explained". The present study has taken the de-scription and explanation one step further. Based on a large-scale corpus, it has provided the first quantified evidence of the distributional patterns of all disyllabic *a*-adjectives that were found to occur in prenominal position. The adjectives *aghast*, *agog*, *aloof* and *askew* appear occasionally in at-tributive position even when not premodified; the largest group, including *adrift*, *alive*, *ashamed*, *averse*, *awake*, *aware* and *awry*, occur attributively more often when they are premodified than when they stand on their own; finally, *afloat*, *afraid*, *akin* and *asleep* only function as attributes when they are premodified. The three groups that emerge show no more than a mini-mal overlap with Jacobsson's (1996: 218) intuitively based categorization. Within them, individual adjectives exhibit extreme discrepancies in their distributional profiles. In addition to this descriptive readjustment, a revi-sion of the explanatory approach taken in Jacobsson (1996) has been pro-posed. Focusing on a semantic constraint disfavouring temporary meanings in attributive modifiers and a phonological constraint working against stress clashes between attributes and their head nouns, the study has dem-

onstrated that both contribute to discouraging the attributive use of single *a*-adjectives. Arguably, in the vast majority of attributive uses, premodification however secures the conformity with both types of constraints. This explains the prominent role played by premodifiers in the licensing of attributive *a*-adjectives.

The importance of various premodification strategies (prefixation, compounding, adverbial modification) and of coordinated attributive structures accounts for the fact, confirmed by a diachronic analysis, that the attributive use of *a*-adjectives is a relatively recent phenomenon. Its rise hinges upon the more general increase in the grammatical complexity of attributive constructions which have progressively become available since the nineteenth century.

A quantitative analysis of the proportion of attributive uses in which the semantic and the phonological constraints are satisfied or violated has come to the conclusion that they are not mutually exclusive (and do not rule out the contribution of further constraints, either). To the extent that meaning and rhythm can be weighed against each other, the relation of power is item-specific rather than of a principled nature. While only a few adjectives (e.g. *agog*, *aghast*, *askew*) easily tolerate infractions of both the semantic and the phonological constraint, some show an extreme sensitivity to either one or the other. *Aloof* and *awry*, for instance, rarely violate the semantic criterion. Contra Jacobsson (1996: 211), for some *a*-adjectives in particular (e.g. *awake*, *asleep*), the avoidance of stress clashes turns out to be a more incontrovertible requirement than the semantic specification. For many others (e.g. *ashamed*, *averse*, *aware*, *afloat*, *afraid* and *akin*), there is a strong tendency to conform to both the semantic and the phonological restriction.

On a more general, theoretical level, these empirical results have far-reaching implications for a model of grammar accommodating them. For one thing, it has to allow for more interactions between different components of the language system than is common in many conceptions. A long tradition in linguistics has recognized the influence of semantics on syntactic structures, and the close ties between these two are at the focus of the innovative constructionist approach to grammar (cf. Goldberg 1995; 2006; see furthermore the graphic representation quoted from Croft and Cruse 2004: 258 in Bergs, this volume). However, the above analyses have suggested that phonological influences have to be assigned an equally important place in the determination of syntactic constructions. The resulting grammar has to be an interactive one in which semantic and phonological information is co-present in the building of grammatical structure. While

such a possibility is not in principle excluded in Construction Grammar (see again the figure in Bergs, this volume), its exclusive focus on the correspondences between syntax and semantics seems to reject the relevance of other levels of linguistic structure such as morphology and, in particular, phonology. The conspicuous absence of phonology from constructionist accounts is exemplified by the other two contributions in part 2 of the present volume: in Hoffmann's account of preposition placement in relative clauses and in Bergs's study of expressions of futurity, phonological form plays no role whatsoever. Phonology is not exactly ruled out, but the character of the grammatical model that Hoffmann and Bergs embrace distracts from this level of analysis. A critique of this property of Construction Grammar can be found in Hudson (this volume), who advocates a more traditional view of language including morphological and phonological aspects. In this respect, Construction Grammar can be usefully complemented by a more output-oriented model concentrating on the phonological form of grammatical structures, as is the case in Optimality Theory (e.g. Prince and Smolensky 1993; Kager 1999).

Secondly, the empirical analyses indicate that violations of both the semantic and the phonological constraint coincide relatively rarely. This suggests that a violation of only one of the two constraints is frequently tolerated, whereas a simultaneous violation of both constraints is strongly avoided as far as many *a*-adjectives are concerned. This finding indicates that, unlike standard versions of Optimality Theory, the evaluation of constraint violations must be based on additive quantification: if a structure is grammatical or not does not depend on whether it violates a single important constraint, but on how many constraints it violates altogether. The interplay of semantic, phonological and other factors not studied here is thus truly interactive in so far as constraint violations become effective in combination rather than in an either-or fashion. In the literature on Optimality Theory, several models have been proposed and discussed that accommodate different kinds of cumulative constraint interaction (see, for instance, Guy 1997; Boersma 1998; Anttila and Cho 1998; Slade 2003; Jäger and Rosenbach 2006).

Finally, while these variations on the theme of Optimality Theory take care of the additive workings of constraints, the results of the present study challenge the theory in yet another respect. The findings place much of the explanatory load on the lexical specifications of individual adjectives. Though both the semantic constraint and the phonological constraint may be operative for each lexical item, their relative importance seems to vary from one adjective to the next: for some, satisfaction of the permanent

meaning is a necessary precondition; for some, the avoidance of stress clashes is a must, and many others occupy the middle ground between these extremes. For constraint-based grammars, this means that constraint rankings must be item-specific, rather than fixed in a unique and consistent constraint hierarchy. This requirement flies in the face of such rigid formalisms as Optimality Theory. For Construction Grammar, this implies that the inherent meaning of a construction, for instance the characterizing or identifying semantics of attributive structures, is complied with by some lexical items filling them, but not by certain others, which may preserve a temporary interpretation.

   This is not the place to elaborate a detailed critique of the various innovative models of grammar that have been developed in the 1990s, or, for that matter, to expand on an alternative and possibly more adequate model.[14] However, the study of *a*-adjectives presented in this contribution can serve as a test case for different conceptions. Thus, the emphasis on constructional meanings that is at the centre of Construction Grammar can usefully be supplemented with the focus on phonological output structures that is characteristic of Optimality Theory. What is more, since even the outwardly homogeneous class of *a*-adjectives has turned out to be extremely heterogeneous with regard to the syntactic behaviour of individual members, a strong lexical component specifying degrees of sensitivity to different constraints is required as well. In a nutshell, the example of the positional restrictions bearing on *a*-adjectives demonstrates that only the best of all models taken together is good enough to come to terms with the complex empirical reality.

Notes

1. For further remarks on the origin of this class of verbs, see Bolinger (1967: 12); Jacobsson (1996: 208); Huddleston and Pullum (2002: 559); cf. furthermore Bolinger (1967: 3); Bailey (1987: 149); Markus (1997: 490).

2. This includes participles preceded by prefixes or followed by particles, compound attributive adjectives, more or less complex adverbial modifiers and negation of the attribute by *not* or *never*, giving rise to ever more complex prenominal constructions (e.g. *the unlit hall*, *his broken-down state*, *a panic-stricken mole*, *a suitably drunk customer*, *quite an unusual person*, *the never especially upright party*, *the not necessarily safer but altogether more satisfying pursuit of skiing*; cf. Schlüter 2005: 143–146).

3. Compare in this context Quirk *et al.* (1985: 409), who discern only two groups.

4. Instances where the adjective is compared by means of *more*, *most*, *less* or *least* were counted as unmodified attributive uses because the fundamental relations (both semantic and phonological) with the noun in examples like (i) are unaltered with regard to adjectives in their absolute form.

    (i)   *They seem to have a generally faster, **more alive culture** and don't need to turn to drink.* (*The Daily Mail* 1994)

5. Cases where attributive *a*-adjectives occupy the last slot in a coordinated attributive structure and immediately precede the noun were assigned to the unmodified attributive category (or, if they carried a prefix, to the prefixed category). Thus, in (i) below, *aloof* was counted as a coordinated attribute, whereas in (ii) it was considered as an unmodified attributive use.

    (i)   *Then, she played an **aloof, unruffled wife** whose mind teemed with images of sexual violence.* (*The Times* 1997)

    (ii)   *The 17th-century colonists who first encountered them wrote of **hospitable but aloof tribesmen** who occupied vast swathes of what is now North Carolina and Georgia.* (*The Daily Mail* 1998)

6. For *aloof* (as well as *alert*, which is not considered here), this has already been stated in Quirk et al. (1985: 409) and Huddleston and Pullum (2002: 559).

7. The only exceptional unmodified occurrence of *afraid* is a highly marked phrase from a letter to the editor representing a two-word summary of an earlier article.

    (i)   *Last week, as at 9 am today, the place was delightfully but depressingly empty; empty not just of "**afraid Americans**" but of over half my usual British and European fellow travellers.* (*The Times* 1991)

8. The results of the chi-square test for *ashamed* (non-attributive vs. attributive) are: $\chi^2 = 4216.62$, df = 2, $p \approx 0$ (***); for *aware*: $\chi^2 = 173.02$, df = 2, $p = 2.69 \cdot 10^{-38}$ (***).

9. For more discussion, see Fijn van Draat (1912), Bolinger (1965), and at greater length Schlüter (2005: 60–149).

10. Acute accents indicate primary stresses, whereas grave accents indicate secondary stresses.

11. There are, of course, some well-known exceptions to this rule typically concerning nominal compounds like *àpple píe*, *sùmmer níght*, *sìlk tíe* (see, for instance, Plag 2006). The type of compound involved in the present study, however, presumably conforms to the compound stress rule, and even if individual items did not, they would be liable to undergo stress shift.

12. In the case of *averse*, and to a lesser extent also *aware*, a major obstacle to their use as attributes seems to be the obligatory presence of a complement (see section 5). The effect of compounding (e.g. *debt-averse*, *design-aware*) and premodification by an adverb (e.g. *historically aware*) is mainly to encode the (near) obligatory complement, whereas the rhythmic and semantic effects are presumably only of secondary importance.

13. The only exception is, once more, the highly idiosyncratic example already quoted in note 7.

14. But see Schlüter (2005: 238–257) for a critical assessment of Optimality Theory applied to empirical corpus data, and Schlüter (2005: 257–306) for an outline of a network model that attempts to integrate multidimensional interactions between phonological, semantic and other factors in the actualization of grammatical structures.

Corpora

BNC
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The Daily Mail
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The Daily Telegraph
 1991–2000 *The Daily Telegraph*, including *The Sunday Telegraph* on CD-ROM. Produced by Financial Times Electronic Publishing. Distributed by Chadwyck-Healey. Database copyright: The Telegraph Group Ltd. Software copyright: Personal Library Software Inc.
ECF
   1996   *Eighteenth-Century Fiction.* Electronic Book Technologies Inc./Chadwyck-Healey. Cambridge.
EPD
 1996/1997 *English Prose Drama.* Electronic Book Technologies Inc./Chadwyck-Healey. Cambridge.

The Guardian
 1990–2000 *The Guardian*, including *The Observer* on CD-ROM. Copyright: Guardian Newspapers Ltd. Software copyright: Chadwyck-Healey.
NCF
 1999/2000 *Nineteenth-Century Fiction.* Electronic Book Technologies Inc./Chadwyck-Healey. Cambridge.
The Times
 1990–2000 *The Times*, including *The Sunday Times* Compact Disc Edition. Copyright: Times Newspapers Ltd., Software copyright: Chadwyck-Healey.

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Part 3　Constructions and lexicalism

Constructions and lexical approaches

The three articles in this section deal with the general issue of what the relationship is between a construction and an articulated lexicon. All three articles have a concern with lexicalist conceptions of grammar.

Hudson is explicitly concerned with the similarities and differences between Word Grammar – a lexicalist dependency theory, of which he is the main originator – and Construction Grammar, while Rosta and Gisborne preoccupy themselves with the analysis of a particular construction or construction type, in Rosta's case the unaccusative and middle patterns exemplified in (1), and in Gisborne's the pattern of predicative complementation, exemplified in the raising and control sentences in (2). Rosta's article is not located in any particular formalism, although it does have an intellectual ancestry in Word Grammar; Gisborne's article is explicitly a contribution to Word Grammar as much as it is a contribution to constructional approaches.

(1)   a.   *The door opened.*
       b.   *The door opens easily.*

In (1a), *opened* is an unaccusative verb with the "accusative" counterpart transitive OPEN as in *Jane opened the door*. In (1b) *opens* is a middle verb. It has generic reference, and refers to a general property of the door, not to a particular instance of opening.

(2)   a.   *Jane seemed to be nice.*
       b.   *Jane tried to be nice.*

In the examples in (2), there is a predicative complement *to be nice*. The main difference is in the matrix verbs: *seemed* in (2a) only assigns a thematic role to the proposition expressed by *Jane…to be nice*, whereas *tried* in (2b) assigns two thematic roles, one to *Jane* and one to the proposition.

The three papers tackle their subject material in different ways. Hudson lays out the theoretical terrain occupied by Construction Grammar and Word Grammar. He shows that the two theories are in broad agreement about a number of foundational issues: they are both at the intersection of generative and cognitive approaches to the structure of language; both

theories are "symbolic" in that they agree that there is a regular association of meaning with grammatical form; both theories assume a form of parallel architecture and correspondingly eschew derivations; and both theories exploit default inheritance as a means of ensuring that the declarative database does not become unwieldy.

Word Grammar differs from Construction Grammar in that it assumes that language is a "symbolic network" where all linguistic information is located only within this network, which is, in turn, a subpart of the larger cognitive network. The model allows Word Grammar to capture the same analytic insights as Construction Grammar, although the ways in which those insights are expressed can differ considerably.

Having laid out his theoretical terrain, Hudson elaborates a careful case study of the Construction Grammar treatment of the ditransitive construction, which he compares with his own Word Grammar analysis. Hudson argues that the Word Grammar analysis has the same descriptive power as the Construction Grammar one, which leads him to explore the key differences between the theories. In brief, and centrally, Hudson rejects the notion of a "construction" beyond the word, and beyond the dependency. In his final section, Hudson explores how Word Grammar and Construction Grammar locate their theories of grammar relative to theories of language acquisition and the processing of linguistic information. As he points out, there is more Construction Grammar work on acquisition, and more Word Grammar work on processing.

Gisborne's contribution is less concerned with detailing the differences between Word Grammar and Construction Grammar, and is more concerned with exploiting the nature of the Word Grammar dependency as a symbolic unit. He argues that the symbolic nature of dependencies means that they are constructions – and therefore Word Grammar is a constructional theory of grammar. Within this framework, Gisborne elaborates an account of raising and control patterns, which argues that they need to be taken constructionally. Evidence in favour of his position comes from verbs like SEEM. It is often argued that SEEM has an epistemic sense in (3a) and an evidential sense in (3b).

(3)   a.   *Jane seemed to be drunk.*
       b.   *Jane seemed drunk.*

One of the advantages of a constructional approach is that it permits the analyst to distinguish between the two subtypes of predicative construction

exemplified in (3), and so to avoid implausible senses of verbs, and also to limit verbal polysemy.

As we have said, Gisborne's article is therefore concerned with the symbolic nature of dependencies. Gisborne argues that this makes dependencies essentially construction like – each dependency is associated with a particular semantics, which makes the matter of dependency selection one of semantic selection. From this observation, Gisborne argues that it is possible to develop a declarative theory of argument linking, exploiting the symbolic nature of dependencies as associations between syntactic and semantic structure and the organization of dependencies into default inheritance hierarchies.

Rosta's article is concerned with two interrelated questions: (i) what is the basis of the notion "construction"; and (ii) how should we analyse the examples in (1) above? Are they really different in the mental grammar? His answer to (ii) rests on his answer to (i). Rosta observes that there are two concepts of "construction" in the grammatical literature. On the one hand, constructions are treated as stored usage events, which become recyclable and which offer themselves as the models of subsequent usage events. On the other hand, constructions are treated as semi-productive, idiomatic permanently stored conventionalized form-meaning pairings. Rosta argues that for the grammarian, it is the latter conceptualization of constructions that is useful. Rosta makes the case that the intransitive predications in (1) do not instantiate different grammatical constructions. In both cases, the intransitive verbs are related to their transitive counterparts, but the interpretations – beyond the observation that it is the "undergoer" of the opening event that is realized as the subject in these examples – does not follow from an "unaccusative construction" and a "middle construction". Instead, Rosta shows that these two constructions are instances of the same macro-construction, and that the interpretative differences between middles and unaccusatives follow from extra-grammatical facts.

Rosta's article is a challenge to some key Construction Grammar nostrums. For example, Goldberg (2006) assumes that constructions are grounded in the human experience of language and are usage-based, as does Croft (2001). For Rosta to insist that it is necessary to retreat to the position that a construction should be a non-compositional form-meaning pairing is in the face of the more general tendencies in this area of linguistic analysis. But in Rosta's hands, the more restrictive position proves to be a powerful tool which permits key generalizations to be made, and no essential insights to be lost.

We have ended the volume with Hudson's article. As a sympathetic comparison of Construction Grammar with alternative theory, it seemed to us that it was a fitting place to end. However, the reader who is not familiar with Word Grammar would benefit from reading Hudson's article before Gisborne's. And given some of the key assumptions, it might also help to read Hudson's article before Rosta's.

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Antitransitivity and constructionality*

Andrew Rosta

1.   Introduction

This paper aims to provide an analysis of the grammar of the English middle and anticausative constructions. The middle construction, also called "mediopassive" (e.g. Bresnan 1982a), is exemplified in (1a–b). The anticausative construction, also called "unaccusative" (following Perlmutter 1978), "inchoative", "ergative" (following Burzio 1986), is exemplified in (2a–b).[1] Both middles and anticausatives have transitive "counterparts", as shown in (1c–d) and (2c–d).

(1)   INTRANSITIVE (MIDDLE)   TRANSITIVE
    a. *This car steers easily.*   c. *The driver steers (the car) easily.*

    b. *These bureaucrats bribe all too easily.*   d. *We bribed these bureaucrats all too easily.*

(2)   INTRANSITIVE (ANTICAUSATIVE)   TRANSITIVE (CAUSATIVE)
    a. *The window shattered.*   c. *The bullet shattered the window.*
    b. *The baby woke up.*   d. *The noise woke up the baby.*

What middles and anticausatives have in common is their "antitransitivity". Antitransitives are intransitives whose subject has been "moved to subject position". (For convenience and expository clarity, in this article I'll use the transformationalist metaphor that describes syntax in terms of positions and movements.) Speakers vary, I have found,[2] as to whether the subject must have moved from object position, as in (3a), or whether it is possible, as in (3b), for the subject to have moved over a longer distance from a more deeply subordinate position, as is possible with passives, as in (3c–e).[3]

(3) a.   *Paper cups discard easily.*
    b. *%Paper cups dispose of easily.*

c.   *Paper cups were disposed of.*
d.   *The paper has been written on one side of.* (from Hudson 1984: 118)
e.   *The box has been scrawled all over the underside of the top of.*

This article is an examination both of the grammar of middles and anticausatives and of the nature of constructionality. Section 2 argues for a distinction between Usage and Grammar, and argues that there is one variety of constructionality in Usage and another, more interesting, variety of constructionality in Grammar. These general points are then illustrated by the particular case of middles and anticausatives, which sections 3–6 argue to be distinct constructions in Usage but not Grammar.

2.   Constructionality

A construction is a whole with multiple parts, or more generally a category with multiple properties, that needs to be recognized in its own right. There are two main reasons why the linguistician might feel it needs to be recognized in its own right. The first reason is quasistatistical: the construction, i.e. the combination of parts/properties, is a salient pattern in usage. When translated into cognitive terms, salience of patterns in memory of usage is termed "ENTRENCHMENT"; it is the property of sticking in the memory through frequency of repetition or some other sort of remarkableness. The second reason is grammatical, i.e. pertaining to grammar in the sense of the body of rules that defines a language's systematic and not pragmatically predictable correspondences between form and symbolic meaning: in the grammar, the construction is a combination of properties that exists only because the grammar explicitly recognizes it in its own right. This is a generalized variety of what is commonly termed "NONCOMPOSITIONALITY". Idioms, for example, are noncompositional: the *kick the bucket* construction has the sense "die" only because the grammar explicitly stipulates that this phrase can have this sense. "(Non)compositionality" is normally understood to involve just the composition of a linguistic construct's *semantic* properties, but I shall employ the notion in a generalized sense that involves the composition of all of a linguistic construct's properties.

My narrow goal in this article is to argue that although the middle and anticausative "constructions" might each have a high degree of entrenchment, neither has any degree of noncompositionality. This argument is laid out in sections 3–6. I further intend this analysis of varieties of intransitiv-

ity to serve to exemplify a broader point about constructionality, which the rest of this section is devoted to. To this end, I will make a terminological and theoretical distinction between "usage-constructions" ("u-construct-ions"), defined by entrenchment, and "grammar-constructions" ("g-con-structions"), defined by noncompositionality.

The distinction between u- and g-constructions rests upon a distinction between Usage and Grammar. The Grammar–Usage distinction has been going in and out of fashion – in and out of the intellectual ascendancy, that is – for the last century. It was In with Saussure (not to mention Panini and some millennia's worth of grammarians in general), then Out with, say, C. C. Fries and the highly inductivist strand of American Structuralism that he represents, and then it was In again with Chomsky. And of late it has been under attack again, as the influence of Chomsky has waned and intellectual alternatives gain in maturity. The current prominence and liveliness of the debate is exemplified by the ongoing outbreak of articles, replies and re-joinders that includes Newmeyer (2003, 2005, 2006), Gahl and Garnsey (2004, 2006), Laury and Ono (2005) and Meyer and Tao (2005).

For my part, and for the purposes of this article, I defend the Grammar–Usage distinction, but as one that, regardless of what, if any, empirical bas-is it has, is ontologically necessary. By saying that it is ontologically ne-cessary, I mean that Grammar can be defined and it exists by virtue of be-ing defined. This, it should be clear, is not to deny that grammar is learnt inductively from usage; nor is it to claim that language involves any partic-ular cognitive architecture (such as encapsulated modules). Rather, I insist merely that just as the rules of chess can be abstracted from chess-playing behaviour, so the grammatical rules of a language can be abstracted from language-use behaviour. For grammar as with chess, the rules once ab-stracted can be studied for their content and formal properties. The recipe for abstracting Grammar from Usage is as follows.[4]

(I)   Suppose, rather uncontroversially, that one's knowledge of usage is a body of structured memories of recurrent patterns in usage, of various-ly greater and lesser specificity, as well as memories of tokens of us-age. The usage patterns are of various sorts: some are sociolinguistic, some are stylistic, some involve systematic correspondences between form and symbolic meaning.[5]

(II) Discard all but the sound–meaning correspondence patterns.

(III) Define "Pragmatics" as an amalgam of "Processing", "Discourse Con-text", "General Knowledge" and "Common Sense".

(IV) Subtract from the sound–meaning correspondence patterns, and dis-card, all elements that Pragmatics can account for.

(v)   The residue is Grammar.

The relevance of this recipe is that it defines a category, which I'm electing to name "Grammar", and this category is in turn crucial to the definition of noncompositionality: noncompositional phenomena are those defined explicitly in Grammar. And noncompositionality is essential to one sort of constructionality. To avoid misunderstanding, it is worth noting here that (i) this "recipe" is not an empirical claim, (ii) there is no implication that other things that get called "grammar" should be dismissed, and (iii) I am making no claims about whether Usage and Grammar are or aren't represented in the mind.

We turn now to the distinction between u-constructions and g-constructions. The term "construction" gets used in a variety of senses. The traditional sense is a grammatical pattern in usage. This has been broadened, in the sense favoured by recent inductivist usage-based approaches, e.g. Hilferty (2003: 42ff), to cover all sorts of significant patterns in usage, and this is what I'll call "u[sage]-construction". In the sense present in early work in Construction Grammar, notably Fillmore, Kay and O'Connor (1988) and Kay and Fillmore (1999), "construction" meant a noncompositional category in grammar, which is what I'll call "g[rammar]-construction".[6]

U-constructions. There are, of course, a multitude of sorts of pattern in usage. There are collocational probabilities, such as exist between, say, *dig* and *spade*, and *heavenly* and *abode*, and *rely* and *on*. There is formulaic language, both in the form of fixed phrases such as *All's well that ends well* and *Every cloud (has a silver lining)* and *Well, whaddaya know*, and in the form of more abstract templates, termed "snowclones" by Whitman (2004) (see Pullum 2004) and documented extensively on Language Log[7] and other correspondent parts of the language-focused blogosphere; examples are:

> *X is the new Y* ("X is as fashionable as Y was");
> *I for one welcome our new X* "masters";
> *X is a few Y short of a Z* ("X is unintelligent");
> X_{verb} *me* $Y_{particle}$ *and call me* Z_{name} (expression (often ironic) of astonishment);
> *X is just another word for Y* ("X amounts to Y");
> *to* X_{verb} *or not to* X_{verb}.

And there are word order patterns showing statistical rather than categorical tendencies to reflect phrase-weight and form–meaning iconicity and to minimize processing difficulty caused by load on short-term memory. And alongside all these sorts of pattern, and others beside, there are morpho-

syntactic patterns. Morpho-syntactic phenomena, even of the most general and basic sort, such as, say, adjunction and extraction, can be seen as u-constructions, albeit of a very general and abstract sort, but nevertheless inducible from usage. (To say that there is, say, an extraction u-construction is not to say that there is not also an extraction g-construction; a salient or entrenched pattern in usage (i.e. a u-construction) may or may not be noncompositional (i.e. a g-construction).)

G-constructions. The essence of a g-construction is that it is a gestalt: the properties of the whole do not follow from the properties of the independent parts, where these properties are part of grammar – i.e. they define sound–meaning correspondences and are not pragmatically explicable. This gestalthood can occur in various ways. The g-construction may have noncompositional meaning, as with idioms, such as *kick the bucket*, or as with the scope of negation in examples like (4a–c).

(4) a. *He doesn't seem to be here.* ['He seems to not be here.']
     b. *I don't think I'll be late.* ['I think I won't be late.']
     c. *%You haven't to walk on the grass.* [%'You have to not walk...']

Or the g-construction may have unique morphosyntactic properties, as with *need(s) must*, (5a–b), in which, among a raft of other eccentric properties, an inflected verb has some sort of intimate syntagmatic liaison with an auxiliary.

(5) a. *The problem needs must persist.*
     b. *%The problems need must persist.*

Or the g-construction may have both noncompositional meaning and peculiar syntactic properties, as with, say, exclamative and *the-more-the-more* constructions. And lastly, the gestalthood may reside simply in the licitness of the cooccurrence of properties. For example, along with an open class of verbs of perception and a closed class of other verbs, *know* can take a bare infinitive complement, but for most speakers this is licit only when *know* (like auxiliary *dare* and *need*, in this respect) is in a nonassertive (negative or interrogative) environment, (6a–b).

(6) a. *Did you ever know anyone make such a mess?*
     b. *I've never known anyone make such a mess.*
     c. *%I have known people be bitchy in circumstances like these.*[8]

Because it has the further property of having to be in a nonassertive environment, *know* with a bare infinitive complement is a g-construction.

I don't wish to deny that Usage and Grammar are each independently worthy of study. From a cognitive perspective, usage is worthy of study because we have knowledge of usage, and all content of cognition is worthy of study. From an extramental perspective, usage and u-constructions are worth studying for such purposes as foreign-language teaching; for example, it is useful to the foreign learner of English to learn that there are middle and anticausative u-conconstructions. But I do wish to make a couple of more polemical assertions. The first is that neither Usage nor Grammar – and hence neither u- nor g-constructionality – is necessarily of interest to the study of the other. If you're focused on a pattern's degree of entrenchment, then its degree of compositionality is irrelevant; and, vice versa, entrenched u-constructions may very well be compositional, as is argued in sections 3–7 to be the case for antitransitives. Therefore, it is possible to have two linguisticians, each ostentibly studying constructions, but one studying u-constructions and the other studying g-constructions, and neither saying anything relevant to the other. There is a very real possibility of this: for instance, if you subscribe to a usage-based theory of language acquisition, in which entrenchment is the fundamental mechanism, then you might very reasonably not care about noncompositionality.

My other polemical point is this: the question "Is X a u-construction?" usually has a pretty obvious answer, whereas "Is X a g-construction?" usually doesn't have an obvious answer. The less obvious the answer to a question is, the more interesting and worth asking it is.

I will take it as uncontroversial that there are distinct middle and anticausative u-constructions; their main properties are outlined in section 3. The remainder of this article then argues that the respective properties of the two u-constructions do not constitute a g-construction either jointly or separately. This, I would argue, provides an important lesson about constructionality. Even though documenting usage patterns is valuable in its own right and is a necessary precursor to further grammatical analysis, a linguistic "analysis" consisting solely of facile documenting of u-constructions[9] (i) fails to discover their underlying workings, (ii) distorts and traduces our view of the nature of language, by exaggerating the complexity, specificity, idiosyncrasy and heterogeneity of its internal workings, and (iii) debases the valuable notion of (g-)construction if phenomena that lack g-constructionality still get called constructions.

3. Distinctive characteristics of the antitransitive u-constructions

The essential u-constructional difference between middles and anticausatives is that with middles but not anticausatives there is an implicit agent. Unlike with passives, the agent can't be made explicit and expressed by a *by*-phrase:

(7) a. *The car steers easily by even inexperienced drivers.*
     b. *Those officials bribe easily by shady entrepreneurs.*
(8) a. *The car can be steered easily by even inexperienced drivers.*
     b. *Those officials got bribed by shady entrepreneurs.*

As u-constructions, prototypical middles are characterized by two further properties that are not characteristic of prototypical anticausatives: (I) the presence of an adverbial; (II) a habitual interpretation.[10] In contrast to prototypical middles, prototypical anticausatives do not have comparably salient characteristics.

I. Adverbials. There is a tendency for an adverbial such as *easily* to be present, as in (1a–b). There are also nonadverbial variations on this tendency, such as the *refuse*, the negation and the polarity *do* in (9a–d).

(9) a. *The car refused to steer.*   c. *Faroese cops never bribe.*
     b. *The cable won't cut.*   d. *So the cop did bribe after all.*

But exceptions to the tendency are also plentiful. Hundt (2006), which employs the ingenious idea of using consumer catalogues as a corpus in which to seek examples of middles, finds no end of examples of bare, adverbialless, middles, such as (10a–c).

(10) a. *The lightweight aluminum pole telescopes from 39-to-70-inches long.*
     b. *Outdoors, the two ends of the net simply anchor securely into the ground.*
     c. *The auto jack plugs into the cigarette lighter with a 12" cord.*

II. Habituality. The middle verb phrase tends to be interpreted as habitual – as expressing not a single event, nor even a specific series of recurrent events, but rather a property of the middle's subject. It is, though, possible to have middles with an implicit agent but without habitual aspect, as in (11a–d).

(11) a. *At long last, the nearly incorruptible customs officer bribed.*
   b. *The Christian Democrats took office; and all of a sudden, govern-*
      ment officials were bribing left right and centre.
   c. *I waved a bundle of fivers in front of the doorman and at once he*
      bribed.
   d. *Australia dismissed for 514.* ["were dismissed for 514 runs at
      cricket"]

It is possible to find "pseudo-middles", such as (12a–b), with a middle-favouring adverbial and habituality, and perhaps with, in the case (12a), an implicit agent, but – as the ungrammaticality of (12c) shows – without anti-transitive syntax.

(12) a. *The knife cuts easily.*[11]
   b. *Cigarettes kill.*
   c. **She cut the knife easily.* [* on reading corresponding to (12a)]

The similarity of (12a–b) to middles is purely superficial. Although non-habitual counterparts of (12a–b) would, as with middles, be odd, the habituality of (12a–b), but not of middles, is a result of a semantic constraint on null objects: any object can be null, as in (13a–b), but only if the verb's interpretation does not involve a single event. (Some verbs, such as *read* and *eat*, are exempted from the constraint.)

(13) a. *To devour fastidiously is scarcely to devour at all.*
   b. *Though shalt not kill, but need'st not strive officiously to keep*
      alive.[12]

Pseudo-middles have a single surface argument and a suppressed object, and receive a habitual interpretation because of a semantic constraint on object-suppression. True middles, on the other hand, have a single surface argument and a suppressed agent, and receive a habitual interpretation for pragmatic reasons that are explained in section 6.

To summarize, in the middle u-construction there is an implicit agent, and typically there is an adverbial and a habitual interpretation, while in the anticausative u-construction there is no implicit agent, and nor is it the case that there is typically an adverbial or a habitual interpretation. Section 6 will argue firstly that the presence of the adverbial and the habitual interpretation are purely pragmatic consequences of the presence of the implicit

agent, and secondly that there is no reason to see the presence or absence of an implicit agent as the basis of a g-constructional distinction. The first of these two arguments made in section 6 depends crucially on an analysis of the semantics of subjecthood, and it is to this matter that we turn in the following section.

4.   Semantics of subjecthood

The strong tendency of middles to have an adverbial and be habitual are argued by Rosta (1995), in an account recapitulated in revised form in section 6 below, to be pragmatic epiphenomena. Drawing on the insights of Lakoff (1977), which noted that middles' subjects are interpreted as primarily responsible for the situation described by the middle, Rosta (1995) treats middles as a g-construction whose sole semantic property is that the subject is specified as bearing the semantic role of "archagonist". "Archagonist" is conceived of as defined, within the force-dynamic model of Talmy (1985, 1988), as the participant some of whose properties constitute necessary conditions for the situation described by the middle to obtain – which really boils down to Lakoff's notion of primary responsibility. Already simple though the Rosta (1995) account of middles is, there is scope for refining and further simplifying it (and – as will be seen in section 6 – in a way that brings anticausatives into the picture). Start by considering linking, i.e. the rules determining which participants get expressed by which syntactic arguments. It is generally the case that if you know what syntactic arguments a word has and what participants it has, then it can with a high degree of accuracy be predicted which associates to which. There is therefore a need for an analytical model of linking that will make these predictions.[13]

In my view, the most promising model of linking is one in which some grammatical relations (or, if you will, syntactic argument "positions" at some appropriate level of syntactic structure) have intrinsic semantic content.[14] Linking is then achieved by finding the overall best semantic match between the semantic arguments and the intrinsic, "constructional", meanings of the syntactic positions; the match is between (i) the semantics of the predicate and its relations to its participants, and (ii) the intrinsic semantics of the syntactic frame into which the predicate is inserted. Here is not the place to thrash out such a model in detail; but for our present purposes it is sufficient simply to point out the most obvious example of its

operation: of a predicate's semantic arguments, it is generally the most agentive that gets expressed by the subject.

We are now in a position to simplify the Rosta (1995) analysis by discarding the putative semantic role "archagonist" as something distinctive to a middle g-construction. Instead we can appeal to the rule – applying to subjects in general – that the most agentive participant gets expressed by the subject. This was the insight of Lakoff (1977) and van Oosten (1977): that the essence of middlehood is that by virtue of being expressed by a subject, a patient takes on agentive characteristics. In contrast to the Rosta (1995) analysis, then, rather than middles constituting a g-construction in which the subject has the semantics of primary responsibility, middles constitute a u-construction in which, as explained in section 6, the semantics of primary responsibility is the pragmatically aptest way of satisfying the grammatical rule requiring the subject to express the most agentive participant.

But the claim that subjects have instrinsic semantic content, namely expressing the most agentive participant, runs into a number of problems of greater or lesser severity. The problems arise with passives, discussed and solved in section 5, and with raised and *there* subjects, which will be discussed now, and will motivate a slightly revised analysis of subject semantics.

In (14a–b), *promise* has three syntactically expressed participants (the promiser, the promissee and the promise), and *threaten* has two (threatener and threat). Of these, the promiser/threatener is most agentive, and, as per predictions, is expressed by the subject. In contrast, in (15a–b), in which there is a raised subject, and (16a–b), in which there is a *there*-subject, *promise/threaten* have just one semantic argument, the promise/threat, and the subject does not express a participant in the promising/threatening.

(14) a. *She promised (him) to be more considerate in future.*
    b. *She threatened to be more censorious in future.*
(15) a. *The day promised to be sunny.*
    b. *Books threatened to topple off the shelf.*
(16) a. *There promised to be certain advantages arising from the reorganization.*
    b. *There threatened to be certain problems arising from the reorganization.*

It is an extremely well-known property of dummy *there* that it can occur only in positions not associated with semantic content. This accounts for

raising/equi contrasts like (17a–b): the object position of *persuade* has semantic content and the object position of *believe* doesn't.

(17) a. *I believed there to be a problem.*
     b. **I persuaded there to be a problem.*

The ability of *there* to occur in a given position therefore diagnoses that position's lack of semantic content.

But that hardly fits with the claim that the subject expresses the most agentive participant. In (18a–b) the subject, *there*, does not express a participant; and in both there is just a single participant, nonagentive in (18a) and agentive in (18b), so in both (18a–b) it is the object that expresses the most agentive participant.

(18) a. *In the forest, there toppled an oak.*
     b. *In the garden, there chirped a throng of children.*

Clearly it is untenable to claim that the subject must express the most agentive participant. But the claim can be straightforwardly revised to be that the subject of X must not express a participant (in what X expresses) less agentive than another participant (in what X expresses). To this revised constraint, raised and *there* subjects would not be an exception. If the subject of X is raised, then it does not express a participant in what X expresses. And *there* subjects do not express a participant at all.

5.   Syntax of passives and antitransitivity

There is a further, glaring exception to the generalization that the most agentive participant gets expressed by the subject: in passives, the most agentive participant gets expressed not by the subject but by the *by*-phrase (which may of course be implicit). There is an obvious and, I believe, correct solution to this: distinguish "surface subjects" from "underlying subjects". For the purposes of this article it is sufficient simply that this distinction be made in some way or another; but I'll suggest one plausible way in which it can be made.

I'll assume, in the absence of evidence to the contrary, that predicates ordinarily have just a single subject position, the subject position being what makes them predicative. The difference between the emboldened phrases in (19a–d) and those in (20a–d) would be that only the latter have

subjects. (In (20a–c) the phrase in bold is predicated of the verb's subject; in (20d) it is predicated of the verb.)

(19) a. *He saw **a right idiot**.*
    b. *She chose **a bright pink**.*
    c. *She dreamt about **after the war**.*
    d. *She imagined **after the war**.*

(20) a. *He seems **a right idiot**.*
    b. *She went **a bright pink**.*
    c. *The election was **after the war**.*
    d. *They married **after the war**.*

What would be special about the passive construction is that, for reasons it is not necessary to investigate here, it would add an extra, "outer", subject position to a phrase already containing an "inner" subject position (which remains associated with the underlying, active subject). There is a movement chain connecting the outer subject position to the object position or (in the case of prepositional passives) to some more deeply subordinate position.

Given this sketch of an analysis, the generalization is that it is the innermost subject, not an outer subject, that expresses the most agentive participant – or more accurately, that it is the innermost subject of X that must not express a participant (in what X expresses) less agentive than another participant (in what X expresses). The generalization applies both to actives and to passives, if, when the verb is passive, it is the *by*-phrase that is the inner subject. (Since *by*-phrases occupy surface positions characteristic of adjuncts, it is reasonable to suppose that the *by*-phrase is obliged to move from inner subject position to an adjunct position.)

Antitransitives are like other verbs in that when they are passive, as in the passive middles in (21a–b) and the passive anticausatives in (22a–b), there is an outer subject distinct from an inner subject.

(21) a. *This very office has been bribed in (by that most august of officials).*
    [cf. *That most august of officials bribed in this very office.*]
    b. *Such unofficial meetings are wont to get bribed at by all officers present.*
    [cf. *All officers present bribe at such unoffical meetings.*]

(22) a. *Her snatched moments of sleep are forever getting woken up during (by the baby)*
    [cf. *The baby wakes up during her snatched moments of sleep.*]
  b. *Even the quietest hours get woken up during (by those uneasy of conscience).*
    [cf. *Those uneasy of conscience wake up during even the quietest hours.*]

But antitransitives are like passives in that just as nonprepositional passives involve movement from object position to (outer) subject position, so nonprepositional antitransitives involve movement from object position to (inner) subject position. In the case of prepositional passives and prepositional antitransitives (as in (3b)), the movement is not from object position but from a position within a prepositional phrase subordinate to the verb.

Antitransitivity is what is often meant by "unaccusativity", so it might be helpful here to give a couple of reasons for the use of the term "antitransitivity" in preference to "unaccusativity". One reason is that whereas antitransitives have transitive counterparts, some verbs standardly analysed as unaccusative do not have transitive counterparts: verbs like *come, go, fall, arrive* lack transitive counterparts but have properties standardly associated with unaccusativity, such as occuring in *be*-perfects (*is come/ gone/fallen/arrived*). A second reason is that antitransives potentially include "prepositional" types, where movement to subject position is not from an object position, as in (23a–b), but syntactic unaccusativity is usually characterized as movement specifically from an object position.

(23) a. *Your garbage has disposed of successfully.* [anticausative]
  b. *Paper cups dispose of easily.* [middle] (= (3b))

As an analytical category, "unaccusativity" has a clear prototypical centre but is somewhat nebulous beyond that (cf. Levin and Rappaport Hovav 1995).

The antitransitive analysis, i.e. raising to (innermost) subject position from a complement position, has two main attractions. The first is that it offers an economical account of alternations between transitive and antitransitive variants: the variants differ only in whether the subject has been moved thither. The second attraction is that antitransitivity copes comfortably with examples like (23a–b), in which the "gaps" after *of* especially favour a "movement" analysis.[15]

I offer two pieces of evidence for the distinction between outer and inner subjects. The first piece is the one we've already seen, namely the dissociation between them in passives, as shown notationally in (24). (The conjectured movement of the *by*-phrase from inner subject position to adjunct position is not notated.)

(24)   [*The bed*]$_{i,\text{OUTER-SUBJ}}$ *was slept in* [_$_i$] [*by Sophy*]$_{\text{INNER-SUBJ}}$.

The second piece of evidence comes from interesting restrictions on depictive adjuncts.[16] Depictives can be predicated of the object, as in (25a), or of the subject, as in (25b). When there are multiple depictives, those predicated of the object must be nearer to the verb than those predicated of the subject (pace Aarts 1992: 53), as (25c–d) show. The grammaticality of the ordering *naked black* in (25e–f) is therefore contrary to predictions.[17] However, the ordering of depictives in both (25c–d) and (25e–f) is explained if inner subjects are distinguished from outer subjects and the ordering rule is that (i) depictives predicated of objects are innermost, (ii) then come depictives predicated of inner subjects, and (iii) depictives predicated of outer subjects are outermost. This is shown notationally in (25g): *unsweetened* is predicated of the object (*coffee*), *naked* is predicated of the inner subject (*Sophy*), and *black* is predicated of the outer subject (*coffee*).

(25)   a. [*Sophy*]$_{\text{SUBJ}}$ $\left\{ \begin{array}{c} drank \\ stirred \end{array} \right\}$ [*the coffee*]$_{\text{OBJ}}$ $^{\text{OBJ}}$[*black*].

   b. [*Sophy*]$_{\text{SUBJ}}$ $\left\{ \begin{array}{c} drank \\ stirred \end{array} \right\}$ [*the coffee*]$_{\text{OBJ}}$ $^{\text{SUBJ}}$[*naked*].

   c. [*Sophy*]$_{\text{SUBJ}}$ $\left\{ \begin{array}{c} drank \\ stirred \end{array} \right\}$ [*the coffee*]$_{\text{OBJ}}$ $^{\text{OBJ}}$[*black*] $^{\text{SUBJ}}$[*naked*].

   d.*[*Sophy*]$_{\text{SUBJ}}$ $\left\{ \begin{array}{c} drank \\ stirred \end{array} \right\}$ [*the coffee*]$_{\text{OBJ}}$ $^{\text{SUBJ}}$[*naked*] $^{\text{OBJ}}$[*black*].

   e. *The coffee was* $\left\{ \begin{array}{c} drunk \\ stirred \end{array} \right\}$ *naked black* (*by Sophy*).

   f. *The coffee was* $\left\{ \begin{array}{c} drunk \\ stirred \end{array} \right\}$ *unsweetened naked black* (*by Sophy*).

   g. [*The coffee*]$_{i,\text{OUTER-S}}$ *was* $\left\{ \begin{array}{c} drunk \\ stirred \end{array} \right\}$ [_$_i$]$_{\text{OBJ}}$ ($^{\text{OBJ}}$[*unsweetened*]) $^{\text{INNER-S}}$[*naked*] $^{\text{OUTER-S}}$[*black*] ([*by Sophy*]$_{\text{INNER-S}}$).

For clarity's sake some additional notated examples of the syntactic phenomena under discussion are given in (26–28). They illustrate the claims made in this section: (i) that middles and anticausatives have the same antitransitive syntax; (ii) that antitransitives and passives both involve movement to a subject position from a complement position; (iii) that antitransitives involve movement to the innermost subject position while passives involve movement to an outer subject position.

(26) a. ORDINARY PASSIVE

[*The criminal*]$_{i,\text{OUTER-S}}$ *was nabbed* [$\__i$]$_{\text{OBJ}}$ ([*by the rozzers*]$_{\text{INNER-S}}$).

b. PREPOSITIONAL PASSIVE

[*The criminal*]$_{i,\text{OUTER-S}}$ *was caught up with* [$\__i$] ([*by the rozers*]$_{\text{INNER-S}}$).

(27) a. ORDINARY ANTITRANSITIVE (ANTICAUSATIVE INTERPRETATION)

[*The window*]$_{i,\text{SUBJ}}$ *shattered* [$\__i$]$_{\text{OBJ}}$.

b. "PREPOSITIONAL" ANTITRANSITIVE (ANTICAUSATIVE INTERPRETATION)

[*The garbage*]$_{i,\text{SUBJ}}$ *disposed of* [$\__i$] *in a trice*.

(28) a. ORDINARY ANTITRANSITIVE (MIDDLE INTERPRETATION)

[*This kind of packaging*]$_{i,\text{SUBJ}}$ *discards* [$\__i$]$_{\text{OBJ}}$ *easily*.

b. "PREPOSITIONAL" ANTITRANSITIVE (MIDDLE INTERPRETATION)

[*Paper cups*]$_{i,\text{SUBJ}}$ *dispose of* [$\__i$] *easily*.

6. Ætiology of the middle–anticausative distinction

I will argue in this section that there are no g-consructional differences between middles and anticausatives. This section explains the processes through which differences between the u-constructions arise, and shows that these processes are entirely pragmatic.[18]

In section 3 we saw it is characteristic of middles, but not of anticausatives, to have an adverbial and to be habitual. These distinctive properties were shown in Rosta (1995) to arise by virtue of facilitating pragmatic interpretations consistent with a semantic constraint on middles' subjects. This constraint was then reformulated in section 5 as a semantic constraint on subjects in general: the rule is that the subject cannot express a participant less agentive than another.

Habituality is a kind of genericity. It describes, or claims the existence of, a class of events. So, for instance, *Sophy smokes* means, on the obvious

habitual reading, that there is a class of events of Sophy smoking. And for the middle in (29), the interpretation is that there is a class of events of the dress getting zipped up.

(29)   *This dress zips up.*

The reason for middles' preference for a habitual interpretation is as follows. In any single event of zipping, the primarily responsible participant will usually be the zip puller. But the existence of the CLASS (of events of the dress's zip getting pulled up) is due mainly to properties of the dress. This makes the dress the participant primarily responsible for there being a class of zippings up. In other words, a habitual interpretation is a way of satisfying the grammatically imposed requirement that the subject should be interpreted as primarily responsible.

As for the reason for middles' preference for an adverbial, consider (1a) (*The car steers easily*). The responsibility for X's steering Y is likely to be at least as much with X as with Y, but the responsibility for X's steering Y EASILY is far more likely to rest mainly with the properties of Y, making Y a correspondingly better candidate for being the primarily responsible participant. The same sort of story goes for the likes of (9a–d). Take (9a), for instance: if X has the power to refuse to do Y, then it is X that will be primarily responsible for Y happening or not happening.

A further reason for the prevalence of, in particular, *easily* with middles, especially in linguisticians' example sentences, is that *easily* tends to force an interpretation with an implicit agent – which by definition is a middle interpretation – because often the readiest interpretation is that it's the agent that the action is easy for. For example, (30a–b) do not really imply the involvement of any agent, while (31a–b) do (even though they still permit an interpretation in which it is the middle subject – the computer and (with greater pragmatic oddity) the varnish – that the action is easy for).

(30) a. *The computer switches off after a few minutes of inactivity.*
     b. *The varnish peels off after a day or two.*
(31) a. *The computer switches off easily after a few minutes of inactivity.*
     b. *The varnish peels off easily after a day or two.*

To summarize, the reason why middles tend in actual usage to have an adverbial and be habitual is merely that these properties add to the overall

interpretation some elements that make it more plausible that the subject is not less agentive than the implicit agent.

   The remaining difference between middles and anticausatives is that, as stated in section 3, middles involve an implicit agent (IA) and anticausatives don't. It is from this difference that the other differences between the u-constructions stem. Just as much as the middle interpretation, the anticausative interpretation is a way of reconciling the pragmatic interpretation with the grammatical constraint on subject semantics: in the anticausative interpretation, there is only one participant, which, by virtue of being the sole participant, must necessarily not be less agentive than another. In order for there to be only one participant, the situation must be construed in such a way that any ultimate causer is not involved in it. And conversely in the causative transitive, as we have known since Fodor (1970), the subject must be a causer sufficiently proximate to be involved – sufficiently involved, that is, for its agentivity to outrank that of the transitive object, which, as the existence of the middle interpretation proves, can itself have some degree of agentivity. For example, the interpretation of (2a) (*The window shattered*) is such that only the window is involved in the event, while the interpretation of (2c) (*The bullet shattered the window*) is such that that the bullet is involved too. If a gunman's unhappy childhood ultimately leads inexorably to firing a bullet that shatters a window, the childhood could be said to have caused the shattering, but if the childhood is too distantly involved in the shattering for it to match the window's own properties in degree of agentivity then this situation could not be expressed as *The gunman's unhappy childhood shattered the window*.

   The middle–anticausative distinction becomes rather blurry when the IA has a very low degree of agentivity, especially given that the lesser the IA's degree of agency, the less are habituality and an adverbial required to facilitate an interpretation in which the subject is not outagented by the IA. We see examples of this blurriness in (11a–c), in which it is implied that the bribe recipient is under the sway more of their own cupidity than of the bribe-giver's actions, and in (10a–c) and (32a–c),[19] in which the IA, if indeed there is one, is of a nebulous identity and highly uninvolved.

(32) a. *Your internet order has despatched.*
     b. *The book has already sold two hundred copies.*[20]
     c. *That problem will solve, so I'm not worried about it.*
        [='The problem will naturally end, without the speaker having to take more than the usual steps to end it.']

Similarly with (33a–b): the grammatical terms *raise* and *extract* presumably originate with a metaphor involving an agent that is perhaps the speaker, or perhaps an engine-like grammar, but is at any rate not of much pertinence to the metaphor; and as we would expect, the terms get used as anticausatives without any oddity, even though *raise* is the causative counterpart of *rise* (as evidenced by the ungrammaticality of causative *rise*: **They rised the flag*).

(33) a. *The NP has raised to subject position.*
    b. *Adjuncts don't extract well out of wh-islands.*

    The presence versus absence of the IA is, then, crucial to the difference between the u-constructions.[21] But there is no reason to suppose that Grammar is sensitive to the presence or absence of an IA. The steering and bribing described by the middles in (1a–b) do involve an IA, and the shattering and waking up described by the anticausatives in (2a–b) don't; but in the context of grammatical analysis, this is no more significant or worthy of remark than the facts that cutting involves a (usually implicit) blade, that spitting and drooling involve an implicit mouth, that chewing involves teeth, that licking involves a tongue, or that manicuring involves hands. In other words, the presence or absence of an IA, though a genuine difference in meaning, is not the basis of a grammatical property. Positing a g-constructional distinction solely on the basis of IAs is as daft and pointless as making a constructional distinction on the basis of implicit blades or mouths or teeth or hands.

    In the ever-burgeoning literature on English middles, this view of the status of the IA, though previously proposed by others (Lakoff 1977; van Oosten 1977; Condoravdi 1989), is a decidedly minoritarian one. Most of the debate has supposed the IA to be lurking either in the "lexicon" (prior to lexical insertion into sentence syntax) or in the "syntax", and has instead focused on which of these two alternatives is superior (e.g. Keyser and Roeper, 1984; Fagan 1988; Stroik 1992, 1995, 1999). The literature on the status of the IA is well surveyed in Klingvall (2005), which presents the various arguments that have been made for the (quasi) syntactic presence of the IA. Although the arguments she surveys are deeply unpersuasive, Klingvall herself nevertheless concludes that the IA must be syntactically represented because (i) *This machine breaks easily* is ambiguous between a middle and an anticausative reading, and (ii) "[w]henever a sentence has more than one interpretation, ... it is likely to be due to a difference in structure".[22] I think her conclusion is unwarranted, though, because (ii) is

untenable. For example, *The express train crossed the viaduct* is six ways ambiguous, according to whether the situation is (i) semelfactive or iterative, (ii) habitual or nonhabitual, and (iii) perfective or imperfective. But there is no evidence to indicate that these ambiguities exist in the grammar of the sentence. Perhaps a compromise position is to be found in Iwata (1999), which argues that the IA is indeed represented structurally, but at the level of (extragrammatical) conceptual structure (in the sense of Jackendoff, e.g. 1990).

It has been suggested that adverbials like *willingly* have some evidentiary bearing on the question of whether the IA is syntactically present. Whereas in *X kissed Y willingly* it can only be X that is willing, in *Y was kissed by X willingly* it can be either X or Y that is willing (Lakoff 1970). Thus from this it appears to be the case that *willingly* can be predicated of a subject, either inner or outer. Lakoff (1977) and van Oosten (1977) claim that in (34), *willingly* can be predicated only of the subject and not of the IA. This would then be suggestive evidence against the IA being some kind of demoted subject.

(34)   *Harry seduces easily and willingly.*

But in fact, adverbs can be predicated of the IA, as in (35a–b). Must this lead us to conclude that the IA is represented in syntax after all? It would be surprising if adverbs were syntactically controlled, and in fact the apparent restriction against the adverb being predicated of a nonsubject is not categorical, as (36) proves. I suggest instead that adverbs like *willingly* are predicated of EITHER a subject OR a comparatively agentive participant.

(35) a. *This paradisiacal holiday resort does not leave willingly.*
     b. *So delicious was the liqueur that all too easily did it gulp down eagerly.*

(36)   The narcotics entered his posses- $\left\{ \begin{array}{l} willingly \\ knowingly \end{array} \right\}$.
        sion

The central arguments of this article have now all been presented. A g-constructional constraint on innermost subjects (i.e. active subjects but not passive subjects) requires that the subject not express a participant less agentive than another participant. The range of interpretations received by antitransitives includes interpretations with an implicit agent and interpretations without. (This distinction is at the level of Pragmatics, not Gram-

mar.) When there is no implicit agent in the interpretation, the subject semantics constraint is satisfied by giving the antitransitive an anticausative interpretation. When there is an implicit agent in the interpretation, the subject semantics constraint is satisfied by giving the antitransitive a middle interpretation, which is facilitated by the presence of an adverbial and by making habituality part of the interpretation. Thus do distinct u-constructions arise where there are no corresponding g-constructions. And thus do we find Grammar to be considerably simpler than the complexities of the patternings of Usage would initially lead us to expect.

7.   Unergatives and the valency of the default verb

Section 6 argued that as far as Grammar is concerned, there are no differences between middles and anticausatives. This section works its way to the further conclusion that as far as Grammar is concerned, nor are there differences between these and some other intransitives. These other intransitives would be ones that (normally) don't have transitive counterparts. Examples are *smile, faint, prance, err*; they are often known as "unergatives" (following Perlmutter 1978).

The semantic constraint on subjects seems sufficient to explain why unergatives tend not to alternate with causative transitive counterparts such as those in (37a–b).

(37) a. *The comedy laughed me.*   b. *Gastroenteritis shat me a lot.*

The standard story, originating with Perlmutter (1978), is that unergatives' sole argument is not associated with object position, thence to move to subject, but rather is associated directly with subject position. This, according to Perlmutter and Postal (1984), would be consonant with the intrinsic agentivity of unergatives' sole argument. In fact, though, unergatives appear to behave like anticausatives: the causative transitive counterpart of the intransitive is acceptable in proportion to the degree that the subject is more agentive than the object. The rarity, in the world, of situations in which the intrinsically rather agentive undergoer is less agentive than a causer is sufficient to account for the rarity of causative unergatives. This can be seen with (37a–b) and (38a–b): (37a–b) are, I am suggesting, syntactically well-formed but pragmatically anomalous, because the subject is not agentive as the object, either because the object is highly agentive or because the subject is hard to imagine being involved enough to count as a participant.

(38a–b) are rarer examples where the transitive counterpart is not pragmatically anomalous. (38a) is a rare case of X having control over Y's bodily functions; (38b) similarly implies an unusual situation, in which the speaker has less control over their giggling than does the cause of the giggling.

(38) a. *The nurse burped the baby.* (from Smith 1970)
     b. *Stop giggling me!*

Consider also the oddity of (39a) compared to (39b). We see from (40a) that by default, *slip* describes a manner of motion, not a change of ubication. But we see from (40b) that the presence of a locative resultative can force a construal in which *slip* means "change location, with a slipping manner of motion". The acceptability of (39b) compared to (39a) is because it is, I suggest, easier to conceive of X as having more control over and responsibility for Y's change of ubication than Y does, as in (39b), than it is to conceive of X as having more control over and responsibility for Y's manner of motion than Y does, as in (39a).

(39) a. !*You slipped me!*[23]   b. *He slipped the ring onto her finger.*
(40) a. *The ring slipped.*   b. *The ring slipped off her finger.*

Thus it appears that anticausatives and unergatives behave alike with regard to transitivizing: both transitivize so long as the subject semantics constraint is satisfied. Is there any g-constructional difference between anticausatives and unergatives? On balance it seems that there isn't, and that unergatives can therefore be taken to be antitransitives. Besides the evidence of (39–40) in support of this conclusion, note also that unergatives, like other intransitives, can have *there* subjects, as in (18b) (*There chirped a throng of children*).[24]

It seems a reasonable further step to suppose that by default,[25] ALL verbs have an object position, but have no further valency specification beyond this. The Middle, Anticausative and Unergative u-constructions are all manifestations of this single Verb g-construction. The properties of the g-construction Verb would be that (i) it has an (inner) subject position, (ii) it has an object position, (iii) there is a free alternation between there being a single argument that moves from object position to subject position and there being one argument in object position and a separate argument in subject position. It follows that a verb has, by default, both transitive and intransitive variants. All intransitives are syntactically antitransitive: there is movement from object to subject. In the case of transitives, the object

stays put and the subject expresses a different participant. In other words, all verbs have the same default valency, which is unspecified for transitivity, and yields both transitive and intransitive variants of the verb. Only in the case of verbs that deviate from this pattern, by lacking a transitive or intransitive variant or by having a more complicated valency, need this default be overridden.

These deviant verbs that override the default valency would include those intransitives that categorically cannot be transitivized. Some randomish examples are *come, go, belong to, cleave to*.[26] These would override the default for the Verb g-construction in respect of property (iii), in that movement from object to subject positions would be obligatory rather than optional.

8.   Conclusion

To properly understand how language works, it is necessary to distinguish Grammar from Usage, Grammar being the body of symbolical form–meaning correspondences that pragmatics cannot account for. Grammar is the tool that Usage is usage of. Once Grammar is distinguished from Usage, we can investigate its workings and enquire into how simple and elegant it is, and how complex and rife with idiosyncrasies and exceptionfulness it is. In an enquiry of this sort, g-constructionality is of crucial importance. The key lessons of Constructionism are, firstly, that not only can categories in grammar be defined by just a single property but also there are categories – g-constructions – defined by a cluster of properties, and, secondly, that (at least as a null hypothesis) there is in principle no limit to the degree of specificity of grammatical categories. But in heeding these lessons, the peril for the grammatical analyst is that it is all too easy to concoct a grammatical analysis by mechanically translating the properties of a u-construction into unwarranted g-constructions of unwarranted specificity. Only if the analyst undertakes a more arduous quest to discover to what extent the specificity and g-constructionality of the analysis can be reduced will we discover the true nature of a grammar.

It is a quest of that more arduous sort that has been the purpose of this article, in its attempt to analyse middles and anticausatives. I have argued that the grammar involves no more than the following very general rules.

(I)   Passives have an inner subject and an outer subject. The inner subject position is either empty or linked, by a movement chain, to a *by*-phrase.

(II)   The innermost subject of a verb V cannot express a participant (in the situation expressed by V) less agentive than another participant (in the situation expressed by V).

(III)   There is no grammatical distinction between middles and anticausatives. Both are antitransitives. Antitransitivity consists of movement from a complement position to innermost subject position.

(IV)   It may further be the case that all intransitives are antitransitives, and that by default, verbs are specified as having subject and object positions but are underspecified for transitivity, freely allowing both transitive and antitransitive variants of the verb.

Given (I–IV), there is no basis for seeing middles and anticausatives as involving, either separately or jointly, any g-constructionality – any gestalts, any categories defined by a cluster of properties. It may, though, be reasonable to attribute a small degree of g-constructionality to the categories Passive and Verb, but it is striking that these are categories of great generality. Perhaps it will turn out that these findings are indicative of the nature of language in general, and that Constructionism, if applied according to the injunction stated above, will reveal that underlying the messy, tangled, heterogeneous jungle of usage is a grammar of far greater simplicity and generality – and learnability – than the superficies of usage would lead us to suspect.

Notes

1.   I use the term "anticausative" (as used by e.g. Haspelmath 1987) to denote verbs that have causative transitive counterparts. "Unaccusative", the more usual name, has a broader sense that includes intransitives, such as come and fall, that don't have causative transitive counterparts (see section 5). The name "inchoative" is potentially misleading, since some anticausatives, such as *shine* and *flutter*, have senses that are not inchoative. On the evils of "ergative", see Pullum 1988.

2.   From consulting classes of British students sporadically over the last fifteen years.

3. The % symbol indicates that the example is acceptable or grammatical for some but not all speakers, when it is relevant to note or acknowledge this variation. The absence of "%" should be taken to imply only that any variation is not relevant, not that the example is acceptable to everybody; so for example the unusual (3e) is being claimed to be acceptable only for some speakers, not necessarily for all.

4. I expect many linguisticians might find this recipe to be a trite and unnecessary statement of the bleedin' obvious. But my protracted conversations over the years with various estimable self-proclaimed deniers of the grammar–usage distinction have demonstrated to me that the recipe does indeed need to be stated with this degree of explicitness.

5. By "symbolic" meaning I mean what the linguistic form symbolizes – i.e. quasi-propositional and illocutionary meaning. This contrasts with, say, socio-linguistic "meaning" (e.g. rudeness, formality, dysphemism), where the linguistic object is a symptom (rather than a symbol) of social conditions.

6. In the sense used in Cognitive Grammar (Langacker 1987: 409ff) and Goldberg's influential fusion of Cognitive Grammar and Construction Grammar (e.g. Goldberg 1995: 1), "construction" is used in the narrower sense of a non-compositional grammatical category involving a form–meaning pairing. I've not yet managed to see the virtue of this more narrow definition.

7. http://itre.cis.upenn.edu/~myl/languagelog/

8. Google finds only two examples of *have known them be*, (i–ii), which surprisingly don't sound all that bad to my ears.

    (i)   *I have known them be everywhere*

    (ii)   *I have known them be strewn along a dining table*

Google finds four examples of *have never known them be*, and about 700 each of *have known them to be* and *have never known them to be*.

9. Hilferty (2003) calls this, with irony, "butterfly collecting".

10. These, and other alleged properties (of greater dubiety), are discussed at greater length in Rosta (1995).

11. From Yoshimura and Taylor (2004).

12. From Arthur Hugh Clough's "The latest decalogue", cited in Rosta (2005).

13. Levin and Rappaport Hovav (1996, 2005) provide a good survey of the main sorts of models of linking found in the lexical semantics literature.

14. The notion of a grammatical relation with intrinsic semantic content pretty much corresponds to the notion "θ-role" – in particular, to such species of θ-role as the "proto-role" of Dowty (1991) and the "macrorole" of Role-and-Reference Grammar (Van Valin and Foley 1980; Van Valin 1993). θ-roles are ordinarily thought of as relations that are independent from, but assigned to, syntactic positions. But for a proposal that does away with this distinction between θ-role and position, see Baker (1997), whose idea is a version of Perlmutter and Postal's (1984) Universal Alignment Hypothesis, which, particularly in its application to subjects, is what I am advocating.

15. Apart from this, the evidence for syntactic antitransitivity in English is not abundant. The best evidence I know of is Simpson's celebrated observation (1983) that resultatives can be predicated of objects and (some) intransitive subjects but not transitive subjects, which is explained if resultatives are always predicated of objects and (some) intransitive subjects are also objects. Even this is challenged by Wechsler (1996) and Rappaport Hovav and Levin (2001), though their argument is that it is unnecessary to posit syntactic antitransitivity, rather than that there is syntactic evidence against the existence of antitransitivity.

16. The term "depictive" comes from Halliday (1967). Strictly speaking, in the likeliest reading of *drink coffee black* (as in (25a–g)), i.e. "drink coffee (only) if/ when it is black" rather than "drink coffee while it is black", *black* is, in Halliday's terms, not a "depictive (attribute)" but a "condition". But in the likelier reading of *stir coffee black*, i.e. "stir coffee while it is black", *black* is a true Hallidayan depictive. It is unclear whether the depictive–condition contrast is grammatical, or whether we are simply dealing with two interpretational poles of a single grammatical category. (That is not the sort of question to exercise Halliday.)

17. To varying degrees, (25c–f) are hard to process and (partly in consequence) rare (or nonexistent) in ordinary unconcocted usage. Since many speakers, linguisticians included, balk at what is hard to process or is not familiar from usage, many readers will likely judge all of (25c–f) unacceptable. Such a pattern of judgements is irrelevant to the arguments of this article, though; what is relevant is the pattern of judgements shown (i.e. with only (25d) ruled out). This pattern of judgements is mine and is also shared by other speakers I have consulted; indeed to the best of my knowledge it is shared by all native speakers who do not balk indiscriminately at all of (25c–f).

18. See also Goldberg and Ackerman (2001) on "pragmatic obligatoriness" (including the middle adverbial).

19. (32a–b) were brought to my attention by Dick Hudson. (32a–c) are all attested data.

20. I am supposing that *two hundred copies* is a measure phrase, not an object.

21. This is the mainstream view, but one also comes across those (e.g. Massam 1987, 1992) who take the essence of middle semantics to be the attribution of a property to the subject, with a particular modal–aspectual characteristic manifest in the genericity (habituality) of the verb. This difference of views seems more terminological than substantive, but at any rate it remains the case that whichever definition of middlehood one favours, Grammar is blind to it all the same.

22. She continues: "However, if one argues that the agentive flavour is not structurally determined, one would probably argue the same to be the case with the causative flavour. The question is then what determines what interpretation the sentence will get." This article provides the answer to that question, ex-

plaining how the intransitive syntax coupled with presence of the implicit agent in the interpretation gives rise to the middle interpretation, and how the intransitive syntax coupled with the absence of the implicit agent in the interpretation gives rise to the anticausative interpretation.

23. This sentence was uttered, when she was a young child, by one of the daughters of Dick Hudson. For many years it puzzled Dick (and in turn, me) how a child, having made the obvious generalization generating (39a), could then learn that it is "ungrammatical". The explanation, I am suggesting, is that (39a) is grammatical but pragmatically anomalous, and what the child goes on to learn is the requirement that the subject should be not merely a causer but also more agentive than the object, this requirement being what gives rise to the pragmatic anomaly.

24. As for possible counterevidence, i.e. evidence for unergatives being a class in their own right, I was once of the opinion that only to unergatives does the imperfective *a-* prefix attach – as in (i–iii). Yet on closer inspection it turns out that there is no grammatical incompatibility between a given intransitive verb having an a- prefix on one occasion, (iv), and a causative transitive version on another, (v).

(i)   *Her eyes were adance.*   (iv) *Her eyelashes were aflutter.*
(ii) ?*Icebergs were amelt.*   (v)   *She fluttered her eyelashes.*
(iii) **The rosebush is adie.*

In this instance as with so much else, the explanation has to do with a semantic constraint: alongside the syntactic requirement that *a-* prefixes to an intransitive, there is a semantic constraint requiring the situation to be dynamic, atelic and imperfective. So (ii–iii) are acceptable only to the extent that they can be seen as atelic; (ii) can be seen as atelic only to a very limited extent, and (iii) is very hard to interpret as atelic.

25. I am assuming a model of grammar in which categories are organized into an inheritance hierarchy, such as HPSG, Construction Grammar and Word Grammar (cf. Gisborne, this volume). Generalizations are stated at as general a level in the hierarchy as possible and then inherit recursively down to subcategories by default unless overridden by stipulation. See Hudson (2007: 21ff).

26. It can be hard to distinguish verbs that categorically cannot be transitivized from unergatives that merely resist transitivization for pragmatic reasons. For instance my intuitions are that *rock* ('be conspicuously good') and *suck* ('be conspicuously bad') categorically cannot be transitivized, whereas the similar-seeming *ming* ('be conspicuously unpleasant') can be, as in the googled-up (i).

(i) *However, I would consider it polite to the next occupant of the room to avoid minging up the walls as far as possible.*

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Dependencies are constructions: A case study in predicative complementation*

Nikolas Gisborne

1. Introduction

In this article, I explore the claim that the dependencies of Word Grammar (WG) are a kind of construction using a case study of predicative comple-mentation.[1] WG is a dependency theory of grammar originally reported in Hudson (1984) and subsequently developed in Hudson (1990). Most of the recent developments are described in Hudson (2007) and Hudson and Sugayama (2005). The central claim of WG is that language is organized as a cognitive network; the major consequence of this claim is that the theory eschews part-whole structures such as are central in Phrase Structure Grammar. Phrases are not basic to WG analyses and so the central unit of organization within WG is the dependency, which is a pairwise relation-ship between two words. In this respect, the theory is different from Con-struction Grammar (CG), because WG has no level of analysis which is larger than the word and the (pairwise) dependency which associates two words. There is an extensive comparison of WG and CG in Hudson (this volume).

There are, however, some key points of similarity between WG and CG: both theories assume a symbolic relationship between the units of syntax and an associated semantic structure; both theories are "usage based"; both theories are declarative; both theories have a structured lexicon; and both theories exploit default inheritance. So what are the main points of differ-ence, and why does it matter whether dependencies are constructions or not?

In both Construction Grammar and Word Grammar, it is recognized that words are constructions, but within CG a grammatical construction is a large unit – such as the "ditransitive" construction – which includes cate-gory and relation information, but where there is more than one relation identified. In a WG syntactic description, on the other hand, there are only words and dependencies.

Let us take an example. Goldberg's (1995: 48) ditransitive construction involves three grammatical relations: Subject, Object and Object2. The

larger construction is understood in terms of the relations, but the relationships themselves are not constructions. In Word Grammar, on the other hand, there is no superconstruction which would subsume these three grammatical relations and their associated semantic roles. The linking of syntactic and semantic information takes place in lexical entries and in the dependencies which relate two words to each other. In this article, I argue that the individual dependencies of WG have the argument-linking properties of the (larger) grammatical constructions of Goldberg (1995). This argument has two consequences: it makes explicit the points of similarity and difference between WG and CG; and it permits us to model a constructional analysis within WG. Arguably, WG has a simpler ontology than CG.

In their discussion of the Indirect Object dependency Holmes and Hudson (2005) also argue that dependencies are constructions, so the position is not new. Holmes and Hudson (2005) are keen to argue that the ditransitive construction reduces to their analysis of the Indirect Object dependency. In this article, the arguments for the claim that dependencies are constructions come from an analysis of predicative complementation: raising and control constructions and certain small-clause patterns. I take these structures because they appear to present a problem for the WG approach. As we shall see below, it appears that predicative complementation can coerce words to have Subjects which do not have Subjects in their lexical entries. (I introduce the data in the next section.) Predicative complementation, therefore, moves beyond the simple word:word pairing of a straightforward dependency relationship, and is a more complex case study than Holmes and Hudson's Indirect Object relationship.

In this article, therefore, there are two separate but interrelated claims. The first claim is a straightforwardly theoretical claim; the second is both data led and theoretical.

- The dependency relations of WG are a kind of construction because
    - they are symbolic
    - and they are irreducible – they cannot be understood as a simple combination of the words they link.
- Predicative complementation requires a constructional solution.

The second claim presents a challenge to one of WG's assumptions, which is that a dependency is a simple pairwise relationship between two words. In this article, I show that predicative complementation is more complex

than that because it involves more than one dependency, and it involves an array of complex argument-linking information.

The claim put forward here is the claim that underwrites Holmes (2005) and the model of argument linking that is advanced there. That is, argument linking is declarative, and the dependency is the locus of argument-linking statements. A similar claim is made in Rosta (this volume).[2] Rosta's hypothesis applies in particular to the linking of the most agentive argument to the Subject. This claim makes argument linking very simple, but it does have a serious outcome: unless dependencies are stored in an appropriate hierarchical structure equivalent to the constructional hierarchies of Croft (2001) and Goldberg (2006), the grammar becomes unwieldy because it is too large.[3] Essentially, the claim is that dependencies are constructions without phrase structure. The model requires a view of the relationship between dependencies (or constructions) and lexical items which is essentially that of Croft (2003).

This article does not only constitute a discussion of WG, however. It is also a contribution to Construction Grammar in that I am able to demonstrate that the constructional properties of predicative complementation are amenable to characterization within a dependency grammar, where there is no recourse to phrases. The reason is that like CG, WG is a symbolic theory of grammar, and the differences between WG and CG are primarily to do with whether we need to admit phrase structure to our theoretical ontology or not. Like the constructions of CG, a dependency is arguably a "piece of syntax which is connected to meaning in a conventionalized and partially idiosyncratic way" (Goldberg and Jackendoff 2004: 532–3). The final reason is that, like WG, Goldberg's (1995) model is a *relational* theory of grammar, in that she has direct recourse to both semantic and syntactic grammatical relations.

In addition to these main claims, I also make and defend the following subordinate claims.

- Predicative complementation (including raising and control) is a construction type.
- Therefore, raising and control simply instantiate the two main semantic classes associated with this construction type.[4]
- Subtypes of predicative complementation can be organized in terms of inheritance hierarchies.

The article is organized into six sections in addition to this introductory section. Section 2 presents and discusses the data; section 3 presents the theoretical toolkit and sets up an analysis; section 4 is where I present the evidence for a constructional analysis of predicative complementation; in section 5 I lay out the constructional analysis and how it extends to linking generalizations; section 6 is the conclusion.

2.   The data: raising, control, anaphoric control

The facts of predicative complementation are well known. I shall reprise them briefly here in order to set up the following theoretical discussion.

Predicative complementation includes raising and control; infinitival small clauses; and non-verbal small clauses. I illustrate it here with raising and control (including anaphoric control) examples first, because they reveal the main semantic and syntactic contrasts and because theories differ in terms of how they cut the data. The first pair of examples shows raising to Subject in (1a) and Subject control in (1b). The empirical (rather than theoretical) semantic distinction is that in (1a), 'seeming' (the sense of *seemed*; single quotation marks denote concepts) does not assign a thematic role to the referent of *Jane*, but in (1b) 'trying' does assign a thematic role to its Subject's referent. We could say that 'seeming' is a one-place predicate and that 'trying' is a two-place predicate.

(1)   a.   *Jane seemed to be nice.*
        b.   *Jane tried to be nice.*

The other empirical fact is that in some sense the finite verb and the non-finite predicate share their Subject: *Jane* is the Subject of *seemed* and *tried*, but there is also a sense in which *Jane* is the Subject of *to be nice* in both examples.[5] The data in (1) raise the problem of how these distinctions should be represented. I shall discuss how these facts are negotiated in different theories below.

The examples in (2) are slightly different. In these examples there is an additional syntactic argument. The raising/control distinction maps onto semantic role assignment again, so that in the raising example (2a) 'expecting' does not assign a thematic role to its Object *Peter*, but in the control example (2b) 'forcing' does assign a thematic role to *Peter*. This is because, in the semantics, 'expecting' is a two-place predicate, whereas 'forcing' is a three-place predicate.

(2)   a.   *Jane expected Peter to be nice.*
        b.   *Jane forced Peter to be nice.*

In the examples in (2) it is also the case that the non-finite predicate looks to its host – the finite verb – to supply it with a Subject. The difference here is that the Subject of the non-finite verb is the Object of the finite verb rather than its Subject. The examples in (2) show argument sharing, rather than a kind of Subject sharing.

   The examples in (1) and (2) exemplify the two main patterns of raising and control. There is a third construction, known as anaphoric control. This is exemplified in (3). The example in (3) differs from those in (1) and (2) because it does not involve any kind of argument sharing. In the example in (3), which I have taken from Falk (2005: 140, 142), the Subject of the non-finite predicate is an unspecified pronoun

(3)   a.   *The landlord agreed [PRO to decrease the rent].*
        b.   *It was agreed by the landlord to decrease the rent.*
        c.   **It was tried (by the landlord) to increase the rent.*

Following Bresnan (1982), Falk argues that in Lexical Functional Grammar (LFG; Bresnan 2001), examples like those in (3) are assumed to have a phonology-free pronoun PRO for their Subject. Why? The argument is that there are two different grammatical functions involved. The claim is that in the examples in (1), there is a *syntactic* association between the subject of the matrix verb and the subject of the infinitive which Bresnan (1982) shows does not hold in (3) because the grammatical relation between *tried* and its infinitival complement is different from that between *agreed* and its complement. The extraposition structure in (3b) points this difference up. To borrow a derivational metaphor, it shows that the infinitival complement has been "promoted" to Subject of the passive verb *agreed* and extraposed. In (3c), *to increase the rent* cannot be the Subject of passive *tried*. These facts can be accounted for by saying that the examples in (3) show that the non-finite complement of AGREE is an Object, whereas the non-finite complement of TRY is an Xcomp.[6] It is the Xcomp relation that forces the non-finite structure to have a syntactically present subject.

   There are two ways of cutting the data in (1)–(3). One class of analyses groups together the control examples in (1b) and (2b) with the anaphoric control example in (3); the other class of analyses groups together the raising and control examples in (1) and (2), and factors out the anaphoric con-

trol example in (3) because they all involve a PRO element. The arguments in favour of either grouping depend on the nature of the generalizations that the theorist intends to make. Non-derivational theories like LFG and WG typically assume that the apparent sharing of arguments in (1) and (2) actually corresponds to a genuine sharing of arguments, which is then shown in the syntactic representation. Derivational theories, on the other hand, assume that the (a) examples in (1) and (2) are syntactically distinct from the (b) examples, which they pair together with the examples in (3). The terms of this debate have changed recently, however, with Hornstein's (1999) derivational account of raising and control, and the responses in Culicover and Jackendoff (2001) and Jackendoff and Culicover (2003): Hornstein (1999) assumes that both raising and control involve movement in the syntactic derivation; Culicover and Jackendoff (2001) argue against a movement account of the control (1b) and (2b) examples; and Jackendoff and Culicover (2003) provide a semantic account of control.

In WG, it is assumed that the argument-sharing fact is criterial. That is, because the Subject of the infinitive in all of the examples in (1) and (2) is also simultaneously an argument of the matrix verb, there has to be structure sharing, as Bresnan (1982) argues. The anaphoric control examples in (3) are left for another analysis. See also Jackendoff and Culicover (2003), Falk (1984, 2005), and Mohanan (1983).

There is a theoretical device which drives this choice, and an analytical assumption which entails it. The theoretical device is that WG allows a single word to have more than one thematic role, so there is no need for covert pronouns. One of the motivations for the covert pronoun (or PRO) analysis is that it enables a theory to insist that that each word bears one, and only one, thematic role. The analytical assumption in WG is that syntactic words have phonological realizations – there can be no phonology-free elements in the syntactic representation.[7] Theories which group the (b) examples in (1) and (2) together with the anaphoric control examples assume that both kinds of construction involve finding a referential antecedent for the phonology-free pronoun PRO; this decision is based on the assumptions (i) that there can be phonology-free elements in syntax, and (ii) that each syntactic word can bear only one thematic role.

I provide a WG analysis of predicative complementation in section 3. Before that, note that it is possible to extend the structure-sharing analysis beyond infinitival complementation to include examples such as (4), (5) and (6). In each case the word or phrase in bold is a predicate in some sense and the underlined word or phrase is its Subject.

(4)   a.   *Jane saw <u>Peter</u> **go**.*
       b.   *Jane made <u>Peter</u> **go**.*

In (4), there is a bare infinitive which is the predicative complement of the matrix verb, and which takes the underlined word as its Subject.

(5)   a.   *<u>Peter</u> seems **drunk**.*
       b.   *<u>Peter</u> seems **a nice man**.*

In (5), the emboldened word or phrase is also a predicative complement and it also takes the underlined word as its Subject. The same analysis applies to the emboldened PPs in (6).

(6)   a.   *Jane put <u>the books</u> **on the shelf**.*
       b.   *<u>Peter</u> went **into the room**.*

The examples in (4)–(6) are important because although they have been assumed in much of the literature to have a different syntax from those in (1) and (2), they share a semantic structure with the kinds of predicative patterns we see in (1) and (2). If we treat these all as separate construction types, we are unable to account for the semantic similarities between the patterns in (1)–(6).

In the research literature, examples like those in (5) and (6) are either treated as small clause patterns (see Aarts 1992) or as special kinds of predication (Heycock 1994). Both the small clause analysis of (5) and (6) and the predication theory account are constructional stories: both theories assume that it is not possible to account for these patterns in terms of their lexical syntax combining with general patterns of phrasal combination. The small clause theory argues that there is an exocentric clause in (5) and (6), whereas predication theory argues that there is, uniquely for these constructions, a relationship of predication. The reason is that the italicized predicate in these examples has a Subject in the construction, even though there can be no Subject in its lexical entry. The examples in (4) are slightly more complex: arguably, verbs do have Subjects in their lexical entries so these patterns are better candidates for a model where lexical syntax interacts with general phrase types. However, clauses are assumed to be projections of inflection (such as TP or IP) and so it is hard to establish how a simple lexical account of these constructions would be composed. But, as we shall see, there are complexities in these patterns too, which suggest that a constructional story is appropriate.

My core argument in this article is this: in order to be able to discuss and handle the semantic similarities between examples like (5) and (6), and examples like (1), (2) and (4), we have to treat them all as instantiating the same construction type. The different kinds of predicative complementation are organized in a hierarchy of dependencies, with the most schematic dependencies at (or near) the top of the hierarchy, and the less schematic, more specific, dependencies at the bottom. In this way, the dependency hierarchy reflects the constructional hierarchy of Trousdale (this volume). Therefore, because TO infinitives are more schematically associated with predication than NPs, we see more general syntactico-semantic patterns with predicative TO infinitives.

To conclude this section, I shall briefly outline some of the semantic patterns of predicative complementation. Pollard and Sag (1991) showed that the verbs which take predicative complements fall into semantic classes. These semantic classes are associated with the different kinds of Xcomp. Among the semantic patterns it is possible to find between a matrix verb and a non-finite complement, there are:

Result: *Jane caused/made/forced/persuaded Peter to go to the doctor's.*
This is a simple example of causation where the Result is that Peter goes to the doctor's.

Potential outcome: *Jane promised Peter/vowed to Peter to go to the doctor's.*
Here, there is potential causation, because the proposition that Jane goes to the doctor's is not entailed.

Modal evaluation: *Jane seemed/appeared to be nice.*
In this example, the proposition that Jane is nice is Subject to an epistemic judgment.

Deontic modal: *I expect you to go.*
The deontic force of 'expecting' applies to the event of your going.

These are all examples of control and raising structures; that is, they pattern with the examples in (1) and (2). Therefore, in order to explore a full description of control and raising, we need an analysis in terms of an explicit domain of conceptual structure.

These different semantic relationships can all be analysed using the same toolkit of semantic relations – the Instigator and Endpoint relations of Force Dynamics. Talmy (1988) analysed both causation and potential causation, as well as epistemic and deontic modality in terms of force-dynamic relationships and so by exploring the semantics of the relationship itself

between the matrix verb and its non-finite complement we can find semantic similarities between different kinds of predicative pattern. Such a finding supports an analysis in terms of a symbolic theory of grammar. It also permits us to simplify verbs' lexical entries. For example, where Matushansky (2002) has to assume two lexical entries for SEEM, we can have just one lexical entry which is compatible with two different Xcomps.

In the rest of this article, I set out an argument in favour of treating WG's *Xcomp* relation as the relationship between the matrix verb and the non-finite predicative complement. The argument is extended in that I claim that the dependencies of WG are the locus of argument-linking strategies, and that in this respect they serve the same function as the constructions of Goldberg (1995, 2006) and Croft (2001). We can treat the dependency relation as a kind of construction, because of its symbolic status. If we do this, we can in turn argue that like words and constructions, dependencies can undergo grammaticalization. However, having made this move, the differences between CG and WG reduce to a simple, single, issue: are phrases part of the basic toolkit of grammar or not? I argue that we can have a comprehensive constructional analysis of predicative complementation, which avoids phrase structure altogether.

3.   Toolkit

In this section, I present the analytical tools of WG, through an analysis of *Jane forced Peter to go* and a comparison of that pattern with *Jane expected Peter to go*. FORCE is a control verb, which therefore assigns a thematic role to its Object. EXPECT is a raising verb, which does not assign a thematic role to its Object. I briefly reprise the contents of WG here, and elaborate by discussing an analytical diagram below.

− The only syntactic structure WG permits involves word-word dependencies. There is no other structure in syntax but for pairwise relations between words.
− Each relation is a two-place predicate, or a function from an argument to a value.
− Information is stored in default inheritance (*isa*) hierarchies. The relationship of default inheritance is *isa*.
− There is a version of a parallel architecture: representations include both syntactic and semantic information but in a system where syntax and semantics are distinct.

The WG analysis permits a semantically enriched version of the story, so that it is not only a syntactic account that is advanced for control. In figure 1, I present the syntax of *Jane forced Peter to go*. In the diagram, *x* stands for *Xcomp* – the relationship of predicative complementation; *s* for *Subject*; and *o* for *Object*. Therefore, the diagram states:

- that *to* is the Xcomp of *forced*, and that *go* is the Xcomp of *to*;
- that *Peter* is at once the Subject of *to* and *go* and the Object of *forced*;
- that *Jane* is the Subject of *forced*.

Recall that there is no recourse to phrases or clauses in this analysis: neither phrases nor clauses are primitives of the WG system. Phrases are understood to be epiphenomenal; phrase structure can be read off dependency structure. Clauses, too, can be analysed in terms of their lexical heads. For example, a finite clause is simply a finite verb with its Subject instantiated; and a non-finite clause involves an Xcomp structure as in figure 1. WG does not refer to the distribution or voice features of a clause, but to the distribution or voice features of the head of a clause. Like phrases, clauses prove to be epiphenomenal.
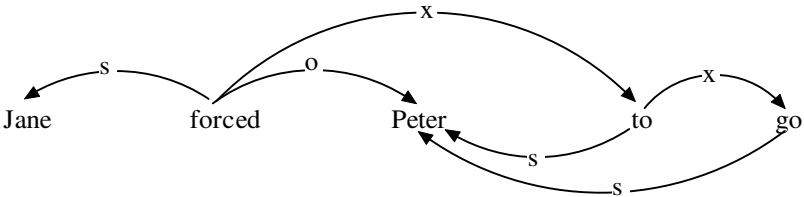
Figure 1. The syntax of *Jane forced Peter to go*

As things stand, figure 1 is no different from figure 2, where a syntactic analysis of the raising verb EXPECT is presented.
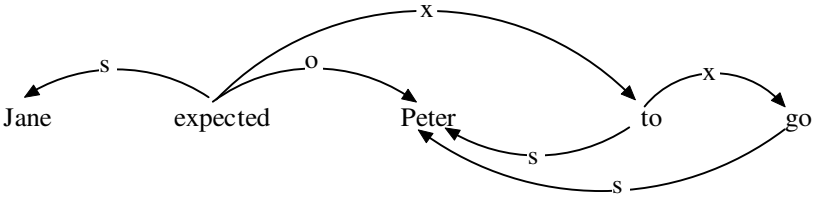
Figure 2. The syntax of *Jane expected Peter to go*

This means that, crucially, the differences between EXPECT and FORCE have to be represented in the semantics of the patterns. Note that in both cases, *Peter* must be analysed as the object of the finite verb because it can be the Subject of passive FORCE and EXPECT. We have to analyse it as the Subject of *to go* in both cases, because it is *Peter* and not *Jane* in these cases that would be coreferential with *himself* in a structure like *Jane force/expected Peter to hurt himself*, and reflexive pronouns must be coreferential with an antecedent which is an argument of the same head.

The diagrams in figures 1 and 2 are essentially the same as the diagrams which would represent the functional structures associated with these verbs in LFG (Bresnan 1982, 2001). What distinguishes the WG approach from the LFG approach is that the dependencies of WG are themselves argument-linking constructions. That is, they each come with an associated semantics. In order to show this, we need to see how the semantics of EXPECT and FORCE are distinguished in WG.

In figure 3, there is a full analysis of *Jane forced Peter to go*. This diagram differs from the diagram in figure 1 in that it has an associated semantics. Each word in the syntax is related to a node in conceptual structure (the semantics) which is classified by an isa relation. The isa relation is shown by the straight line which has an upside-down triangle at its top. This links the classified node to its classifier. Therefore 'Jane', the referent of *Jane* is classified as a 'thing'; the sense of *forced* is classified as an instance of 'causing'; and 'go' is classified as an 'action'.
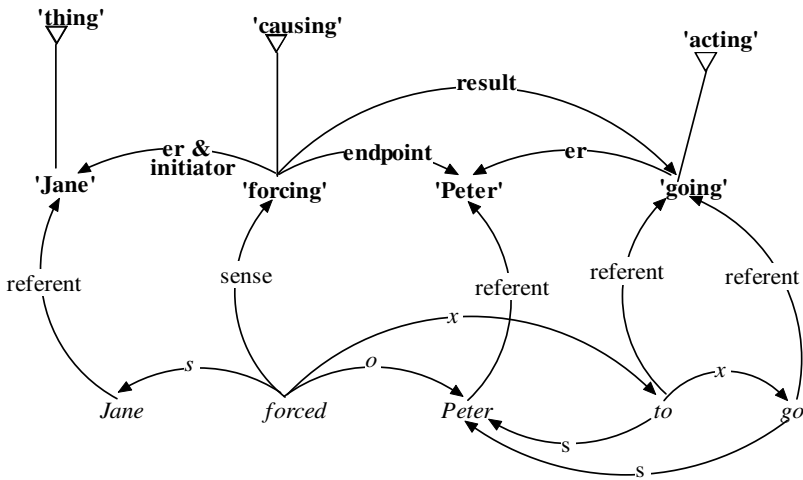
Figure 3. Jane forced Peter to go in WG[8]

Before I describe the analysis in the diagram, let me briefly explain the conventions. The syntactic part of the representation is in italics, so *Jane, forced* and so forth are words, and *s, x* and *o* are the relations between those words. In bold, there is a semantic representation, so the referent of *Jane* is **'Jane'**, that is the person named by *Jane*. This is labelled as a **'thing'** because (ultimately) people are things rather than events or concepts and **'forcing'** is a kind of **'causing'** which is ultimately a kind of action. I do not use the bold and italics means of distinguishing between syntax and semantics in subsequent diagrams.

We can see that semantic relations pattern in tandem with syntactic relations, in that here the 'Result' relation holds between the concepts that are associated with the argument and value of the Xcomp relation. That is to say that the diagram in figure 3 associates the Xcomp syntactic relation with the semantics of results. Note too that each relation can be classified much as each node can be. In the same way that each node is classified by the Isa relation, each relation can also be classified by the Isa relation. For example, all of the syntactic dependencies in figures 1–3 are classified as *valents*, because they are all dependencies that are selected by the verb. In this way, they are distinct from adjuncts. Therefore, relations are classified by default inheritance just as nodes in the structure are.

The semantic relations in figure 3 include Er – by which I mean "logical Subject" or the semantic argument which maps onto the Subject in the active voice; Initiator, which is the beginning of a force-dynamic chain; and Endpoint, which is the end of a force-dynamic chain. Er is just a gloss over the different thematic roles which can map onto active-voice Subjects; it has a related relation, Ee, which is not shown in figure 3 because it does not feature in the analysis. However, Ees will be relevant later in the article. For now we can treat that as like a "logical Object" – the semantic relation which consistently maps to the syntactic Object. As we shall see below, Er and Ee can be separated out from Initiator and Endpoint, so it is necessary to keep them conceptually distinct. The relationship between the two events is a Result.

We can contrast figure 3 with figure 4, which presents an analysis of EXPECT.
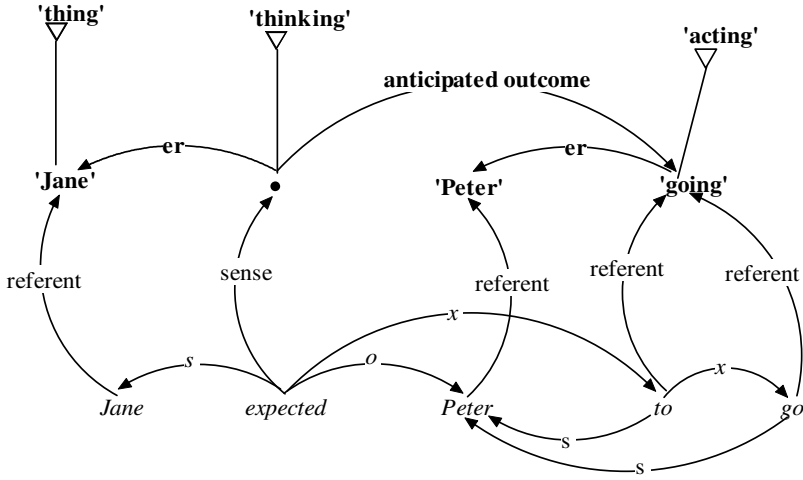
Figure 4. Jane expected Peter to go in WG

In the diagram in figure 4, there are three main differences from the diagram in figure 3.

− The sense of *expected* does not assign a thematic role to the referent of *Peter*, and it does not involve a force-dynamic transfer.
− The semantic relation associated with the Xcomp is different: here it is 'anticipated outcome' rather than 'Result'.
− The sense of *expected* is analysed as a kind of 'thinking' rather than a kind of 'causing'.

From the diagrams in figures 1 and 2, we can see that WG is a declarative, monostratal, parallel-architecture model, much like HPSG (Pollard and Sag 1994; Sag, Wasow and Bender 2003) and the Construction Grammar of Fillmore (1999), Fillmore, Kay and O'Connor (1988) and Kay and Fillmore (1999), as well as the Construction Grammar of Goldberg (1995, 2006). In WG, the facts of argument linking are negotiated by different dependency types, so that there are regular associations between Ers and Subjects and Ees and Objects. In this sense, the dependency is a kind of construction, because argument linking works by the (maximally) simple device of a verb selecting for a dependency that it is semantically compatible with. On this view, dependencies look very like the argument linking constructions of Goldberg (1995).

We can extend this view to the Xcomp relation. Clearly, it is polysemous. The associated semantic relation in figure 3 must be Result, because what the Xcomp denotes is entailed by the verb *caused*. However, what the Xcomp denotes in figure 4 is not entailed by the verb *expected* and so I have glossed it as 'anticipated outcome'. This polysemy of the Xcomp relation is part of the claim that predicative complementation is a kind of construction. Of course, it can be argued that the fact that one kind of Xcomp denotes a result and another denotes an anticipated outcome simply reflects the lexical semantics of the verbs. However, here I am following Croft's (2003) model so that each dependency is a linking construction and therefore the verb selects the relevant linking pattern, or dependency. For predicative complementation to be a construction, it needs to be symbolic; here we have evidence that it is polysemous, which makes it clearly symbolic.[9] Whereas in CG the symbolic units of grammar are words and phrasal constructions, in WG, they are words and dependencies. The polysemy of dependencies shows that they have a similar ontological status to constructions, excluding the phrasal analysis, because they relate words to words in a symbolic structure.

4.   Independent evidence for a constructional view of predicative complementation

So far I have claimed that predicative complementation is a symbolic pattern, located on an Xcomp relation, which is polysemous. The semantic evidence from polysemy is one kind of evidence in favour of treating Xcomp as a construction. In this section, I look at theory-independent evidence that predicative complementation is a construction type.

I am concerned with four main kinds of evidence for this position.

−   In small-clause predicative complementation, the Xcomp relation is what causes the Xcomp entity to have a Subject. We can call this "coercing subjecthood".
−   Predicative nominals all follow the same argument-linking pattern and so event predicative nominals do not link their Er to their Subject. The argument-linking of predicate nominals is therefore coerced by the construction.

- The semantic patterns are interrelated: we can see different kinds of Xcomp, with subtly different semantics, which can be stored in an inheritance hierarchy.
- Some verbs are ambiguous between different kinds of interpretation.

4.1.   Coercing subjecthood

The first argument in favour of a constructional analysis is the coercion of subjecthood in small-clause pattern predicatives. In figure 5, I present an analysis of the syntax of *Jane considered Peter a fool/foolish*. In this example, the network of dependencies is essentially the same as the network of dependencies in figures 1 and 2, excluding the complexities of analysing the relationship between *to* and *go* and the Subject of *go* in the earlier figures.
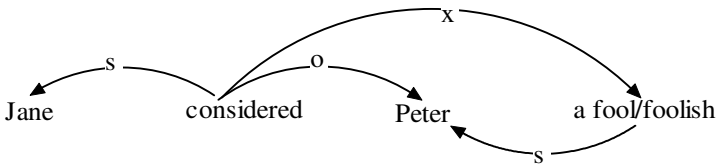
Figure 5. Jane considered Peter a fool/foolish

The WG analysis, therefore, claims that these examples display the same syntax as TO infinitive constructions. One important part of the claim is that on the WG analysis, both the NP *a fool* and the adjective *foolish* are shown to have Subjects. We can be sure that they do not have Subjects in their lexical entries because NPs are always referring expressions when they occur elsewhere in the grammar (they are only found as predicating expressions when they occur in constructions like that in figure 5 with verbs like CONSIDER). Likewise, we can be sure that adjectives do not have Subjects in their lexical entries because they would be unlinked (and unexplained) in attributive constructions. Compare (7a) with (7b): in (7a) the sense of *inside* has a theme argument which is linked to the referent of *it* whereas in (7b) it does not, because it is simply a referring expression.

(7)   a. *Jane put it inside the box.*
        b. *I painted inside the box.*

We must conclude that INSIDE has two lexical entries – one with a theme argument and the other without. But we do not have to conclude that it has a Subject as part of its lexical entry in the first case, because the Subject relationship is supplied by the predicative construction.[10] This shows us that the Xcomp dependency is a complex relationship which invokes additional structure. Xcomps must minimally be stored as having the structure in figure 6, irrespective of whether the word which appears as the value of the Xcomp (the dot at the end of the Xcomp arc) has a Subject in its lexical entry or not.
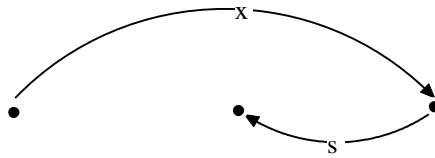
Figure 6. The minimal structure for Xcomps

In fact, the picture is worse. The Xcomp dependency does not only coerce a Subject in predicative words and phrases, but it also determines how that Subject relates to the other arguments of the matrix verb: the Subject of Xcomps has to link to either the Object or the Subject of the head. If we assume syntactic unaccusativity (Levin and Rappaport Hovav 1995), we could argue that the diagram in figure 7 is the minimal structure for Xcomps.
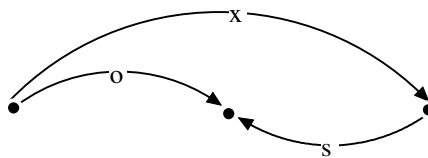
Figure 7. The minimal structure for Xcomps revised

However, if we do not assume syntactic unaccusativity, we need a second kind of Xcomp where the Subject of the Xcomp links to the Subject of the head; I shall not provide a diagram for this alternative, but note that the Xcomp relationship is not a simple dependency which exists as a pairwise relationship between words. It is more complex, involving at least three words (or phrases) and three related dependencies. In a subset of cases, the

Xcomp dependency coerces a word into having a Subject and it states the relationship to the other valents of the verb.

The Xcomp dependency is not the only dependency which involves a complex network of interrelated dependency patterns: the dependency extractee enters into complex relationships with other dependencies as well. However, Xcomps are the only dependents which are arguments of verbs which bring with them such a complex network of associated relations. Note too that the diagram in Figure 7 is incomplete. It contains no semantic information, and we would need to include argument-linking information related to the network of dependencies for a complete picture. To summarize:

−   Xcomps make some words and phrases have Subjects which do not have Subjects in their lexical entries;
−   Xcomps determine how the (coerced) Subject aligns with the arguments of their heads.

This pattern of Xcomps coercing Subjects causes us to look at the Xcomp dependency as a syntactic pattern which involves a frame – just as Hudson (this volume) defines frames – and to extend the notion of "frame" to syntax.

4.2.   Predicative event denoting nouns

Another fact relevant to a constructional view of predicative complementation concerns nouns like EXPLOSION which denote an event. These nouns have the same participants as the verb which they derive from – that is, they involve the same participant roles. This is shown in (8) and (9).

(8)   a.   *The bomb disposal expert's controlled explosion of the bombs saved lives.*
         b.   *The bomb disposal expert exploded the bombs.*

In both examples in (8), the referent of *the bomb disposal expert* is the Er of 'exploding' (the sense of *explosion*) and the referent of *the bombs* is the Ee. The same pattern of verb to noun is revealed in (9).

(9)   a.   *The enemy's destruction of the village made us homeless.*
         b.   *The enemy destroyed the village.*

We can say, then, that the noun and the verb have the same argument structure. However, as (10) and (11) show, this argument structure does not participate in the predication you find in structures involving Xcomps.

(10)   a.   *It seemed to be an explosion.*
       b.   *There began to be destruction.*

In (10a) the referent of *[i]t* is not the Er of the sense of *explosion* and in (10b) the referent of *[t]here* is not the Er of the sense of *destruction*. Furthermore, as the examples in (11) show, it is impossible to create a context in which the event noun is understood to be linking its Er to its Subject. No predicative nominals can link their arguments in such a way.

(11)   a.   **The bomb disposal expert seemed to be explosion/an explosion/the explosion.*
       b.   **The enemy began to be destruction/a destruction/the destruction.*

The reason why is that predicative nominals have their linking coerced by the predicative construction. They must present their sense to their Subject in an isa relationship, which is the analysis of the examples in (10), or they must be referentially identified with their Subjects as in (12).

(12)   *Jane was who you meant.*

The data in (9) to (12) are significant because this linking pattern is determined by the construction – in other construction types, event-denoting nouns can link their agent and patient arguments. Note too that predicative nouns link in this way irrespective of whether they occur with a determiner or not, as example (13) shows.

(13)   *We made him president.*

There is another construction where event nouns can link their Er to the Subject of the predication. The light verb construction in (14a) shows the sense of claim linking its Er to the referent of the Subject of *made*, and in (14b), the sense of look links its Er to the referent of the Subject of *had*.

(14)   a.   *Jane made the claim that Peter was drunk.*
       b.   *Peter had a look through the bottom of the glass.*

In (14a), the referent of *Jane* is the *claim*-Er; in (14b) the referent of *Peter* is the *look*-Er. Light verb constructions are relevant in another sense: they show that the argument linking patterns in predicative constructions have nothing to do with the absence or presence of a determiner, because in (14) both *the claim* and *a look* have determiners, but the argument linking involves the Er and the Ee of the event noun.

The conclusion of this subsection is that predicative complementation coerces a particular kind semantic relationship which excludes event nouns from argument-linking patterns which they can participate in when they occur in other predicating constructions. This ban is, then, a constructional property of the Xcomp dependency.

4.3.   The semantic patterns are inter-related

Raising and control are just two coarsely grained subtypes of the predicative construction. The semantics of Xcomps typically involve the force-dynamics of Talmy (1988) and Jackendoff (1990). Following Croft (1991), I call the force-dynamic relations Initiator and Endpoint: the metaphor is that the Initiator is the beginning of a force-dynamic chain, and the Endpoint is at the end.

In this subsection, I discuss the polysemy of different kinds of Xcomp. My argument is that the different kinds of Xcomp are related, and have similar semantic structures. This similarity can be captured in a grammar which treats dependencies as symbolic relations – the different kinds of Xcomp can be related to each other in a type hierarchy, using the devices of default inheritance. In order to prosecute that similarity, however, I need to establish the similarity first. I established that Xcomps are polysemous in section 3, because this is a key part of the analysis of the differences between raising and control.

In the first examples, I show that the semantics of FORCE and PERSUADE both involve the force-dynamic relations of Initiator and Endpoint.

(15)   *Jane forced Peter to go.*

As we saw in figure 3, there is a relationship of affectedness: *Jane* acts on *Peter* which is shown in the figure by the force-dynamic dyad where 'Jane' is the Initiator and 'Peter' is the Endpoint. Similarly, (16) also involves the same relationship of affectedness: in this example, *Jane* acts on *Peter*.

(16)   *Jane persuaded Peter to go.*

In figure 8, we can see that the sense of PERSUADE, like that of FORCE, can be analysed as 'causing' with a Means link. The Means relation shows how the causing was brought about. Essentially, however, PERSUADE and FORCE enter into the same network of relations.
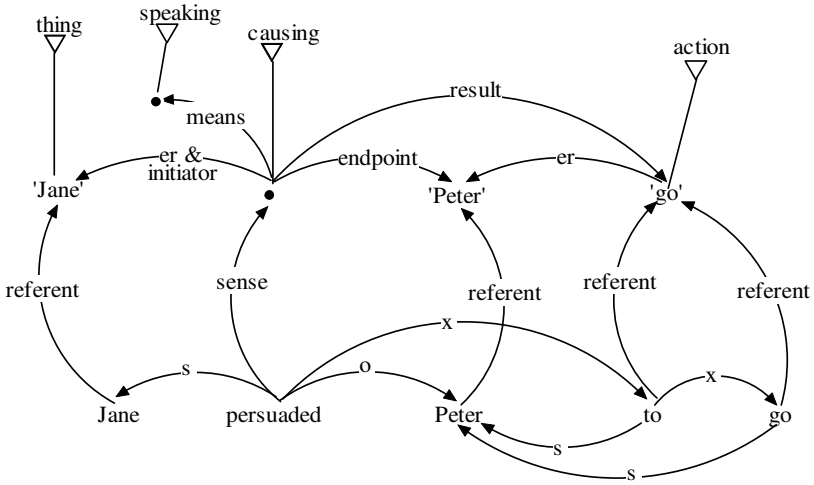
Figure 8. PERSUADE

We can develop from this an account of predicative complementation where the Xcomp is responsible for how the Initiator and Endpoint relations are linked. In the case of FORCE and PERSUADE the pattern of linking relations is shown in figure 9, which presents the schema for Result Xcomps. My claim is that the complex schema presented in figure 9 is all information which belongs in the entry for the Result Xcomp. The verbs that take a Result Xcomp must, of course, have a compatible semantics, but linking is not stated in a lexical entry (because a lexical entry is not instantiated and so cannot have any linking rules specified). Nor, in WG, can linking be established by algorithm, because the lexicon and the grammar are continuous, so there is no possibility of an algorithmic routine to take you from a lexical entry to a grammatical structure. The linking generalization can only be stated in the dependency relations. Dependency relations are of different degrees of schematicity. Some are more schematic than others. For example, the Indirect Object dependency is semantically spe-

cific, because it is associated with only two possible senses. Xcomps, on the other hand, are more schematic: they involve a complex of relations but there is not necessarily a lot of semantic content in the relations that they link.
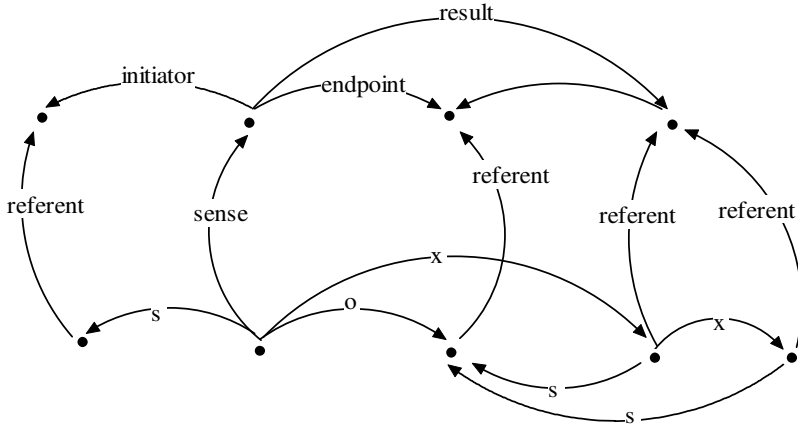
Figure 9. The schema for result Xcomps

We saw in figures 6 and 7 that the Xcomp dependency in some cases coerces a Subject, and that it states how the Subject of the value of the Xcomp is linked to the other valents of the verb. This fact introduces complexities into the construction. The reason is that the associated dependencies bring their own linking statements with them. For example, the Subject dependency has an associated semantics, and each verb will select a semantically appropriate subtype of Subject (Holmes 2005). For that reason, I have left the semantics associated with the Subjects in the diagram unstated. The semantic relations I have named are Initiator, Endpoint and Result, because these are the semantic relations that the Result Xcomp states the linking associations of. This means that the Initiator link I have shown, where it is linked to the Subject of the head, is a statement of force-dynamics associated with the Result Xcomp. This is a challenging claim to make: it would be customary to assume that the Force-Dynamic relations had their linking generalizations stated by the Subject and the Object, because of their status in transitivity. However, by contrasting the pattern in figure 9 with other kinds of pattern involving Xcomps we can see that the linking of Initiator and Endpoint is stated over the Xcomp relation.

One place to start is with deontic modality. Talmy (1988) and Sweetser (1990) both made a Force-Dynamic analysis of how deontic modality works and we can see that there is a pattern of affectedness in the analysis of deontic modality. If we take deontic MAY, as in (17), we can see that there is a force-dynamic chain between the speaker and the addressee. In (17), the speaker gives the addressee permission to leave.

(17)   *You may leave.*

In addition to acting on the addressee, the speaker may, in an indirect way, act on the referent of the Subject in *Jane may leave now*. This example is complex in two ways. First, the argument-linking properties of the construction mean that the representation has to include the speech context. In WG, this is assumed to be the case, as each word is understood to be an action, with a place, a time, and an actor. Second, it shows that the Xcomp relation extends to include modals (and aspectual auxiliaries) as well as TO infinitives, bare infinitives and the small clause kind of predicative complement.

I present an analysis of *You may leave* in figure 10.
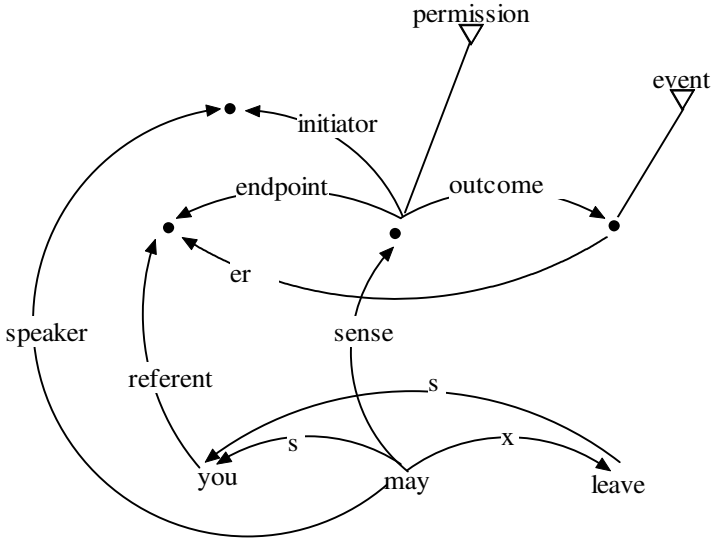
Figure 10. You may leave

It is difficult to represent the Modal-Outcome Xcomp in figure 10 without presenting an analysis of an utterance because it involves contextual relationships. I have left out the analysis of *you* which relates it to context, because it adds unnecessary complexity. The important fact here is that the Modal-Outcome Xcomp links its Initiator and Endpoint relations very differently from the Result Xcomp. In figure 10, the Initiator does not link to the Subject, and the Endpoint does not link to the Object. Instead, the Initiator links to the speaker, who has to be represented somehow in the context and the Endpoint links to the Subject. This example is important because it shows how linking must be composed over dependency types. What algorithm could determine that Endpoints link to Objects in some cases, and Subjects in others, when there is no relevant morphosyntactic phenomenon like voice to control the linking? Note that deontic modality is an event modality – the Outcome must be an event rather than a proposition.

Our next examples also involve contextual relationships of affectedness. They differ from deontic modality in that the speaker is the end of the force-dynamic chain in these cases. We will look at SEEM and epistemic MAY.

(18)   a.   *Jane seemed to be drunk.*
       b.   *Jane may bedrunk.*

One of the reasons for the current analysis is to capture the similarities in sense between SEEM and MAY. Although SEEM is a lexical verb, and MAY a modal auxiliary, they both display the semantics of epistemic modality. Like deontic modality, there is a relationship of affectedness. The proposition *Jane (to) be drunk* is the initiator and it acts on the speaker. This is the standard force-dynamic model of epistemic modality and it applies in both cases. I present an analysis of epistemic modal MAY in figure 11. I have simplified this diagram by treating *be drunk* as if the phrase were a single word – as far as the semantics is concerned, they have a single referent 'Jane be drunk'. Note that here, the semantic relation associated with 'evaluating', which for the sake of argument I am treating as the sense of deontic MAY, is Ee. This is not a surprise. What is evaluated is a proposition, and the semantic relation Ee is the semantic relation between 'thinking' and 'that Jane is drunk' in *I think that Jane is drunk*. More surprising is the overlay of force-dynamic relations. We have to treat this set of relations as involving the proposition affecting the speaker because if, for example, Jane were your boss, thinking that she was drunk might well affect

your willingness to work for her. The diagram could be considerably more complex, showing how the modal evaluation comes about. It is enough here to show that the Xcomp relation is semantically mapped to an Ee, and that in this case the Initiator and Endpoint behave in a non-standard way.
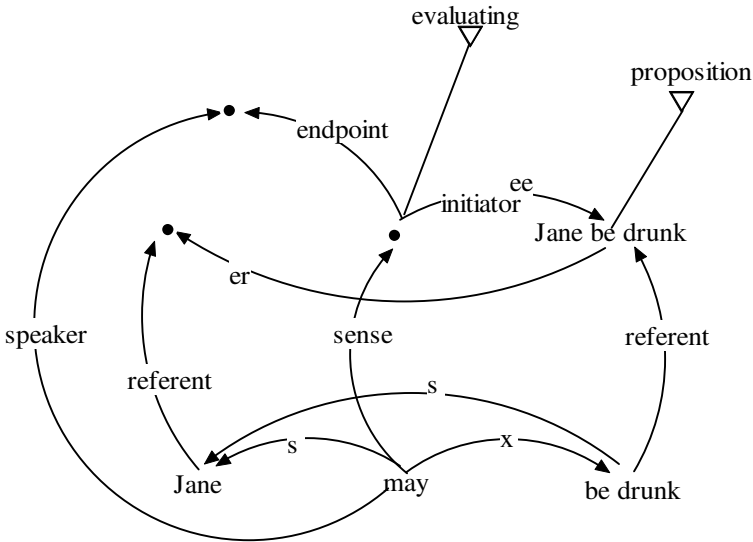
Figure 11. Jane may be drunk.

We can therefore see that the historical pattern from deontic to epistemic observed by Traugott (1989) and Sweetser (1990) involves the semantic relations found in the meanings of verbs like FORCE and involves their remapping in increasingly schematic, and abstract linking patterns. Partly this involves subjectivization – and my diagrams show how subjectivity can be embedded in the model. But also it involves symbolic dependencies which control the argument-linking patterns. Again, these patterns are not predictable, and so they are constructional, and not derivable by algorithm.

The examples in (15)–(18) show the main examples that exemplify my argument that apparently widely different predicative constructions involve the same semantic relations in different linking patterns, and that the linking patterns are associated with different subtypes of Xcomp dependency. I discuss what this means for a theory of Xcomps and argument-linking in

section 5. In the next subsection, I look at the case of PROMISE, which Jackendoff and Culicover (2003) argue presents complexities that argue in favour of a lexical semantic treatment of predicative complementation rather than a syntactic treatment. In section 4.4, I explore some ambiguities in a number of raising and control predicates

4.3.1. PROMISE

One interpretation of PROMISE (I return to other interpretations in the discussion of ambiguous predicates in the next section) is problematic, because of the way the Subject of the Xcomp links to the arguments of the matrix verb. Normally, as figure 7 shows, the Xcomp links to the object of its head, if the matrix verb has an object. Alternatively, it can link to the Subject of its head. Examples like (19a) are problematic because you would anticipate that *Susan* should be the Subject of the infinitive, but in fact *John* is. Jackendoff and Culicover (2003: 528–9) propose a complex semantic argument. They contrast (19a) with (19b), which are their examples (38a) and (36a).

(19)   a.   *John$_i$ promised Susan$_j$ to $_{i/*j/*gen}$ take care of himself/*herself/*oneself.*
       b.   *John$_i$ forced/helped/enabled/pressured Susan$_j$ to $_{j/*i/*gen}$ take care of herself/*himself/*oneself.*

The subscripts on the examples show whether *John* or *Susan* can be identified as coreferential with the Subject of the Xcomp. Jackendoff and Culicover argue that since "36 and 38 are completely parallel in syntactic constituency, there is no overt syntactic basis for the difference in control."[12] In WG, we do not have to assume that the constructions in (19a) and (19b) are in fact parallel in their syntax, because our theory assumes the distinctions of grammatical function which are encoded in dependencies, so where Jackendoff and Culicover (2003) have to assume the same phrase structure for the examples in (19a) and (19b), the WG analysis involves a very clear difference. In (19a), *Susan* is an Indirect Object, whereas in (19b) *Susan* is a Direct Object.

This fact makes a very simple story for the grammaticality judgements in (19): the reason why *Susan* cannot be the Subject of *to take care* is that an Xcomp's Subject must be the Object or the Subject of its head. However, there is reason to take Jackendoff and Culicover's findings seriously:

as they point out, Larson (1991) tries to offer a syntactic story for PROMISE based on the fact that the NP immediately after the verb is an Indirect Object, but unfortunately this story cannot accommodate examples like (20).

(20)   a.   *Jane told Peter a story.*
         b.   *Jane told Peter to go.*

These examples can be accommodated within the current framework. Just because TELL has a variant which takes an Indirect Object does not mean that when it occurs with a predicative complement, the NP immediately after the verb must be an indirect object. For example, (21) shows that MAKE can occur with two NPs. It is not the case that because a verb occurs in a ditransitive construction it must have an Indirect Object when it occurs with an Xcomp. If we take MAKE in (21), we can see that it has both a causative and a ditransitive interpretation.

(21)   a.   *Jane's mother made her go.* [causative]
         b.   *Jane's mother made her a cake.* [ditransitive]

There is no sense in which (21a) can be a simple transitive structure, because there is no sense in which Jane's going can be constructed as being something that comes into being on Jane's behalf and which she benefits from. TELL in (21b) above is simply a standard causative verb, more specific in its sense than FORCE because it encodes the manner of 'causing' – it means 'cause by telling'. So this argument of Jackendoff and Culicover's is a non-argument.

   Jackendoff and Culicover (2003: 529) also suggest that (22), which has an NP immediately before the infinitive, but where the infinitive takes the Subject of the matrix verb as its Subject, should be taken into account when evaluating claims that the ditransitivity of PROMISE is relevant to the argument linking of its predicative complement.

(22)   *John$_i$ pledged to Susan$_j$ to $_{i/*j/*gen}$take care of himself.*

However, this observation is also not directly relevant to the issue of whether the ditransitivity of PROMISE can account for the assignment of a Subject to its predicative complement. The NP immediately before the infinitive is not available to be the Subject of the preposition because it is the Complement of a preposition. Only an argument of the matrix verb can

be the Subject of the Xcomp, and in (22), *Susan* is not an argument of *pledged*.

Finally, Jackendoff and Culicover argue that there is important evidence from the noun PROMISE/N which cannot be ignored in a discussion of this kind. The examples are given in (23) (Jackendoff and Culicover 2003: 529).

(23)   a.   *the $_i$promise$_j$ to Susan$_j$ from John$_i$ to $_{i/*j}$take care of himself/*herself.*
       b.   *John$_i$ gave Susan$_j$ some sort of $_i$promise$_j$ to $_{i/*j}$take care of himself/*herself.*
       c.   *Susan$_j$ got from John$_i$ some sort of $_i$promise$_j$ to $_{i/*j}$ take care of himself/*herself.*
       d.   *A: John made Susan a promise.*
            B: What was it?
            A: I think it was to take care of himself/*herself.

This is an argument is from non-argument infinitives – these are similar in structural terms to the anaphoric control examples of section 2. The problem posed by these examples is that the infinitive sets up a relationship with the reflexive pronoun. If the reflexive pronoun has to be bound by a clausemate antecedent, then the infinitive has to have a Subject, and its Subject has to be found from among the arguments of PROMISE/N. I will put these examples aside, making two observations: (i) these are light verb constructions, and in light verb constructions with 3-argument verbs, the argument mapping is fixed by the light verb head. As a result, in a worked-out theory of light verbs, it should be possible to explain the pattern that Jackendoff and Culicover (2003) identify; (ii) Jackendoff and Culicover do not themselves provide a theory of light verbs, so it is hard to establish their claims. Note that the arguments of PROMISE do not necessarily map as Jackendoff and Culicover assume. In (24), *Jane had a promise* is ambiguous between an interpretation where *Jane* is the giver of the promise and one where *Jane* is the beneficiary of the promise.

(24)   a.   *Jane had a promise.*
       b.   *Jane had a promise to keep.*
       c.   *Jane had a promise to go to the cinema.*

In (24b), Jane is the *promise*-Er and the *keep*-Er; in (24c), Jane is the *promise*-Ee and the *go*-Er. From this, I think we have to assume that Jackendoff and Culicover's evidence from light verbs is inadequately worked out.

I will assume, therefore, that PROMISE shows the patterns it does because it is ditransitive and the NP immediately after the verb is the Indirect Object. However, as we shall see in the next section, PROMISE presents other problems, which we shall have to explore in order to account for ambiguities in the meanings it shows.

4.4.   Some verbs are ambiguous between interpretations

As Davies and Dubinsky (2004) point out, some verbs, such as BEGIN, PROMISE and THREATEN are ambiguous between raising and control interpretations. They give the example in (25) which shows how these verbs are compatible with both raising and control interpretations (2004: 9–10).

(25)   *The street sweeper began to work.*[12]
        – The street sweeper began to work, once we replaced the spark plugs. [raising]
        – The street sweeper began to work, as soon as he got to the park. [control]

The example in (25) is particularly problematic, because the same string of words can have either interpretation, so it is possible for a single utterance to be ambiguous. Note that the ambiguity in these examples is not due to the ambiguous reference of *street sweeper*. The ambiguity of *street sweeper* allows us to diagnose the different interpretations of *began*, but unless *began* were ambiguous, the different interpretations would not follow.

In the case of PROMISE in (26) and THREATEN in (27) on the other hand, the pragmatics of the sentence will tend to lead an interpretation in either direction.

(26)   a.   *The boy promises to be a gifted musician.* [raising]
        b.   *The boy promised to pick up a quart of milk on the way home.* [control]

(27)   a.   *Several downtown businesses threaten to go bankrupt.* [raising]

b.   *Several downtown businesses have threatened to take the city to court over the new parking regulations.* [control]

One of the criticisms it is possible to level against Jackendoff and Culicover's (2003) account of control is that it does not mention this difference in the behaviour of PROMISE.

In fact, PROMISE is even more complex, because it is potentially ambiguous not only between a raising and a control interpretation, but also (under the control interpretation) it has interpretations where either *[w]e* or *the children* or *[w]e* and *the children* can be interpreted as the Subject of the infinitive.

(28)   *We promised the children to go to the cinema.*

An example like (28) can be interpreted as (i) we promised the children that they would go to the cinema; or – possibly – (ii) we promised the children that we would go to the cinema; or (iii) we promised the children that both we and they would go to the cinema.

I do not have interpretation (ii) available to me. However, we need to be able to describe this pattern. Given the Indirect Object analysis of the postverbal noun or noun-phrase, interpretations (i) and (ii) can be handled on the assumptions of this article in the following way.

−   By default, the Subject of *to go* is *we.* [interpretation (i)]
−   In some lects, an Indirect Object can be the argument of the matrix verb which supplies a predicative complement with its Subject. [interpretation (ii)]

The split reading is more difficult. My solution is partially pragmatic. If I promised my children to go to the cinema and then went without them, there would be a riot. That is, for the Indirect Object to be the beneficiary of the promise, the Indirect Object NP has to refer to a participant in the event denoted by the predicative complement. This pragmatic solution is a kind of coercion, courtesy of the semantics of the Indirect Object dependency. On this reading, the Subject is the Subject of the predicative complement, but in order to be the beneficiary of the promise, it is understood that the Indirect Object has to refer to a participant in the event as well.

The reason why these ambiguities matter is that they are most simply negotiated in a grammar where the differences of meaning are differences

of sense, but where the syntax remains stable. If that were not so, the grammar would be significantly complexified, because each verb would have two (or in the case of PROMISE three) separate lexical entries, and would enter into different derivational routines. On the account presented here, it is simply the case that each verb is polysemous. They may, therefore select either the raising or the control Xcomp subtype with the upshot that they are potentially ambiguous.

Note that there are similar ambiguities in the small clause type of predicative complement. Verbs of appearance can occur with clausal LIKE as the value of their Xcomp relation, as in (29). Examples like this are extensively discussed in Heycock (1994) and Gisborne (1996). As the alternative continuations in the bullet points below the example show, this can be interpreted as either raising-like or control-like. The raising-like interpretation follows from the interpretation where *[y]our car* is not the source of the sound; the control-like interpretation follows from the interpretation where *[y]our car* is the source of the sound. In both cases, the LIKE clause has to be taken as an Xcomp.

(29)   *Your car sounds like it needs a new clutch…*
         … from what you've said about it.
         … from that noise it's making.

Again, ambiguities of this kind support the structure-sharing analysis, because they reduce to a simple semantic difference. They are also compatible with the constructional view of argument linking that I am putting forward here, where the verb's semantics are compatible with either predicative construction – the raising Xcomp, or the control Xcomp.

5.   The constructional analysis and linking generalizations

In this section, I discuss how the formal mechanisms of the theory work. The claims I have pursued in this article are that argument linking takes place within dependency relations and that in the case of predicative complementation, there is a network of dependencies involved in the argument-linking patterns. The claim is very simple:

−   Each dependency is an association of a syntactic relation with a semantic relation, or network.

- Each dependency states how its associated semantic relation or relations can be linked to the syntax.
- Argument linking consists of a verbal head selecting a semantically compatible dependency.

This is very easy to see in the case of the Indirect Object relation where the relation has an associated semantics. The Indirect Objects dependency is polysemous, with both a beneficiary and a recipient interpretation. Potentially ditransitive verbs must be semantically compatible with either indirect Object type. In the case of predicative complementation, the patterns are more complex for three reasons.

- The argument of an Xcomp must have a Subject.
- The value of an Xcomp must have a Subject.
- The Subject of an Xcomp must map onto an argument of its head.

Returning to the idea of dependencies as argument-linking constructions, we can identify different subtypes of Xcomp which account for the different linking patterns that can be found with the different kinds of Xcomp-taking verb. Returning to some of the semantic points I made in section 2, it is clear that the semantic generalizations hinge on the linking of force-dynamic semantic relations. Force-dynamic relations usually link Instigator to Subject and Endpoint to Object, but certain raising and control patterns violate that expectation. For example, if raising verbs are unaccusative, and control verbs are not, we have two syntactic subtypes of predicative complementation pattern, which accounts for the force-dynamic patterns identified in section 4.3.

This becomes clear in (30), what we see is a situation where the force-dynamic relations are unlinked from the Subject and Object relations, allowing them to be linked to entities in the context: in this case the speaker and the hearer.

(30)   a.   *You may go.*
       b.   *It's 3 o'clock. He may be there by now.*
       c.   *The cake seems cooked.*

To summarize: each sub-type of Xcomp is associated with different Subject and Object relations – and therefore different linking patterns. This means that we can establish different subtypes of Xcomp – and the patterns

of ambiguity we saw in section 4.4 follow from the verbs there being compatible with different Xcomp types.

In figure 12, I offer a hierarchy of predicative construction types. This hierarchy shows that Adjuncts and Xcomps are different subtypes of predicative construction, and that there are several different kinds of Xcomp.
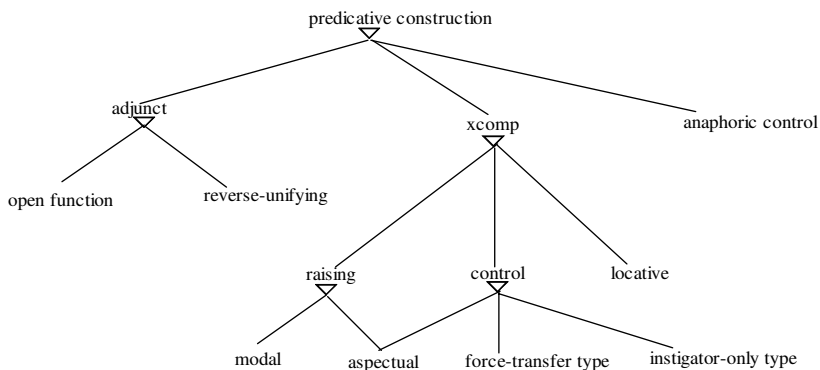
Figure 12. A hierarchy of predicative construction types

In the hierarchy in (12), I have suggested that control constructions are a subtype of predicative construction alongside raising constructions. I have also suggested that the Xcomp construction is just one type of predicative construction – adjuncts are another kind of predicative pattern. The reason for setting the hierarchy up in this way is that there are both raising and control types of aspectual construction (because of the evidence from BE-GIN in section 4.4), yet not all control constructions are aspectual constructions. However, there is still plenty of research that can be done which would affect the final outcomes of this hierarchy.

6.   Conclusions

I have four main conclusions.

−   Predicative complementation involves a family of related constructions rather like resultatives (Goldberg and Jackendoff 2004).
−   Constructions are subparts of the linguistic-cognitive network.
−   Dependency-constructions can involve more than one dependency.

- There is no addition to the ontology; we don't have to assume that there are constructions which exist as objects independent of words and dependencies.

These conclusions are all grounded in the assumption that language is a symbolic network that consists of:
- classified nodes associating form and meaning; and
- classified relations, associating form and meaning.

In this sense, the grammar is very like Construction Grammar but without the phrase structure relations, which leads me to this quotation from Holmes and Hudson (2005), which I endorse:

> we believe that CG would be better if phrase structure was replaced by dependency structure, because the theory would be simpler (with fewer stipulated principles) and analysis would be more explanatory (with fewer intervening nodes between related words). So far as we can see there are no basic assumptions of CG which require phrase structure rather than dependency structure; nor, so far as we know, has the possibility of adopting dependency structure ever been considered and rejected. Rather we believe that phrase structure is simply a residue of the theory's historical roots in phrase-structure grammar. (Holmes and Hudson 2005: 254)

However, in one sense – the recognition that patterns of dependencies come together to form larger constructional patterns, as in the predicative small-clause construction – I have brought Word Grammar slightly closer to Construction Grammar. This is partly because in this article I have treated Subject coercion as a syntactic equivalent of the frames that Hudson discusses in his paper in this volume. I have also shown that one of the major contributions of Word Grammar is to treat dependencies – specifically those relating to a verb's valency – as argument-linking constructions.

Notes

1. This paper exploits WG notation and is grounded in the theory's background assumptions. Readers who are unfamiliar with the model might want to read the paper by Hudson in this volume before reading this article. I introduce the model in section 3.

2. Rosta writes, "In my view, the most promising model of linking is one in which some grammatical relations (or, if you will, syntactic argument 'positions' at some appropriate level of syntactic structure) have intrinsic semantic content. Linking is then achieved by finding the overall best semantic match between the semantic arguments and the intrinsic, 'constructional', meanings of the syntactic positions".

3. For this reason, dependencies in Word Grammar are stored in taxonomic hierarchies (formally modelled with default inheritance) so, for example, Hudson (1990) says Direct Object *Isa* Complement. The word *Isa* is the predicate of the default inheritance relation; therefore, the statement *Direct Object Isa Complement* means 'Direct Object is an instance of the category Complement'.

4. Raising and control are not different constructions because, as we shall see, they have the same syntax.

5. I am leaving the formal mechanism by which this can be captured to one side for now.

6. "Xcomp" is a term borrowed from LFG. It is formal label for the dependency which holds between a head and its predicative complement. The "X" of "Xcomp" is intended to recall the variable of predicate logic: an Xcomp is a complement which needs to be found a subject.

7. This constraint has been relaxed recently in Hudson (2003), which admits a PRO-like element into the theory's ontology. However, the findings in Hudson (2003) have no bearing on the analysis of raising and control structures, the distribution of PRO being shown to be orthogonal to the raising/control distinction.

8. In the diagram, I actually do mean to say that the node in the semantics *'go'* is the referent of *to* and *go*. I am showing that *to go* is coreferential, and that the referent of these words is the result argument of the sense of caused.

9. The reasoning is that if something is clearly polysemous then there is a genuine associated semantics. If the differences were due to vagueness rather than ambiguity, the meaning differences could be attributed to pragmatics. While pragmatics could well be enough to justify constructional status (Croft 2001), different semantics offers a more robust basis for the assertion that there are different constructions.

10. There are debates about the lexical entries for verbs, nouns and prepositions (Croft 1991; Baker 2003) but we can agree that nouns and adjectives do not have a Subject in their lexical entry.

11. Jackendoff and Culicover (2003) go on to elaborate a complex argument about the related nominals (A) PROMISE and (THE) ORDER.

12. One problem with BEGIN which I note here, but do not have a solution for, is that quantified NPs behave differently with the control and the raising variant.

With the raising variant, broad and narrow interpretations are both available, whereas with the control variant only the broad interpretation can be found.

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Word Grammar and Construction Grammar*

Richard Hudson

1.   Overview

Word Grammar (WG) has so much in common with Construction Grammar (CG) that similarities are a lot easier to find than differences. These similarities are partly a case of independent parallel development, but I have always been a great admirer of the work of the CG group, especially Charles Fillmore (1982, 1986; Fillmore, Kay and O'Connor 1988; Kay and Fillmore 1999), George Lakoff (1977, 1987) and Adele Goldberg (1995, 2002, 2006; Goldberg and Bencini 2005). In fact, on an autobiographical note, I was so impressed by the early CG work that I visited Berkeley in 1987 to find out more. I borrowed a number of important ideas from the CG group covering such topics as prototype effects, lexical semantic analysis and multiple inheritance. This article, which continues the discussion started in Holmes and Hudson (2005), is an attempt to repay this debt by offering four very general ideas that (in my opinion) would make CG even better at very little cost:

−   that syntactic structure consists of dependencies between words
−   that semantic frames are part of the analysis
−   that the levels of phonology, morphology, syntax and semantics are autonomous
−   that the cognitive context should be enriched.

Section 2 reviews what strike me as the most important similarities between the two theories. In general terms, I shall suggest that CG and WG share more ideas with each other than with other theories, but that both of them straddle the division between cognitive linguistics and generative linguistics. On the one hand, they are "cognitive" in their commitment to embedding a theory of language in a more general theory of cognition from which most (or maybe even all) of the properties of language may be derived; they share this commitment (and many other ideas) with Cognitive Grammar (Langacker 2000) and a range of other "cognitive" theories

(Croft and Cruse 2004; Evans and Green 2006). But on the other hand, they are "generative", like the Minimalist Program (Chomsky 1995) and Lexical-Functional Grammar (Bresnan 2001), in recognizing an independent level of syntax; and like Head-driven Phrase Structure Grammar (Pollard and Sag 1994), they both allow complex structures to be inherited from simpler structures, some of which are very specific. This view of CG and WG as a bridge between competing theories of language structure is shown in figure 1. Moreover, CG and WG also bridge the division between linguistics, conceived narrowly as the study of language structure, and psycholinguistics, the study of language use and learning. I would like to think that each of these bridges includes all the best bits of the other theories without too many of their weaknesses.
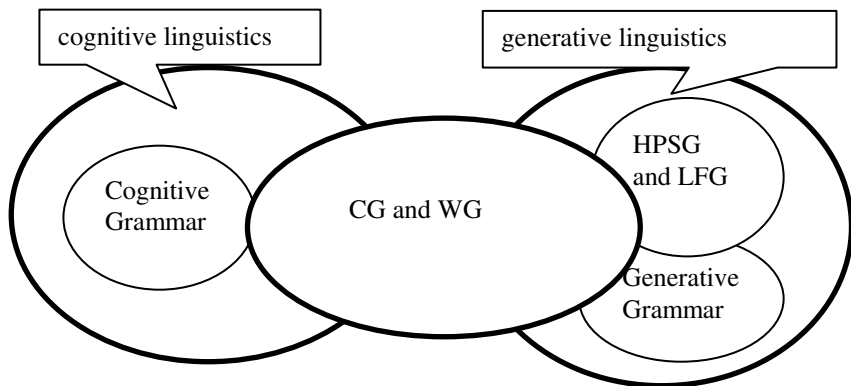
Figure 1. CG and WG are a bridge between cognitive and generative linguistics

Section 3 then introduces the first main area of disagreement between CG and WG: the nature of sentence structure. Is it based on phrases (CG) or on words (WG)? CG at least implicitly follows the American tradition of phrase structure (with the addition of functional labels), while WG is a typical European theory based on dependency structure. The two theories make different predictions and have different success rates in explaining various phenomena. I shall review the evidence which supports dependency analysis over phrase-structure analysis. In a sense this discussion will be about mere technicalities, but, the devil being in the detail, I shall draw some far-reaching conclusions.

Section 4 shows the value of taking the idea of "frame semantics" seriously. If every concept is defined by a "frame" of related concepts, then the framing concepts should be included in the analysis. The discussion applies this principle to the ditransitive construction and its meaning, and shows the benefits of including the framing semantic structures in the total analysis. It turns out that various meanings of this construction do share a common semantic structure, although their variation produces a family-resemblances cluster of meanings.

Section 5 then argues that form is a great deal more independent of meaning than is allowed if grammar pairs every form with a meaning (as in CG). In this section I argue that language has a traditonal multi-level architecture rather than the simple form-meaning structure of CG, and that dependency structures leave no separate role for constructions – in other words, dependencies applied to individual words are constructions (Gisborne, this volume), and every "constructional" fact can be stated in terms of single words and dependencies; moreover, as Gisborne observes, any category invoked in classifying dependencies must be "framed" by a network of dependency types for just the same reasons that support "frames" in semantics. In short, the correspondences between syntax and meaning can be analysed better without assuming distinct constructions than with them. The WG view also includes the claim that there is one more distinct level than is sometimes recognized, an extra level of morphology between syntax and phonology.

Finally, section 6 is about the "cognitive context" of language – how conceptual knowledge is organized, how it is used and how it is learned. This is a fundamental question for theories such as CG and WG, both of which rest on the assumption that a theory of language structure must be embedded in a more general theory of cognition. The cognitive theories are encouragingly similar, but I shall pick out some important differences and suggest directions for further research.

A small challenge in comparing theories is the range of variation that can usually be found within any named theory. WG has its fair share of diversity (illustrated richly in Sugayama and Hudson 2006), but for simplicity I assume here my own most recent views on all issues, and since I have just finished a book about the theory (*Language Networks: the New Word Grammar*, 2007) it is this book that defines WG. For CG, on the other hand, my definition of the theory will be based on the work of Adele Goldberg, the author whose work is most familiar to me (Goldberg 1995, 1998, 2002; Goldberg and Bencini 2005); and in particular I shall use her

most recent book, *Constructions at Work. The Nature of Generalization in Language* (2006).

2.   Similarities between CG and WG

As I explained in section 1, there are more distinctive features that unite CG and WG than divide them. To borrow a useful term from Goldberg, both theories are "constructionist" (Goldberg 2006: 3). Goldberg distinguishes two senses for this word.

On the one hand, theories are constructionist if they "emphasize the role of grammatical constructions" as "learned pairings of form with semantic or discourse function" (Goldberg 2006:5). (This approach assumes that constructions must be part of the internalized grammar, and not merely immanent in observable data – i.e. we are dealing with g-constructions rather than u-constructions, in the terminology of Rosta, this volume.) In other words, a constructionist theory claims that grammar is organized in such a way that each "form" that is stored can be paired directly with a structure which shows the form's meaning. Of course, it is uncontroversial to claim that formal structures (e.g. syntactic structures) can be mapped onto structures of meaning; but what is controversial is the claim that we store some formal structures which are quite *specific* as well as the more general patterns that they contain. For example, in both theories the grammar includes a stored entry for the ditransitive construction which includes some information which might be derived from more general constructions. This emphasis on specific syntactic patterns contrasts both theories with Chomsky's Minimalist Program, whose stated aim is to explain all syntactic patterns as the effects of independent principles: "The language-particular rules reduce to choice of values for … parameters. The notion of grammatical construction is eliminated, and with it, construction-particular rules" (Chomsky 1995: 170).

However, another distinctive characteristic of CG constructions is the nature of the "form" that they pair with function. For phrasal constructions it is a *syntactic structure*. The recognition of syntax as a level of structure distinct from both semantics and phonology is a property that both CG and WG share not only with the Minimalist Program but also with Lexical-Functional Grammar (Bresnan 2001). In contrast, at least early versions of the other main cognitive theory, Cognitive Grammar, deny the existence of a separate syntactic structure; instead, "only 'semantic', 'phonological' and bipolar 'symbolic' units are posited … Syntactic units are 'bipolar', with semantic and phonological poles" (Langacker 1990: 102). In other words,

syntactic units are merely realization relations between meanings and sounds. Somewhat similarly, Head-driven Phrase Structure Grammar merges syntactic and semantic structures into a single "synsem" structure, so the units of grammar are again bipolar "signs", without the independent syntactic structures of both CG and WG (Pollard and Sag 1994: 3). The distinct syntactic structures of both CG and WG thus align these theories with the Minimalist Program and LFG, in contrast with both early Cognitive Grammar and HPSG.

The other sense that Goldberg gives to *constructionist* is that "languages are *learned* – that they are constructed on the basis of the input together with general cognitive, pragmatic and processing constraints" (Goldberg 2006:3). The crucial word here is *learned*, which stresses the major role of experience rather than genetics. Both CG and WG are "usage-based" theories, explaining knowledge as the residue of countless encounters with specific tokens of language. Every item of vocabulary is a generalization across a range of highly contextualized tokens, and every grammatical generalization is similarly based on the characteristics of a range of these stored vocabulary items. To take the ditransitive construction as an example again, it is learned by induction across a stored collection of verbs that take two objects, and each of these verb-types in turn is induced from a collection of tokens. This view of learning comes from Cognitive Grammar (Langacker 1987, 2000, 1990) and is one of the most important contributions of that theory because of its radical consequences for our view of language. In place of the static and "purely synchronic" idealization of most other theories, we have a constantly growing system of elements with different degrees of "entrenchment" in which synchrony and diachrony meet. Any theory that links language structure so closely to experience has to include a theory of how language is learned, and CG and WG both include such a theory (which I discuss briefly in section 4).

Perhaps the most important similarity, at least from the point of view of WG, is the shared assumption that the product of this learning – a person's knowledge of language – is a single unified *network*. "What makes a theory that allows constructions to exist a 'construction-based theory' is the idea that the network of constructions captures our grammatical knowledge of language *in toto*, i.e. *it's constructions all the way down.*" (Goldberg 2006: 18, author's emphasis) It should be noted that constructions include lexical items, so when Goldberg refers to "grammatical knowledge" she actually means "linguistic knowledge", i.e. our entire linguistic competence from specific lexical items to the broadest of grammatical and phonological generalizations. The sum total of linguistic knowledge is contained in a single

network in which there is no formal distinction between lexical items and grammatical rules. The same assumption is fundamental to WG: "Language is a conceptual network" (Hudson 1984: 1, quoted in 2007: 1). On the other hand, the networks envisaged in these two theoretical statements are rather different because they allow different kinds of nodes: just constructions in CG, but any kind of concepts (including constructions) in WG. I return to this difference in section 6.

Why do I think the network idea is so important? (In contrast, Goldberg merely takes it for granted; in fact, neither of her books even includes the word *network* in its index.) Because this brings language structure very clearly into the realm of long-term memory, which most cognitive psychologists think of as a network (Reisberg 1997: 257). If "knowledge of language is knowledge" (Goldberg 1995: 5) – a beautiful formulation with which I agree totally – then knowledge of language must have the same organization as other kinds of knowledge; and if other kinds of knowledge (e.g. about birthday parties or kinship) are organized as networks, then the same must be true of language. This conclusion may seem innocuous, but it actually excludes any contrast between "rules" or "principles" and stored knowledge, thereby immediately ruling out any theory that invokes extra principles, rules or constraints which are not expressed either in network terms or in terms of processing or learning. If language really is a single unified network, as described by WG and CG, then most of the theories that dominate linguistics are fundamentally wrong: not only all of Chomsky's theories (1957, 1965, 1995; Chomsky and Lasnik 1993) but also Head-driven Phrase Structure Grammar (Pollard and Sag 1994), Lexical-Functional Grammar (Bresnan 2001) and others. Clearly, the network idea raises some fundamental (and difficult) questions for us all.

These similarities between CG and WG are all so fundamental that they deserve a great deal more discussion, and it would be easy to extend the list by pointing out other similarities. For example, I share the "commitment in principle to account for the entirety of each language" (Kay and Fillmore 1999), including its non-canonical constructions such as *What about a drink?*; I have even given this commitment the memorably awful name "poly-constructionism" (Hudson 1990: 5). The main point, I think, is to establish that CG and WG start from very similar basic assumptions about the way language works and how it fits into the human mind, and have the same ultimate goal. Consequently it should be possible for ideas to flow relatively smoothly between the theories, and as far as I can see, the ideas that I outline below are fully compatible with the basic aims and assumptions of CG.

3.   Syntactic structure consists of dependencies

As we have seen, "it's constructions all the way down" in CG. Construc-
tions are defined as "learned pairings of form with semantic or discourse
function, including morphemes or words, idioms, partially lexically filled
and fully general phrasal patterns" (Goldberg 2006: 5). The discussion in
this section will focus on the phrasal patterns, whether idiomatic, partially
lexically filled or fully general. As Goldberg points out (2006), some lin-
guists reserve the term "construction" for phrasal patterns, and call single
words or morphemes "signs", so this section is about constructions in this
narrower sense. The question is how to represent "patterns" in multi-word
sentence structure.

Ever since I first used the name "Word Grammar" (Hudson 1984), I
have argued that sentence structure consists of nothing but *dependencies
between individual words* – hence the name of the theory. At one time I
thought differently. The first grammatical theory that I adopted was what at
that time was still called Systemic Grammar (Halliday 1961, 1985; Hudson
1971), which, under the influence of post-Bloomfieldian grammarians in
the USA, assumed a hierarchical part-whole analysis of sentences. At that
time, like most other linguists, I was unaware that there was an alternative,
the dependency-grammar tradition of Europe, which is still taken for
granted in the school-teaching of many European countries and which ar-
guably dominated linguistics until the twentieth century (Covington 1984;
Gaifman 1965; Heringer 1993; Kunze 1975; Mel'cuk 1988; Owens 1988;
Percival 1990; Tesnière 1959; Venneman 1977). In contrast, most Ameri-
can linguists still follow Bloomfield into phrase structure (Bloomfield
1933; Percival 1976), and in this respect CG appears to be a typical Ameri-
can theory. In CG, a sentence seems to have a hierarchical phrase structure,
whereas in WG there is no phrase structure but there are direct dependency
links between individual words. A simple example is shown in figure 2. As
we shall see in later diagrams, the arcs are also labelled to distinguish sub-
jects, objects and so on. The essential point to notice about this diagram is
that there is no separate node for the clause (or sentence), nor for the noun
phrases *his students* and *good marks*. In each case, the head word (*gave,
his, marks*) carries all the properties of the phrase that it heads, so a sepa-
rate node would be redundant.

He   always   gave   his   students   good   marks.
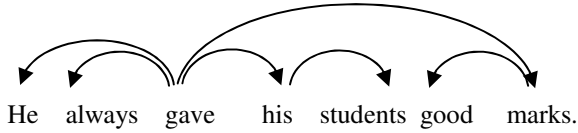
Figure 2. In WG, words are linked directly, not via phrases

However, this difference may not go very deep, because CG is almost agnostic on the details of sentence structure. In fact, there is not a single example of a full sentence structure in either of Goldberg's books. The only diagrammed structures are for single constructions, which are presented as collections of structure like the one for the ditransitive construction in (Goldberg 2006: 20). The ditransitive construction consists of this entire combination of elements.

Sem: intend-CAUSE-RECEIVE   (ag   rec(secondary topic)   theme   )

Syn: verb   (Subj   Obj1   Obj2   )
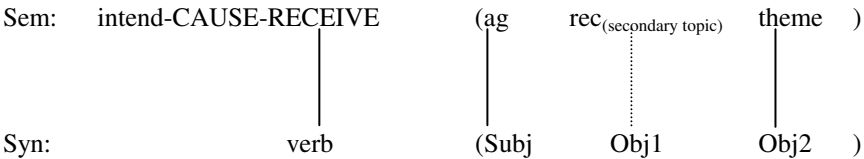
Figure 3. The ditransitive construction in CG

The CG analysis translates easily into the WG notation of figure 4, where for simplicity I replace "intend-CAUSE-RECEIVE" by its synonym 'giving' and merge the two syntactic layers. The most obvious difference between figure 3 and figure 4 is the use of arrows in place of the brackets. For example, instead of "verb (Subj Obj1 Obj2)" we now have a separate arrow from "verb" to each of its arguments. This notation has the advantage of clearly distinguishing relations and their classification (e.g. as Subj, Obj1 or Obj2) from non-relational nodes or "categories" such as "verb". This clear distinction in notation between relations and nodes reflects the very different statuses of the things labelled "verb" (a category) and "subj" (a relation), and would actually serve CG better by avoiding the uncertainty over relations and categories that Goldberg mentions (2006: 21, fn 2). In figureFigure 4 the difference is exaggerated by the use of callouts, but WG diagrams normally label arrows directly. Moreover, the separation of the label from the node or arrow that it labels allows us, where necessary, to leave an arrow or a node unlabelled.
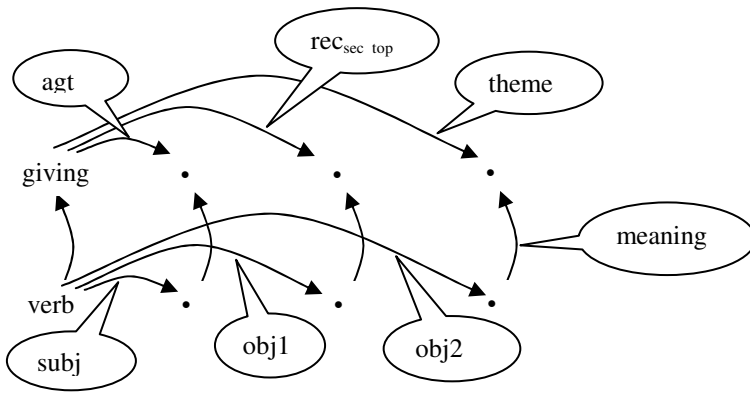
Figure 4. The CG ditransitive construction in WG notation

The main question in this section is the choice between phrase structure and dependency structure in syntax, so we should concentrate on the syntactic parts of these two diagrams. The use of labelled relations such as Subj in the CG diagram is already a gesture in the direction of dependency structure in contrast with phrase structure as found in classical versions of phrase structure in the Chomskyan tradition. On the other hand, labelled relations are combined with phrase structure in other theories such as Lexical-Functional Grammar (Bresnan 2001), Systemic Functional Grammar (Halliday 1985), Relational Grammar (Blake 1990) and Functional Grammar (Dik 1989), so labelled relations do not in themselves indicate dependency structure. The crucial question is whether the dependents are phrases (for phrase structure) or single words (for dependency structure). So far as I know, the CG literature does not address this question, and phrase structure is by and large taken for granted. I should like to suggest that dependency structure fits the assumptions of CG better.

Before I turn to the specifics of CG, we can review some general advantages of dependency structure. Compare the two structures in figure 5 for the sentence *Cows eat green grass*, where the phrase-structure diagram is adapted to CG by the addition of relation labels ("s", "o" and "h" for "subject", "object" and "head" respectively; "a" stands for "adjunct") and by the omission of a VP label to allow the subject and object to be sisters (as seems to be intended in the formulae).
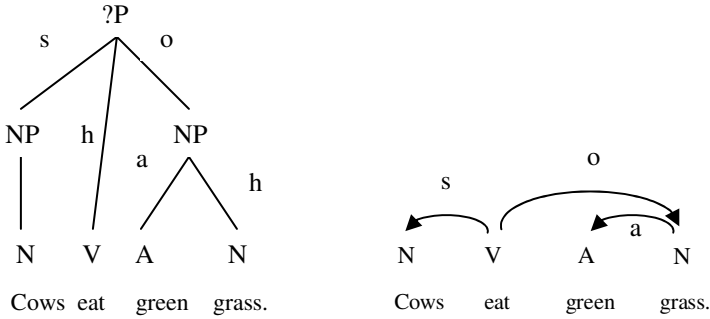
Figure 5. Phrase structure and dependency structure compared

The most obvious difference lies in the number of nodes and links: just one node per word on the right, compared with an extra three on the left, and just three links on the right compared with six on the left. Those extra nodes and links require justification in terms of generalizations that they allow which would otherwise not be possible. It is much harder to find such generalizations than might be thought. Here are some possibilities to consider.

First, maybe the phrasal nodes help with classification: NP is different from N, so it may be important for the grammar to distinguish them. The standard assumption is that this is indeed so, because nouns combine with adjectives to form NPs, whereas it is NPs that combine with verbs to form clauses; and this distinction requires the "unary branching" above *cows* to show that this is in the intersection of the two classes: both N and NP. But this distinction is easy to make in terms of dependencies: a noun allows an adjective as its dependent and a verb as its parent (the word on which it depends). Phrase structure simply mirrors these dependencies by adding an extra node to hold together the head and all its dependents. The dependency arrow from *grass* to *green* achieves exactly the same effect as the phrasal NP node, so the latter is a more complicated solution with three nodes and two links instead of two nodes and one link. Moreover, CG seems to follow the general trend in phrase structure of requiring phrases to be endocentric, with one word picked out as the phrase's head. What this means is that the classification of the phrase is entirely predictable from that of the head, so the difference between "phrase" and "word" is the only

possible contribution of the phrase. Since this distinction can easily be read off the dependency relations, phrase nodes are redundant.

The second possible role for phrasal nodes is in handling word order: phrases hold all the dependents of a word together, but this can be done just as easily without phrases. Simply assuming phrases does not in fact achieve this effect, but only when combined with the additional theoretical assumption that the words inside a phrase must form a continuous string. This can be expressed in various ways, e.g. in terms of brackets or non-intersecting lines in structure diagrams. But the same is true of dependency relations. These too can be combined with an equivalent additional theoretical assumption about the dependents of a word forming a continuous string, which may also be related in various ways to structure diagrams. For example, if we split the phrase *green grass* to give **Cows green eat grass*, each of the diagrams in figure 6 contains two intersecting links, so we might simply ban intersecting links. There happen to be better solutions in WG (Hudson 2007: 131ff.), but the point is that it is just as easy to keep phrases together in dependency structure as it is in phrase structure. And of course, the well-known exceptions such as raising, extraction and extraposition, where phrases are allowed to be discontinuous, can be accommodated at least as easily in dependency structure as in phrase structure (Hudson 1990: 113ff., 354ff.).
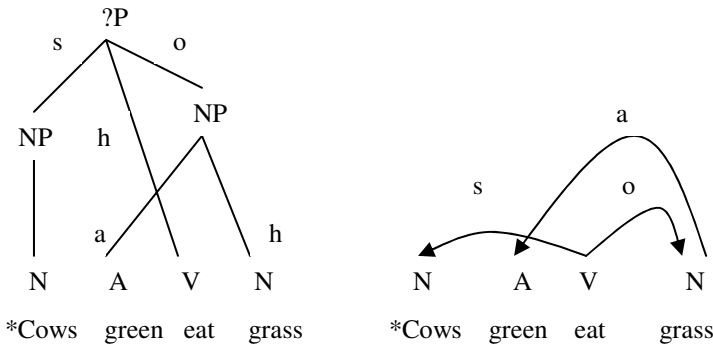
Figure 6. A discontinuous phrase in phrase structure and dependency structure

To judge by the two defences of phrase structure just considered, the usual arguments for phrase structure are woefully inadequate because none

of them considers the dependency alternative. One defence that does consider it explicitly is the argument that dependency structure is merely a notational variant of phrase structure, with just the same weak generative capacity (Gaifman 1965; Robinson 1970). It is certainly true that there are types of phrase-structure grammar that can systematically be matched by dependency grammars with the same weak generative capacity (in the technical sense of the range of symbol strings that they generate, disregarding the structures assigned to these strings). However, the grammars we have these days are so much more sophisticated than anything considered in the 1960s that such comparisons are meaningless, and especially so if we consider strong generative capacity (i.e. the range of structures assigned). To take a rather spectacular example of non-equivalence, dependency grammars allow mutual dependency unless this is explicitly ruled out, whereas this is fundamentally impossible in phrase structure because nothing can be part of itself. This is not a mere hypothetical possibility in WG, which recognises syntactic structures where two words are interdependent (Hudson 2007: 142).

The general argument for dependency structure thus rests on the following claims:

- It is simpler than phrase structure in terms of the nodes and links in a structure diagram.
- It allows the same generalizations about classification and word order as phrase structure.
- But it is not a mere notational variant, as it allows analyses (e.g. mutual dependency) which are not possible in phrase structure.

There is a great deal more general evidence in favour of dependency analysis for which there is no room here; this evidence comes from areas as diverse as computational linguistics and   child language (Hudson 2007: 118ff.). It is true that dependency analysis is vulnerable to a few theoretical challenges, the strongest of which rests on the absence of any obvious equivalent of the c-command relation that has played such a dominant role in Chomskyan linguistics (Hudson 2007: 122). However, CG does not use this notion so it is irrelevant to the choice between phrase structure and dependency structure as the theoretical basis for CG syntax.

I now present some benefits of dependency structure which are more directly relevant to CG. Firstly, dependency structures are "flat", and in particular they have a single layer of structure for each verb and its depend-

ents, so dependency structure yields one structure per clause (defined as a phrase headed by a verb), which seems to be what CG analyses need; for example, the CG formula for the ditransitive construction includes the subject as well as the two objects, with the implication that these are sisters, as they necessarily are in a dependency analysis.

Secondly, dependency structures in a sentence are lexically specific because each of their nodes is a specific word (though of course they may be represented in a much more general way in a grammar). This allows the grammar, where necessary, to refer directly to a particular word or lexical item as a dependent of another particular item. For instance, it can say that the verb LONG requires the preposition *for* as its dependent; this statement refers to two words which are directly related in a dependency structure such as the one in figure 7. In phrase structure, on the other hand, the same link (indicated by the arc below the words) is only indirect; to be precise, it relates *longed* to its niece via three links. This structure obscures the fact that only the head of the phrase *for rain* is relevant to *longed*, so CG would in principle allows the combination LONG RAIN to be stored, whereas WG only allows LONG FOR.
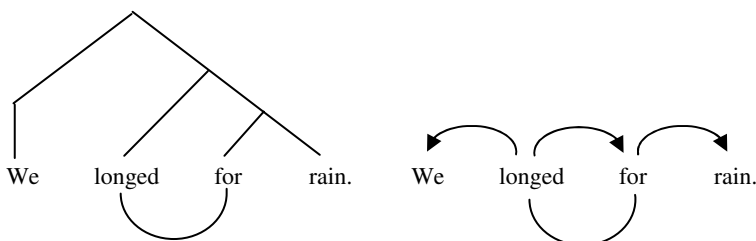
Figure 7. Lexical selection of *for* by LONG in phrase structure and dependency structure

The third advantage of adopting dependency structure in CG concerns semantics. In dependency structure, a word's dependent modifies that word's meaning – e.g. *big dog* refers to a kind of dog, and *eats ice-cream* to a kind of eating – so the phrase's head carries the meaning of the entire phrase. Of course, the modified word is distinct from its basic counterpart, so the *dog* of *big dog* is represented by a different node from the lexeme DOG, and similarly for *eats* in *eats ice-cream.* In each case, the specific word is a special subcase of the general lexeme, with distinct syntax and distinct semantics.

This facility of locating phrasal differences on the head word is helpful when handling idioms and other stored phrases; for example, the meaning of KICK THE BUCKET is carried by what we can call KICK$_{bucket}$ (a special sub-case of the general lexeme KICK which has *the bucket* as its object and means 'die'). Similarly, to the extent that GIVE in 'composite predicates' such as GIVE X A KICKING has a special meaning (Trousdale, this volume) this can be attributed to the special sub-case of KICK which combines with deverbal objects. In neither case is there any need to postulate a phrasal construction to carry the stored meaning. Indeed, dependency structure is a better basis than phrase structure for analysing idioms because it forces the prediction that the fixed elements in an idiom will always include the head word; so there could be no idiom such as "Verb *the bird the worm*", in which any verb could be combined with two lexically specified objects (Holmes and Hudson 2005).

Such idiomatic dependency structures can be combined incomplex memorized structures such as the one for the famous *What's X doing Y?* construction (as in *What's your car doing in my parking space?*), for which Figure 8 is the analysis proposed in Holmes and Hudson 2005.
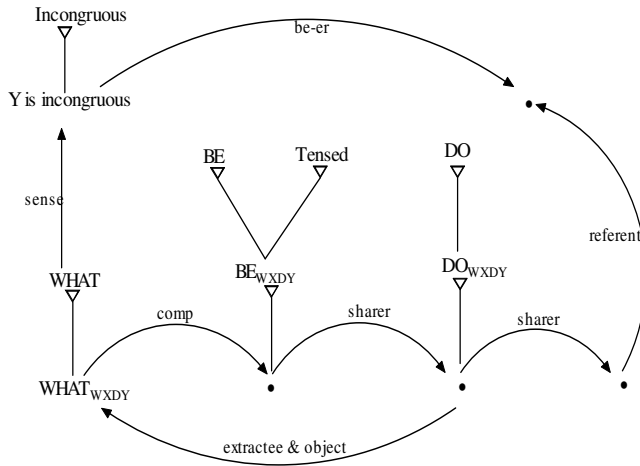
Figure 8. A WG analysis of the *What's X doing Y?* construction

The fourth, and most important, advantage of dependency structure involves the intimate pairing of syntactic and semantic relations in dependencies. Every dependency is defined in part by its meaning, so it is just right for mapping onto semantic roles (as in a CG construction). In WG, relations are concepts and, like any other kind of concept, they are learned

inductively from bundles of features which tend to co-occur – in other words, which correlate positively with one another. When the relations concerned are between pairs of words, the correlated features tend to include both semantic relations between the words' meanings (semantic roles) as well as syntactic relations between the words themselves such as word order or agreement. Indeed, in some European versions of dependency grammar, dependencies are exclusively semantic and have nothing to do with such superficial syntactic considerations as word order (Bröker 1998; Heringer 1993; Kunze 1975; Tesnière 1959; Sgall, Hajicova, Panevova 1986), though I know of no theoretical justification for this restriction. The essential requirement for recognising a dependency between two words is that there should be at least two relations between them which tend to co-occur, and it makes no difference whether these relations are deeply semantic or superficially syntactic. However, dependencies do typically combine meaning with one or more syntactic relation such as word order, which makes them particularly suitable for pairing with meaning in a construction. Indeed, the semantic relations which are part of the definition of the dependency relation duplicate the pairing achieved by a construction, so in a sense the construction is already part of the dependency and a separate construction is redundant. For instance, the definition of the syntactic dependency "indirect object" includes a pairing with a semantic role such as "recipient", just as in the CG conception of a construction.

Given a network analysis in which syntactic structures consisting of meaningful dependencies between words are mapped onto semantic structures, what extra role is left for constructions? One possible answer is suggested by Gisborne (this volume): all the work done in CG by phrasal constructions can be left to individual dependencies, linking individual words. However, if this is right (as I believe it is), no work is left for phrasal constructions in the CG sense. At this point we might consider the experimental evidence for the psychological reality of constructions (Goldberg 2006: 120–125). One particularly impressive type of evidence involves "structural priming", where a syntactic pattern is made easier to retrieve ("primed") by earlier occurrences of the same pattern, providing a convenient psychological test for what counts as "the same pattern" in syntax. What emerged from the experiments is that structural priming requires similarity of meaning as well as of syntax (Goldberg and Bencini 2005); for example, one experiment used stimuli like the following:

(1)   *The 747 was landed by the pilot.*
(2)   *The 747 might land near the airport control tower.*

The significance of these examples is that they have similar "surface syntax" if we simply consider the words and phrases and their categories; but their very different semantic structure was enough to prevent either from priming the other. In contrast, one passive sentence such as (1) does prime another even if the lexical content of the two sentences is completely different.

How we interpret these results depends on what assumptions we make about syntactic structure. If it consists of a phrase structure which is so superficial that (1) and (2) have the same syntax, the experiments do indeed show that syntax alone is relevant only to the extent that it is paired with semantics – in other words, that we think in constructions. But this would be a very odd conclusion, because it rests on the assumption that we assign a syntactic structure which is inadequate. Why should we do anything so silly? Oddly, this assumption is not even part of CG itself, because the syntactic pole of a construction is defined in terms of abstract and semantically relevant grammatical functions such as Obj1 and Obj2. Surely sentences (1) and (2) would have different syntactic structures even in CG, let alone in WG where syntactic structure consists of dependencies and a superficial structure is impossible? What the experiments show, therefore, is that we think either in the functionally-labelled phrase structure of CG or in the dependencies of WG. Even given the assumptions of CG, therefore, they do not show that we think in constructions.

In conclusion, then, I believe that syntactic structure does in fact consist of dependencies, each defined in terms of a mixture of semantic and syntactic features, so the same should be true for the syntactic pole of a CG construction. But accepting dependency structure also means that the constructions of CG are too large, because they presuppose phrases when in fact there is nothing in syntax longer than a word. Applying this conclusion to the ditransitive construction, the crucial elements are the indirect-object dependency and the verb, so these are all that remains of the CG "construction".

4.   Semantic frames are part of the analysis

The idea of semantic frames is very familiar in CG but semantic frames are rarely spelled out formally in the way that, say, argument structures are.

The main insight of Frame Semantics is that word meanings must be studied in relation to "a structured background of experience, beliefs or practices, constituting a kind of conceptual prerequisite for understanding the meaning" (Fillmore and Atkins 1992: 75). For example, the meaning of *Monday* is best explained in terms of the cycle of days in a week, and that of *elbow* in terms of the structure of an arm. In contrast with old-fashioned semantic fields, these frames consist of concepts – i.e. meanings – rather than words; so the definition of Elbow (the meaning of the word *elbow*) relates it to the concepts Arm, Hand and so on. Crucially, the relations among these concepts must "go far beyond anything envisioned by current theories of thematic roles or deep cases," so "we need 'frame-specific' semantic role categories" (Fillmore and Atkins 1992: 84). For instance, the relation between Monday and Tuesday might be "Day-after", a relation which only applies to the days of the week.

These ideas have been developed more fully in WG than in CG (or, for that matter, in any other theory of language structure that I am aware of). On the one hand, the principle of "re-cycling" guarantees that the meaning of one word should be defined where possible in terms of the meanings of other words, rather than in terms of some kind of universal basic vocabulary of concepts and relations (Hudson and Holmes 2000). For example, the paper just cited offers an analysis of the concepts expressed by lexemes such as BICYCLE and CYCLE, in which very specific concepts such as Pedal are used in the analysis of several other concepts (e.g. as parts of Bicycle and also as the moving element in Pedalling). Re-cycling means that every concept in the network is defined solely by its relations to other concepts, so the analysis of word meaning cannot be separated from the analysis of the speaker's complete conceptual structure. Of course this means that a complete analysis is impossible, but this difficulty is amply outweighed by the fact that partial analyses are relatively easy. All that is needed is careful thought and sensitivity to semantic facts, rather than a rigid universal framework of categories and relations. The result is analyses which can be richly articulated and very precise (Gisborne 1996; Holmes 2005).

On the other hand, the idea of frame-specific semantic role-categories is very easy to accommodate thanks to the way in which WG assumes that relations are learned. As I said in section 3, "relations are concepts and, like any other kind of concept, they are learned inductively from bundles of features which tend to co-occur – in other words, which correlate with one another." Like other concepts, relations may have any degree of generality from the most specific relation between two tokens of experience to the most general; for example, the string of letters that I am writing now have

mutual relations which are a particular case of the relations between letters in a string, which in turn exemplify relations between objects in a string, which involve the most general relations such as Before or After. Each of these relations has a place in the network and most (possibly all) may be learned from experience.

WG even offers a fairly specific theory of how new concepts (including relations) are learned (Hudson 2007: 52–9; for similar theories applied to syntax, see Ninio 2006; Chang, Dell and Bock 2006; Tomasello and Bates 2001: 163–290). According to this theory, we are continually enriching our mental networks by adding new links, each representing a new relation, and we do this in two ways: either by observing and remembering a token of experience, or by inducing a more general relation from a collection of existing links whose properties correlate. These two kinds of growth are opposite sides of the same coin of "exemplar-based" learning which Goldberg discusses in some detail, and which combines the storage of individual exemplars with the drawing of generalizations (Goldberg 2006: 44–65). The resulting potentially vast collection of links is held together by the same kind of inheritance hierarchy as is assumed in CG (Goldberg 2006: 13), in which specific concepts "inherit" properties from more general ones. On the basis of the usage that we experience, plus the inductions we draw, we construct a hierarchy of relations in which each lower relation "isa" at least one other relation whose properties it inherits by default; so for example my mental network for the relations between letters in front of me isa Inter-letter relation which isa Inter-string-member relation which isa Before. It is a question of fact (and research) how these relations are distributed across languages and even across speakers of the same language; but the main point is that new relations are easily created either by the language learner or by the analytical linguist. Moreover, the usual caveat about inheritance applies: inheritance does not preclude storage. Indeed, if generalizations are built by induction from stored exemplars, we can be sure that some stored exemplars are stored with properties that they could, in principle, inherit from a super-category, so WG rejects what Hoffmann (this volume) calls "complete inheritance models" in which storage is minimized.

The ideas of re-cycling and relation-creation are important in WG because they affect the analyses that are produced. CG analyses typically invoke specific relations without defining them, but WG analyses tend to define them by spelling out the relevant inheritance hierarchy – i.e. the "semantic frame". This difference between the theories may show nothing more profound than different interests and priorities of the researchers, but

it may also have something to do with notation. The network notation of WG encourages the analyst to explore semantic frames, whereas this would be much harder in the notation of CG, which strikes me as rather rigid and cumbersome. For example, I have used WG networks to analyse the semantic frame of commercial transactions which defines the relations needed in the semantics of the verbs BUY, SELL, CHARGE, SPEND, PAY and COST (Hudson 2008). In this analysis, the meanings of these verbs are related to the meanings of TRADE, CONSUME, USE, GIVE and GET, and the analysis invokes a range of different relations ranging from very general relations such as Part and Time to frame-specific ones like Giver and Gift. But crucially, the more specific relations are not only invoked, but they are also defined by the frames in which they are introduced and from which specific instances inherit properties. In short, the frame is part of the analysis.

As in previous sections, we can use the English ditransitive construction to show the benefits of these general ideas. Figure has already presented a direct translation of this construction from CG into WG notation, but the purpose at that point was simply to introduce the WG notation. WG actually allows a much deeper analysis in which the semantic roles are "unpacked" into a structural analysis. Details of this analysis can be found in Holmes and Hudson (2005), which also gives WG analyses for a number of other constructions including the *What's X doing Y?* construction. (A great deal more discussion of constructions can be found in Holmes 2005.) The following discussion extracts the most relevant points.

Ditransitive constructions are interesting and challenging because a single syntactic pattern (the "double-object" pattern discussed in detail in Hudson 1992) expresses two different meanings, called "to" or "for" according to whether they can be paraphrased as in (3) or (4).

(3)   *She gave her friend a present.* = She gave a present to her friend.
(4)   *She found her friend a present.* = She found a present for her friend.

A handful of ditransitives do not allow either kind of paraphrase; for example, the verbs ASK and ENVY are hard to paraphrase in this way:

(5)   *She asked her friend a question.* = She asked a question *to/*for/?of her friend.
(6)   *She envied her friend his wealth.* = She envied his wealth *to/*for her friend.

We shall return below to these awkward cases. A second contrast is one based on lexical selection or its absence. For example, GIVE clearly selects its indirect object, but KICK equally clearly does not; in terms of typicality, GIVE is a typical ditransitive verb, whereas KICK is a typical two-participant transitive verb. And yet, KICK can in fact be used with an indirect object:

(7)   *She kicked her friend the ball.* = She kicked the ball to her friend.

This contrast cuts across the one between the "to" and "for" meanings, so unselected indirect objects may be paraphrased either by *to,* as in (7), or by *for*:

(8)   *She baked her friend a cake.* = She baked a cake for her friend.

Table 1 presents examples of the four intersecting cases; my evidence for claiming that the indirect object is lexically selected by both GIVE and FIND is that this pattern is listed for these two lexemes in at least two modern dictionaries (Anon 2003; Sinclair 1987), neither of which lists it for either KICK or BAKE. (I recognize that it is very hard to apply to particular cases, but I argue below that this does not matter for the general point.) The challenge, then, is to produce an analysis which allows the full range of possibilities, and I shall suggest that the solution is to include the semantic frame in the analysis.

Table 1. *Four kinds of ditransitive constructions*

	Lexically selected	Unselected
'to'	She gave her friend a present.	She kicked her friend the ball.
'for'	She found her friend a present.	She baked her friend a cake.

We start with the plausible assumption that the lexeme GIVE provides the model for other ditransitive verbs. Once we have a semantic structure for this verb, we shall see that all the other ditransitives are sufficiently similar in their semantic structures to explain why they all use the same syntactic structure. What exactly does GIVE mean? If I give you a pound, then:

- Before the giving, the pound belonged to me.
- After the giving, the pound is yours.
- The giving is a deliberate action.
- The change of ownership is its intended result.

In other words, the semantic frame for Giving (the sense of GIVE) includes ownership, action and causation. In prose, the analysis that I offer is as follows, where I use the verb *isa* for the classification relation (as in "Dick isa linguist"):

- Giving isa **Doing** – an event which has a **do-er** and a **purpose**.
- Giving isa **Making** – an event which has a **patient,** a **result** and a **source** related as follows:
     o the result and source are two complementary states,
     o the source is replaced at the time of the making by the result,
     o the patient is the '**er**' (e.g. *sitt*-er, *sleep*-er, *be*-er) of both states.
- The result of Giving isa **Belonging**, and likewise for the source. (I explain below why this state is called 'belonging' rather than 'having'.)

The claim is that all the highlighted relations and event-types are part of the semantic structure of GIVE, so they are all available for explaining the uses of the ditransitive construction.

The WG notation allows us to express the analysis in a way which combines formal precision with psychological plausibility; after all, if language really is a cognitive network, what better notation for it than a collection of nodes and links? To avoid overload, I shall introduce the analysis in stages. We start with the very simple relation between Giving and Doing (the typical purposeful action), which explains why Giving has an "er" (i.e. a giver) and a purpose: even if these relations were not stored for Giving, as they surely are, they could be inherited from Doing. This part of the frame is shown in figure 9. The most important general point in this diagram is that each of the relations that Giving has are classified by an "isa" link which allows it to inherit whatever properties may be associated with the more general relation at the other end of the isa link (the end where the small triangle is). The diagram does not try to show what these properties

might be, but they would certainly include the cluster of relations that define "purpose" in terms of Wanting and Controlling by the "do-er".
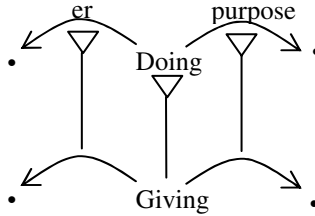
Figure 9. Giving isa Doing

   The properties of Making are more complex because they involve a change from one state to another; for example, if I make a cake, the cake changes from not existing to existing, and if I make it cool, it changes from not cool to cool. This is what figure 10 shows. As before, the links to Giving can all be inherited from Making, but for simplicity I have only included one isa link from a relation of Giving to one of Making. In prose, the diagram says that Making has a source, a patient and a result, such that the patient is the "er" of both the source and the result, and the result isa the source. Thanks to default inheritance, this isa link allows one or more inheritable properties of the source to be overridden, but it does not allow the source and result to be completely unrelated states – e.g. a change from being poor to being tall. For simplicity, I have omitted the time relations whereby the Making is after the time of the source and before that of the result. Finally we have the fact that giving has to do with ownership, which in this analysis is expressed in terms of a state of belonging. In giving, the gift passes from the giver to a second person, the receiver, so both the gift and receiver are affected; so which of them is the patient? It might have been the receiver, but in view of the general structure for Making, it has to be the gift because this is the participant which is er of both the source and result states – which is why this must be 'belonging' rather than the more obvious 'having'. This analysis is due to Holmes (Holmes 2005: 139–45), who suggests that what I am calling 'belonging' is actually the primitive spatial relation 'at', the meaning of the preposition *at*. One of the attractions of this analysis is to explain the alternation with *to*, which generally refers to an 'at' which is a result. This change of ownership is shown in

figure 11, which also defines a new relationship (recipient, the second owner) and identifies the first owner with the giver.
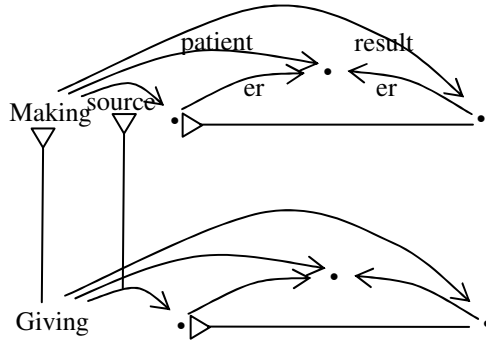
Figure 10. Giving isa Making
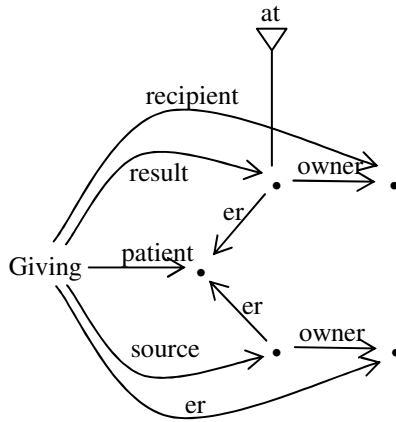
Figure 11. Giving causes a change of ownership

This completes the semantic analysis of Giving, which I assume is also the area of general cognition in which we handle the idea of giving even when we are not talking about it – e.g. in thinking about giving someone a present. All that remains is to show how this cognitive structure can be put

into words. Since the concept Giving is the sense of the verb GIVE, the question is how the various semantic relations of Giving map onto the syntactic dependents of GIVE. We must allow two possible mappings: the ditransitive and the prepositional. In order to accommodate both possibilities we distinguish two sub-lexemes of GIVE, each of which isa GIVE: GIVE$_{ditransitive}$ and GIVE$_{prepositional}$. (These must be sub-lexemes of GIVE rather than distinct lexemes because they have the same sense and the same mappings for the subject and direct object, so the only differences lie in the syntactic expression of the recipient; sub-lexemes are an important part of any WG analysis, and no doubt GIVE has many other sub-lexemes, such as the one for mono-transitive uses as in *He gave a pound*.) I shall take the relations Subject, Object and Indirect-object for granted, but they too can be defined in much the same way as the semantic relations we have considered. These mapping relations are shown in figure 12 (where all but one vertical arrows link a word to its referent, the exception being the one between GIVE and its sense; the distinction between senses and referents is familiar, but not relevant here).

Now that we have a complete analysis of Giving and the verb GIVE, we can return to our investigation of the ditransitive construction. I can now show how the rich semantic frame that we have built for GIVE helps us to generalise from this example of a lexically selected "to" pattern to the other three patterns in Table 1. These generalizations explain why they all have the same syntax in spite of different meanings and different selection.

We start with the "for" ditransitives such as (4) *She found her friend a present*. What exactly is the difference in meaning between finding and giving such that one is paraphrased by *to* and the other by *for*? And equally importantly, what do they have in common such that they both use the indirect object? The relevant part of the semantic frame is the network in figure 11, which defines the relation in giving between the source state and the result. What "giving X to Y" and "finding X for Y" have in common is that in both cases, the outcome is that Y has X – or in our terms, X belongs to Y. In short, they both have the same result structure. Putting this in functional terms, if I want to express the idea that applying some action to X puts X into your possession, an obvious model is the structure for Giving which maps X onto the direct object and Y onto the indirect object. On the other hand, the structure for Giving cannot be inherited lock, stock and barrel because in finding, in contrast with giving, the finder does not start by owning X. Rather, the "source" (the start-state) of Finding is undefined, in contrast with Giving where it is the giver that owns the patient. This is

why finding is a less typical example of the ditransitive construction than giving.
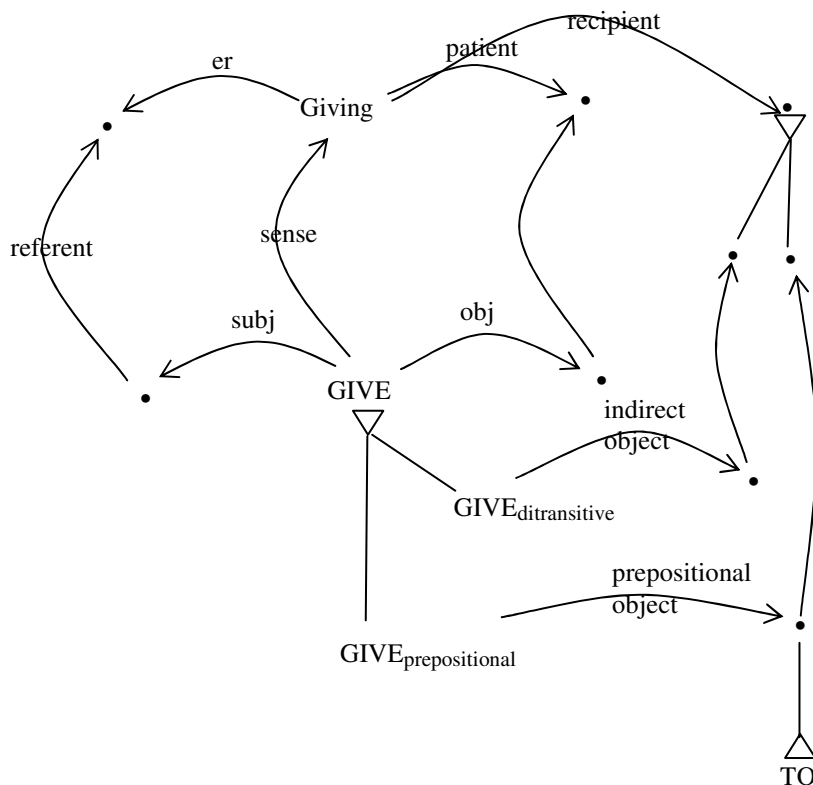
Figure 12. The two syntactic options for Giving

What about the verbs such as ENVY and ASK which have no prepositional paraphrase? Is their syntactic similarity to GIVE merely arbitrary, or is there some semantic similarity which motivates it? ENVY is easy because I can only envy you what belongs to you; so I can envy you your success, but I don't think I can envy you your enemy's demise. But of course your success is not the result of my envying, so extending the indirect object to ENVY is really stretching the model to its limits. What ENVY and GIVE have in common is merely the fact that the direct object belongs to the indirect object; but the convenience of the syntax presumably outweighs the seman-

tic anomaly. ASK works the other way round: if I ask you a question, the question is mine initially, but becomes yours in the sense that it is your responsibility to answer it. (This is even clearer with SET; if I set you a question, it becomes your problem, not mine.) The conclusion, then, is that the use of indirect objects with ENVY and ASK is motivated by partial similarities between their semantic structures and that of GIVE. However, my reason for discussing these examples is that these similarities are visible only if we can explore the whole of the semantic frame. If the only semantic structure available for each verb is one layer deep, so to speak, the verbs have no particular semantic similarities and their syntactic similarities are inexplicable.

The second challenge from Table 1 is to explain why indirect objects are available even when there is no lexical selection, as may well be the case with verbs such as BAKE and KICK. For these verbs, the ditransitive construction is quite marginal in contrast with the central role it plays for GIVE; indeed, there are good reasons for thinking that our first encounter as children with this construction is precisely with the verb GIVE (Goldberg 2006: 77). Lexical selection seems to be a matter of degree, with verbs spread across a spectrum ranging from completely lexicalized (GIVE) to completely unlexicalized neologisms such as FAX or TEXT as in *I texted him the news* (Holmes 2005: 258). It is very hard, and perhaps even impossible, to know for sure whether or not any given verb lexically selects an indirect object (Croft 1998), so I am merely guessing that BAKE and KICK do not; but nothing hangs on this choice, as the main point is simply that the ditransitive construction may be applied to verbs that we have not previously heard in this pattern.

What kinds of verb will accept this innovative extension of the ditransitive pattern? Levin (1993) lists ten classes such as "verbs of future having", "verbs of throwing" and "verbs of transfer of a message", but it may be possible to explain this apparently random collection if we define the extension correctly. In that case, all we need to say is that the extension is possible for any verb that is syntactically and semantically compatible with it. The verb must have compatible syntax which allows a direct object, because the indirect object is by definition one which co-occurs with a direct object and which combines its referent semantically with the latter's. But equally importantly, the verb's semantic frame must be compatible with the construction's meaning; and to be somewhat more precise, it must define an action applied to a patient which puts the patient into the ownership of the recipient. Baking and kicking pass this test: baking brings the object into existence and kicking moves it; but some verbs do not pass. For

example, opening a door does not change the door in such a way that it could belong to someone, so we cannot open someone the door, although we can open the door for someone (Holmes 2005: 52); moreover, we probably can open someone a can of beans, because this puts the beans into their possession. It is unlikely that this kind of information could be stored lexically, so it must follow from more general principles; but if the general principles involve semantic compatibility, then they must involve the entire semantic frame of the verbs concerned rather than a simple semantic structure such as the argument roles that CG envisages. These ideas need to be developed more fully and formalized, but I believe that they promise a much better explanation than one based on an arbitrary list of verb classes.

This analysis of the ditransitive construction raises a serious question about the logic of inheritance: how can ordinary transitive verbs like BAKE and KICK inherit the properties of a ditransitive without being classified as ditransitive? I return to this question in section 6. Meanwhile, I hope to have shown that the semantic structures of CG are not rich enough to express some important generalizations, and that the analysis needs to include the entire semantic frame. This is already the practice in WG, and I see no reason in principle why the same should not be true in CG.

5.   Levels of organisation are autonomous

In CG, a construction is defined as a "conventionalized pairing of form and function" (Goldberg 2006: 3), and it is constructions, rather than the forms and functions themselves, which are the basic organizational units of the grammar; in Goldberg's words quoted in section 2, "it's constructions all the way down". Taking this claim literally, formal patterns and meaning patterns are not themselves part of the network of grammatical knowledge. Instead, each network node is a complex of information consisting of a formal structure, a meaning structure and the mapping between the two – something very much like figure 3, the ditransitive construction in CG. This is a very different view of knowledge structure from the one in WG, where the corresponding slogan is that "it's networks all the way down" (Hudson 2007: 232); in this respect, WG follows Stratificational Grammar (Lamb 1966, 1998). In a WG network, the nodes are merely nodes where arcs meet, and can never be "boxes" full of information which is not itself part of the network.

One particular manifestation of this difference is in the role of inheritance hierarchies, which apply in CG only to constructions (Goldberg

2006: 13–14). This is similar to the first version of Head-driven Phrase Structure Grammar, where attribute-value matrices are "typed" (i.e. related in an inheritance hierarchy), but the individual attributes and values are not (Pollard and Sag 1994:20). In contrast, more recently HPSG has moved towards WG by allowing the individual elements to be typed as well (Sag 1997). This is an important improvement because it allows generalizations which (at least when taken literally) the principles of CG do not seem to allow – generalisations across grammatical functions or across semantic functions; or indeed, generalizations across classes of words or phrases or across semantic classes.

To return to our example of the ditransitive construction, the CG analysis invokes three grammatical functions labelled "Subj", "Obj1" and "Obj2", and three argument roles labelled "agt", "rec_{secondarytopic}" and "theme" (Goldberg 2006: 20). As far as the argument roles are concerned, these are not "drawn from a universal or limited set" (Goldberg 2006: 20), because they are "defined in terms of the semantic requirements of particular constructions" (Goldberg 2006: 39). By implication, a role such as "agt" is defined afresh for each construction where it is mentioned; but how? How can we define a specific role such as the "donor" role without referring to other roles and ideas which go beyond the specific construction in question? The WG answer is that we cannot because (as explained in section 4) each semantic relation is defined by the total semantic frame, including the general event types which help to define the action concerned. As far as CG is concerned, given the importance of frame semantics in CG, we might expect the same reply there too; and yet participant roles seem to be left entirely undefined. Of course there is a limit to what can be covered in a single book, but in this case the problem goes deeper, and touches on the basic assumption that grammar "is constructions all the way down". If constructions are the only elements that may be related to one another, it follows that this is not possible for the elements of a construction such as the argument roles and consequently these roles are inherently undefinable.

Similar questions arise for the grammatical functions which comprise the formal pole of a phrasal construction, such as "Subj", "Obj1" and "Obj2" in figure 3. Each of these labels summarizes a bundle of properties, some formal and others semantic – details of word order, agreement, reflexivization, relativization, agenthood, animacy, topicality and a number of other properties which tend strongly to correlate both cross-linguistically and inside each language (Keenan 1976; Dowty 1991); for example, as Rosta argues (this volume), lexical subjects tend to be more

agentive than any other participant. Somehow, somewhere, the analysis of a language needs to show how the relevant properties are inherited by the grammatical function labels. In CG the only mechanism for inheriting such information is to treat it as a property of an entire construction, because it is only constructions that can inherit; in the present case, this presumably means treating the properties of subjects and objects as properties of more schematic "clause" constructions, with (presumably) a different clause type for each grammatical function. In contrast, WG allows each relation to inherit its individual properties directly from more schematic relations, without invoking a parallel series of clause types. The question is whether constructions improve the analysis, and at present we have no evidence that they do. It is simpler to inherit the properties of grammatical relations directly from more general relations than to inherit them from phrasal constructions where they are combined with semantic relations.

In short, by treating meaning and form as inseparable sides of the same coin, constructions prevent generalizations from being made about one without the other, so constructions are too large in terms of levels. (Similarly, section 3 concluded that constructions were too large in terms of length, because phrases should be replaced by single words and dependencies.) This objection rests on the traditional assumption that each "level of analysis" (which I prefer to call "level of organization") has its own organizing principles and generalizations which need to be stated in addition to whatever correspondences there may be between levels. Even if there were only two levels ("form" and meaning), this would still be true because the levels are organized quite differently – e.g. linear order is crucial to form whereas meaning is organized as an unordered network. Each level has its own inheritance hierarchies and its own rules for building structures (Lamb 1966, 1998); and each level is mapped onto its neighbours by "correspondence rules" (Jackendoff 1997) or relations of "meaning" or "realization" (the WG terminology). This is the WG view of how language is organized (Hudson 2007: 72–81), but CG seems to reject it by its exclusive focus on constructions as the only units of language structure. However important cross-level correspondences are, it is just as important to be able to analyse the combinatorial patterns found in form and meaning, and where they are autonomous, to treat them independently.

Another undesirable consequence of taking constructions as basic is the implication that there is only a single level of "form", in contrast with a more traditional view in which linguistic structure can be factored into a series of levels including phonology, morphology and syntax. Constructions are "pairings of form with semantic or discourse function, including

morphemes or words, idioms, partially lexically filled and fully general phrasal patterns" (Goldberg 2006: 5). In this view, morphemes, words and phrases exist on the same level and differ only in size, just as in classical American structuralism where morphemes were the basic constituents of a single level of "grammar" (Matthews 1993: 82).

The objections to this view are well known thanks to the long debate dating back at least to the classic defence of the European "Word-and-Paradigm" model in which words and morphemes exist on different levels (Robins 2001), and to my mind the objections are overwhelming. For one thing, morphs need not be paired with a meaning; for example, there is no obvious meaning (however broadly we interpret this term) to be paired with the morphs that can be isolated in *perceive* and *deceive*, or with in-flectional and derivational suffixes such as *-ing* and *-er*; and conversely, there is no obvious morph to be paired with the individual meaning contrasts in words like Latin *amo*, where the suffix *-o* indicates present tense, indicative mood and a first-person singular subject. Many morphologists (e.g. Stump 2001; Aronoff 1994) adopt the "Word-and-Paradigm" solution which separates grammatical structure into two levels: morphological and syntactic. Morphological structure (which I call simply "form" – Hudson 2007: 74–8) consists of morphs which realize words either singly (e.g. *cat*) or in combination (*cats*), so morphs pair phonological structures with words. In contrast, syntactic structures consist of words which realize semantic structures both individually and in combinations, so what words pair is morphs and meanings. In this analysis, words and word-combinations can reasonably be described as "constructions" because they pair a "form" with a meaning; but morphological units have no meaning, so they do not qualify as constructions. This is not a mere quibble about the meaning of the term "construction", but a rejection of the fundamental claim that there is nothing in language except constructions. Apart from the patterns which can be paired directly with a meaning, there are many which cannot, so to identify grammar with constructions is to ignore not only morphology, but also phonology.

The traditional multi-level analysis is supported by evidence from psy-cholinguistics. I argue in section 6 that a network carries activation, so evidence for activation patterns throws light on the internal organization of the network. If there are separate sub-networks for phonology, morphol-ogy, syntax and semantics, these should show up in the psycholinguistic evidence; and this is precisely what we find. There are two main kinds of evidence for detailed activation patterns, both of which arise because acti-vation spreads blindly, spilling over from active nodes onto their

neighbours. Under normal processing conditions the spilt activation is mopped up more or less efficiently, but its effects can be seen under two special conditions: experiments on "priming", and speech errors. In both cases, we can conclude that because node A's activation has spread onto node B, A and B must be near neighbours in the network. The evidence does not, of course, tell us what the relation between A and B is, but it does reveal some kind of fairly direct relation. This kind of evidence is important for any discussion of the architecture of the language network, so I now review the two kinds of evidence.

Priming experiments take place in front of a computer screen which presents a stimulus word A and then another word B, which requires some kind of processing (such as a decision about whether or not it is an English word). The crucial question is how long the experimental subject takes to process word B (when measured in milliseconds – the effects are very slight). If A is related to B (e.g. *doctor*, then *nurse*), the delay is measurably shorter than if the two words are unrelated, so A is said to "prime" B; and if A primes B, we can be sure the two are closely linked in the mental network. But of course there are all sorts of different kinds of links between words, so it us up to the linguist to classify the links. As predicted by WG, we find priming at each of the levels of organization:

- purely phonological priming (e.g. of *worse* by *nurse*; see Brooks and MacWhinney 2000; James and Burke 2000; Norris, McQueen and Cutler 2002; Spinelli, Segui and Radeau 2001)
- purely morphological priming (hard to illustrate in English, but demonstrated for Hebrew – see Frost *et al*)
- purely syntactic priming (e.g. by one passive priming another; see the discussion of (1) and (2) in section 3)
- purely semantic priming (e.g. of *doctor* by *nurse*; see Beer and Diehl 2001; Moss *et al* 1995; Perea and Rosa 2002; Smith, Bentin and Spalek 2001).

These separate types of priming are as expected in WG, given the network links between elements on the separate levels of phonology, morphology, syntax and semantics; but CG predicts only one kind of priming: from one entire construction to another. It remains to be seen whether there is any evidence for constructional priming which could be separated from syntactic priming.

Moreover, the evidence from priming is supported by observational evidence from speech errors, where a node which is topologically near to the target happens to get an unintended boost of activation which pushes it to the head of the "production queue" in the speaker's mind. For example, when Dr Spooner famously said "Young man, you have tasted the whole worm" (instead of "you have wasted the whole term"), we may assume that the activation of the planned *term* spread, via its first phoneme /t/, to combine with that of *wasted* to select *tasted* instead. Speech errors confirm the existence of activation at individual levels:

− purely phonological, e.g. *orgasms* for: *organisms* (Aitchison 1994: 38)
− purely morphological, e.g. *slicely thinned* (for: *thinly sliced*) (Levelt *et al* 1999)
− purely syntactic, e.g. *I'm making the kettle on* (for: *making some tea* + *putting the kettle on*) (Harley 1995: 355)
− purely semantic, e.g. *fork* (for: *spoon)* (Harley 1995: 352)

Once again, these results are not predicted if every network node pairs a "form" with a meaning.

My conclusion, therefore, is that the notion "construction" is not needed in grammar. Moreover, it is not merely redundant: it causes problems in grammatical analysis because it implies boundaries that are impossible to justify. If grammar consists of constructions, each construction ought to have boundaries; but where are they? We cannot define a construction as a unique pairing of form with meaning because there are polysemous or even homonymous constructions such as the word FOR in (9) and (10) (Goldberg 2006: 38).

(9)   *The statue stood for three hours.*
(10)   *He exchanged the socks for a belt.*

But how can a single construction allow two different meanings if meaning is an essential pole of the pairing? And if this is possible, how is a construction different from a mere form? No doubt synonymy raises similar questions: if two formal patterns share the same meaning, do they therefore belong to the same construction? Such questions are familiar from the literature on "lexical items", and as in that debate, the only reasonable conclusion may be that we are asking the wrong question because both "construction" and "lexical item" are inventions rather than discoveries.

6.   The cognitive context

As I mentioned earlier, both CG and WG are part of the general "cognitive linguistics" movement. In my opinion, the most important tenet of this movement is the one quoted in section 1: "Knowledge of language is knowledge" (Goldberg 1995: 5). For most of the twentieth century, the dominant model of language structure was structuralism, which emphasised not only the internal structure of language but also its external separateness. In the early years this isolationism was good because it insulated linguistics from some unhelpful ideas from pseudo-psychology, but now that psychology has grown up it is time to build on its theories. Of course this is precisely what psycholinguistics does in its investigations of language learning and use, but if linguistic knowledge is controlled by the same principles as the rest of knowledge, this should also have consequences for linguistics, the theory of language structure. In particular, whatever psychologists think about the structure of general knowledge should generalize to the structure of language and to theories of language structure such as CG and WG. Moreover, even matters of language use (and learning) are relevant to these theories because the structures proposed for language must be compatible with whatever we know about use and learning. I think these general principles are shared by CG and WG.

However, it is easier to accept the principles than to translate them into a fully worked-out theory of language structure, use and learning in the light of the best current psychological work. This kind of theory is what I mean by the "cognitive context" for linguistic theory. My impression is that cross-disciplinary work in this area is weak, as psychologists and linguists generally ignore one another's theories and live in different cultural worlds. We all have a lot of bridge-building to do. I admire the bridges that Goldberg has already built towards experimental psycholinguistics (Goldberg 2006), but WG includes some bridges that are still missing in CG and which start from some of the most elementary and uncontroversial ideas of cognitive psychology:

  – spreading activation
  – universal inheritance hierarchies
  – best-fit binding

(Apart from spreading activation, these names need the explanations that I shall provide below.) I believe that all these ideas could be incorporated

into CG with very little change to the rest of the theory – indeed, I shall suggest that some of them are already implied by the existing tenets of the theory.

6.1.   Spreading activation

Spreading activation is certainly one of the implicit ideas of CG, although the term does not appear in the index of either of Goldberg's books. As I mentioned in section 5, Goldberg rightly sees a link between language structure and priming, the phenomenon whereby one token makes a later token easier to process. As Goldberg argues, priming results illuminate the structure of the language network by giving a measure of "topological distance" – the distance between two nodes measured in terms of the number of intervening links – so if sentence A does prime sentence C but B does not, this must be because A is topologically closer to C than B is.

One consequence of priming for language structure is that nodes must be associated with an activity level; this idea is already accepted at least in principle in CG in the sense that constructions are expected to have a degree of "entrenchment" or "token frequency" (Goldberg 2006: 93) which reflects the number of times they have been heard. The main determinants of activation level are frequency and recency (including the very short-term recency of priming experiments), so CG already has a place for activation on a single node. Unfortunately, the WG theory of activation is not much more advanced than the CG one, but it has two possible contributions to make.

One is the idea from section 3 that "relations are concepts". This means that most relations are carried by network nodes (rather than by links, as one might expect); for example, a syntactic dependency link such as "subject" passes through an ordinary network node which itself has two elementary links (called "argument" and "value") to the verb and noun nodes. As I shall explain more fully in section 6.2, relational nodes are also related by inheritance hierarchies so they have "isa" links to one another; so in our example, the "subject" node has isa links upwards to "dependency" and downwards to particular kinds of subject, such as inverted subjects. As I explained in section 4, this kind of analysis solves the problem of defining relations as needed not only in semantics but more generally. However, it also means that relations can carry activation in just the same way as non-relational nodes. For example, when listening, the relation "meaning" will be highly active so the focus of attention will be on meaning, but in a

discussion of etymology the "etymology" link (for those of us who have one) will be much more active than usual.

The other possible contribution of WG is that the locus of activation is the individual node rather than something larger which we might call a construction. This suggestion repeats the negative conclusion from other sections that constructions cannot be distinguished from their parts, and that the nodes of a cognitive network are in fact individual words, morphs, syntactic relations and so on, rather than constructions. The conclusion may be premature, but at least the issue deserves more debate.

6.2. Universal inheritance hierarchies

The second idea from WG is that everything is part of an inheritance hierarchy. Of course the notion of inheritance is already well established in CG, but it only applies to constructions. In elementary cognitive psychology, and even more so in Artificial Intelligence, inheritance is seen as the basic mechanism of generalization in all domains (Luger and Stubblefield 1993: 35), so it is strange to find it restricted as in CG. However, the idea of applying it more generally seems to lie behind CG theorizing: "Inheritance hierarchies have long been found useful for representing all types of generalizations" (Goldberg 2006: 13). The idea of limiting inheritance to constructions is linked to the general isolation of the internal elements of constructions that I have noted in other sections. For example, there seems to be no provision for an inheritance hierarchy for either words or event-types, although both are standardly classified in hierarchies (e.g. BE isa auxiliary verb isa verb isa word, Giving isa Causing isa Action isa Event). Once again, it would be easy to change CG to accommodate the extra hierarchies, but as with the previous WG idea, the result would be to make constructions less distinctive because they would no longer be the only "typed" entities.

Pushing this idea further, however, WG not only generalizes inheritance hierarchies to all kinds of entity, but because "relations are concepts" (section 3) to relations (except the basic Isa relation itself and a handful of other primitive relations). For example, it is possible to treat the syntactic relation Indirect-object as a subcase of Object, which in turn is a subcase of Complement; and in semantics the Seller role might be a subcase of Exchanger which in turn is a subcase of Agent. One attraction of treating relations in this way is that if a relation is a particular kind of concept, it can be learned in just the same way as other concepts; and this being so,

relational concepts can be learned in the same numbers as other concepts. In other words, we no longer need to feel bound to restrict the inventory of relations to a small universal set. This approach to relations seems to be exactly what is needed to accommodate the CG view of semantic roles, whether argument roles or the more specific participant roles:

> … because they are defined in terms of the semantic requirements of particular constructions, argument roles … are more specific and numerous than traditional thematic roles …. Participant roles may be highly specific and are often unique to a particular verb's meaning; they therefore naturally capture traditional selectional restrictions. (Goldberg 2006: 39)

6.3.   Best-fit binding

The third WG idea concerns the treatment of tokens of experience – what CG calls "exemplars" (Goldberg 2006: 47). The two theories agree about the importance of tokens in the grammar, as a vast collection of half-remembered experiences from which more general categories are induced (Hudson 2007: 54–55); so CG and WG seem to incorporate more or less the same theory of learning (which I sketched briefly in section 4). However, CG appears to say very little about processing, whereas WG has at least the beginnings of a general theory of how we understand our incoming experiences and how we plan our behaviour – i.e., in relation to language, about how we understand and how we speak (Hudson 2007: 41–52). Any theory of language structure ought to be paired with a theory of processing because the two kinds of theory are interdependent: language structure must be usable, and processes must be applicable to the structures that are actually found. For example, if processing involves spreading activation, then the language structure that we assume must be one that allows activation to spread freely across network links (as I suggested above).

   To give a concrete example of how a theory of processing might help CG, let us consider again the ditransitive construction and the question that I raised briefly at the end of section 4 about how the process of inheritance applies the stored construction to particular cases. Every verb is itself a construction, so it has a place in the inheritance hierarchy of constructions which also includes the ditransitive construction itself (Goldberg 2006: 14); and presumably each construction defines a different class of verb (e.g. the ditransitive construction defines the verb-class Ditransitive), so

the hierarchies of verbs and constructions are linked. Consequently, it is easy to see how inheritance applies the general construction to a verb such as GIVE which isa Ditransitive; but what about a verb such as KICK and BAKE? The point of the examples is that they are not stored under Ditransitive, so how can they inherit from this construction? In general, A inherits from B only if A isa B (or more generally if there is a chain of isa links from A to B); so how come a verb which has no such isa relation to Ditransitive can be used in the ditransitive construction? Clearly the problem is soluble, because we can, in fact, extend the ditransitive pattern to verbs which are not stored as such. But before an analysis such as Goldberg's can be evaluated it needs to be paired with a general theory of processing which explains how generalizations can go beyond the inheritance hierarchy.

We might look to psycholinguistics for a suitable theory. There is no shortage of theories which assign a central place to spreading activation (for a survey, see Hudson 2007: 41–42). However, spreading activation only explains part of the process: selection of a target among the millions of stored nodes; for example, it is activation spreading from each of the letter-characters that you read that guides your mind to the target word. What these theories do not explain is what we do with this target once we have found it, by applying it to the current task. This seems to involve two very different processes: binding the target node to the current token, and then enriching the token from the target's properties. For example, when you read a token of the word *cat*, you first identify the target as the lexeme CAT but that is not the end of the matter; you then have to record mentally that your token is indeed an example of CAT, in order finally to work out what the token means, what word class it belongs to, and so on. The same is true when working in the opposite direction, from the meaning 'cat' to an utterance that carries this meaning: in this case, the target is once again a token which inherits its unknown characteristics (especially its pronunciation) from the word selected by spreading activation. In other words, both hearers and speakers have to combine spreading activation with binding and default inheritance; but so far as I know, no existing psycholinguistic theory combines these elements.

One theory of processing that does combine them is the WG one (Hudson 2007:41–52). Suppose I am speaking, and my target is to utter some word W to describe a situation in which Mary made a cake, which we can call S. (We consider the more complicated meaning that requires a ditransitive below.) In short, all I know about this word token is that it is a word and that it can refer to S, so the immediate task is to use my stored

knowledge to enrich W: what word (or words) are needed in order to refer to S? There is no single word which fits S sufficiently precisely, so we have to find a more general one whose meaning can be made sufficiently precise by adding dependents (bearing in mind that these too may be modified recursively by their own dependents). Eventually I shall work out that I need to say *Mary baked a cake*, but all I know at the start is that I need a word which means that Mary baked a cake.

The first step, therefore, is to add a new node W to my mental network, but I can go a little further without any further thought. I know that W is going to be modelled on some stored word (or words), so I can introduce a dummy node M for this model word along with W, and of course I already know that M isa Word. So right from the first step, W is attached to the main network via M and Word: W isa M isa Word. In order to enrich W, I need to identify M with one or more stored nodes, inherit whatever properties these nodes make available, and then recursively enrich any other nodes that may have been added by inheritance (including the various dependent words).

The mechanism for enriching W in this way has three parts:

− activation which spreads through the grammar network from two highly active nodes, S (the situation to be described) and W, and which converges on various nodes in between.
− a "binding" mechanism which binds W to the best available stored word-types.
− default inheritance which inherits properties for W from these word-types.

The activation spreads from S to the concept Baking, and from there to the word-type BAKE that expresses this concepts; and at the same time, it spreads from W to M. Highly active dummy nodes such as M trigger a process of binding which binds it (by an "identity" link) to any stored nodes which satisfy two criteria:

− they are compatible with existing isa links of M, i.e. in this case each one isa Word.
− they are the most active such nodes, which guarantees that they provide the best global fit with the target properties.

One attraction of this approach is that it allows multiple inheritance,[1] so I can identify M not only with BAKE, but also with Past-tense (which will express the time relations of S); each of these models provides a different kind of information about the target word W. Finally, once the identity of M has been established as the past tense of BAKE (in WG notation: "BAKE:past"), default inheritance applies to enrich W's properties from BAKE and Past-tense.

Another attraction is that it accommodates some degree of deviation, because the search is for the best available global fit, not for a perfect fit. (The "best-fit" principle is due to Winograd 1976.) This flexibility is helpful in explaining "loose" use, as when we might use BAKE for a process which is not exactly baking but which (in the current context) is nearer to baking than to anything else. This possibility opens the door to the full range of meaning-extensions such as metaphor and metonymy discussed in cognitive linguistics. Similarly, it allows us to ignore misspellings, mispronunciations and slips of the tongue provided that the right node receives the most activation from all parts of our entire cognitive network.

Now let us change the scenario to one in which the situation S is one in which Mary makes the cake for John. In this case, the activation spreads from S not only to BAKE and Past-tense, but also to the words suitable for doing something for someone else: not only to FOR, but also to the ditransitive verb-type. Leaving aside the choice between these alternatives, let us assume that one of them has more activation than the other, and has as much activation as BAKE and Past-tense. In that case, the binding process can attach M to Ditransitive as well, thereby allowing W to inherit an indirect object even though BAKE does not in itself allow one.

The general point of this discussion is that the notion of "generation" is a process which has to be spelled out before we know what a given grammar does or does not generate; and in a cognitively oriented theory such as CG or WG, the best way to define generation is in terms of human processing. Consequently, we cannot explore language structure without at the same time considering language use, so we need to develop both kinds of theory in parallel. My account of ditransitives stands or falls by the theory of processing that I have just sketched, in contrast with the much more comfortable theories in which competence can be studied without reference to performance. On the other hand, I believe that other theories are in fact vulnerable in precisely the same way, so it is better to recognize the problem than to pretend we can ignore it. The cognitive context has to be part of any theory of language structure.

7.   Conclusion

The similarities between CG and WG make the differences all the more surprising and worth discussion. I suspect that many, and perhaps most, of the differences are not matters of disagreement so much as of different research interests. For example, Goldberg has developed the theory of learning more fully than I have, whereas I have spent more time thinking about processing. Similarly, I am primarily (or at least historically) a morpho-syntactician whereas Fillmore and Goldberg are more interested in lexical semantics and argument structure, so it is understandable that CG takes a very conservative, or even agnostic, position on matters of sentence structure. Given these differences of focus, we might expect the two theories to be complementary rather than to conflict. It is easy to imagine a new theory which "isa" both of them and which inherits all their properties with very little need for conflict resolution.

However, I should finish by highlighting an issue that has come up several times in this article and where the two theories may be harder to reconcile. Do constructions exist? If all they are is mapping relations between some kind of form and some kind of function, then they are the same as the realization relations or correspondences that every theory accepts. But the main claim of CG is that they are more than that.

One more precise claim is that they are very much more specific and numerous than the very general interacting structures of the Minimalist Program, but this is actually a claim about formal structures being specific and numerous, tied with the uncontroversial claim that any form may be mapped to a function. One could easily accept (as I do) that we store a lot of detailed morphological or syntactic patterns without thereby being committed to any particular view of how these are mapped to meaning.

A much more controversial claim about constructions is that they are the basic units of language – for example, that only constructions are organized in an inheritance hierarchy. However, I have pointed out that the formal and semantic elements of different constructions also have relations to one another, so in what sense do only constructions exist? I wonder what difference it would make if all the boundaries around constructions were removed. I suspect that the result would be hard to distinguish from WG, but I must leave the answer to the CG experts.

Notes

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1. Aarts (this volume) argues against multiple inheritance when applied to two lexical classes (noun and verb), but if inheritance is used at all, it is hard to avoid multiple inheritance when dealing with complex word-class definitions which combine a lexeme with an inflection (e.g. BUY, past – i.e. the past tense of BUY). The only way to avoid multiple inheritance would be to make one of these categories into a subcase of the other, but this is not possible.

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