A Reader in Cognitive Grammar
for Students of English

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INTRODUCTION

The purpose of this reader is to introduce students already familiar with the important concepts of generative grammar and truth-functional semantics to some of the basic concepts of cognitive grammar. It cannot be expected to be fully comprehensive, partly because important papers pertaining to the field have already been published in another reader (Gleanings in Modern Linguistics 1991, compiled by B. Korponay and P. Pelyvás).

This volume can be said to be thematic in the sense that all the papers included in it share one important characteristic: they make explicit comparisons between the background assumptions and procedures of generative syntax on the one hand and those of cognitive grammar on the other.

Such a comparison is an important and interesting venture because the overwhelming predominance of generative grammar (and of what G. Lakoff calls objectivist theories in general), which characterized linguistics in the past decades, now appears to be coming to an end, with the natural consequence that issues that seemed hardly debatable within the objectivist framework are now returning to the focus of linguists’ attention.

I will now briefly outline some of the basic issues that are sometimes overtly debated and sometimes can only be felt to be lurking behind the discussions of the papers collected here.

- Is the native speaker’s ‘ability to create and understand sentences he has never heard before’ such a remarkable feat?

It is, if we assume that all this happens within the framework of a fully inductive theory, based on sweeping generalizations projecting from a small set of rules. It is less so if we assume, as cognitive grammar does (cf. Langacker (1987), (1991), Aitchison (1987)) that language users initially make only low-level generalizations, often storing and using longer sequences as symbolic units that are nevertheless analyzable as complex structures, the form and meaning of which are motivated, although not fully determined, by the smaller units that compose them.

- Are humans really born with a ‘universal grammar’ (or Language Acquisition Device) in their minds?
Universal grammar should be taken in a non-trivial sense, which is considerably more than just brain structure/cognitive abilities in general developed well enough to master (a) language. It is to be regarded as a set of well-defined rules of what language is like (with the basic nature and interrelationships of Chomsky’s modules such as *Bounding theory, Theta-theory, Case theory, Binding theory, the ECP*, etc. included), with the effect that language acquisition can be reduced to a process of *parameter setting*, which only defines how exactly a given module works in a given language. Newmeyer (1991 [in this volume]) even argues that not only does universal grammar exist, but it is (or was) a decisive factor in natural selection: the race with the best system of language at its disposal was at an advantage in the struggle for survival -a view that has drawn skeptical reactions not only from (cognitive) linguists, but from anthropologists as well.

Given only the behaviorist theory of learning (*stimulus --> response, feedback*), and the fully inductive nature of Chomsky’s grammar, the only logical conclusion is that grammar cannot be learnt properly and so must be innate. Chomsky himself calls this the *regress argument*. (For a detailed discussion, cf., e.g. Steinberg 1982.)

Such a treatment inevitably separates linguistic abilities from other aspects of cognition. (One cannot postulate an innate Acquisition Device for all human activities.)

Cognitive grammar sees language acquisition and other aspects of cognition in full harmony. A typical example is *basic level terms*, which are the ‘product’ of human interaction. Learning how to handle things and how to name them are simultaneous processes (if separable at all).

- *Is abstract syntax central to language, with other levels like phonetics/phonology and semantics relegated to an interpretive role?*

  This claim seems to be based on the assumption that syntactic processes are fully predictable, which, as we will proceed to show, is only true if full regularity (predictability) is turned into a criterion for inclusion into syntax (cf. the behaviour of *cognitive predicates*).

- *Are these levels autonomous?* Can all syntactic phenomena¹ really be described without recourse to other areas?

  It might be worth mentioning at this point that one of the pivotal points of early generative grammar was the claim that *transformations preserve meaning*, which clearly rested on a minimalist interpretation (+/- identity) of truth-

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¹ In theory it would have been possible to choose any of the other levels as well. My choice fell (perhaps subconsciously) on syntax because in Chomskyan theory *autonomy of levels* practically means *autonomy of syntax.*
functional meaning. Although in the theory of government and binding this claim was eventually replaced by a device internal to syntax, i.e. traces, it is not difficult to find areas where semantic considerations appear to determine what is possible in syntax. Two examples, both taken from Lakoff, can illustrate this point. The first concerns relative pronouns:

(1) a  ?*The dead man, who I came across in the alley, was covered with blood
    b  The dead man, who I had once come across at a party in Vienna, now looked a mess  (Lakoff 1971: 331).

The difference in acceptability (grammaticality) results from the (semantic or even pragmatic) assumption that in b the man was alive when ‘I came across him in Vienna’. Lakoff adds, in a footnote, that he would find which just as bad, if not worse, in (1a), with the final conclusion that ‘there seems to be no way to make this sentence completely acceptable’. The other example concerns inversion after a preposed negative:

(2) a  At no time did I move the piano
    b  *At no time I moved the piano

(3) a  With no help, I moved the piano
    b  *With no help did I move the piano

(4) a  For no reason, Harry would beat his wife
    b  For no reason would Harry beat his wife

As the examples suggest, inversion is only necessary (or possible) when the non-occurrence of the event is entailed. Inversion is a syntactic process, but it depends on a semantic factor here (entailment is semantic if not pragmatic) (Lakoff 1991: 56-8 [in this volume]).

On the other hand, we could also mention Logical Form, which can be interpreted as the inclusion into syntax of a very restricted set of semantic considerations (scope, coreference, etc.) that are seen as necessary for the description of phenomena that are undoubtedly syntactic (and part of core grammar). With the advent of the Minimalist Theory and the Procrastinate Principle, Logical Form now shows signs of becoming the discarded rag-bag for syntax (cf. Anderson (1971), who assigns this role, although unwillingly, to the Modality component of his case grammar).

- To what extent is the semantics (grammar) <-> pragmatics dichotomy legitimate?
The problem can be traced back (at least in part) to Chomsky’s distinction of *competence* and *performance* (not to mention Saussure’s *langue* and *parole*). For Chomsky *performance* is merely a depository of ‘numerous false starts, deviations from rules, changes of plan in mid-course and so on’ (Chomsky 1965: 4) that would only interfere with the description.

Lyons (1977: 588) states in this respect that *decontextualization* is a perfectly legitimate tool of the linguist to separate what he calls *system sentences* from actual utterances of the language. But it has to be borne in mind that this is a form of *idealization* and we cannot expect to be able to describe all aspects of a phenomenon by only considering it in this isolated form. (Different aspects of) different phenomena may require different degrees of decontextualization (cf. the *semantic* vs. *pragmatic* definition of modality), but if the result is to be applicable to language as it is, this has to be reduced to a minimum.

On the other hand, the inclusion of pragmatics as a separate level of linguistic description is a direct consequence of the too narrow (truth-functional) definition of semantics.

This complex of problems is huge enough to be called THE problem of the 90’s in linguistics, and a collection of this kind cannot be expected to give or even to attempt to give all the answers. What it is expected to do is to ask the questions and, by doing so, help the reader find his or her own answers.

The papers in this reader fall into three natural groups. Those in **Part One**, all with an obvious cognitive bias, taken from the compiler’s post-doctoral dissertation, help the student to understand some of the basic differences between the generative and the cognitive approach.

The papers in **Part Two** constitute the backbone of an actual debate on the Innateness Hypothesis (*Language & Communication*, Vol. 11, No. 1/2, 1991), but are of more direct relevance to our theme in that they rely on basic assumptions of the two theories, also revealing methods of argumentation in linguistic theory.

The paper in **Part Three**, Ronald W. Langacker’s *Raising and Transparency* is not only a good illustration of how cognitive theory can handle a grammatical phenomenon that is also at the centre of attention of transformational syntax, but can also serve as an excellent brief introduction to Langacker’s system of cognitive grammar.
PART 1

Generative Syntax and Cognitive Grammar Compared
THE PHILOSOPHICAL BACKGROUND. A BRIEF COMPARISON OF GENERATIVE, TRUTH CONDITIONAL AND COGNITIVE THEORY

Péter Pelyvás

1. INTRODUCTORY REMARKS

In a recent examination a student, when confronted with the pair of sentences

(1) a Professors wear ties
    b Ties are worn by professors,

and asked to comment, insisted that (1b) was grammatically incorrect, because ‘Not only professors wear ties’. The example can serve as an illustration of how closely truth and grammatical well-formedness can be intertwined in our everyday thinking.

This is a rather clear-cut case of transformational non-equivalence (cf. Quirk et al., 1985: 166), which is easy to explain if we do not try to go into the unsolved details of differences between generic reference and universal quantification in logic, and of how sentence structure can have an effect on matters which would seem to be entirely within the domain of the NP. Nevertheless, it took me some time to convince the student that although the two sentences are not true under the same conditions - bad enough for any remaining proponents of the view that transformations preserve meaning -, this does not necessarily mean that a sentence that expresses a false proposition (or, more precisely, a proposition believed to be false by some observer) cannot be grammatically correct.

In theory, it is easy to draw a clear distinction between grammatical well-formedness, a matter of the syntactic structure of the sentence, and truth value, which has to do with utterance meaning. In practice, the distinction may not be so clear. An early attempt at finding a connection between these concepts (and between the purportedly autonomous levels of syntax and semantics) is found in Lakoff (1971), who advocates a solution to problems of this kind by postulating a grammar that generates ‘pairs (PR, S), consisting of a sentence, S, which is grammatical only relative to the presuppositions of PR.’ (Lakoff, 1971: 336).

Although in that paper Lakoff is primarily concerned with the borderline of syntactic ill-formedness and semantic ill-formedness resulting from incompatibility of semantic markers, i.e. cases where the presup-positions of the
(PR,S) pairs simply cannot be met, there is an obvious connection between this treatment of grammaticality in terms of presup-positions that can or cannot be met and the definition of sentence meaning in truth-conditional semantics, where understanding a sentence constitutes **knowing under what conditions it would be true.**

Understanding meaning in terms of correspondence with the real world, i.e. in terms of reference and truth and in terms of systems of formal logic can now be said to have had a long tradition in modern linguistics. So long, in fact, that the areas where such an approach is not applicable are becoming increasingly clear. A far from exhaustive list would certainly include:

- speech acts
- reference, opacity of reference, existential presupposition
- factive presupposition and modality

These are cases where subjectivity (speaker involvement, the speaker’s assessment of the situation) plays a crucial part. Truth-conditional semantics, or objectivist semantics, to use George Lakoff’s term, does not seem to be equal to the challenges hidden in these areas. In its early forms it can only relate expressions to objective reality. Recent theories of this kind, such as Discourse Representation Theory, no longer strictly truth-functional in the sense that they relate meaning to the evolving background of the discourse, have made some advances, especially in the fields of reference (anaphor) and existential presuppositions. From our point of view, however, they still remain only of limited significance, as they cannot (yet) include the speaker’s point of view into their discussion (cf. their definition of discourse as ‘a sequence of sentences uttered by the same speaker’ (Asher et al. 1994: 978). Cognitive semantics, however, which does not seek correspondences between mental representations and entities or relationships existing independent of the observer in the world, and can handle the individual speaker’s view, has a good chance of formulating a theory that could give a unified account of these areas, which we all feel must be connected at some level.

2. THE PHILOSOPHICAL BACKGROUND

The main purpose of this study is a detailed discussion of the area mentioned last in the previous section: **factive presuppositions and epistemic modality** in the light of what Langacker’s version of cognitive theory (Langacker 1987, 1991, 1993, Sweetser 1990) has to say on **metaphorical extension, subjectification** and **epistemic grounding.** The discussion will hopefully show that subjectification, apart from providing a link between the
areas mentioned above, is a cognitive process that has important consequences in grammatical organization as well, by establishing what Langacker calls the grounding predication.

Before embarking on that task, however, I find it necessary to summarize the differences between the philosophical backgrounds of the objectivist theory (notably generative grammar) and cognitive grammar, as I see them. Although I do not claim to be an expert in the field, I think that such a discussion is essential, because as I understand it, this difference is not just the usual case of two theories with essentially the same philosophical background competing in the well-established linguistic game of ‘anything-you-can-do-I-can-do’.

### 2.1. Generative grammar and cognition

The game that I called ‘anything-you-can-do-I-can-do’ - AND MORE! can be viewed as a logical consequence of the inductive nature of generative grammar - essentially a post-positivist theory developed to a great extent as a reaction to logical empiricism (which would result in a taxonomic description of language), which determines the task of linguistic description as the formulation of a set of abstract rules that would generate exactly the grammatical sentences of a language.

But any inductive system has to face the consequences of the Underdetermination Thesis (UT), which, in the formulation of Winston (1978), runs as follows:

> UT: The choice of theories and hypotheses in science is so underdetermined by observational evidence that for any set of possible observations there can be alternative theoretical hypotheses each of which may satisfy the empirical requirements imposed upon theories, but which, nevertheless, may still be incompatible with one another. (Winston 1978: 13)

Underdetermination is not just the consequence of insufficient evidence. It would also hold if all the evidence concerning language were suddenly and miraculously at our disposal. Competing inductive theories are therefore the natural thing, and since any number of them can be adequate descriptions of the observed data, some additional criteria appear to be needed to facilitate the selection of the best grammar. This is one of the reasons why Chomsky introduces a three level system of adequacy for grammars:

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3 or ‘God’s Truth Grammar’, as Chomsky sometimes likes to call it.
a. *Observational adequacy* - the lowest level, indicating whether the grammar has properly identified the phenomena that need to be accounted for. (Chomsky 1964: 62). In the case of linguistics this criterion seems easy enough to meet. Some indication that this may not always be so can be seen in Chomsky’s strict separation of *competence* and *performance*, or in his later distinction between *core grammar* and *periphery*.

b. *Descriptive adequacy*. A descriptively adequate grammar ‘assigns structural descriptions to sentences in accordance with the linguistic competence of the native speaker’. (Chomsky 1965: 34)

c. *Explanatory adequacy* - the highest level of adequacy attainable by a grammar that is observationally and descriptively adequate, a level at which significant generalizations, elegance, economy of description and universality play a decisive role\(^4\). (Chomsky 1965: 31-4)

Both in \(b\) and \(c\) elements occur of a search for a *psychological justification*. This is a very characteristic property of generative grammar. It purports to give an account of the ideal native speaker’s competence - his theory of grammar. This can be seen as a direct consequence of the Underdetermination Thesis: of the competing descriptively adequate grammars the grammar with the real explanatory adequacy can be THE ONE which also has psychological reality. Generative grammar seeks to establish its psychological justification by postulating an innate Language Acquisition Device or Universal Grammar, a device that contains information in the human brain on what possible grammars can be like.

The criteria for the three levels of adequacy can also be reformulated in these terms, with differences from the earlier version that might seem insignificant at first sight. Radford (1988) redefines them in the following way:

1. A grammar of a language is *observationally adequate* if it correctly specifies which sentences are (and are not) syntactically, morphologically, and phonologically well-formed in the language. (Radford 1988: 28)

2. A grammar of the language is *descriptively adequate* if [1 holds] and also properly describes the syntactic, semantic, morphological, and phonological structure of the sentences in the language in such a way as to provide a principled account of the native speaker’s intuitions about this structure. (Radford 1988: 28)

3. A linguistic theory attains *explanatory adequacy* just in case it provides a descriptively adequate grammar for every natural language, and does so in terms of a maximally constrained set of universal

\(^4\) All these terms are catch-phrases in the game of ‘anything-you-can-do...’. The criteria are far from being objective: what is elegant for one linguist (or theory) might be very far from being so for another.
principles which represent psychologically plausible natural principles of mental computation. Thus, to attain explanatory adequacy, a theory must in effect be universally valid, psychologically real, and maximally constrained. (Radford 1988: 30)

The new set of definitions makes explicit reference to universal grammar and psychological plausibility. Yet this is not the only difference. The observant reader may feel that the criteria may have been ‘inflated’ in a peculiar way.

- The new definition of observational adequacy makes no reference to the range of phenomena to be accounted for and seems to be rather similar to the old version of descriptive adequacy - assuming that the native speaker’s linguistic competence consists in his ability to produce only grammatical sentences and to make grammaticality judgements rather than in his intuitions about the background of those judgements.

- The new definitions of descriptive and explanatory adequacy differ significantly only in the explicit mention of linguistic theory and universality in the latter, since the native speaker’s intuitions about structure referred to in descriptive adequacy could hardly have come from any source other than his intuitions on the general principles of his innate universal grammar. This also appears to imply that a grammar cannot be descriptively adequate without being compatible with the requirements of explanatory adequacy for linguistic theory.

In modern generative theory Universal Grammar (UG) takes the form of modules (such as Bounding theory, Q-theory, Case theory or Binding theory) implanted innately in the mind, and language acquisition is then characterized as a process in which the parameters appropriate to the different native languages are set. Without going into details of language acquisition and parameter setting, I should like to mention here that this approach depends rather heavily on behaviorist theories of learning, with the consequence for the theory that given the complexity of the rules to be learnt, the scarcity of data and lack (or great insufficiency) of feedback, language acquisition must be seen as a remarkable achievement, which can by no means be accounted for along the lines of other cognitive processes. This is a serious consequence, which is at variance with Chomsky’s earlier views on the relationship between language and other aspects of cognition:

Any interesting generative grammar will be dealing, for the most part, with mental processes that are far beyond the level of actual or even potential consciousness... (Chomsky 1965: 8)

The problem of internal justification -- of explanatory adequacy -- is essentially the problem of constructing a theory of language acquisition, an account of the specific innate abilities that make this achievement possible. (Chomsky 1965: 27)

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5 Lakoff (1991) points out how the scope of generative grammar has been systematically restricted to exclude phenomena that are not compatible with the notion of an autonomous and fully predictable syntax.
Both a grammar of a particular language and a general theory of language are of interest primarily because of the insight they provide concerning the nature of mental processes, the mechanisms of perception and production, and the mechanisms by which knowledge is acquired... It seems quite obvious that it is within this general framework that linguistic research finds its intellectual justification. (Chomsky 1966: 59, quoted in Winston 1978:2)

With an innate Language Acquisition Device postulated, this cause is forever lost for generative grammar. After all, it would be absurd to postulate similar Acquisition Devices for all aspects of human cognition.

Another problem of a similar nature - so similar in fact, that on one occasion (Chomsky 1975: 182) Chomsky identified it with the Underdetermination Thesis - is the thesis of Indeterminacy of Translation.

The name derives from Quine (Quine 1960, 1969), who introduced the problem into the philosophical tradition by means of his example of a field linguist attempting to translate the utterances of an exotic language which has never been described before and is radically different from his native language. The essence is summarized in Winston (1978) as follows:

In this situation the best the linguist can do is to set up semantic pair tests in which he puts questions to the native while the latter is attending some objective stimulus, e.g., a rabbit, and to attempt to gauge whether certain expressions in the native’s language mean “rabbit” by judging from the native’s dispositions to assent and dissent to the linguist’s queries. On the basis of such tests, the linguist will frame certain analytical hypotheses, or proposed translations, for the various expressions in the native’s language, and will compile these into a translation manual which will map the sentences of the native’s language into sentences in some other, familiar, language. The thesis that Quine calls the Indeterminacy of Translation says that in such situations, manuals for translating one language into another can be set up in divergent ways, all compatible with the totality of speech dispositions, yet incompatible with one another. (Winston 1978: 20, the emphasis is mine)

The idea that Quine introduces here through the example of translation has, of course, much wider validity. What is really at issue is whether meaning in general can be studied in objective terms. Quine’s answer is clearly in the negative: In a linguistics which aims to determine meanings ‘there is not even an objective matter to be right or wrong about’ (Quine 1960: 73). Interpretation (or translation) in language is impossible except relative to some shared background theory. As Kempson (1988) summarizes it, ‘...any definition of a concept of meaning for linguistic expressions is hopelessly circular, and hence empty.’ (p. 6)

This last formulation is also indicative of how strongly modern linguistic theory is (or has been) committed to objectivism. Kempson makes no mention

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6 Translation in the example can easily be associated with understanding the meaning of - just as theories of meaning like the Katz - Fodor theory have repeatedly been described as translations into Semantic Markerese.
of Quine’s ‘shared background theory’ - for her postulating that would simply be out of the question.

Although Quine himself, maybe half-jokingly, suggests a sort of a way out of this situation, to which we shall be returning while discussing the foundations of cognitive grammar, and which is basically non-objectivist, the general reaction to the thesis of the Indeterminacy of Translation in modern linguistic theory has been to look for greater rigour, which was all too readily found in the application of symbolic logic to the description of understanding language (truth-conditions). Recourse to meaning can quite easily be avoided by the introduction of reference and truth.

The temptation of a fully formalized system, with its arguments for words, propositions for sentences, operators and logical connectives for grammatical morphemes, which is nevertheless clearly related to language and promises the possibility of automatic processing/translation at arm’s length, has clearly proved too great to resist. That it has not led to the complete solution of all of language’s problems (in fact it has not led to the solution of too many) is something that only language can be blamed for. Systems of symbolic logic are axiomatic systems, where the result depends only on the ways the axioms are set. But it would not be easy to set the axioms so that they describe language, which is a sloppy and elusive system where expressions that ought to refer do not always refer, propositions sometimes do not have a truth value and words that should correspond to logical operators notoriously do not do so, cf. P. Cole (1978), Strawson (1950), (1964), Austin (1962), Grice (1975), Bolinger (1977), and others.

A possible world is a full and consistent description of a set of propositions and of all the relations that hold among them, whereas a person’s beliefs about a state of affairs, which language typically expresses, are never complete and very often not even consistent (cf.2.2.3.)

Generative grammar, which purports to describe ‘the ideal speaker’s competence’, seems to have in mind an ideal speaker who, besides being free of false starts, performance mistakes and lapses of memory, also has a full and consistent picture of all the possible states of the world around him, with the consequence that he never wants to communicate his own tentative views and feelings about affairs of which he is a mere observer. Or, the problem can be neglected...

In an earlier paper (Pelyvás 1981) I argued that generative grammar can only handle cognitive predicates on the level of exceptions. In Chapter 3 of this study I will return to this point, as I feel now increasingly convinced that the neglect can be deliberate: Quine (1960) found it important to eliminate mentalistic and intensional terms like mean, believe, or think from the vocabulary of science, since they would only make his neat system
unnecessarily complicated (cf. Winston 1978: 25), on the grounds that ‘belief is intentional’ (Kamp 1990) in the sense that it has ‘aspectual shape’ (Searle 1990): the exact formulation of the subject matter is highly relevant to the subject - a notion of great importance in opacity phenomena (cf. Cole 1978).

Chomsky, who grew up very much in the Quinean tradition, may have been motivated by these considerations in his syntax, in which he never even contemplates the possibility that the recurring ‘irregularities’ in the complementation of these predicates may be connected with their cognitive status and that there would be room here for another ‘significant generalization’.

Some of the problems outlined above will be discussed in detail in Part Two and Part Three. I should only like to remark at this point, as a summary of my views on the relationship between logic and language, that there seems to be something wrong with what Grace (1987) calls in a slightly different, but certainly relevant sense the direction of fit. Linguists have been trying to find systems of logic, developed (more or less) independently of language, which would seem to fit (some of) the phenomena of language. This appears to have been hardly more effective than the well-known method of trial and error.

The situation seems to be changing now, but perhaps not fast enough. A good correspondence between facts of the language and formal systems can only be achieved if facts of language are used as the starting point, which certainly requires giving up strict truth-functionality. There are indications, as I have noted in 1., that this approach is now gaining ground, but the process is slow and has not yet reached the stage when it can be directly relevant to the main topic of this study, which is subjectivity on the clause level.

2.2. Basic assumptions and framework of cognitive grammar

In the previous section I mentioned that Quine offered a way out of the trap for the study of semantics that he had created himself by setting up the thesis of the Indeterminacy of Translation. Unscientific as it may sound, it certainly provides a practical solution to the dilemma:

An actual field linguist would of course be sensible enough to equate gavagai with rabbit, dismissing such perverse alternatives as undetached rabbit part and rabbit stage out of hand... The implicit maxim guiding his choice of rabbit, and similar choices for other native words, is that an enduring and relatively homogeneous object, moving as a whole against a stable background, is a likely reference for a short expression. If he were conscious of his maxim, he might celebrate it as one of the linguistic universals, or traits of all languages, and he would have no trouble pointing out its psychological

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7 Another problem may be that for generative grammar a rule in syntax must be a rule without an exception, and there is some irregularity in the behaviour of cognitive predicates, cf. 2.2.3.
plausibility. But he would be wrong: the maxim is only his own imposition towards settling what is objectively indeterminate. It is a very sensible imposition, and I would recommend no other. But I am making a philosophical point. (Quine 1969: 48-9)

Cognitive grammar works exactly on the assumptions outlined in the paragraph quoted above, denying with ample evidence that there is anything philosophically wrong in making these impositions, which have to be made if a theory of language is to be useful. It is a theory which, although accepting the objective existence of the universe around us, claims that the categories and relationships among the categories in the world do not exist independently of the ‘observer’, i.e. denies the existence of what is traditionally called natural kinds. In an objectivist framework the role of the observer is entirely passive: his mind is simply a medium onto which categories existing in the real world are mapped, with the result that cognition is looked upon as a passive process of creating mental representations of objectively existing categories, ‘natural kinds’.

In cognitive grammar the ‘observer’ has a very active part: categorization (the formation of Idealized Cognitive Models) crucially depends on his interaction with his environment - cf. 2.2.3.

2.2.1. Basic level terms

One branch of the process begins with the identification of basic level terms. These terms are usually located around the middle of the classification hierarchy:

...  
furniture  
sitting furniture(?) - cf. Országh - seat(?)  
chair  
armchair  
wicker chair  
...

or, stretching my meagre knowledge of biology for Quine’s sake,

...  
mammals  
lagomorpha  
leporidae

As we have seen in the previous discussion, even this approach to cognition is incompatible with generative grammar’s notion of Universal Grammar, which is therefore considered to be a system entirely different from other cognitive processes.
**rabbit, hare**

brown hare, blue hare

...

(bunny

Quine’s characterization of ‘rabbit’ in the passage quoted above is an excellent summary of the properties that single out the basic level (bold in the examples) as described by Lakoff (1987: 32-3):

- it is the level at which things are first named
- it is the level which is learned earliest
- it is the level at which names are shortest and used most frequently
- at this level, things are perceived **holistically**, as a single **gestalt** (a unit which is more than the collection of its parts)
- it is the level which is based on bodily experience, **meaningful human interaction**. (The level at which shape, structure and primarily **use** are most naturally perceived and interpreted.)

In commentary to the first three points it is enough to mention that I had to consult dictionaries and encyclopedias to establish some of the non-basic level terms with any certainty at all. The last two properties reveal some of the basic properties of categorization.

**Holistic perception** means rather more than Quine’s ‘enduring and relatively homogeneous object’. We call an object enduring and **relatively** homogeneous because we perceive it that way and the reason we perceive it that way is simply that it is something capable of functioning as one, something that can be characterized in terms of human interaction: it can be seen or shot at, as in the case of *rabbit*, or it can be sat on, as in the case of *chair*. It would be more difficult to define *furniture* in this way, or to explain the difference between *chair* and *wicker chair* in terms of meaningful human interaction, since they serve essentially the same purpose. Interaction (very often **use**, especially with man-made objects) can be found everywhere in the background of human categorization: basic level terms can be used or interacted with. Terms lower down the scale, like parts of a machine, are usually defined in terms of the machine, most often by referring to their role in a sophisticated mechanism. But only the machine can be **used**, its parts collected in a plastic bag would not be of much value to the average person, who would probably call them just ‘a heap of useless junk’.

### 2.2.2. Kinesthetic image schemas
If basic level terms, holistically perceived, are one pivot stone of cognitive theory, interaction through movement - *kinesthetic image schemas* - is another. Motion, the experience gained by motion, and the interaction with other objects through motion, have been known for a long time to have a central role in the development of intelligence, cf. Aitchison (1987). This activity provides basic cognitive models for relationships like *up - down, front - back, part - whole, source - path - goal, container* or *link*. Basic kinesthetic experience is crucial, as we have seen, in singling out basic level terms (e.g. *part - whole*), and together with basic level terms, takes a crucial part in the formation of *metaphor*, which is considered by cognitive theory to be at the root of all abstract thinking. In Chapter 8 we shall see an application of the *source - path - goal* schema in combination with metaphorical extension to account for the connections between the root and epistemic meanings of some modal auxiliaries.

### 2.2.3. Idealized cognitive models

According to cognitive theory, ‘we organize our knowledge by means of structures called *idealized cognitive models*’ (ICMs) (Lakoff, 1987: 68). An ICM can be roughly described as a situation (or mental space, cf. Fauconnier (1985)), its participants and the relationships that hold between them, as conceived of by the speaker.

An ICM is a structured whole, or gestalt, which might at first sight seem to have much in common with the *possible worlds* of truth-functional semantics, Fillmore’s *case frames* or with *situations* in situation semantics.

The main difference between *possible worlds* and ICMs is that a possible world is a full and consistent description of some entities and the relations holding among them, with no special status given to the actual world; an ICM is a partial description, often inconsistent, based on an idea of truth that is essentially connected with cognition, i.e. understanding a situation, rather than on absolute and objective truth. Recent versions of realist semantic theories, such as Discourse Representation Theory, are beginning to negotiate discourse representation structures in partial and inconsistent models (cf. Kamp 1990),

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9 The term very closely corresponds to Langacker’s *(abstract) domain* (Langacker 1987, 1991).

10 This is true to such an extent that (early versions of) systems of modal logic were not even capable of making a distinction between *p* and *Lp* (i.e. between what happens to be true and what is necessarily true - true in all possible worlds, cf. Karttunen (1972)).

11 The difference will be of great importance in our discussion of referential opacity and presuppositions.
although Asher et al. (1994: 981) still state that this ‘has never really been worked out’.

Situation semantics may roughly be viewed as an effort to tame the apparatus of logic and make it more applicable to the analysis of real-language phenomena, within a framework which is otherwise very much objectivist, i.e. holds the view that ‘the only possible concept of content for natural language semantics is the articulation of a direct relation between language tokens and objective reality...’ (Kempson, 1988: 12). In contrast to the possible world of truth-functional semantics, a situation is only a partial description, and it is not strictly consistent in terms of formal logic, since, for example,

\[ a \land b \supseteq a, b, \]

but

\[ a, b \nsubseteq a \land b, \]

to accommodate for the well-known fact that in natural language the juxtaposition of two sentences (propositions) may not be equal to their conjunction:

(2) a John missed the train and he arrived late
    b John missed the train. He arrived late

This could go some way towards explaining some of the properties of referential opacity, where the basic problem is that a person’s system of beliefs does not always reflect in full the real state of affairs - he may not be aware of cases of coreference.

Fillmore’s case frames also have the predicate-argument structures of predicate calculus in their background - although substantially altered by Fillmore’s introduction of semantic Case roles to replace the linear order of the arguments (Fillmore 1968b).

Deep Case, despite its inherent problems, has proved to be one of the seminal thoughts in modern linguistics, which found its way - if only in traces - into current theories as well (cf. the Theta-roles and Case-theory of the Theory of Government and Binding (Chomsky, 1981), or the framework of Lexical-Functional Grammar.

In a later modification of case grammar Fillmore introduces scenes: ‘Meanings are relativized to scenes’ (Fillmore 1977: 59), and the scene he outlines for the commercial event characterized by the sentences

(3) a I bought a dozen roses
    b I paid Harry five dollars
    c I bought a dozen roses from Harry for five dollars
    d I paid Harry five dollars for a dozen roses
e. Harry sold me a dozen roses for five dollars
f. The roses cost me five dollars
g. Harry got five dollars for the roses
h. Harry earned five dollars

is very much like an ICM in cognitive grammar. The problem with Fillmore’s treatment, however, seems to be that syntactic considerations like subject and object selection play a role too direct in the identification of participants and perspective, which might still be a remnant of the centrality of syntax, although the vexing problem of the holistic vs. partitive interpretation of pairs like

(4)  a. I loaded the truck with hay
    b. I loaded hay onto the truck
certainly needs to be solved.

An Idealized Cognitive Model in cognitive semantics is a partial description of a state of affairs, it is relative to the speaker’s understanding of the situation and it is not even necessarily consistent.

ICMs can be of many kinds. The simplest form is the propositional ICM, which does not contain metaphoric elements and looks quite objective - similar to propositions in truth-functional semantics. The basic difference is that the entities (and relationships) in these ICMs are ‘mental entities, not real things’. (Lakoff 1987: 285).

A typical structured ICM is the scenario, a sequence of events, with typical components like the source, the path and the goal (cf. kinesthetic image schemas). Very often we categorize objects in terms of a scenario. When we say

(5)  Fred is building a house,

seeing a dozen people or so digging away at what we can identify as a building site, with Fred perhaps not even among them, and we identify the hole in the ground as the foundations of a house to be built, we have done much more than just produce a mental representation (image) of what was there in front of our eyes. We identified one stage of a structured ICM (a scenario) and analyzed what we actually saw in terms of this scenario, even projecting the desired goal onto the scene. That this is not a negligible achievement could be illustrated by a schizophrenic’s account of the same scene, who, after seeing a film that first shows laying the foundations of a house and then, with a gap, the house

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12 A possible treatment of the phenomenon in cognitive grammar is in terms of the figure-ground opposition, saying that the two sentences foreground different aspects of the ICM (scenario), or use different ICMs. A solution based on this second possibility will be proposed and discussed in detail in Chapter 6.
standing ready at the same site, would probably find no connection between these two experiences and comment that first he saw people hitting the ground with something that looked like sticks and then suddenly there was a house standing there.

A normal person would be able to find out what he had ‘seen’ in the first scene on the basis of what he saw in the second, even if he did not understand the first part when he saw it. A detailed discussion of the problem, together with illustrations taken from normal and psychotic narratives, based on Chaika and Alexander (1986), is to be found in Chapter 6.

A very important kind of ICMs are radial categories. These are categories that characteristically cannot be described in terms of defining properties true of all the members and only the members of that category. Wittgenstein’s game (Wittgenstein 1953) could serve as a first example. It would be impossible to find properties that characterize all games and only games, from party games through football and solitaire to Russian roulette.

Lakoff’s title - Women, Fire and Dangerous Things (1987) - also comes from the description of a radial category - that of balan in Dyirbal. The first suggestion of the title is that women are like fire and that there is something inherently dangerous about them, which would directly follow from the traditional view of categorization based on a defining property common to all members - in this case, danger. That this is not so can be seen from the analysis of this category given in the book (pp. 91 - 104, also summarized in Radden (1991)). The different members are held within the category by different kinds of links, with no direct link between women and danger.

The properties and interrelationships of ICMs give rise to prototype effects, which are characteristic of language but would be difficult to account for in traditional terms, where any example of a category must be as good as another.

2.2.4. Prototype

It is important to bear in mind that categorization in cognitive theory is not a one-way process, from bottom to top (or top to bottom) as objectivist theories invariably see it, with category membership unequivocally defined by a set of defining properties, the presence and absence of all of which would determine whether an entity fully belongs to a category or is entirely out of it\(^\text{13}\). Cognitive theory holds that categories can have fuzzy edges with some entities in marginal positions (e.g. in graded categories, like tall), there are radial

\(^{13}\) But cf. Wittgenstein’s game.
categories where links between members can be of many kinds, and that even among entities that are fully within a category, some members are better examples of that category than others - which introduces the term **prototype**. Sparrows are better examples of birds than penguins or ostriches (or maybe even cuckoos, which are closer to the prototype), and this has consequences in language. It is perfectly normal to say,

(6) Ostriches are like sparrows,
but the opposite,

(7) Sparrows are like ostriches

would have to be explained thoroughly before it was accepted.

We can say that in the example given above the source of the prototype effect is that the birds differ in the characteristic that is most meaningful in terms of human interaction: *ability to fly*.\(^{14}\)

The Idealized Cognitive Model (ICM) of *bird* will, among many other things, contain the property that birds are characteristically capable of flying. Some birds will not fit very well in this ICM. One of the consequences is that we can say

(8) a The sparrow is a bird AND it can fly
b The penguin is a bird BUT it cannot fly,

but not the other way round:

(9) a The sparrow is a bird BUT it can fly
b The penguin is a bird AND it cannot fly.\(^{15}\)

This is a consequence for language of the fact that a sparrow is a prototypical bird and a penguin is not.

Another source of prototype effects is the case when a category, like *mother* (Lakoff 1987: 74-5, 79-84) cannot be fully described within one ICM, only at the intersection of several ICMs (birth, genetic, nurturance, marital and genealogical in the case of *mother*).

Radial categories can also give rise to prototype effects. They characteristically cannot be described in terms of defining properties true of all members of the category (e.g. you cannot conclude that women are dangerous just because they share the category *balan* with fire and dangerous things). In

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\(^{14}\) Building nests would seem to be of less importance, which explains why *cuckoo* is closer to the prototype.

\(^{15}\) An attempt at treating this and similar phenomena in terms of Discourse Representation Theory is found in Lascarides and Asher (1993).
this case prototype effects result from the number of shared categories. The best examples will be the ones with the largest number of, or the most salient, properties shared.

Radial categories are especially important in the description of language. Many of the categories that have so far eluded precise definition may be radial. In Chapter 7 I will attempt to outline an analysis of auxiliaries and ‘similar verbs’ (such as be and have as main verbs and some of the cognitive verbs) in terms of a radial structure.

2.3. Motivation vs. predictability

In a grammar based on induction (such as generative grammar), any regularity that is to be of any value at all has to be fully predictable, a function of the configuration the elements occur in. This is also a more or less natural consequence of the claim to greater explanatory adequacy. The requirement of explanatory adequacy itself is formulated in such a way that the grammar in which phenomena are more predictable is superior to the one in which they are less so - in fact, in ‘God’s truth grammar’ everything would be fully predictable. The rules are meant to be simple and elegant and to cover a lot of ground. When language fails to be fully predictable, such a grammar will necessarily have to have recourse to treating the phenomena in question as idiosyncracies, which either belong to the lexicon, or to the periphery - as opposed to ‘core grammar’.

To give an example: when faced with the facts of the syntactic behaviour of cognitive predicates (Nominative / Accusative with the Infinitive, long-distance Wh-movement, negative raising, obligatory extraposition, etc.), all of which seem to relate these structures quite strongly with simple sentences, a generative grammarian is likely to say that all this behaviour is idiosyncratic, as think and say, for example, do not occur in the Accusative with the Infinitive construction. This fact alone, which is not even strictly true for British English (cf. the difference in the Verb patterns given for think in the third and fourth editions of OALD¹⁶), seems to be enough for generative grammar to relegate the whole problem to the lexicon, as an idiosyncratic property of some lexical entries¹⁷. (Chapter 3 will be devoted to a detailed discussion of the properties of cognitive predicates, and to the attempts made in generative grammar to account for their behaviour.)

¹⁶ The Fourth Edition remarks that the $V + N + Inf.$ construction is used ‘especially in the passive’, whereas there is no such reference in the Third Edition.

¹⁷ Even there, they find it necessary to divide what is essentially one into two: cf. the distinction between A-transparency and non-A-transparency in van Riemsdij - Williams (1985) and the argumentation that such a distinction is unnecessary in Chapter 3.
Such insistence on predictability and full regularity is well in line with a mathematics-based formalistic approach to language and its description (cf. Lakoff 1991), but leaves very little room for the sloppiness of natural language, and, more importantly, for linguistic change, which is especially fast in the domain of elements expressing subjectivity (cognitive predicates, epistemic modals, sentence adverbs, etc.). There is, usually, both a non-subjective and a subjective sense/use present, sometimes with marked differences in syntactic behaviour, cf. Traugott (1989) on the emergence of epistemic modals, discussed in detail in Chapters 4 and 8. Generative grammar cannot recognize these changes as \textbf{changes in the grammatical system} until they have fully taken over, and in some cases, since language is a ‘sloppy system’, this may never happen at all.

For cognitive grammar \textbf{motivation} is essential. Apart from phenomena like \textbf{iconicity}, it also plays a crucial role in \textbf{categorization}. But since motivation can come from many spheres of experience, sometimes with contradictory results, the outcome is highly unpredictable. In metaphorization based on a metonymic relationship, for example, it is not \textbf{predictable} that the name of an incandescent lamp will be based on a metonymical relationship based on shape (as in many languages it is), although it is certainly highly \textbf{motivated}. No more is it predictable that in some languages the basis of the metaphor will be a kind of \textit{fruit} (cf. \textit{pear} in Hungarian), whereas in others it will be a \textit{bulb}.

It is, of course, possible to say that this would be well within the scope of idiosyncracies of the lexicon in any kind of grammar. The difference is that motivation, not necessarily combined with predictability, is a basic principle of cognitive grammar, which can be extended to fields certainly beyond the scope of the lexicon. It can be argued, among other things, that grammatical structure and categorization are motivated by changes in the world view of language users. This would mean that categories of language are not eternal, but can change with time\textsuperscript{18}.

In cognitive grammar the emergence of epistemic modals from deontic modals is well-motivated (metaphorical extension, cf. Chapter 8), with well-motivated (and more or less predictable) changes in the morphological (no past tense) and syntactic pattern (perfect and continuous infinitive, rare occurrence in interrogative sentences or \textit{if}-clauses)\textsuperscript{19}.

Whereas in generative grammar subordination under a cognitive predicate can only be treated as a highly irregular case of what would normally be

\textsuperscript{18} cf. Langacker’s (1987) \textit{partial sanction} and related issues, to be discussed in Part Two.

\textsuperscript{19} cf. Chapters 3, 8 and 9.
subordination of a self-contained S-bar under another self-contained S-bar (for details, see Chapter 3), in cognitive grammar the problem could find the following solution: in contrast to other kinds of subordination, where an (ordinary) ICM is included within another (ordinary) ICM, with cognitive predicates subordination would occur into a special cognitive framework (a special ICM, if an ICM at all): that of the speaker assessing the probability of the subordinate ICM. Langacker\textsuperscript{20} calls this process epistemic grounding, and the result a grounding predication, which has a special status in his system. This treatment can provide a direct connection with other kinds of cognitive processes (as opposed to the isolation of the language capacity in the framework of generative grammar), and could be seen as the re-introduction (in a radically different form) of the basic idea of performative analysis, which was doomed to failure in the 1970’s owing to its fatal mistake of trying to include into a truth-functional framework what is patently (as Austin pointed out) non-truth-functional.

Since such a special cognitive framework (or ICM), in which the speaker assesses the probability of an(other) ICM is necessary in the case of simple sentences as well, it is quite natural to assume that some of the properties of its linguistic expression in what look like complex sentences are strongly reminiscent of the properties of simple sentences. These similarities are highly motivated, though not fully predictable, since, among other things, say does not, and think does not readily occur in the Accusative with the Infinitive. The grammatical category of subordination could be seen as having fuzzy boundaries in this case, a phenomenon that cognitive grammar has all the apparatus to handle\textsuperscript{21}. We shall return to a detailed discussion of this problem in Chapter 9.

\textsuperscript{20} cf. Langacker (1987), (1991), although his treatment is rather controversial. For a detailed discussion, see Chapter 9.

\textsuperscript{21} It is interesting to note that in Lakoff (1972) the idea of a fuzzy logic (still more or less within the limits of truth-functionality) was illustrated, among other things, on phenomena connected with the syntax of cognitive predicates, both in simple and in complex sentences.
2.4. Truth

In a truth-conditional framework, it seems essential that the truth conditions of a sentence can be determined objectively. If the definition: understanding a sentence means knowing under what conditions it would be true is to be taken seriously, there must be an understanding that these conditions can be determined objectively. This objective notion of truth is central to the construction of truth-functional semantic theories, and may be one of the reasons why elements of subjectivity, such as the speaker’s assessment of the truth of a situation cannot have a major role in semantic theories of this kind.

The situation is again radically different in a cognitive framework, where truth can only be interpreted as truth as seen/conceived of by the speaker (conceptualizer). In addition, the truth of a statement is strongly dependent on the categories that occur in it, and since the categories are not strictly defined, different categorial boundaries (depending on the different purposes the speaker may have in mind) can change truth conditions radically. The terms statement and speaker suggest that we are dealing with utterances rather than with sentences here, but I find that this distinction would be very difficult, if not impossible to make in cognitive grammar, where even the simplest elements of language cannot be viewed independent of the purposes of the language user. Lakoff and Johnson’s well-known sentences:

(10) France is hexagonal.
The earth is a sphere.
An atom is a tiny solar system with the nucleus at the center and electrons whirling around it.
Light consists of waves.
Light consists of particles.

can serve as examples to illustrate this point. Owing to different degrees in the exactness of categorization required in different contexts, sentences like these can be true or false for different purposes (cf. Lakoff and Johnson (1980)), i.e., their truth conditions can be different in different contexts. Nevertheless, we would be reluctant to say that their meaning is different. Following Tarski’s definition, France is hexagonal is true if and only if France is hexagonal. But is France hexagonal? For certain purposes it is, for others it is not. Perhaps instead of saying that the language user knows under what conditions a sentence would be true, it would be more proper to say that the speaker decides for
what purposes the sentence will be true. Characteristically, this formulation concentrates on the active rather than on the passive side of language use and emphasizes the inseparability of the element of the system (sentence) and of its use (utterance).

This approach seems to have more room for the description of epistemic modality and of existential presuppositions than the objectivist view.

3.SUMMARY

The main purpose of this chapter has been to ‘point out the psychological plausibility’ of the field linguist’s assumption about basic level terms and kinesthetic image schemas (cf. 2.2.), and to suggest that cognitive grammar, although not based on a strictly objective ‘mapping’ of independently existing categories onto the language user’s mind, may, with its unified and humanized view of cognitive processes, provide a better framework for the study of at least certain elements of language (notably, elements expressing the speaker’s epistemic commitment).

I also tried to outline how cognitive grammar uses these very tangible aspects of everyday experience to build up ICMs, which in their turn, through processes of metonymy and metaphor, lead to the formation of abstract categories. Detailed discussions of examples are to follow in Chapters 6 to 9.

The picture that we get from the cognitive approach is very different from the one offered by generative and truth-functional grammar. Generative grammar also appeals to psychological plausibility, as the last word in selecting ‘God’s Truth Grammar’, but that is a psychological basis which deliberately rules out predicates expressing cognition and separates Universal Grammar - an innate language acquisition device - from all other aspects of cognition.

Cognitive grammar sees categorization, a basic aspect of both cognition and language use as a process inseparable in many ways from the basic human experience and says in effect that abstract reason - through metaphor - has a strong bodily basis in everyday physical functioning.

A brief comparison of the world views has revealed great differences. The following chapters will be concerned with how these differences affect what a particular theory has to say about certain grammatical phenomena. We shall focus our attention on the theory of government and binding (GB) in Chapters 3 and 4 and on cognitive theory in the remaining chapters. The topic investigated in both cases will be a thorny grammatical problem for English: the

...although metonymy and metaphor are present even at the first steps of the formation of many ICMs.
syntactic behaviour of elements expressing subjectivity, in particular, auxiliaries and cognitive predicates.
CATEGORIZATION IN COGNITIVE GRAMMAR

Péter Pelyvás

1. SCANNING

The basic operation in cognitive grammar, as described in Langacker (1987, 1991) is comparison.

Comparison is at the heart of scanning, an ‘operation that relates a standard of comparison and a target, registering any discrepancy between them’ (Langacker 1987: 492). This is the operation on which practically all cognitive processes, linguistic or non-linguistic, are based, including the figure - ground (profile - base, trajector - landmark) distinctions. Scanning is also responsible for the atemporal relation - process distinction, which is directly relevant to syntactic structure (cf. 9.4.1.).

Summary scanning is a mode of scanning in which the different component states (of, e.g. the observed motion) remain activated simultaneously, ‘in a cumulative fashion, so that all facets of a complex structure are coexistent and simultaneously available’ (Langacker 1987: 493). Summary scanning results in an atemporal relation, characteristic linguistic expressions of which are non-finite forms of the verb, adjectives or prepositions. Figures 1 and 2 illustrate summary scanning. The preposition in is an inherently stative relation (in the intended sense), with a relatively simple internal structure.

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Figure 1  A IN B

Figure 2  FROM

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23 This will prove somewhat controversial in the light of the burden that Langacker’s formulation of epistemic grounding puts on the distinction, cf. Chapter 9, especially 9.4.
A is the **trajector** (the figure in a relational profile) and B is its **landmark**, in the basic domain of three-dimensional space.

The preposition *from* is more complex: the structure changes with time (hence the arrow), but time is not in profile and all the previous component states remain activated as a new stage is approached (in a manner similar to several transparencies placed on top of each other on an overhead projector).

In contrast, sequential scanning, characteristic of **processes**, would observe motion as occurring **in time**, with previous stages disappearing as a new stage is being scanned. The process corresponding to the atemporal relation *from* would be the verb *depart*, with the scheme represented in Figure 3. Time is in profile here, as the thick arrow indicates. A fundamental property of sequential scanning is that the identity of the trajector (TR) is preserved (**one** entity changing location rather than distinct entities appearing in different locations). This is illustrated by the ‘correspondence line’ in Figure 3.

**Figure 3**  DEPART
2. SANCTION

Comparison is also the basis of categorization (which can be further identified with another basic operation of cognitive grammar - composition (cf. Langacker (1987: 466)).

Categorization is conceived of as an act of comparison and sanctioning between a usage event (target structure) and a conventional unit (sanctioning structure) according to the scheme in Figure 4:

Conventional units are structures of any length or complexity which, through repeated occurrence and/or special salience, have become entrenched in the grammar.

Figure 4

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24 Langacker lays great emphasis on the bipolarity of such schemes: in symbolic structures (all structures of language are symbolic), corresponding to the semantic pole (shown in Fig. 4) there is also a phonological pole with a similar/identical structure and a set of symbolic relationships between elements/operations in the two poles (cf. Langacker (1987:67)). This is not to be contested here at all, but since this paper is concerned only with the semantic pole, no reference will be made to the phonetic pole or to the symbolic relationships between (elements of) the two poles.
For Langacker grammar is a structured inventory of such conventional linguistic units (Langacker 1987: 57). This definition has at least the following implications:

- grammar is not rule-governed behaviour based on sweeping generalizations (as in generative grammar):

In a sense, cognitive grammar contrasts with generative theories by placing a lesser descriptive burden on the grammar of a language per se; it does not consider the grammar a constructive device - i.e. the grammar is not responsible for assembling novel expressions out of their component parts and giving them as “output”, either in the active sense suggested by the process metaphor or in the mathematical sense of recursive enumeration. Motivating this non-constructive conception of a grammar is the fact that the set of novel expressions available to the speaker of a language is neither predetermined nor well defined given a view of linguistic structure that accommodates both figurative language and usage. Such a view is not only intrinsically desirable but actually necessary for understanding even the more limited range of phenomena that generative models attempt to deal with. (Langacker 1987: 64-5)

- grammar is not an objectively given monolithic system which is and remains the same for all speakers of the language. Through repeated use and/or increased salience, previously novel structures can acquire unit status, which means that composing them out of their components will no longer require special cognitive effort and that they can now serve as sanctioning structures in acts of categorization.

Also, since frequency of use and increased salience are crucial in this change, and these can be very different from one language user to another, what serves as a unit for one speaker may not (yet) be one for another. This does not, however, affect communication in any crucial way but can account (together with the network - point of access view of meaning) for the well-known fact that language is ‘sloppy’ in the sense that it never communicates exactly the same idea from one speaker to another and sometimes communication can even break down.

- linguistics is not solely concerned with the study of the grammar defined in this narrow sense. Since acts of comparison involve grammar as only one of the two poles and cognitive linguistics is interested in both, the traditional distinction between the system as it is (grammar) and the actual use of the system (pragmatics) cannot (and need not) be maintained at all:

Putting together novel expressions is something that speakers do, not grammars. It is a problem-solving activity that demands a constructive effort and occurs when linguistic convention is put to use

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25 A similarity, though not an identity, can be observed with Lakoff’s basic level terms ([Lakoff (1987). The nature of this parallelism is an important aspect of the compatibility of Lakoff’s and Langacker’s systems of cognitive grammar.

26 See also Langacker’s argument against the validity of the container or conduit metaphor of meaning (Langacker 1987: 164, 378, Langacker 1991: 507-14).
in specific circumstances. Creating a novel expression is not necessarily different in fundamental character from problem-solving activity in general, and the speaker’s knowledge of linguistic convention is but one of the many resources he brings to bear in finding a solution; others include memory, the capacity to plan and organize, the ability to compare two structures and judge their degree of similarity, and so forth. We must examine this interface between convention and usage in some detail, for it is the source of language change and the crucible of linguistic structure. (Langacker 1987: 65)

The other pole of the categorizing event (Fig. 4) is the usage event (target structure). This is a novel expression (of any length or complexity) encountered or assembled (for a particular purpose) by the speaker on a particular occasion. It can be used for successful communication in a particular situation to the extent that it is sanctioned by the salient conventional unit to which it is compared, since it is sanction that determines the extent to which the speaker will be understood.\footnote{Sanction is determined by Langacker as ‘the motivation afforded a novel structure by the conventional units of a grammar’ (Langacker 1987: 492). Although no universality is claimed regarding the array of conventional units across speakers (see above), it is nevertheless required that there is a substantial overlap among speakers of the same language community. Any discrepancy will tend to make communication more difficult (extra processing effort and misunderstanding owing to the non-compositionality characteristic of units but not of novel structures), or even impossible in certain cases (e.g. among scientists who mean different things by identical terms they both use).}

Sanction can be full (a solid arrow on Fig. 4) or merely partial (usually indicated by a broken-line arrow).

2.1. Full sanction

1. Identity

When a conceptualization occurs, the simplest case of sanctioning is the one when the speaker simply selects a conventional unit from the grammar which will be ‘fully adequate as it stands’ (Langacker 1987: 66) to serve as the target. So, when the target has to be rabbit, the conventional unit RABBIT can be used, and full sanction will be established by the relation of identity. Identity is the limiting case of schematicity, another variant of full sanction.

2. Schematicity (elaboration)

Very often, the conventional unit that serves as the sanctioning structure differs from the target structure only in the degree of schematicity, i.e. the sanctioning structure is schematic for the target. This happens in acts of categorization (in the traditional sense), when rabbit is categorized as
MAMMAL or ANIMAL depending on the cognitive distance between the target and the sanctioning structure. In this case the target structure elaborates the more schematic sanctioning structure.

Schematicity is of great importance in grammatical composition as well (viewed by Langacker as identical with categorization, cf. Langacker 1987: 466ff), where one component structure elaborates a schematically given salient substructure (e.g. trajector or landmark) of another - through the relationship of correspondence.

The composite structure of *under the table* is given in Figure 5. The basic domain is oriented 3-dimensional space.

a is the schematic atemporal relationship UNDER. (Note that this depends largely on the trajector - landmark distribution: if that were reversed, the relationship would be ABOVE).

In a both salient substructures are highly schematic: the notation (circle rather than a box) only specifies that they are THINGs.

b represents a noun, since it profiles a THING - in Langacker’s definition ‘a region in some domain’ (Langacker 1987: 189). This profile can be brought into correspondence (the dotted line in Fig. 5) with the fully schematic landmark of the relation UNDER.

c is the resulting composite structure.

The arrows 1 to 4 represent the sanctioning (categorizing) relationships involved.
Figure 5

1 and 2 refer to the same relationship along the horizontal and vertical axes, respectively: the relationship of elaboration, since a more specific (less schematic) structure, TABLE, which is nevertheless fully consistent with the specifications of the schema a (the landmark is a THING), is ‘substituted’ for one of its salient substructures: is brought into correspondence with the schematic landmark.

3 indicates that a is the profile determinant: the resulting composite structure is a Prepositional Phrase rather than a Noun Phrase.

4 refers to the identity of b with the landmark of c.
2.2. Partial sanction

Partial sanction involves the situation in which schematicity of the sanctioning structure is less than full: there is some conflict between the specifications of the sanctioning structure and the properties of the target structure, e.g. when a person is referred to as a *pig* or an *ostrich*, to use Langacker’s example, or when the *estuary* of a river is referred to as its *mouth*, or the end of a gun’s barrel as the *muzzle*.

One of the interesting problems arising in this connection is whether partial sanction (involving conflicting specifications) interferes with communication, perhaps to the extent that the target structure becomes unacceptable. Langacker gives the following answer to this question:

Partial sanction can be equated with deviance or ill-formedness, but it should be emphasized that a considerable amount of non-conventionality is tolerated (and often expected) as a feature of language use. (Langacker 1987: 69)

Initially at least, Langacker makes a distinction between what he calls the **schematicity model** and the **prototype model** of categorization and argues that categorization based on partial schematicity corresponds to the prototype model, in which membership is a matter of degree rather than absolute as determined by the presence or absence of a well-defined set of defining properties.

It has also been argued that language would not be able to exist as a means of human communication without **polysemy** and **metaphor** - the most important ‘consequences’ of partial sanction, since the human brain does not have the capacity to store the amount of data that would be necessary to describe the world in terms fully independent of one another. Given the **network** view of meaning adopted in cognitive grammar (Langacker 1987: 377ff), such a system of fully isolated elements would be unlearnable owing to its **nature** as well as to the size.

It can also be argued that there is no full sanction at all. Schematicity obviously refers to a difference (if not incompatibility), and even identity can be seen as tenuous in the sense that there may be aspects of the target structure that are not covered at all (e.g. colour, size), and that the target structure requires some operation of **individuation (grounding** in Langacker 1991) to be of any use in the composite structure: *the table vs. table* (NP vs N) - an aspect of the composite structure in Figure 5 that was completely neglected.

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28 Langacker (1987: 370). In Chapter 10 of that volume the two models are eventually integrated into one (in which the horizontal axis corresponds to the prototype, and the vertical to the schema - cf. Fig 5.)
Even if full sanction exists, it seems to be the exception rather than the rule: extension based on partial sanction appears to be the relationship that is responsible for virtually all creative aspects of language. The most significant of these creative devices is metaphor.

3. METAPHOR

Metaphorical extension is considered by cognitive theory to be the driving force of abstract categorization:

Of prime importance is the growing recognition that metaphor is a pervasive and fundamental aspect of our mental life; far from being merely decorative, it is a vehicle for understanding (even constructing) our experience that generally transcends individual linguistic expressions. (...) Its relevance here is twofold: many (if not most) of the cognitive domains invoked by predications are metaphorically structured; and at the analytical level, metaphor exerts a powerful influence on linguistic theorizing. (Langacker 1991: 8)

It is not very easy, however, to draw a clear dividing line between ‘simple’ extension (like the extension of TREE to include palm) and metaphorical extension. The latter is usually associated with a domain shift:

More extreme instances (of extension) are considered metaphorical, especially when domain shifts restrict the similarity between standard and target to abstract configurational properties, as they do for tree in phrase tree, decision tree, etc. (Langacker 1987: 379)

A metaphoric mapping involves a source domain and a target domain. The source domain is assumed to be structured by a propositional or image-schematic model. The mapping is typically partial; it maps the structure of the ICM in the source domain onto a corresponding structure in the target domain. (Lakoff 1987: 288)

As well as providing evidence that metaphoric extension is usually associated with a shift of domain, the quoted statements call attention to a fundamental property of metaphor: the difference between the source and target domains can be very great (to incompatibility):

... recognizing the metaphorical nature of an expression like take the bull by the horns requires the co-construal of two very different conceptions, its literal sense and its figurative value. (Langacker 1991: 133)

... semantic incompatibility between corresponding entities is precisely what distinguishes an instance of semantic extension or figurative language from normal cases of unproblematic categorization and full sanction. (...) Only by attributing to speakers the ability to form complex conceptualizations incorporating mutually inconsistent scenes can we account for the interplay between literal and

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29 Note that the element of branching, which is made use of here, is absent in the non-metaphorical extension \( \text{TREE} \rightarrow \text{palm} \).
Since the incompatibility cannot be resolved in any other way, some aspects of the source domain will have to be eliminated, while others will be preserved in the process.

What are the factors that determine (or motivate) which aspects of the source domain are preserved (carried over) in metaphorical extension?

Lakoff (1987: 276-8) presents a detailed analysis of the metaphorical extension of the image schema up - down: MORE IS UP; LESS IS DOWN.

The source domain is VERTICALITY (oriented 3-dimensional space); the target domain is QUANTITY.

Lakoff poses the following questions:

- What makes VERTICALITY appropriate as a source domain?
- Why is VERTICALITY rather than some other domain (such as containment, front-back, or any other) used to understand QUANTITY?
- Why is MORE mapped onto UP, rather than onto DOWN?

and gives the following answers:

- VERTICALITY is appropriate as a source domain since it can be understood independent of the metaphor as it is based on direct bodily experience - our functioning relative to gravity.

- MORE is mapped into UP because there is a basic structural correlation between UP and MORE - through the container metaphor: as you add MORE of a substance, the level goes UP.

Lakoff’s final conclusion is as follows:

Schemata that structure our bodily experience preconceptually have a basic logic. Preconceptual structural correlations in experience motivate metaphors that map that logic onto abstract domains. Thus, what has been called abstract reason has a bodily basis in our everyday physical functioning. It is this that allows us to base a theory of meaning and rationality on aspects of bodily functioning. (Lakoff 1987: 278)

If we accept this as true, as cognitive linguists invariably do, then it is easy to see that the choice of a particular metaphor (of a particular source domain) will largely determine our conception of the structural aspects of the target domain. Although this choice nearly always remains hidden (at least with the so-called ‘dead’ metaphor), its consequences can be far-reaching. If we accept, for example the metaphor: TIME IS MONEY (save time, waste time, etc.) and the assumption that follows from it, that employers own every minute of their employees’ time on the grounds that they give them salaries, then we can talk about employees stealing from their employers by spending small
amounts of time with activities not strictly connected with the job during the working hours (Lakoff 1987: 209-10).

Closer to linguistics: Langacker (1987, 1991) analyses the unfavourable consequences for linguistics of the acceptance of the container/conduit metaphor (1987: 164, 378, 1991: 507-14), which he abandons for the network/point of access view, and of the building brick metaphor (1987: 452, 463n, 1991: 507-14). The latter holds that linguistic units are either fully compositional (i.e. a composite structure has to be the sum total of its component structures and of the operations that connect them - cf. the Katz - Fodor theory, or truth-functional semantics, not to mention generative syntax itself) or fully idiosyncratic (unanalyzable). This has ramifications in the larger problem area of motivatedness vs. predictability (cf. 2.2.3), which we shall not discuss here, except that incidentally, it has some bearing on metaphorical extension itself.

Metaphor cannot be described in terms of full compositionality at all (cf. the total failure of the Katz - Fodor theory) and it would be nonsensical to consider it fully idiosyncratic (as if the components of blackboard had nothing to do with the colour and the material). Langacker (1987: 458, 463) states that most (if not all) complex symbolic units are ‘analyzable but less than fully compositional’:

A and B in Figure 6 can be thought of as building bricks in a sense, since they contribute to the meaning of C, but they do not determine it. C is more than A and B taken together. This applies to all composite structures, although to a lesser degree to novel (non-unit) structures. In the case of a metaphor, C is to be regarded as the figurative sense, which is certainly motivated by A and B, but is by no means determined (predicted) by them.

It is possible to use the concept of metaphor in describing syntactic phenomena as well. An example could be Langacker’s analysis of the sentences:

(1) a I sent a book to the library  
b I sent the library a book

In Langacker’s analysis the status of (1b) depends on one’s conceptualization of library. Since the structure X VERB Z Y highlights ‘the
resulting state where \( Z \) possesses \( Y \)’ (Langacker 1987: 51), this sentence is only acceptable if the speaker conceptualizes *library* (through metaphorical extension) as an institution rather than a location (which is difficult to conceive of as the possessor of an object). In Chapter 6 we shall attempt an analysis of the two argument structures of *load* along similar lines.

Another, perhaps more significant area of using metaphor in grammar is the analysis of various senses of grammatical words as metaphoric extensions of a more basic ‘root’ sense.

Sweetser (1990) performs such an analysis on modal auxiliaries in English. Since the problem of modals (and of auxiliaries in general) has been one of the most painfully unsuccessful areas of modern linguistic theories, Chapter 8 will be devoted (as an illustration of the workings of metaphor in linguistic analysis) to a more detailed description and critique of Sweetser’s proposals.
A RADIAL CATEGORY: AUXILIARIES AND ‘RELATED VERBS’ IN ENGLISH

Péter Pelyvás

1 INTRODUCTORY REMARKS

Lakoff (1987) suggests that many grammatical categories are radial. As an illustration to this, and to prepare the ground for some of the ideas discussed in the following chapters, this chapter will attempt an analysis of the English auxiliaries and some ‘related verbs’ along these lines.

This definition of the topic, which would sound anything but ‘technical’ even to a sophomore student of English, is used here on purpose. Its function is to forecast that the radial category I am trying to formulate will not be in good correspondence with any of the categorizations for these elements attempted in traditional grammars, and would, among other things, include (to some extent, at least) cognitive verbs, semi-auxiliaries and main verbs that can also function as auxiliaries.

We cannot attempt to provide a full analysis of even the auxiliaries: it would take volumes, cf. Leech (1971), Palmer (1979), Quirk et al. (1972), (1985), and many others. We cannot even hope to provide a multitude of new facts. What we can hope to do is (to) gain some insight into why such an analysis can never be full or fully consistent.

Consider, for instance, the case of (to) gain in this sentence. Optionality of to could be taken to indicate that do is an auxiliary in this (pseudo-cleft) sentence, cf.

(i) What he hoped was to find/*find the best answer
(ii) What you should do is find/?to find the best answer.
(iii) What I am doing is trying to find the best answer

There seems to be a mysterious connection between the italicized parts of each sentence, which Quirk et al. (1972) call ‘matching’ (14.21, the term is left undefined). They call do a ‘substitute verb’ (again undefined) in this construction, although they do not hesitate to call it an auxiliary in tag questions, substitute clauses, etc. (3.17). The fact that grammarians do not consider this use of do an auxiliary use is probably connected with it clearly having a lexical meaning (cf. Langacker 1991: 238).
2. TRADITIONAL GRAMMARS

Descriptive grammars of English usually define auxiliaries by listing them (Zandvoort (1962), Thomson and Martinet (1986), Quirk et al. (1972), (1973), (1985), Greenbaum and Quirk (1990)) and by mentioning that they are helping words with no independent existence, which only help to express grammatical categories like the progressive, the passive and the perfect or express specific modal meanings. The modals, nevertheless, are defined in morphological and syntactic terms (the NICE properties, cf. Palmer (1979: 8-9, 180-1)).

The problem for categorization here is that there are at least five properties that are traditionally used to characterize auxiliaries, but not a single one of them characterizes them all, and some of them apply to other verbs as well. (Some of these verbs I have decided to call ‘related’.)

These properties are as follows:

1. **They co-occur with another V**
   BUT:
   - *want, wish*, etc. also co-occur with another V, and even *to* of the infinitive cannot be decisive because *have to* and *ought to*.
   - some verbs which behave very much like auxiliaries otherwise do not have another V in the VP (*have* in *I have a problem*, or *be* in *He is a liar*)

2. **They can function as operators** in the sense of Quirk et al. 1972, 1985
   BUT:
   - *be* as in *He is a coward*, which does not have a main V must also function as an operator and sometimes *have* (possession) also can.
   - *have to* often does not function as an operator, and the *have of I had him open the window*, which obviously has another V and is therefore treated as an auxiliary in many grammars, never does.

We can even suspect that the term operator owes its existence to this only partial overlap between structure and function.

3. **Word order with adverbs of frequency, extent**
The usual place of these adverbs is after the first auxiliary, BUT:
   - *I never have to go*
   - *He was always a coward*.

4. **Only auxiliaries can be repeated in short answers, question tags, etc.**
   (code)
   BUT:
   - *I had a coat made and so did she* (auxiliary)
   - *He is a coward, isn’t he?* (main verb)
5. **Most auxiliaries take the infinitive without to**

(need not go ⇔ do not need to go), BUT:

- ought to, have to, (used to)
- I had him do the job (auxiliary) made (main verb).

To these five criteria we could perhaps add a sixth:

6. **Some auxiliaries give rise to scope problems** with negation. Any such problem may count as an effective counterargument to regarding these elements as devoid of an existence (meaning?) of their own.

- MUST → must not (Aux. ~V)
  → need not (~Aux. V)

- MAY → may not (deontic) ~Aux. V
  → may not (epistemic) Aux ~V

**BUT**

- WILL → will not, where originally Quirk et al. (1972: 384) indicate main verb negation:
  I won’t interfere → I’m willing not to interfere,
but where auxiliary negation seems just as possible, as indicated in Quirk et al. (1990: 229), where we have
I don’t intend to interfere ≡ I intend not to interfere

- CAN → cannot (~Aux.)
  except in You can always NOT go (Aux. ~V),
and many others.

But main verbs may also have scope problems, as in:

\[
\text{I don’t want you to go} \neq \text{I don’t WANT you to go}
\]

\[
\text{(want ~go)} \quad \text{(~want go)}
\]

---

31 ...which COULD mean that the meaning of will is now mostly grammatical.
3. COGNITIVE GRAMMAR

3.1. Radial and graded categories

The English auxiliary appears to be a curious blend of a radial category and of a graded category.

A prototypical radial category, like *mother*, is based on a cluster model where various cognitive models (nurture, birth, marriage, etc.) converge on a central subcategory.

The variants are not generated from the central model by general rules; instead they are extended by convention and must be learnt one by one. (Lakoff 1987: 91)

Although the extensions are not predictable, they are certainly motivated by the central model and some general principles of expansion. In no sense is any of the models more basic than the others, and although ‘mothers’ defined on some models, like the birth model, for instance, may be better examples of the category, we cannot say that there is any difference at all in the degree of membership in the category of ‘mothers’ defined on different models. They are all real ‘mothers’, with (perhaps) mothers conforming to more cognitive models serving as better examples.

Another prototypical radial category, this time taken from the domain of linguistics, is *balan* (in Dyirbal), described in full detail in Lakoff (1987). In this case the unity of the category, which is built on radically different principles, is ensured by linguistic form: all members of the category inevitably take the classifier *balan*, which automatically results in equal membership. There is, however, some evidence from Dyirbal itself that some of the principles may be less important or less durable than others: in linguistic change, which unfortunately means ‘language death’ for Dyirbal, as Lakoff describes the situation, some of the connections disappear quite rapidly - with the subsequent change of the classifier -, while others characteristically remain (Lakoff 1987: 96-8).

A prototypical graded category is *tall*, a property that is inherently scalar in nature. In graded a category membership itself is fuzzy. Some individuals are obviously members, others are marginally so.

7.3.2. Auxiliaries and ‘related verbs’

32 cf. 2.2.3.

33 the ones relating to myths, traditions, etc.
In this section I will argue that the category of the *auxiliary* in English is both radial and graded: there are several principles or criteria (formal or functional models) in terms of which membership can be defined, which leads to a converging model (a typical radial property). At the same time, some of these criteria (or models), e.g. the ability to form questions and negatives without *do*, are more important than others, probably owing to the fact that they are functional rather than ‘merely’ structural\(^{34}\): they have immediate practical consequences on the operation of grammar\(^{35}\), but not important enough (unlike *balan*) to determine category membership unequivocally.

The result is a category that is both radial and graded. The criteria that hold one member within the category may be very different from the criteria for other members, and degree of membership is also variable, with the kind of criteria playing a greater role than the number of ties taken mechanically.

The criteria taken into consideration were as follows\(^{36}\):

1. Is an NP object impossible in *any* of the senses?
2. Is there another V in the given sense?
3. Is negation/interrogation possible without periphrasis?
4. Is periphrasis excluded in the given sense?
5. Are non-finite forms absent?
6. Are person distinctions absent?
7. When X is first in the VP: does never follow X?
8. Does X remain out of the scope of passivization?
   e.g.: *The play* should be seen \(\Leftrightarrow\) *The play* was expected to be seen
9. If followed by the infinitive, is the infinitive bare?

On the basis of these criteria the senses of verbs that are pre-theoretically candidates for auxiliary status fall into 15 groups (Figure 1 A to P, with J left out for typographical reasons):

**A:** 1,2,3,4,5,6,7,8,9

| MAY |

---

\(^{34}\) Sometimes the opposite may also happen, in grammatical description: grammarians may tend to over-emphasize one criterion. An instructive example is the *bare infinitive* with modals: Quirk et al. (1985) state that modals take the bare infinitive and stigmatize *ought* for taking the *to*-infinitive (by calling it a *marginal modal auxiliary*).

\(^{35}\) cf. *meaningful human interaction* as one of the main criteria for the selection of basic level categories (2.2.2.1.).

\(^{36}\) The questions are formulated in such a way that positive answers point towards inclusion into the category and negative answers towards exclusion.
MIGHT
CAN permission
CAN possibility
CAN’T probability/possibility
COULD(N’T)
MUST
WILL deduction
WILL insistence
WILL volition
SHALL order, promise (see to)
SHOULD advice, probability

B: 1,2,3,4,5,6,7,* ,9
CAN ability

C: *,2,3,4,5,6,7,8,9
NEEDN’T
HAD BETTER

D: 1,2,3,4,5,*,7,8,9
SHALL future
WILL future
SHOULD future in the past, conditional
WOULD future in the past, conditional

E: 1,2,3,4,5,6,(7),8,*
OUIGHT

F: *,2,3,4,5,* ,7,-,9
DO (dummy)

G: *,2,3,*,5,6,*,*,9
DAREN’T?

H: *,2,3,4,*,*,7,8,*
HAVE perfect
BE (to be to...)

I: *,2,3,*,*,6,*,8,*
USED

K: *,2,3,*,*,*,8,*
HAVE TO

L: *,2,*,*,*,*,*,9
DARE (I don’t dare go)

M: *,2,*,*,*,*,8,*
NEED TO

N: *,*,3,*,*,7,*,
BE + NP/AP

O: *,2,*,*,*,*,*
HAVE + OBJ + V₃/V-ing

P: *,*,3,*,*,*,*
HAVE possession

(* = absent or not applicable)
Criterion 3 seems to be of greater practical (functional-interactional) importance than most others. This is clearly shown by N and P on the one hand, which, although classified as main verbs, are the verbs that usually give the learner of English his first experience of auxiliary behaviour; and by L, M and O on the other, which all satisfy criterion 2, the only criterion for auxiliarrihood in, e.g. Thomson and Martinet (1986) (THE ‘defining property’ in a traditional system of categorization?), but are classified as auxiliary (O), semi-modal (L) and main verb (M) in Quirk et al. (1972). Note that in the causative construction that O marks make could be used under exactly the same conditions: in fact nothing but tradition can prevent a grammarian from categorizing make as an auxiliary in this construction, once (s)he has categorized have as one.
Bibliography to Part 1


PART 2

On the Innateness Hypothesis
FUNCTIONAL EXPLANATION IN LINGUISTICS AND
THE ORIGINS OF LANGUAGE*

FREDERICK J. NEWMEYER†

It is necessary to relate functional explanations to the whole issue of innateness, which has been so crucial
in the development of formal explanations in linguistics. For instance, it is not excluded that functional
principles might be innate... This raises the interesting question of how innate ideas turn out to be
'correct' (more accurately, functionally valuable) ideas, as the result of selectional pressure in evolution.
(Comrie, 1983, p. 99.)

1. The principal conflict in modern linguistics

1.1. Two foci in the study of language

Two markedly different approaches to the analysis of language coexist uneasily in the
field of linguistics today. They are commonly distinguished by the terms ‘formal linguistics’
and ‘functional linguistics’ (or simply ‘functionalism’).

The former approach, whose foremost exponent is Noam Chomsky, is exemplified by
the cluster of theories that come under the heading ‘generative grammar’. A working
hypothesis shared by practically all who practice this approach is that of the ‘autonomy of
linguistic form’, the idea that central aspects of language can and should be characterized as a
system whose primitive elements and governing principles are not derivable from or
reducible to concepts outside that system. ‘Formal linguistics’, then, as the term will be used
in the remainder of this paper, will be taken to embody the autonomy hypothesis.1

Fundamental to the concept of the autonomy of linguistic form is that of the autonomy
of syntax. In this view, syntactic patterning is not explicable on the basis of the meanings or
discourse functions of the elements involved, nor is there held to be a simple correspondence
between syntactic constructs and semantic constructs and/or discourse function. Rather,
syntactic patterning is largely characterizable by a set of irreducible formal principles.

Along the same lines, phonological systems are held to be governed by principles
which defy replacement by statements making reference only to phonetics or the physiology
of the vocal tract, thus leading to the postulation of strictly phonological primitives.

The extent to which meaning can be subsumed under the autonomy hypothesis is still
an open question among formal linguists. Chomsky (1965, p.159), for example, remarks that
‘semantic systems [and) systems of knowledge and belief... seem to interpenetrate in
obscure ways’ and devotes a 1977 essay in large part to a discussion of the difficulty in
constructing an autonomy hypothesis strong enough to encompass lexical meaning. Some

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formal linguists, on the other hand, particularly those influenced by currents in formal logic, posit an autonomous grammatical model rich in semantic constructs (Gazdar et al., 1985). Finally, most, but by no means all, formalists accept the idea that the central principles governing linguistic form are innate, and that these innate principles, known as ‘universal grammar’ (UG), help shape the acquisition of particular grammars. In this view, grammars have an ultimate grounding in the human genome, though no generative grammarian would abandon grammar construction to practice genetics any more than chemists or geneticists cease to seek the (higher level) generalizations of their respective fields because they can be linked to (lower level) generalizations in physics and molecular biology.

The functionalist wing of the field, while quite diverse in many respects, shares the rejection of autonomous grammar. In its place, it advances the belief that grammatical patterning is grounded in what is seen as the most important ‘function’ of language, namely communication. As Tomlin (1990) characterizes the functionalist position:

Syntax is not autonomous from semantics or pragmatics. . . . The rejection of autonomy derives from the observation that the use of particular grammatical forms is strongly linked, even deterministically linked, to the presence of particular semantic or pragmatic functions during the discourse. (Tomlin, 1990, p. 7.)

In other words, in the functionalist view, grammatical patterning mirrors discourse function in a direct way. There are no autonomous rules or principles of any depth; indeed, there is no aspect of form, except perhaps the most trivial, that cannot be derived from the exigencies of communication in conjunction with demands placed by other faculties such as memory or physiology.

Actually, many functionalists take a somewhat weaker position than that indicated in the above quotation, allowing a wider role for ‘arbitrary’ (i.e. autonomous) aspects of grammar. Nevertheless, even the weaker position entails that the semantic and pragmatic motivation for linguistic structure is sufficient to obviate the need for an autonomous grammatical system:

. . . the functionalist view of language [is] as a system of communicative social action. . . . Syntax is not radically arbitrary, in this view, but rather is relatively motivated by semantic, pragmatic, and cognitive concerns. It is not completely motivated: syntax cannot be reduced to any one or a combination of these notions. There is a significant degree of arbitrariness in linguistic structure which cannot be denied, but the crucial question is, is the semantic and pragmatic motivation for linguistic structure which functionalist linguistic theories posit sufficient to render language learnable without postulating an autonomous language acquisition device? (Van Valin, 1991, pp. 1-2; emphasis in original.)

Since Van Valin concludes that yes, indeed, it is learnable without the need of such a device (i.e. for UG), even the weaker functionalist position rejects the idea of an innate, strictly linguistic, faculty; typically functionalists assume that the child instead is endowed with general learning structures and strategies that underlie both the acquisition of grammar and also knowledge of the norms and conventions governing appropriate use of language in social interaction (Foley and Van Valin, 1984, p. 12).

1.2. How the formalist functionalist conflict might be resolved

Given the remarks of the preceding section, it might seem that taking the formalist position precludes any possibility of a functional explanation of why grammars have the properties that they do. To be sure, many functionalists see things that way. Givón (1979b, p. xiii), for example, offers the opinion that ‘the dogma of autonomous syntax. . . precludes asking the most interesting questions about the grammar of human language,
namely, why it is the way it is; how it got to be that way; what function it serves, and how it relates to the use of human language as an instrument of information processing, storage, retrieval, and—above all—all-communication’.

Contra Givón, however, there is nothing about autonomous grammar per se that discourages these admittedly ‘interesting questions’ from being asked. Thus one could plausibly maintain the position that individual instances of language change are determined in whole or in part by system-external functional factors, yet the net effect of the entire set of changes, as a result of their complex interaction with each other, is a synchronic system in which the relationship to these functional factors is largely opaque. Indeed, Anderson (1981) argues that phonological systems have just this property (see also Section 4.4 of this paper). Likewise, it is quite reasonable to investigate the function in discourse (if any) of the principles, rules, and structures of autonomous grammar. As Chomsky has noted: ‘Surely there are significant connections between structure and function; this is not and never has been in doubt. . . . Where it can be shown that structures serve a particular function, that is a valuable discovery’ (Chomsky, 1975, p. 58).

In other words, advocacy of the autonomy of grammar is not incompatible with the proffering of a functional explanation for the changes that grammars of particular languages may undergo nor for why particular structures of our autonomous grammar might be employed in particular acts of speaking.

But what about the innate principles of UG? Despite the frequently voiced functionalist opinion that to identify a principle as innate is to abandon any attempt to explain it, there exists a well-accepted (functional) mechanism for explaining the provenance of innate traits: natural selection. It is quite plausible that the design of the grammatical model as a whole or some particular grammatical principle might have become encoded in our genes by virtue of its being so successful in facilitating communication that the survival and reproductive possibilities of those possessing it were enhanced. In this sense, a functional explanation would hold at the evolutionary level.

Thus autonomy is also compatible with a functional explanation for those aspects of language that form part of our biological endowment.

Until very recently, formal linguists who have addressed the question at all have appeared quite reluctant to point to natural selection as the evolutionary force that shaped the language faculty. Chomsky, despite an earlier observation that ‘language must surely confer enormous selective advantages’ (Chomsky, 1975, p. 252) and his speculation (with Lasnik) that if there is a functional explanation for a particular filter, it might hold ‘at the level of evolution of the species’ (Chomsky and Lasnik, 1977, p. 437), now takes the view that the nature of UG is beyond the reach of an adaptationist explanation, pointing instead to (unelaborated) ‘physical principles’ being at work:

Evolutionary theory is informative about many things, but it has little to say, as of now, of questions of [language evolution]. The answers may well not lie so much in the theory of natural selection as in molecular biology, in what kinds of physical systems can develop under the conditions of life on earth and why, ultimately because of physical principles. (Chomsky, 1988a, p. 167.)

 Elsewhere, Chomsky dismisses ‘speculations about natural selection [as being] no more plausible than many others; perhaps [properties of UG] are simply emergent physical properties of a brain that reaches a certain level of complexity under the specific conditions of human evolution’ (Chomsky, 1988b, p. 22). In this article, Chomsky goes so far as to claim that, far from conferring selective advantage, some properties of UG are actually dysfunctional to the species. For example, he considers the ‘Last Resort’ principle (Chomsky, 1986b), which ensures that derivations be as economical as possible and contain no
superfluous steps, to be dysfunctional because it causes computational difficulties. The parser would seem to have to scan globally all possible derivations before it came across the right one. He concludes that while language might be ‘beautiful’, it is at the same time ‘unusable’, and must resort to a number of ‘computational tricks’ to allow structure to be recovered at all.3

Chomsky’s current position is elaborated in Piattelli-Palmarini (1989), who offers the opinion that ‘the study of language has, in fact, disclosed many instances of specificity and gratuity in the design of all natural human languages, but hardly any instance of traits dictated by general communicative efficiency’ (Piattelli-Palmarini, 1989, p. 22). His two major examples are the Projection Principle (Chomsky, 1981) and the principle of Full Interpretation (Chomsky, 1986b), which adaptation cannot even begin to explain’ (Piattelli-Palmarini, 1989, p. 25). Piattelli-Palmarini’s discussion of language evolution is embedded in a view popularized by Stephen Jay Gould and others that extra-adaptive mechanisms vie with or perhaps even eclipse natural selection as the prime mechanism of evolutionary change.4

There is a small but apparently growing number of formal linguists, however, who have attempted to work out the possibilities inherent in the idea that the language faculty was shaped to a significant extent by natural selection (Bickerton, 1981, 1990; Hurford, 1989, forthcoming, 1991; Pinker and Bloom, in press; Newmeyer, 1990; Wilkins and Dumford, 1990, in preparation). This present work continues the trend, by putting forward and attempting to motivate concrete proposals on how selective forces might have shaped UG. To the extent that it is successful, then, it will have taken a step toward a reconciliation between formal and functional approaches to grammar.

2. The evolutionary origins of grammar

2.1. The functional necessity of autonomous syntax

It is logically possible that Chomsky and Piattelli-Palmarini are correct that the innate principles of UG arose as a chance by-product, as it were, of forces unrelated to their utility to the species. However, the remainder of this paper will be devoted to arguing that there is no reason to reach such a (to my mind) pessimistic conclusion. Rather, the position will be defended that innate autonomous grammatical principles were selected for because they allotted a greater evolutionary advantage to populations that had them. In short, if the line of reasoning to be taken is correct, one can deduce the functional need for formal principles of grammar.

Let us begin with what linguists of all persuasions agree is the task of any linguistic theory, namely to relate sounds and meanings (perhaps ‘expressions’ would be a more appropriate term than ‘sounds’, so as not to exclude signed languages). Since humans can conceptualize many thousands of distinct meanings and can produce and recognize a great number of distinct sounds, one’s first thought might be that this relation could be expressed in large part by a simple pairing of individual sounds with individual meanings, as shown in (1).

\[
\begin{align*}
\text{Meaning}_1 & \\
\text{Meaning}_2 & \\
\text{Meaning}_3 & \\
\text{Meaning}_n & 
\end{align*}
\]
At the domain of lexical meaning, no such one-to-one pairing exists, of course; a vastly greater number of words can be stored, retrieved, and used efficiently if sequences of a small number of distinctive sounds are paired with meanings than by a direct mapping between individual meanings and individual sounds.

But what about propositional meaning, where the question of a one-to-one pairing is rarely, if ever, raised? The infinitude of possible messages that can be conveyed cannot in and of itself be the explanation; while humans can formulate an indefinite number of propositions, we can also produce and perceive an indefinite number of sound sequences. Thus a one-to-one pairing between them is at least within the realm of logical possibility.

The most plausible answer is that sound and meaning are too different from each other for this to have ever been a practical possibility. Meanings, whatever their ultimate nature, are first and foremost mental realities, with no obvious physical instantiation. Sounds, physical realities par excellence, are produced by a coordinated set of articulations in the vocal tract, under control of a very different area of the brain from that responsible for meaning.

Furthermore, in the conceptual structures that represent meanings, temporality and linearity play no role. Such structures do, however, contain diverse types of hierarchies and structured relationships: predicate argument dependencies, and relations of inclusion, implication, cross-classification, and identity. Moreover, conceptual structures are discrete; in the representation of a sentence like the girl threw the ball, for example, girl, threw, and ball do not grade continuously into one another.

Phonetic representations, on the other hand, have almost none of these properties. A phonetic representation is temporal and quantitative. While partly hierarchical in nature, there is no direct relationship between the hierarchy of a phonetic representation and that of a conceptual structure. Indeed, the articulatory gestures, formant frequencies, tone patterns, and so on relevant to phonetics have nothing in common with the properties of a conceptual structure. And this mismatch is alleviated only slightly by appealing to phonological instead of phonetic representations.

In other words, a major evolutionary step toward vocal communication was the development of an intermediate level between sound and meaning, a ‘switchboard’, if you will, which had the effect of coordinating the two. Only at that point could propositional meanings be conveyed with any degree of efficiency.

What properties might we deduce about this intermediate level? First, it would have to contain a small number of basic units. No advantage would have been conferred by the development of a third level with thousands of basic entities. And second, this level would need to share some properties with conceptual structures and some properties with phonetic representations, but be constructed out of units common to neither. Communication (and its benefits to the species) would not have been facilitated if this level had been skewed too much either to the sound end or to the meaning end of the spectrum.

What we have just done, of course, is to deduce the selective advantage of autonomous syntax! This level contains a small number of basic units (no more than a couple dozen syntactic categories are postulated for any given language), which are related to each other by the simple notions of ‘dominate’ and ‘precede’. In this way, a syntactic representation contrasts markedly with the complexity of a semantic or phonetic one.
Furthermore, a syntactic representation shares some properties with the former (hierarchy, dependency) and some with the latter (linear sequencing), yet is governed by a calculus neither semantic nor phonetic.

Again, from the functional pressure favoring the development of a workable system of communication (i.e. from pressure to pair sounds and meanings efficiently) and with it the reproductive advantage that this ability to communicate would confer, autonomous syntax arose in the course of language evolution.

Let us look more closely at the mapping between conceptual structures and phonetic representations [see (2)].

Each level is linked by a set of rules to the level above or below it, which carry a derivation a step closer to sound from meaning, or vice versa, and each level is governed by its own autonomous principles of organization.

Subparts of conceptual (i.e. semantic) structures are replaceable by individual lexical items in lexical conceptual structure (Hale and Keyser, 1986, 1987) in accord with the lexicalization principle discussed in Jackendoff (1983). As a result of the linking rules, predicate-argument structures are created, in which the specific content of the thematic information present in lexical conceptual structure is lost (Rappaport and Levin, 1988). Linearization principles (the principle of Case adjacency, directionality of Case and/or theta-role assignment, and so on) transform predicate-argument structures into syntactic structures terminating in phonologically specified lexical items. The phono-syntactic rules are sensitive only to a subset of syntactic constituent structure, namely that provided by principles of X-bar theory, in building the phonological and intonational phrases that define the level of prosodic structure (Selkirk, 1986). All syntactic information is lost by the time of the application of the phonological rules, and in the phonetic realization rules, quantitative information enters the derivation for the first time (Pierrehumbert and Beckman, 1988).

Thus, this autonomous systems view embodies a small set of manageable operations functioning in concert to link the inherently disparate components of language.

(2)
It is worth raising the question of why functionalists have so consistently missed the point that the most plausible scenario for the development of vocal communication involved the development of an autonomous syntactic level. Perhaps this has resulted from the fact that functionalists tend to be as narrowly specialized as formal grammarians. That is, there are functionalists who focus on grammatical constructions and attempt to derive syntactic patterning from semantics and discourse. Others focus their attention on phonology and attempt to provide phonological patterning with phonetic motivation. Yet few, if any, attempt to provide a functional explanation for the entire mapping between sound and meaning. Any who set their minds to this task, I believe, would come to the conclusion that autonomous syntax has a functional motivation.

2.2. The evolution of autonomous grammar

The reader who has been convinced of the functional utility of autonomous syntax might wonder whether selective forces could have shaped a grammatical model with the intricacy of that depicted in (2). Pinker and Bloom (in press) speak of this concern and argue compellingly that this very intricacy admits no alternative explanation than that of shaping by natural selection. It is vanishingly implausible, they argue, that nonselective forces could have resulted in a faculty of such adaptive complexity. But by what means and through what steps could natural selection have yielded such a model? Clearly, if there were no alternative to the conclusion that it came into being full-blown as a result of a single monster mutation of gigantic and miraculously salubrious proportions, then skepticism about an evolutionary account would be more than justified.

Fortunately, however, there is no reason to appeal to the evolutionary equivalent of divine intervention. Rather, language evolution is an example of ‘mosaic’ evolution, in which selective forces steered once separate and evolutionarily unrelated components to become integrated over the passage of time. Each step fed the following one, each resulting in a more efficient and utilitarian system of communication. Jacques Monod observed that ‘as soon as a system of symbolic communication came into being, the individuals, or rather the groups best able to use it, acquired an advantage over others incomparably greater than any that a similar superiority of intelligence would have conferred on a species without language’ (Monod,
And each evolutionary improvement in this system bestowed a further advantage to those possessing it.

To begin our story, studies of ape intelligence (Premack, 1976; Premack and Premack, 1983) suggest that prehominids possessed a surprisingly sophisticated level of mental representation. The conditions for the subsequent development of language as a medium of communication were set by the evolution of this level into a faculty able to integrate ‘information from peripheral systems such as vision, nonverbal audition, smell; kinesthesia, and so forth’ (Jackendoff, 1983, p. 18), i.e. into the level of conceptual structure (for discussion of how this might have taken place, see Wilkins and Dumford, 1990, in preparation). It is here that we find the central evolutionary antecedents of language; as Bickerton (1990) rightly stresses, the properties of human language have little in common with any known system of animal communication, but much in common with animal, in particular primate, representational systems.

A first step toward the evolution of this system for communication was undoubtedly the linking of individual bits of conceptual structure to individual vocalizations, perhaps along the lines manifested by animals whose communicative repertoire consists of a series of fixed calls. Once this was in place, the stage was set for the two crucial steps that would remove human communication forever from the company of animal communication: first, the development of the level of lexical conceptual structure whose central component is an autonomous lexicon consisting of a set of bi-directional sound-meaning pairings; and, second, the capacity to transmit an unbounded number of stimulus-independent messages. In an important paper, Hurford (1989) speculates on how the level of lexical conceptual structure (which can be identified as the locus of the Saussurean ‘sign’) might have originated. Since vocal communication can take place without an autonomous lexicon (as in animal communication), he assumes that at an early stage our ancestors were able to vocalize concepts and to understand them when vocalized by others without having sound-meaning pairings stored as such. Language acquisition and communication took place simply as a result of generalizing observed verbal behavior. Employing mathematical models, Hurford demonstrates that successful communication is greatly facilitated if it is possible for the language learner to construct an autonomous sign on the basis of the observation of these acts of linguistic transmission and reception. Thus once the human brain had evolved to a level of complexity to allow it, the level of lexical conceptual structure came into being.

Simultaneously, a phonological level distinct from phonetic representation was in the process of evolving. Indeed, it seems likely that from the moment that the vocal channel was employed for the expression of concepts, a primitive phonology was in place. As Mattingly (1972) points out, the roots of phonology (the imposition of structure on the continuous speech stream) lie in the ability to perceive sign stimuli categorically, an ability shared by a wide variety of animal species. Furthermore, we know that the human vocal tract underwent a rapid evolution whose only function was seemingly to facilitate the production of an ever greater diversity of sounds (Lieberman, 1984). At a certain point in this evolution, a workable system of phonotactics must have evolved, which allowed for the possibility of different combinations of a set of basic sounds, each combination linked with a different conceptual structure. In any event, the level of phonological representation allowed for an efficient storage and retrieval of a vastly greater number of elements than a phonetic level alone and must have conferred an enormous evolutionary advantage to the populations that developed it.

The reproductive advantage of being able to convey an unbounded number of stimulus-free messages can hardly be doubted, though the point at which the emergent
linguistic system was first able to achieve this is a mystery [Brandon and Hornstein (1986) suggest that evolutionary pressure for phenotypic transmission of information, which demands a system with such properties, was especially acute in the capricious and rapidly changing environment in which our ancestors lived]. But what is clear, however, is that the communication of propositions demands a syntactic level, the final link in the evolutionary chain leading to human language. This level, as suggested in the preceding section, has design features that suggest that it arose as an interface to link pre-existing components, an idea stressed by Alvin Liberman in a paper not widely known to grammatical theorists:

[T]he several components [of language] developed separately in evolution and in connection with different biological activities. At the one end of the system is long-term memory, as well as the nonlinguistic aspects of meaning and thought. . . . At the other end of the system, the components most directly concerned with transmission--the ear and vocal tract--had also reached a high stage of development before they were incorporated as terminals in linguistic communication. . . . We might assume, then, following Mattingly (1972), that grammar developed as a special interface joining into a single system the several components of transmission and intellect that were once quite separate. (Liberman, 1974, p. 44.)

The emergent syntactic level drew in particular on conceptual structure. Indeed, if Jackendoff (1983) is correct that every major phrasal constituent in a sentence corresponds to a conceptual constituent in the sentence’s semantic structure, then the influence of conceptual structure on syntactic representations was profound. But the fact that syntax evolved to coordinate this former level with the vocal output channel led to other, and sometimes conflicting pressures on its design features. In particular, since concepts have to be expressed in real time and by means of a vocal tract exapted from structures originally evolved for respiration, olfaction, and digestion (and thus not in any sense ‘perfected’ for communication), a second set of forces contributed to the shaping of syntax. In particular, there arose many conflicts between the demand that it ‘fit’ well with semantics (which would favor a one-to-one match up between concepts and syntactic categories) and the demand that it feed smoothly into the expressive plane (which would favor structures designed for ease of production and perception). The resulting level, as a consequence, came to mirror neither perfectly, but rather developed its own distinct set of governing principles.

3. The evolutionary origins of innate constraints

A major issue dividing formal and functional linguistics is whether particular grammatical phenomena can be explained without recourse to principles of formal grammar. Many works in the functionalist tradition attempt to provide evidence that the constructs of autonomous grammar have a plausible external motivation, from the rules governing predominant word order possibilities of predicates and arguments within clauses (Tomlin, 1986) to the types of categories and rules out of which grammars are constructed (Creider, 1979) to the principles that constrain their operation (Givón, 1979a). The conclusion is then typically drawn that formal autonomous approaches to language are misguided in that they have no means of incorporating these (functional) generalizations.

It is not my purpose in this paper to scrutinize in detail any particular functionalist account of a linguistic phenomenon, though I will argue in Section 4 that successfully providing a functional grounding for a linguistic principle is not in and of itself sufficient to allow the conclusion to be drawn that the principle is not autonomous.

This section will focus on the question of the relationship between functional explanation and innateness. Typically, when a functionalist explanation is provided for some
hypothesized innate principle of UG, the conclusion is reached that we have prima facie evidence that this principle cannot be innate. Such a conclusion, however, is a non sequitur. We have already seen that the model of autonomous grammar depicted in (2) has features that suggest that it was shaped by natural selection, that is, that it evolved to its present state in effect because it was functionally so advantageous. It will be argued below that the same is true of the central principles of autonomous syntax. These principles were encoded in our genes by virtue of their playing such a central role in communication that the survival and reproductive possibilities of the species were advanced as a result of them.

3.1. Innate principles of universal grammar

In the view of many formal linguists, it is not just the components of the grammar that are innately specified, but also many specific principles operating within and between components. In this section I will present three principles operating at the level of syntactic structure which have been attributed to an innate UG: Subjacency, Principle A of the Binding Theory, and the Empty Category Principle.\(^8\)

Let us begin with Subjacency, which is stated as follows (Van Riemsdijk and Williams, 1986, p. 62):\(^9\)

(3) No rule can relate X, Y in the structure

...X...[α...[β...Y...(or:...Y...]β...]α...X...]) where α, β are bounding nodes.

Subjacency, in effect, keeps rules from relating elements that are ‘too far apart from each other’, where distance apart is defined in terms of the number of designated nodes (bounding nodes) that there are between them.

Subjacency accounts for the violations of grammaticality in the English sentences (4a-b):

(4) a. *What do you wonder where John put---i?  
b. *What do you believe the claim that John ate---i?

In these sentences, two bounding nodes intervene between the gap and the word what.

Principle A of the Binding Theory (or ‘Anaphor Binding’ for short), is stated as in (5):

(5) An anaphor must be bound in its governing category.

The component elements of (5) are defined, along with their own components, in (6a-e) (allowing for slight oversimplification for ease of exposition):

(6) a. Anaphor: An NP that requires an antecedent.  
B. Bound: Coindexed with a c-commanding antecedent.  
C. C-Command: A c-commands B if and only if the first branching node dominating A also dominates B, and A does not itself dominate B.  
D. Governing Category: A is the governing category for B if and only if A is the minimal NP or S containing B and a governor of B.
E. Govern: X governs Y if and only if Y is contained in the smallest maximal X-bar-projection of X, and X c-commands Y.

Violations of Anaphor Binding are illustrated in (7):

(7)  
   a. *John, told Mary to help himself.
   b. *John, thinks that himself, should be nominated.

In both cases, the antecedent of the reflexive lies outside its governing category.

Finally, consider the Empty Category Principle (ECP) (Chomsky, 1981), which is defined in (8):

(8)  An empty NP must be properly governed.

Proper Government is defined as follows:

(9)  X properly governs Y if and only if X governs Y and X is either V, N, A or P; or if X is NP, where Y = NP.

The ECP explains the contrast between (10a) and (10b), as well as the fact that both (11a) and (11b) are fully grammatical:

(10)  
   a. Who, do you think---, saw John?
   b. *Who, do you think that---, saw John?
(11)  
   a. Who, do you think John saw---?
   b. Who, do you think that John saw---?

Needless to say, the position to be argued below, namely that these three principles were shaped by natural selection, will be less than convincing to those who reject the logically prior conclusion that they are innate (though demonstrating the selectional advantages conferred by these principles might well lead skeptics to re-evaluate their belief that they cannot be innate). Nevertheless, it is not my purpose in this paper to provide an exhaustive defense of their innateness, since to do so adequately would more than double its length. Rather, I will simply sketch what is commonly and correctly regarded as the strongest argument for their innateness, that based on the poverty of the stimulus presented to the child language learner.

Poverty of the stimulus arguments take the following form. One points to a hypothesized principle of UG and reasons that given its abstractness, the limited amount of relevant data made available to the child (in particular the fact that children’s syntactic errors are rarely corrected), and the speed of acquisition, there is no way that it could have been learned inductively. Hence the principle must be innate.

Hoekstra and Kooij (1988), for example, motivate the innateness of Subjacency by pointing out that positive evidence alone could hardly suffice to enable the child language learner to come to the conclusion that (12a) is ambiguous as to the scope of where, while (12b) is not:

(12)  
   a. Where did John say that we had to get off the bus?
   b. Where did John ask whether we had to get off the bus?
They conclude, quite reasonably in my opinion, that knowledge of the permissible intervening structure between a wh-phrase and its associated gap must be pre-wired into the child.

Poverty of the stimulus arguments also apply (though perhaps not as strongly) to Anaphor Binding. It is by no means evident how positive evidence could lead to the conclusion that (13a) is grammatical and (13b) ungrammatical, thereby supporting the innateness of Anaphor Binding:

(13) a. John seemed to Mary to love himself.  
b. *John appealed to Mary to love himself.

Finally, turning to the ECP, while speakers unfailingly make the grammaticality assignments depicted in (10) and (11), it seems beyond the realm of possibility that anything on the order of generalization from observed environmental input could have led to this conclusion. One concludes, therefore, that the ECP, as well, is innate.

3.2. Speaker-hearer asymmetry and UG principles

As has been noted, many linguists have attempted to provide functional grounding for UG principles, in some cases arguing that such grounding invalidates their very existence. And to be sure, many functional explanations seem at first blush to be highly plausible. Subjacency, in particular, has received attention as a principle admitting to a functional explanation. Suggestions as to its functional basis have pointed to the processing problems created for the hearer in matching the displaced wh-element with its coindexed gap (Givón 1979a; Berwick and Weinberg, 1984; Frazier, 1985a) or to cognition-based strategies of sentence interpretation that disfavor Subjacency-violating structures (Deane, 1988). However, it is rarely pointed out that Subjacency performs no particular service for the speaker, whose ‘easiest’ task would simply be to ‘wh’ any Noun Phrase regardless of its subcategorized position in the structure. In other words, Subjacency exhibits a functional asymmetry. This very asymmetry, it is worth pointing out, further serves to bolster the case for its innateness, since, surely, children learning their language could not be expected to refrain from uttering the relevant ungrammatical structures because they had come to realize through experience that their conversants might have trouble processing their utterances.

The same point can be made with respect to Anaphor Binding and the ECP. While these principles may help the hearer more efficiently to pair anaphoric elements and their antecedents, they seemingly complicate matters for the speaker, who, of course, is fully aware of the identity of the intended referent and is thus forced to make a ‘personally’ unnecessary grammatical distinction. Anaphor Binding and the ECP are therefore functionally asymmetrical as well.

In short, it seems to be the case that those grammatical phenomena whose explanation is most convincingly attributed to some principle of UG tend to be those whose functional grounding is asymmetrical between speaker and hearer.

The tendency for innate constraints to exhibit a functional asymmetry is a natural consequence, I believe, of evolutionary pressure for language to serve as an ever more efficient medium of communication. In cases where ease for the speaker and the requirements of the hearer were in direct conflict, an obvious solution presented itself-to bypass directly the push-pull between speakers’ demands and hearers’ demands by incorporating those
constraints necessary to the hearer directly into the innate language faculty itself. Thus the
principles of UG were selected for, allowing a stable innate core to language, immune to the
functional exigencies of the moment.

It may seem at first blush a bit ironic that function-based factors should lead to an
innate UG, but I feel that a moment’s reflection will dispel any feelings of irony. If we agree
with the functionalist thesis that the ability to communicate by spoken language is a
paramount human attribute, and contributed more than anything else to the survival and
development of the species, then we would expect anything that facilitates this process to
become biologized. If Subjacency really does ease communicators’ burdens, then would not
its biologization have conferred an advantage to the species?

Still, one might find the idea a bit far-fetched that the survival and reproductive
possibilities of constraint-possessing hominids could have been greater than those of
constraint-lacking ones. But is it far-fetched? Principles such as Subjacency, Anaphor
Binding, and the ECP govern a myriad of grammatical processes, from question formation to
the binding of quantifiers to coreference. Given the reasonable assumption that verbal
interaction was as important in prehistory as it is today, one can easily imagine that
populations whose communicative abilities were honed by having grammars that more
effectively allowed such abilities to be realized would have had an edge over those that did
not. Surely, an advance in the ability to convey complex propositions clearly and
unambiguously should have done as much for the survival of early hominids as, say, minute
variations in the shape of a finch’s beak or the color of a squirrel’s coat have aided the
survival of such creatures.

There was no evolutionary pressure, of course, to biologize what aided speaker and
hearer equally. There would hardly be any benefit in encoding in our genes some linguistic
principle that the path of least effort would lead both participants in a discourse to follow
anyway.

3.3. UG principles and parsing principles

In addition to principles of UG, there exist principles that help govern the
comprehension of utterances. Among them are parsing principles, by means of which a
hearer assigns phrase structure to incoming strings of words. Clearly, such principles are
innate—it is vastly less plausible that we ‘learn’ how to parse sentences than that we ‘learn’
Subjacency, Anaphor Binding, or the ECP. One may assume that parsing principles evolved
as the grammatical model evolved; from the time that syntax reached the level of complexity
that prohibited sentential meaning from being recovered purely from the meanings of the
individual words and the extralinguistic context, such principles would have become a
functional necessity.

There exists considerable uncertainty and debate over the interaction of parsing and
strictly grammatical principles. It is generally assumed that pressure from the parser can
affect the grammar; for example, many have pointed to cases where a particular sequencing
of elements that facilitates comprehension has been grammaticalized (see several of the
papers in Hawkins, 1988). Likewise, it seems clear that the converse also can be the case. For
example, Frazier and Rayner (1988) and Mazuka and Lust (1988) have argued that parsing
principles are parameterized to function somewhat differently in Object-Verb languages than
in Verb-Object languages. Furthermore, it has also been suggested that parsing and
grammatical principles can, in effect, overlap in their consequences. For example, Marcus
(1980) and Berwick and Weinberg (1984) argue that Subjacency is both a UG and a parsing
principle; in this view, pressure from the parser led to its being incorporated as part of our innate grammatical endowment.

Are parsing principles also functionally asymmetrical between speaker and hearer, or, putting the question somewhat differently, do the same principles that govern comprehension also govern production? The answer to this question bears on the hypothesis that speaker-hearer asymmetry was at the root of the genesis of UG principles. For if parsing principles are asymmetrical and parsing and UG principles can overlap in their function, then of course the hypothesis that functional asymmetry leads to UG principles would be weakened considerably.

Unfortunately, not enough is known about sentence production to answer this question with any degree of certainty. However, to the extent that parsing principles are rooted in human memory limitations, it follows that their analogs must help regulate production. For example, it seems intuitively clear that memory limitations should be as much at work in making it as difficult for a speaker to produce multiply center-embedded structures and structures in which too much material intervenes between heads and their dependents as they do for hearers to process them. Therefore, parsing principles encoding such memory limitations should be accompanied by symmetrical production principles. So while it is surely the case that not all parsing principles have analogs in production, it seems a safe conclusion that some do, and that therefore parsing principles exhibit less asymmetry than UG principles.

Let us consider by way of example the parsing principle Early Immediate Constituents (EIC), proposed in Hawkins (forthcoming). EIC asserts that orderings of words are preferred which enable the parser to recognize all immediate constituents of some mother node as rapidly as possible. Thus EIC explains (among other things) why in Verb-Object languages there is a tendency for heavy constituents to occur at the right margins of their verb phrases; why, for example, (14b) and (15b) are preferred to (14a) and (15a) respectively:

(14) a. ?I consider everybody who agrees with me and my disciples about the nature of the cosmos (to be) smart.
    b. I consider (to be) smart everybody who agrees with me and my disciples about the nature of the cosmos.

(15) a. ?I met the twenty three people who I had taken Astronomy 201 with last semester in the park.
    b. I met in the park the twenty three people who I had taken Astronomy 201 with last semester.

As Hawkins notes, ‘one of the most fundamental tasks that the syntax module performs, evidently with quite remarkable speed and efficiency, is to group words together into the hierarchically organized phrases of the linguist’s constituent structure representation’ (Hawkins, 1990, p. 227). EIC is instrumental to this task, abetting the speaker as well as the hearer in the task of organizing-as well as perceiving-rapid speech.

Thus we might speculate that UG and parsing principles have quite different evolutionary origins; the former to ‘protect’ the hearer from the speaker running verbal roughshod over him or her, the latter (in large part) in the memory faculty adapting itself to the newly emergent language faculty. If such is the case we might expect, as a consequence, there to be a number of diagnostics that help distinguish one from another. The remainder of this section will be devoted to arguing that such is the case.
To begin with, poverty of the stimulus arguments are inapplicable, or only weakly so, to parsing principles. One’s first thought might be that such arguments would be neutral between identifying UG principles and parsing principles, since both are innate. Nevertheless, the effect of a parsing principle should typically be a distinction in, or judgment of, acceptability that is learnable through positive evidence alone, while the effect of a UG principle should not be. Just as a logical point, there is no reason that distinctions in acceptability, whose explanation is based in the structure of the parsing mechanism, present learning difficulties. A learnability problem therefore points directly to an innate UG, not to the parser, which merely employs the existent grammar in language use.

Consider, for example, EIC. Even though this processing principle which, again, explains the contrasts of (14) and (IS), is innate, there are no poverty of the stimulus arguments applicable to the acquisition of these contrasts. Positive evidence can reveal that V-VP-NP, V-AP-NP, and V-PP-NP are options to V-NP-VP, V-NP-AP, and V-NP-PP, respectively, as well, I suspect, as the conditions under which the former would be likely to be used instead of the latter.

Or take cases where the effects of EIC have been fully grammaticalized. EIC predicts that more languages are likely to have N-Adj-S’ orders than N-S’ -Adj, but in this fact I see no evidence for a UG principle, since there is no compelling poverty of the stimulus argument that learners must choose the former order. I assume that if anything is learnable from positive evidence, it is the possible ordering of the constituents of phrases and clauses--a phenomenon about which EIC has a great deal to say and principles of UG very little.

Interestingly, Freedman and Forster (1985) and Frazier (1985b) have argued on the basis of how Subjacency violations are parsed that this constraint, for which, as we have seen, poverty of the stimulus arguments do apply, cannot be built into the parser.

A second diagnostic for a UG principle is the nature and degree of variation that it exhibits. The current consensus is that each principle admits to variation in a highly circumscribed way, namely by allowing different parameter settings whose values are ordered with respect to one another by the set-theoretic relation of proper inclusion. Take the question of the possible governing categories for Anaphor Binding, where there exists variation from language to language and even between different anaphors within a particular language. Manzini and Wexler (1987) have argued that this variation is highly systematic: γ can be a governing category for α just in case γ is the minimal category that contains α and a governor for α and has one of the grammatical elements enumerated in (16) (I am oversimplifying somewhat for ease of exposition):

(16) a. a subject; or
b. an Infl; or
c. a Tense; or
d. a ‘referential’ Tense; or
e. a ‘root’ Tense.

Interestingly, the set of categories that have a subject includes the set that has an Infl; the set that has an Infl includes the set that has a Tense; and so on.

While the possible bounding nodes for Subjacency have not been subject to the same cross-linguistic scrutiny as the possible governing categories for Anaphor Binding, the findings of Keenan and Comrie (1977) suggest that very much the same sort of variation might be at work here. They found a universal hierarchy with regard to relative clause formation, depicted in (17):
All languages relativize from subject position; if a language relativizes from a position lower on the hierarchy, it will also relativize from higher positions. It is possible that their work, translated into current theoretical conceptions, will lead to conclusions about variation in possible bounding nodes that conceptually parallel those of binding domains.

As Manzini and Wexler note, parameterized hierarchically organized variation is precisely what learnability considerations would lead us to expect. And Piattelli-Palmarini (1989), drawing on the work of J.-P. Changeux, points out that the idea of a UG characterized by a pre-programmed chain of multiple hierarchically ordered internal ‘switches’ accords well with much current thinking in neurobiology.

Non-UG related variation in language is quite different. Most importantly, it tends to be graded rather than discrete. Anaphors that are not bound in their governing category in English are impossible, except for those subject to an independent discourse-based condition (Zribi-Hertz, 1990), but when is a heavy NP ‘too heavy’? To take another example, Dryer (1980) defends at length the generalization that languages are more likely to have sentential noun phrases in final position than in internal position, in initial position than in internal position, and in final position rather than in initial position. Hawkins (forthcoming) argues that these generalizations are a consequence of EIC. But we do not have here the characteristic property of a UG principle; the choices that languages make in this respect are not matters of choosing the proper ‘switch-settings’ but rather reflect statistical tendencies which themselves are rooted in the speed with which relevant syntactic nodes can be recognized by the parser.

Surely the graded consequences of parsing principles is a function of the fact that they in turn are rooted to one degree or another in human memory, which itself demands a description along a continuum.

A third characteristic of UG principles is their abstractness. Typically, they manipulate grammatical elements inaccessible to speakers’ conscious awareness. So, for example, Subjacency governs the relationship between an overt element and a null element (i.e. a trace), as in overt wh-movement, between two null elements, as in the case of the relationship between an empty operator and its trace, and scopal interpretation where no syntactic movement has occurred at all, as in example (18) from Lakhota, discussed in Foley and Van Valin (1984):

\[(18)\] Wichasa wa taku ophethu ki he walaka he  
man a WH/smthg 3sg-buy the that 2sg-see-3sg Q.

They note that this sentence may be interpreted to mean ‘Did you see the man who bought something?’, but not ‘What did you see the man who bought’, a fact that follows directly from Subjacency governing (invisible) movement in LF.

Likewise, Anaphor Binding affects null anaphors as well as overt ones. Indeed, an important insight that was incorporated ultimately into the Binding Theory is that the relationship between an anaphor and its antecedent parallels that between the launching and landing sites of NP movements.
I have seen no evidence that non-UG principles ever make reference to null grammatical categories. EIC, for example, treats all NPs the same, whether they are overt or null.

3.4. Some further issues in the origins of UG principles

It needs to be stressed that while UG principles point to asymmetry, asymmetry alone does not lead irrevocably to a UG principle. For example, one way to keep the speaker in check is to build constraints directly into the production system. Cutler (1987) and Levelt (1989) discuss innate production constraints whose sole function seems to be to ease communication, the former involving the formation of neologisms and the latter guaranteeing that on-line repairs follow a particular well-formedness rule.

Why then were Subjacency and the other constraints not made production constraints, a solution which, like the UG solution, would effectively prevent sentences like (4) and (7) from being uttered? I suspect that the reason is that the planning units of production (see Levelt) are too short for this to have been a workable possibility. Hence, these constraints were grammaticalized in UG instead.

Finally, asymmetry exerts no pressure toward an innate constraint if it does not lead to communication being impaired. So, as Slobin (1977) has pointed out, speakers and hearers have different ‘interests’ as far as the packaging of a linguistic form is concerned. The former wish to minimize the articulatory effort in producing it, the latter the effort of understanding. The result is a spectrum of possibilities within a range acceptable to both, from an inflectional ‘speaker-oriented’ morphology, as in Serbo-Croatian at one end, to an agglutinative ‘hearer-oriented’ morphology, as in Turkish, at the other. And in the realm of discourse, Horn (1984) has pointed to a ‘division of pragmatic labor’ to deal with asymmetries in the needs of speakers and hearers.

Interestingly, some languages have found a way to handle ‘awkward’ pairings of antecedents and gaps without recourse to a UG principle. This has been accomplished by means of resumptive pronouns, which fill the gap of the displaced wh-phrase. Thus in English, Subjacency-violating (and therefore ungrammatical) (19a) becomes grammatical (at least in some dialects) if the gaps are filled with pronouns, as in (19b):

(19) a. *He’s the kind of person who when you meet--- you like---.

b. He’s the kind of person who when you meet him you like him.

What the use of resumptive pronouns does is to reduce the degree of asymmetry by making things a great deal easier for the hearer, who has the gap marked and can thus link more easily its position to the fronted wh-phrase.

Why then, given a possible solution to the asymmetry problem not involving a novel principle of UG, did such a principle arise at all? Why do some languages allow resumptive pronouns, but not others, and why do some languages that have them (like English) restrict their use severely? At the present time, I have no answer to offer to these questions.

In sum, the innate principles of UG can be motivated functionally. As the language faculty evolved, pressure for more successful communication (and with it the reproductive advantage that this would bestow) conferred an evolutionary advantage on those whose grammars incorporated them.
4. Functional explanation and autonomy

The conclusion that UG principles have a functional motivation might well seem like a pyrrhic victory for formal linguistics. For if it is the case that proposed UG principles can, one by one, be attributed to some external cause, then what, one might ask, is left of autonomous grammar but a hollow shell, gutted of the central principles that were once thought to comprise it?

Formal linguists need not despair, however. In this section, I will demonstrate that the conclusion that many central UG principles can be motivated functionally does not, despite first appearances, undermine the autonomy of grammar.

4.1. Functional motivation, but structural formulation

While the principles of UG might have a functional motivation, they nevertheless cannot be formulated in functional terms. Rather, they demand formulation in the vocabulary of autonomous syntax, that is, in terms of notions like ‘syntactic category’ and constituent structure relations of dominance, precedence, and c-command. However, none of these can synchronically be reduced to syntax-external factors.

Take the ECP, for example, stated above in (8). The replacement of (8) by a statement making use only of constructs outside of formal grammar would involve demonstrating that every one of the following notions that enter into it are replaceable by such statements: ‘Verb’, ‘Noun’, ‘Adjective’, ‘Preposition’, ‘Noun Phrase’, ‘maximal projection’, and ‘c-command’. But, as far as I can determine, none of them are. Take the syntactic categories, Noun, Adjective, and Verb, for example. It seems unlikely that these categories can be defined semantically, since each of them can be used to encode grammatically what semantically are entities, processes, and attributes, as illustrated in (20).

Likewise, an NP may function as a semantic argument, but need not do so (21a-b), and may or may not be propositional (22a-b):

(20)

<table>
<thead>
<tr>
<th></th>
<th>Entity</th>
<th>Process</th>
<th>Attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noun</td>
<td>tree</td>
<td>explosion</td>
<td>nuisance</td>
</tr>
<tr>
<td>Adjective</td>
<td>mammalian</td>
<td>transitory</td>
<td>blue</td>
</tr>
<tr>
<td>Verb</td>
<td>edit\textsuperscript{14}</td>
<td>run</td>
<td>cower</td>
</tr>
</tbody>
</table>

(21) a. It is creeping up my leg.
    b. It is raining.

(22) a. John’s refusing the offer stunned us.
    b. John stunned us.
And finally the definition of govern in (6e) allows a Verb to ignore whether it enters a thematic relationship with the Noun Phrase that it governs. In (23a), Bill is an argument of persuade, but in (23b), Bill is not an argument of believe:

(23)a. Mary persuaded Bill to leave. b. Mary believes Bill to be a fool.

In short, the ECP, while it may have arisen to perform a communicatively necessary function, cannot be replaced by a functionally based statement or set of statements.

Furthermore, UG principles are instantiated in slightly different ways from one language to the next. And as we have seen, these differences can be characterized structurally: the variation in the bounding nodes for Subjacency and the binding domains for Anaphor Binding is sensitive to syntactic category, a concept which, as demonstrated above, does not admit wholly to syntax-external definition.

The idea of a linguist’s objecting to a formal characterization of UG principles seems no different in principle from that of a physiologist objecting to a structural characterization of the organs of the human body. Organs too have both structures and functions. The heart, for example, functions to pump blood and the kidneys to filter waste. But these facts would hardly deter an anatomist from studying the structures of these organs in terms of the tissues, cells, and molecules that comprise them. Indeed, a purely ‘functional’ characterization of the heart and kidneys that was not based on a structural account of these organs would be strange indeed. So it should hardly be surprising that the components of the ‘language organ’ (to use Chomsky’s frequent expression) also call for a detailed ‘anatomical’ working out of their formal properties.

4.2. Structural systems

A second reason that a functional genesis of UG principles does not obviate the necessity of a structural characterization of such principles is that they interact with each other to form structural systems which differ for each language, with the division of labor among the principles differing as well. Thus in any particular grammar, particular principles cannot be linked to particular functions.

To give a concrete example, it is a necessary function that arguments need to be kept distinct for each predicate. Putting the matter in fairly crude terms, hearers need to be able to tell what is a subject, what is an object, and what is an indirect object. But as is well known, this can be achieved in many different ways. Some languages keep arguments distinct by means of rigid word order, others allow fairly free word order, but identify the role of the phrase in question by means of an adposition, and still others use a combination of the two devices.

Quite a few UG principles interact to ensure identifiability of arguments, most importantly among them the Theta-Criterion, the ECP, and the Case Filter. But since these principles are parameterized to a certain degree (that is, they admit to some variation from language to language) and they interact in different ways with purely language-particular properties, there is no way that the nature of the structures responsible for identifiability of arguments can be derived from the functions that these structures, acting in concert, carry out.

Again, an analogy with the human body seems apropos. There are two ways that the body can be described: in terms of its functional systems (digestion, circulation reproduction, respiration) and in terms of its structural systems (the interconnected network of organs,
tissues, cells, and so forth that comprise it). These two systems are in a many--many relation with each other. One particular type of cell tissue can be involved in carrying out two or more functions, and each function draws on several types of anatomical structure.

No physiologist therefore would dream of denying the reality of structural systems on the grounds that structures exist to carry out functions. Yet it is curious that in linguistics one finds an analogous denial.

Furthermore, every language’s structural system contains a great amount of language-particular syntactic, morphological, and phonological generalizations that defy restatement in grammar-external terms. Consider grammatical gender in German, for example. What conceivable function does it serve? Objectively speaking, would not German be a more efficient vehicle of communication without it? Yet in terms of the grammar of German, gender is hardly some marginal excrescence. On the contrary, its relevance to such central features as agreement and declension shows that it is tightly integrated into the structural system of that language.

The point that there are profound structural generalizations in language that have no synchronic external motivation is amply illustrated by a central construction of English, the inverted auxiliary. In this construction, the first auxiliary verb precedes the subject, as in does John work, has Mary been studying, etc. Use of the inverted auxiliary is associated with many diverse semantic functions. For example, it can be used to signal a question, both of the ‘yes-no’ and the ‘wh-’ variety:

(24) a. Have you been working late?
   b. What have you been eating?

However, it is disallowed in embedded questions (cf. (25)-(26)) and in main clause questions if the subject itself is a wh-phrase (cf. (27)):

(25) a. I wondered whether you had been working late.
    b. *I wondered whether had you been working late.

(26) a. I wondered what you had been eating.
    b. *I wondered what had you been eating.

(27) a. What has been bothering you?
    b. *Has what been bothering you?

Furthermore, the construction occurs after preposed negative adverbs (28), but not after preposed positive adverbs (29); with bare subjunctives, but not with those introduced by if (30); and obligatorily after preposed so-clauses (31):

(28) a. Under no circumstances will I take a day off.
    b. *Under no circumstances I will take a day off.

(29) a. *Given any possibility will I take a day off.
    b. Given any possibility I will take a day off.

(30) a. Had I known the dangers, I would have kept my distance.
    b. *If had I known the dangers, I would have kept my distance.
a. So tall is Mary, she can see into second story windows.

b. *So tall Mary is, she can see into second story windows.

The environments in which the inverted auxiliary construction occur defy a uniform semantic characterization. Yet the formal differences between this construction and the ‘normal’ auxiliary-after-subject construction are trivially easy to state. Thus the facts surrounding this construction support the idea of an autonomous structural system.

It seems clear that we learn that English has the option of fronting an auxiliary and we learn the contexts in which it is correct to do so. Presumably any linguist who wished to deny the reality of autonomous constructions would have to take the somewhat peculiar position that each time a new semantic function is learned for the construction, the construction itself must be learned de novo. For to say otherwise would be to make a fundamental concession to the principle of the autonomy of linguistic form.

Furthermore, the syntactic principles involved are just special cases of more general ones even further removed from semantic function. For example, the fact that only one auxiliary can be fronted [as (32) illustrates] and the nonoccurrence of the construction in embedded clauses both follow from very general formal principles.\(^\text{17}\)

(32) *Have been you working late?

Pursuing the matter further, a functionalist might speculate that what unites the various uses of the inverted auxiliary construction is the service of some broader discourse function. But this too is incorrect; its use has a diversity of discourse effects. For example, the construction can convey a question (33a), a request (33b), an offer (33c), an exclamation of desire (33d), and a statement (33e):

(33) a. Can you take Interstate 90 all the way to South Dakota?
   b. Could you pass the salt?
   c. Can I help you?
   d. Could I use a drink!
   e. Is linguistics easy!

Since all five types of speech acts represented in (33a-e) can also be carried out by means of other formal devices, we may conclude from a study of the inverted auxiliary that the principles involved in characterizing constructions formally must be distinguished from those involved in determining the use of particular constructions in discourse.\(^\text{18}\) The inverted auxiliary construction is typical in that its properties point to the reality of function-independent structural systems at the heart of language.

4.3. **Conflicting functions**

A third reason why a functional basis for UG principles does not serve to undermine autonomy is that functions can be in conflict with each other. As we have already seen, what aids comprehension by the hearer can create an obstacle for the speaker. Chomsky may well be right that his ‘Last Resort’ principle (see Section 1.2) creates parsing difficulties. Yet it may prove to provide an efficient way to store representations. A language is full of conflicting functions that it must somehow juggle, one against the other: the speaker’s preference for brevity versus the hearer’s demands for clarity, parsing ease versus efficient
storage, a subconscious preference for symmetrical phonemic inventories versus the push toward asymmetry caused by the irregular shape of the vocal tract, and so on.

Autonomy, then, is the solution that language has developed to ‘compromise’ between the various opposing forces pulling on it, to mediate between the conflicting functions that it must fulfill in such a way as to guarantee that the scales do not get tipped too far in one direction or the other.\textsuperscript{19}

Needless to say, we have no metric that will decide in advance how the conflict created by conflicting functions will be resolved. As suggested in Section 3, Subjacency, Anaphor Binding, and the ECP were probably necessary in order for language to be usable at all. But one can imagine a workable communication system both with and without the Last Resort principle and many others that have been argued to comprise UG.

And this observation leads to a final point that must be made. The basic thrust of this paper has been that general architecture of the grammatical model and some of the principal constraints governing its operation arose via natural selection. This said, we still must recognize the fact, stressed so forcefully by Steven Jay Gould in his recent books, that every organism’s genotype contains traits that did not arise as adaptations. Assuming that human language is no different in this respect, it would follow that a functional origin is simply not discoverable for every feature of UG. While I have found no convincingly nonadaptive UG principles, their discovery would lend even further support to the autonomy hypothesis.

4.4. The divergence between form and function

Even where it can be demonstrated that a formal principle arose to meet some function language is no different from other human faculties (and institutions, for that matter) in that form and function tend to diverge over time. Therefore, synchronically, at least, function and form can be so out of step that it becomes quite hopeless to try to derive the latter from the former.

For example, while the effect of the biologization of Subjacency may have been the more efficient pairing by the hearer of antecedents and gaps, there are innumerable sentences that violate this principle (and are therefore ungrammatical) that are nevertheless perfectly easy to understand. Take, for example, a ‘Coordinate Structure Constraint’ violation such as (34), which in all likelihood can be subsumed under Subjacency:

\textbf{(34) *What did John eat beans and?}

Not only does this sentence present no processing difficulties, but it forms a minimal pair with grammatical sentence (35), in which Subjacency has not been violated:

\textbf{(35) What did John eat beans with?}

The divergence over time between selectionally shaped form and the functional pressures that originally shaped the form is, of course, the norm in evolutionary history. In the general case, form will change to reflect a changing environment only if doing so has a positive effect on the survival and reproductive possibilities of the organism possessing the particular formal structure. Hence we retain our appendix, even though its utility to digestion has disappeared owing to changed diets caused by a changed environment. Fair-skinned people who have migrated to sun-bathed countries show no genetic tendency from generation
to generation to darkening of the skin (though if skin cancer rates in Australia are any indication, this might change).

One might speculate then that Subjacency was established as a principle of innate UG before the language faculty supported coordinate structures. Since questioning elements within such structures was never communicatively vital, this principle remained the same. Or alternatively (and perhaps more plausibly), Subjacency might have arisen to disallow certain structures that were difficult to process, yet likely to be uttered, without regard to its effects on parallel-yet communicatively nonessential structures that presented no processing difficulties.

Whichever option is correct, Subjacency illustrates *par excellence* that central to language design are autonomous grammatical principles that cannot be reduced *in toto* to the functional principles that in the distant past brought them into being.

Quite possibly syntactic categories at one stage in prehistory had a uniform external characterization as well, nouns for entities, verbs for processes, and adjectives for attributes, and an analogous process of extension led to the state of affairs depicted in (20), in which these categories no longer match up with their original defining semantic properties.

The extent to which form and function in language can diverge is even more dramatic at the level of the evolution of individual languages, rather than that of the biological evolution of language in general. Lee (1988) provides an interesting example involving the diachronic changes that noun classifier systems have undergone. Noun classifiers are grammatical elements that denote some salient property of the noun with which they co-occur, for example *sheets* in the English example (36a) and *zhi* in the Chinese example (36b):

(36) a. five *sheets* of paper.
   b. liang *zhi* qianbi (lit. ‘two long-thing pencil’).

Japanese has a classifier *hon*, which at one time was apparently used solely for long thin rigid objects such as sticks, canes, pencils, candles, and trees, and is still used to classify these nouns today. However, over time, *hon* came to be used to classify martial arts contests (since they are fought with long thin rigid staffs and swords), and then judo matches (by analogy to martial arts contests); to classify letters (since they were originally written on long stick-like scrolls) and now telephone calls (by analogy to letters). Each extension of *hon* was motivated functionally, but the net result of all these changes is a classifier lacking a coherent function.

The fact that such sweeping form-function mismatches can arise in less than a millennium in the history of a particular language points out vividly the utter hopelessness of any attempt to effect a general replacement of formal principles with functional statements after tens of thousands of years of language evolution, both biological and cultural.

Even more troublesome for the anti-autonomy position is the fact that there are clear instances of language change that have no functional motivation whatever. Labov (1987) points to near-mergers in support of this point. In near-mergers, once distinct phonemic contrasts are neutralized perceptually, but not physically. For example, in Philadelphia, short /e/ and /ɪ/ before intervocalic /r/ (as in the pairs *merry-Murray, ferry-furry*) have come to approximate each other so closely that speakers of that city’s dialect cannot reliably distinguish them. Yet spectrographic evidence shows the vowels to be distinct. Apparently such near-mergers have been quite common in language change and are at the root of apparent mergers in the pronunciation of two words and their later separation. Labov concludes from this phenomenon:20
The existence of near-mergers has important consequences for functional explanation. It appears that the communicative role of phonemic contrasts can be suspended for a considerable period of time without disturbing the integrity of the word classes and the system they participate in. There is no doubt that phonemes do function to distinguish words. But the historical development of the system of phonemes is not narrowly controlled by that communicative function. In this respect, the anti-functional position taken by Chomsky and Halle (1968) in defending flip-flop rules seems fully justified. . . (Labov, 1987, p. 319.)

In sum, establishing the fact that some grammatical principle, rule, or construction arose diachronically to serve a particular communicative function is not sufficient evidence for removing it from the domain of formal grammar.

5. The resolution of the formalist-functionalist conflict

We may conclude that formal and functional grammarians have a lot that they can learn from each other. Every formalist must recognize that many properties of the structural systems whose workings he or she is devoted to elaborating, including the innate principles which comprise them, arose for a good reason. More often than most formalists have been willing to accept, external factors based in communicative efficacy helped to steer grammar in the course of language evolution. Functionalists, then, have been right in stressing the interest and importance of identifying the external factors that have led grammar to take its present shape and form.

On the other hand, functionalists must recognize that the existence of these factors, as profound as they may have been, in no way threatens the fundamental formalist tenet, namely that of the autonomy of grammar. Indeed, as we have seen, the functionalist position, worked through to its logical conclusion, leads to the realization that all linguists should accept the idea that central to language there exists an autonomous grammar, shaped in part by natural selection.

The biologist S. E. Luria seemed to anticipate just this conclusion when he wrote:

Perfecting of these cerebral structures must have depended on their becoming progressively more useful in terms of reproductive success. For language, this must have meant becoming a better instrument in formulation and communication of meaning through a usable grammar and syntax. (Luria, 1973, p. 141.)

NOTES

1 It must be stressed, however, that the autonomy hypothesis is in no sense entailed by the ‘Chomskyan’ program for linguistics, which sees the study of language as a tool for gaining insight into the human cognitive capacity (and thereby into human nature in general) (Chomsky, 1975, pp. 3-5). The program would remain unaltered even if it were demonstrated that grammatical concepts were derivative in the above sense. Nevertheless, the principal conflict in the field I feel, centers not around the validity of the general program, but rather over the autonomy hypothesis, which is advocated by the great majority of those who endorse the program.

‘Formal linguistics’ should also be understood as the approach to language that focuses on form (as opposed to function), sees form as central, etc. rather than that which advocates formalization, though most formal linguists do see formalization of the properties of the autonomous system to be an essential task. Functionalists, on the other hand, tend to downplay or dismiss the need for formalization. The comments of Li (1976, pp. x-xi), in which any move toward formalization is characterized as premature, are typical in this respect.

2 An even weaker functionalist position is put forward by Dik (1987), who writes that ‘the functional approach to language is not committed to the view that any property of a language must be functionally explainable; it is
committed to the attempt at arriving at a functional understanding of the structure of a language to the extent that this is at all possible’ (Dik, 1987, p. 84). While it is clear that Dik believes that the extent to which this is possible is great, his wording leaves open the possibility that no ‘functional understanding’ is attainable, and hence that one could be a functionalist and a radical autonomist at the same time.

3 In one article, Chomsky (1976) casts aspersions on anyone even raising the question of the evolutionary origins of language, suggesting that it is no more or less interesting than those of any other organ, say, the heart. He implies that the age-old quest for an answer to this question must reflect religious motives, rather than scientific ones. I find Bickerton’s response to be wholly compelling:

How we first got arms or a heart are questions so phylogenetically remote and so unrelated to the mental life of our species that Chomsky is right to dismiss them as not worth asking (except, presumably, for those whose professional specialism they are). But the evolution of language is so recent that we may reasonably suppose that its present nature is still conditioned by those origins, and its crucial role in distinguishing between us and other species (while any number of other species have arms and hearts) is such that it must strongly influence, even if it does not wholly determine, all that we think and do. Thus, to put the determination of its origin on a par with the determination of the origins of physical organs seems to me a piece of evasive perversity. (Bickerton, 1981, p. 315.)

4 Gould himself (1987) has taken the position that language is not the product of natural selection, but rather is a product of nonadaptationist mechanisms.

5 For discussion of syntactic principles, see Chomsky (1981, 1986a, b), Sells (1985), Van Riemsdijk and Williams (1986), and Newmeyer (1986a). I leave open the (for our purposes) irrelevant question of the number of levels of syntactic structure, i.e. whether the model contains the levels of D-Structure and Logical Form, as well as S-Structure.

6 Pinker and Bloom address a great many objections that have been raised to an evolutionary origin for UG. It is worth summarizing their responses to the two most serious. First, Lieberman (1984) claims that selection demands allelic variation, and none exists in syntactic abilities. To this point, Pinker and Bloom note that enormous individual differences in such abilities exist, certain of which plausibly have a genetic basis. Indeed, there have been demonstrated to be genetically transmitted syndromes of grammatical deficits. Second, Geschwind (1980) argues that ‘no hypothetical beneficial grammatical mutation could have benefited its possessor, given that none of the person’s less evolved compatriots could have understood him or her’ (Pinker and Bloom, in press). To this they reply that comprehension abilities do not have to be in perfect synchrony with production abilities, a point that they amply illustrate with examples of asymmetries between the two.

7 For discussion, see Wilkins and Dumford (in preparation).

8 The claim that these are UG principles should not be taken to imply that there are not also semantic and pragmatic factors that are relevant to the interpretation of sentences whose derivation is governed by such principles. In fact, there are, as has been demonstrated for Subjacency by Erteschik-Shir and Lappin (1979), Van Valin (1986), and Deane (1988) and for Principle A of the Binding Theory by Kuno (1987) and Zribi-Hertz (1990).

9 The principle of Subjacency dates from Chomsky (1973) and unifies several of the extraction constraints proposed in Ross (1967). In different ways, Kayne (1984) and Chomsky (1986b) attempt to unify Subjacency and the ECP, a result which, if correct, has no bearing on the conclusions of this paper.

10 For experimental results that bear on the question of innate principles of UG, see Tavakolian (1981), Lust (1986), and Roeper and Williams (1987).

11 Matthew Dryer (personal communication) points out that poverty of the stimulus arguments lead irrevocably to innateness, but not necessarily to innate principles of UG. As he notes, while the acquisition of the contrasts in (10) and (11) might suggest that the child brings to the language learning process more than the ability to make simple generalizations from observed input there is no logical necessity for the conclusion that a specifically linguistic faculty (i.e. UG) is at work, rather than some sophisticated general cognitive faculty.
Dryer is correct in his observation. However, since no adequate nonlanguage-specific mechanism has been proposed that accounts for the data handled by the ECP and other putative UG principles, one feels safe in hypothesizing that poverty of the stimulus arguments do in fact lead to an innate UG.

In an interesting book, O’Grady (1987) argues that UG principles, modified in fairly drastic ways, yet maintaining their autonomous nature, are capable of being learned inductively. While his alternatives to Subjacency and so on demand to be taken seriously, he gives no reason for why the child should expect any restrictions to occur, and thereby effectively bypasses the question of innateness, rather than overturning it.

12 Early discussion of the conflict between the interests of speakers and hearers and its resolution can be found in Zipf (1949) and Martinet (1962).

13 Matthew Dryer (personal communication) suggests that the ungrammaticality of (19b) in most dialects provides evidence for the autonomy of grammar. As he notes, from a functional point of view it would make more sense if this sentence and others like it were grammatical, since speakers always seem to ‘want’ to utter such sentences.

14 As in Mary edits for Pergamon Press, synonymous with Mary is an editor for Pergamon Press.

15 Though languages do allow the subject-object distinction to be neutralized in certain instances, as in English nominalizations like the shooting of the hunters. Irish relative clauses even allow wholesale ambiguity between subjects and objects (McCloskey, 1977).

16 For a finer characterization of the occurrence of this construction after negative adverbs, see M. Liberman (1974) and Lakoff and Brugman (19871.

17 The former property follows from the Structure Preserving Constraint (Emonds, 1976) and the Head Movement Constraint (Travis 1984). Newmeyer (1987) argues that the latter property follows from the ‘Barriers’ framework of Chomsky (1986a).

18 For discussion of the pragmatic principles relevant to an understanding of the use of these sentences, see Searle (1975).

19 Many functionalist works have addressed the problem of conflicting functions (see, for example, Haiman, 1983; Du Bois, 1985, 1987), though none draw the conclusion that autonomy is a natural solution to the problem.

20 Labov and his collaborator Judith Weiner (Weiner and Labov 1983) have suggested that the idea of autonomy finds support even in the conditions governing the use of roughly synonymous expressions in discourse. They investigated when it is normal to use the passive construction, to say (ii) instead of (i):

(i) Somebody broke the school window.
(ii) The school window was broken.

A standard functionalist answer is that one would use a passive like (ii) to downplay the agent of the action if it is unknown or unimportant and at the same time to express the topichood (the ‘givenness’) of the nonagent. This in itself is normally related to maximizing the efficiency of the exchange of information in discourse. However, Weiner and Labov found something very different. While the functionalist answer is not wholly wrong they found that the use of a passive is just as much a function of the use of a passive earlier in the discourse as of the factors mentioned in the preceding paragraph. In other words, the desire of speakers to maintain structural parallelism is an important motivating force in actual speech.
COGNITIVE VERSUS GENERATIVE LINGUISTICS: HOW COMMITMENTS INFLUENCE RESULTS

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The Chomskyan framework that Newmeyer assumes without question has been rejected on empirical grounds by a large proportion of the linguistics community, especially those concerned with cognition and communicative function. Since the paper concerns the relationship between cognitive functional theories and the Chomskyan paradigm, a discussion of the differences in background assumptions is necessary. Let us begin by making some distinctions.

Empirical linguistics

This is the scientific study of language in all its manifestations. It is defined by the generalization commitment.

The Generalization Commitment

The commitment to characterize the general principles governing all aspects of human language. This commitment comes with a phenomenological characterization aspects of language where generalizations are to be sought:

In syntax. Generalizations about the distribution of grammatical morphemes, categories and constructions.

In semantics. Generalizations about inferences, polysemy, semantic fields, conceptual structure, knowledge structure, and the fitting of language to what we perceive, experience, and understand.

In pragmatics. Generalizations about communicative function: speech acts, implicatures, discourse, deixis, and the use of language in context.

And so on, for morphology, phonology, etc.

Empirical linguistics, in itself, makes no a priori commitment as to whether these are separate subfields, but takes it as an empirical matter as to whether syntax is autonomous, or whether the generalizations governing the distribution of grammatical morphemes, categories, and constructions involve aspects of semantics, communicative function, or other aspects of cognition.

1 This paper was originally published in Language & Communication, Vol. 11, No. 1/2, pp. 53-62, 1991.
Generative linguistics

Generative linguistics, as Newmeyer observes, begins with the assumption that syntax is autonomous. It is not an empirical question within generative linguistics as to whether semantics, communicative function, etc. might play a necessary role in stating syntactic generalizations: that possibility is simply ruled out a priori. It is important to understand exactly why that possibility is ruled out. It follows from an a priori philosophical commitment.

The Chomskyan Commitment

This is the commitment to describe language in terms of the mathematics of symbol manipulation systems (which are variously described as ‘formal systems’, ‘systems of rewrite rules’, etc.). The subject matter of this form of mathematics is the manipulation of abstract symbols without regard for what the symbols mean and without regard for anything outside the symbol manipulation system. Thus, such things as meaning, communicative function, and general cognition cannot by definition enter into rules of formal grammars.

The Chomskyan Commitment is more than just a ‘working hypothesis’ that might be abandoned tomorrow if it fails. It is an overriding philosophical commitment that takes precedence over the Generalization Commitment. If one fully accepts the Chomskyan Commitment, then there could not possibly be a linguistically significant generalization that violates that commitment, because the Chomskyan Commitment itself limits the possibility for what counts as a ‘linguistically significant generalization’. In this way, the Chomskyan Commitment changes what is meant by ‘empirical linguistics’.

Cognitive linguistics

Cognitive linguistics is defined by the Cognitive Commitment.

The Cognitive Commitment

The commitment to make one’s account of human language accord with what is generally known about the mind and brain from disciplines other than linguistics.

The Cognitive Commitment, if one takes it as a primary, overriding commitment, forces one to be responsive to empirical results from cognitive and developmental psychology, cognitive anthropology, neurobiology, etc. Examples include results that indicate the existence of basic-level categories and conceptual prototypes (cf. Lakoff, 1987); results about the nature of color perception and categorization from psychology, anthropology, and neurobiology; results from psychology linking conventional mental imagery and language (cf. Gibbs and O’Brien, 1989).

Adopting the Cognitive Commitment as primary also changes what is meant by ‘empirical linguistics’. The reason is that it gives different meanings to the notion ‘generalization’. Generalizations are statements about categories. But what a ‘category’ is is in itself very much at issue. It is an empirical question, within cognitive science, just what counts as a category. The classical position, and the one required by the mathematics used
in generative linguistics, is that a category is defined by necessary and sufficient conditions. But empirical research in the various cognitive sciences has shown that this is grossly incorrect for real human categories; instead, the human category system is based on basic-level and prototype-centered categories of various kinds - graded, metonymic, and radial. (For details, see Lakoff, 1987.)

Thus, the Cognitive Commitment is at odds with the Chomskyan Commitment. Both are primary, overriding commitments that change what counts as a possible ‘generalization within an account of empirical linguistics. The Chomskyan Commitment requires formal grammars in the technical sense, which, by definition, exclude such results about general cognition. That is why one does not see discussions of basic-level concepts and kinds of prototypes in the generative linguistics literature.

Cognitive and generative linguistics are, of course, at odds in another way. Unlike generative linguistics, cognitive linguistics is open to the possibility that aspects of general cognition, semantics, and communicative function might play a necessary role in the generalizations governing syntactic phenomena. Indeed, it studies cases where that occurs. Functional linguistics is a branch of cognitive linguistics that primarily studies the more limited area of how communicative function plays a role in generalizations governing syntactic phenomena.

Incidentally, Newmeyer incorrectly describes functional linguistics. He assumes that functional linguistics must rely on function alone and cannot make use of any formal structure in its principles. Newmeyer assumes a strict dichotomy: only function or only form. Generative linguistics may require only form, but functional linguistics does not require only function. Functional linguistics argues, on empirical grounds, that general principles governing syntactic phenomena may make use of both function and form, by stating correlations between them. Similarly, cognitive linguistics argues on empirical grounds that aspects of general cognition and semantics as well as communicative function enter into the statements of general principles governing syntactic phenomena. This is important because a number of Newmeyer’s arguments show nothing more than that form plays a role in linguistic generalizations. This is wholly consistent with a functionalist position.

Innateness

The innateness of autonomous syntax is not a philosophy-free empirical result; it is a consequence of the Chomskyan Commitment. It is required simply because there is no way that such a formal mathematical system could be learned.

From a cognitive perspective, there is no autonomous syntax and hence no innate form of it. It is an open empirical question for us just what is and is not innate. In general, we assume a great deal of innate conceptual structure and processing capacities, and we take these as forming the basis for linguistic universals.
Newmeyer’s claims

Let us begin with a minor place where Newmeyer uses the Chomskyan Commitment in his paper. Newmeyer cites a paper on classifiers by Michael Lee (1988), where Lee, a former student of mine, makes reference to my 1987 discussion of the Japanese classifier hon. Lee argues, as I did, that hon was extended historically from long, thin, rigid objects like writing scrolls, baseball bats, and swords and staffs via regular conceptual principles to letters, home runs and wins in martial arts contests to form a currently existing radial category whose internal structure reflects the historical extension. Newmeyer presents Lee’s work misleadingly, saying (as if it were Lee’s conclusion) that ‘the net result of all these changes is a classifier lacking a coherent function’. This is the opposite of Lee’s conclusion as well as mine. Moreover, our analysis of hon as characterizing a currently existing radial category with a conceptual internal structure has since been confirmed by Yo Matsumoto of Stanford University.

What Newmeyer did here was ignore the conclusion of the author he was citing and present the conclusion that the Chomskyan Commitment requires him to present, namely, that the classifier ‘lacks a coherent function’. The notion ‘coherent function’ for Newmeyer excludes radial categories structured by general cognitive relations, as it must for any adherent of the Chomskyan Commitment. To those who make the Cognitive Commitment, however, such radial categories as hon are excellent evidence of the cognitive-functional organization of language.

A central fallacy

Newmeyer claims to ‘deduce the functional need for formal principles of grammar’, that is, ‘to deduce the selective advantage of autonomous syntax’. He assumes without argument that ‘propositional meaning’ does not itself have the structure to be mapped directly onto phonology (since it lacks ‘temporality’ and ‘linearity’), and so an intermediate level (with temporality and linearity) is necessary. He then assumes without argument that such an intermediate level must be an autonomous syntax. To say it is autonomous is to say that all generalizations governing permissible distributions of grammatical morphemes, categories and constructions make no reference to general cognition, semantics, or communicative function. He gives no argument that this is the case, presumably since it follows from the Chomskyan Commitment.

The argument fails for two reasons: firstly, he fails to show that the intermediate level must be strictly autonomous. Secondly, he fails to show that there must be such an intermediate level at all. The reason is that he has an impoverished view of semantics. One thing we know from study in the various cognitive sciences (including cognitive linguistics) is that human conceptual structure makes use of conceptual schemas. These schemas are abstract and compose by superimposition. As Langacker (1987a) has shown at length, such schemas have the right structure to map directly onto phonology without any intermediate level. Moreover, radial categories have the appropriate structure to function as what have been called ‘grammatical categories’. Moreover, just about every serious student of semantics has postulated linear semantic structures (e.g. role hierarchies, image-schemas, various discourse hierarchies, etc.) which provide the basis for a mapping from the linear aspects of meaning to the linear aspects of sound. Indeed, the literature in cognitive and functional linguistics abounds with discussions of such mappings.
This argument is at the heart of Newmeyer’s paper and its failure leaves very little. He is left without his evolutionary justification for the existence of autonomous syntax. But the situation is even worse. The very phenomena he cites do not support the existence of autonomous syntactic principles; indeed, they are used within the cognitive-functional literature to argue that the whole Chomskyan paradigm is mistaken.

The negative inversion counterexample

We saw above that Newmeyer reinterpreted Lee’s (1988) paper against the Chomskyan paradigm so that it fits the Chomskyan Commitment, and then claimed that Lee’s results confirmed the Chomskyan paradigm. Let me now turn to a case where he does this with a paper of my own.

Newmeyer cites a paper by Claudia Brugman and myself which he describes as giving a ‘finer characterization’ of purely formal principles governing auxiliary inversion after preposed negative adverbs. Our paper, in fact, provides evidence against the existence of any such principles.

The typical examples of this phenomenon usually cited include:

Never have I seen such behavior.
*Never I have seen such behavior.

At no time did he leave the building.
*At no time he left the building.

Nowhere could he be found.
*Nowhere he could be found.

By no means will he be allowed to stay in the country.
*By no means, he will be allowed to stay in the country.

Under no circumstances will he be admitted.
*Under no circumstances he will be admitted.

But not all preposed negative adverbs trigger aux-inversion. While never, at no time, at no place, by no means and under no circumstances all do, with no help does not.

With no help, he moved the piano upstairs.
*With no help did he move the piano upstairs.

Various other kinds of adverbials marked with with:

With no thought for his own safety, he jumped into the river.
*With no thought for his own safety did he jump into the river.

With no hat on, he went out into the cold.
*With no hat on did he go out into the cold.

As these cases show, inversion occurs with negative adverbs that entail that the event expressed in the main clause does not occur. For example, since everything that occurs must occur at some time, at some place, and under some circumstances, the adverbs at no time, at no place, and under no circumstances entail that the event in question did not occur. Thus
At no time did I move the piano.
entails
I didn’t move the piano.

while

With no help, I moved the piano.
entails
I did move the piano.

A lack of help does not entail the nonoccurrence of the event; hence the semantic condition for inversion is not met.

One might think that it is the lexical choice of prepositions and head nouns that determines invertability, rather than the character of the entailment. But that is not so. For example, if ‘amount of’ is added to the negative with-phrase and the modal is changed to ‘could’, then the entailment changes, and so does invertability.

With no amount of help could I move the piano.
*With no amount of help, I could move the piano.

Here it is entailed that I could not move the piano, and correspondingly inversion is required. Though with-phrases are by far the most common of the noninverting negative adverbials, other prepositions can head negative adverbials of this type, again under the condition that they entail the truth of the main proposition:

In no time he left the building.
*In no time did he leave the building.
(cf. At no time did he leave the building.)

After virtually no discussion, the bill was passed.
*After virtually no discussion was the bill passed.

As a final case to show that it is conceptual interpretation, not form, that triggers the inversion, consider the effect of reason adverbials. Take the expression for no reason. This expression is compatible either with a reasonless action or with the negation of an action-for-a-reason. If for no reason designates a reasonless action, we get sentences like:

For no reason, Harry would beat his wife,

where it is entailed that wife-beating does occur. But if for no reason is taken as the negation of an action-for-a-reason, then we get sentences like:

For no reason would Harry beat his wife,

where it is entailed that wife-beating does not occur. That is, if we are talking only about actions-for-a-reason and we say there are no such reasons, that entails that there are no such actions. As before, inversion is correlated with the polarity of the proposition: if it is
negative, there is inversion. If it is positive, there is no inversion. The next minimal pair
provides a similar example:

For no money would she dance naked. (She wouldn’t.)
For no money, she would dance naked. (She would.)

These examples show that inversion occurs with preposed adverbials when the
nonoccurrence of the main clause event is entailed.

But entailment is a semantic relation. The fact that it is part of the condition for the
occurrence of the inversion construction shows that a purely autonomous syntax cannot be
maintained while stating the correct generalizations concerning auxiliary inversion. This is
not a ‘finer characterization’ of a syntactic condition; it is evidence against the claim that
syntax is autonomous.

The coordinate structure evidence

Much of generative syntax is concerned with what are called ‘long-distance
dependencies’ or ‘movement rules’; for example,

Who did Harry say Bill hit?

is described from the perspective of autonomous syntax as involving a rule that moves ‘who’
from the position after ‘hit’ to the beginning of the sentence.

This phenomenon can, however, be described in a completely different way. From a
semantic perspective, the sentence consists of a conceptual schema with a role slot unfilled,
the schema corresponding to ‘Harry said Bill hit ---’. Semantically, this partially unfilled
schema is predicated of an animate entity whose identity is being sought, an entity expressed
by ‘who’. That entity fills the slot in the unfilled schema. From a semantic perspective, there
is no ‘movement’ at all; there is only predication, that is, the filling of a slot in a schema,
which involves no linear order at all. The constructional link between the semantics and
syntax is straightforward: the surface form of argument of this one-place complex predicate
precedes the surface form of the predicate.

Since such a semantic description is required in any account of semantics, the
question arises as to why the ‘movement rule’ way of looking at this phenomenon came
about at all. The reason is the Chomskyan Commitment. If one makes that commitment, then
a purely syntactic level exists and such sentences must be described by a movement rule (or
the equivalent) at that level. If one does not make the Chomskyan Commitment, then the
semantic description suffices unless there is some reason to add the extra autonomous
syntactic apparatus of movement rules.

The usual justification for adding this purely syntactic apparatus is the existence of
what have been called ‘constraints on movement rules’, most of which were discovered by
Haj Ross (Ross, 1967, 1983). Perhaps the most celebrated of these is the coordinate structure
constraint, which is illustrated by sentences such as:
What did John eat and Bill drink?

*What did John eat pizza and Bill drink?
*What did John eat and Bill drink beer?

From a syntactic point of view, there is a constraint on ‘movement’: if an element (such as ‘who’) is moved out of a coordinate structure, it must be moved out of all conjuncts. This was seen, historically, as a purely formal constraint that was presumably innate, and was taken as confirmation of the Chomskyan paradigm.

I was in the room with Haj Ross when he first proposed the coordinate structure constraint more than 20 years ago. Within minutes, he also discovered a case where it fails. It is a well-known case in which ‘movement’ is possible from the second conjunct in (1).

(1) What did Harry go to the store and buy?

Goldsmith (1985) cites the converse case, in which extraction is possible in the first conjunct of (2).

(2) How much can you drink and still stay sober?

In an attempt to save the coordinate structure constraint, I observed that the and in (1) is not a simple conjunction and that the semantic relation between the two clauses is the relation that holds between a main clause and a purpose clause (see Ross, 1983, p. 103). I proposed that (1) was not a true conjunction syntactically, but that (in the spirit of the generative semantics of the day) its syntax followed its semantics, and that it functioned essentially like the sentence What did John go to the store to buy?

Goldsmith, also attempting to save the coordinate structure constraint, argues similarly that the semantic relationship between the two clauses is like that between a main clause and an adversative clause as in How much can you drink while still staying sober? Goldsmith suggests that the semantic relationship between the clauses forces a ‘reanalysis’ so that the syntactic properties of the sentence accord with its semantic properties. Though different in detail, Goldsmith’s analysis was very much in the same spirit as my 1966 proposal.

In 1966, Ross and I, in our haste to explain away apparent counterexamples, failed to apply the most basic test that any first-year syntax student learns to apply-iteration. We simply never checked to see whether multiple across-the-board movements were possible for such cases. As it turns out, they exist. Here are a couple of examples:

(3) What did he go to the store, buy, load in his car, drive home, and unload?

(4) How many courses can you take for credit, still remain sane, and get all A’s in?

In (3) across-the-board extraction is applying in the second, third, and fifth conjuncts. In (4) it applies in the first and third conjuncts. The very existence of across-the-board extraction in such cases shows that true conjunction is required, as does the occurrence of final and preceded by a comma-intonation sequence. Thus, these sentences have no possible analyses with simple in order to and despite adverbials. Yet the phenomena are the same as in (1) and (2).

Before we proceed, it is worth looking at a number of such sentences, just to get a sense of the robustness of the phenomenon.
(5) Sam is not the sort of guy you can just sit there and listen to.

(6) Sam is not the sort of guy you can just sit there, listen to, and stay calm.

(7) Sam is not the sort of guy you can just sit there, listen to, and not want to punch in the nose.

(8) This is the kind of brandy that you can sip after dinner, watch TV for a while, sip some more of, work a bit, finish off, go to bed, and still feel fine in the morning.

(9) I went to the toy store, bought, came home, wrapped up, and put under the Christmas tree one of the nicest little laser death-ray kits I’ve ever seen.

The phenomenon occurs with (at least) questions, relative clauses, and right-node-raising. The extraction patterns are:

In (5): extraction from second of two VPs. In (6): extraction from second of three VPs.
In (7): extraction from second and third of three VPs.
In (8): extraction from first, third, and fifth of seven VPs.
In (9): extraction from second, fourth, and fifth of five VPs.

In purely syntactic terms, just about any kind of extraction pattern is possible with VP conjunctions of this kind. In short, there is no purely syntactic coordinate structure constraint! The coordinate structure constraint is an illusion, a consequence of making the Chomskyan Commitment and seeing everything in terms of that commitment. When one steps outside the Chomskyan Commitment, all these data make perfect sense, but from a semantic point of view.

What makes sense of these phenomena is the choice of the semantic predication analysis over the syntactic movement analysis. Ross’ original examples, like What did Bill eat and Sam drink? can be seen to involve parallel predication. The conceptual schemas for ‘Bill eat ---’ and ‘Sam drink ---’ both involve food consumption, which is what makes them ‘parallel’ semantically in ‘What did Bill eat and Sam drink?’ they form a compound parallel predicate, which is then bound to the same argument, namely, ‘what’.

The other examples involve nonparallel complex predication, of which the major type is a ‘natural course of events’, which can be characterized within frame semantics. The places in such a course of events where so-called ‘extraction’ does not occur is with those predicates that indicate a setting of scene or a change of state or location. Thus, ‘What did John go to the store [change of location], buy---, put--- in his car, drive home [change of location] and unload---?’

Both parallel compound predicates and natural course of events predicates can be expressed as conjunctions, via principles of construction grammar, which involve the pairing of semantics and surface syntactic form. For a lengthy discussion of the principles that account for all the above cases, see Lakoff (1986).

What is a counterexample?

If one does not start out by making the Chomskyan Commitment, then the data just discussed on preposed negative adverbs and coordinate structures count as counterevidence
to the very idea that syntax, as characterized by the Generalization Commitment, is autonomous. The linguistics literature contains hundreds of articles with counterevidence of this sort. Why then do not generative linguists just give up in the face of massive counterevidence?

The reason is that, once one accepts the Chomskyan Commitment as an overriding commitment, then there can be no counterevidence to that commitment itself. One can always make any number of other changes to preserve the commitment. Here are some possibilities:

One can reinterpret the data, that is, one can change the interpretation of asterisks, deciding that what were previously seen as syntactically ill-formed sentences are now to be considered semantically or pragmatically ill-formed.

One can add auxiliary hypotheses, for example, ‘reanalysis principles’.

One can restrict what the theory is responsible for. For example, one can claim responsibility only for ‘core grammar’, which is just a tiny portion of the grammar of a language.

All of these options have been taken to preserve the Chomskyan Commitment in the face of counterevidence such as that presented above.

Conclusion

Newmeyer’s entire argument rests on the Chomskyan Commitment. If one does not accept that commitment-say, if one makes the cognitive commitment instead-then his argument collapses, since there is no autonomous syntax and no innate principles of pure syntactic form, but only innate conceptual and processing restrictions.

There are good reasons why so many linguists have given up on the Chomskyan Commitment: it blinds one to the cases where general cognition, semantics, and communicative function play major roles in grammar.

Science or speculative philosophy

Cognitive and generative linguistics have different primary commitments which have consequences for virtually every analysis of every linguistic phenomenon. But there is a big difference in the nature of those commitments. The Chomskyan Commitment is a commitment as to the form of the answer: it must be in a symbol-manipulation system (which cannot make use of general cognition, meaning, or communicative function). The Cognitive Commitment makes no commitment as to the form of an answer; it is just a commitment to engage in scientific research, to study language as an implicit part of human cognition.

For me, this distinction has the following import. The Cognitive and Generalization Commitments are just commitments to engage in scientific research, whereas the Chomskyan Commitment is a commitment to a program of speculative philosophy: to see what happens if you decide to study language given the metaphor that a grammar of a human language, is a symbol-manipulation system in the technical sense. There are a great many linguists who, like myself, were trained as generative grammarians and then moved on to cognitive linguistics because we found that the Chomskyan Commitment was not consistent with what we saw as the scientific study of language.
Finally, Newmeyer’s claims about the nature of evolution are based on a speculative philosophy that has been thoroughly refuted, and therefore cannot tell us anything about evolution.

SOME SUGGESTED READING

For those readers who would like to see a few of the hundreds of studies demonstrating the non-autonomy of syntax, here are some recent ones from the construction grammar tradition.


DEANE, P. 1988 Which NP’s are there unusual possibilities for extraction from? In Papers from the Twenty-fourth Annual Regional Meeting of the Chicago Linguistic Society. Chicago Linguistic Society, Chicago.


FRAZIER, L. 1985b Modularity and the representational hypothesis. *Papers From The Fifteenth Annual Meeting of the North Eastern Linguistic Society*.


HALE, K. and KEYSER, J. 1986 Some transitivity alternations in English. Lexicon working papers No. 7, Center for Cognitive Science, MIT.

HALE, K. and KEYSER, J. 1987 A view from the middle. Lexicon working papers No. 10, Center for Cognitive Science, MIT.


LEHMANN, C. 1985 Grammaticization: synchronic variation and diachronic change. Lingua e Stile 20, 303-318.


RADFORD, A. 1979 The functional basis of transformations. Transactions of the Philological Society 77, 1-42.


DEANE, P. 1988 Which NP's are there unusual possibilities for extraction from? In Papers from the Twenty-fourth Annual Regional Meeting of the Chicago Linguistic Society. Chicago Linguistic Society, Chicago.


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Part 3

A Cognitive Solution to a Syntactic Problem
RAISING AND TRANSPARENCY

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The phenomena that classic transformational syntax handled by means of ‘raising’ rules pose an interesting challenge to theories that do not posit movement or derivation from underlying structures. An account of these phenomena is formulated in the context of COGNITIVE GRAMMAR. Raising is analyzed as a special case of the metonymy that virtually all relational expressions exhibit in regard to their choice of overtly coded arguments. The transparency of these constructions—the fact that the main clause imposes no restrictions on the ‘raised’ NP—is explained with reference to the semantics of the governing predicates.

Pivotal to the derivational analyses of classic transformational syntax were a set of operations generally referred to as ‘raising’ rules. Raising is crucial to Chomsky’s classic example of the contrast between expect and persuade (1965: 22-3), figured prominently in some of the foundational works of generative grammar (e.g. Rosenbaum 1967), and was regularly exploited in arguments for the transformational cycle (cf. Soames & Perlmutter 1979). While these rules are no longer uniformly adopted in generative descriptions, the phenomena they were meant to accommodate retain their interest and pose a worthwhile challenge for cognitive and functional theories. Previous works (Langacker 1984, 1990b, 1991, 1993a) have sketched a way of accounting for them from the standpoint of cognitive grammar. My purpose here is to examine the proposed analysis in greater detail and to consider its broader implications.

1. THE CLASSIC RAISING ANALYSIS. Concerning expect and persuade, Chomsky argued that sentences like 1a and 2a have to be distinguished grammatically despite their superficial parallelism. The difference becomes apparent when the subordinate clause is passivized: whereas 1a and 1b are ‘cognitively synonymous’, no relationship of ‘even weak paraphrase’ holds between 2a and 2b.

(1) a. She expected a specialist to examine her mother. =
   b. She expected her mother to be examined by a specialist.

(2) a. She persuaded a specialist to examine her mother. ≠
   b. She persuaded her mother to be examined by a specialist.

Chomsky attributed this difference to ‘logical grammatical relations. Thus in 2a a specialist is both the logical object of persuade and the logical subject of examine, while in 2b her mother is the logical object of both verbs. In 1, by contrast, neither a specialist nor her mother bears any ‘logical’ relation to expect—the former functions exclusively as the logical subject of examine in both a and b, and the latter as its logical object.

In the Aspects model, deep structures were posited to provide a consistent representation of logical grammatical relations. Thus the ‘cognitively synonymous’ examples in 1 were both

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1 This paper was originally published in Language, Volume 71, Number 1 (1995)
2 Portions of this paper were presented at the third meeting of the International Cognitive Linguistics Association (Leuven, 23, July 1993), and in various other forums. I appreciate the helpful comments received from members of these audiences and from a number of other individuals.
derived from the deep structure shown in 3, whereas the sentences in 2 were assigned the respective underlying structures roughly sketched in 4.

(3) she expected [a specialist examine her mother] \[\Rightarrow 1 \text{a, 1b}\]
(4) a. she persuaded a specialist [a specialist examine her mother] \[\Rightarrow 2\text{a}\]
    b. she persuaded her mother [a specialist examine her mother] \[\Rightarrow 2\text{b}\]

Sentence 2a was then derived from 4a by the transformational rule that came to be known as ‘Equi-NP Deletion’, which erased the complement subject under certain conditions of identity (today, of course, one would speak of ‘control and ‘coindexing’ rather than deletion). Sentence 2b was likewise derived by ‘Equi’ from 4b once Passivization in the subordinate clause gave rise to the configuration needed for its application. In the case of 1, the choice between a and b depends solely on whether Passivization applies to the embedded clause in 3. Chomsky himself did not propose any kind of raising rule for such examples (nor are they handled by raising in government-binding theory), but after Rosenbaum 1967 a raising analysis became completely standard in transformational grammar. To this very day it is usual to speak of ‘equi’ (or ‘control’) verbs like persuade in opposition to ‘raising’ verbs like expect.

The factors Chomsky cited--paraphrase and ‘logical’ relations--are basically semantic in nature. They indicate that the NP which follows a raising verb participates in the semantic role structure of the subordinate clause but not, apparently, in that of the main clause. Later generative accounts presented other kinds of evidence in support of two further claims: (i) that this NP functions grammatically as the direct object of the main-clause verb, and (ii) that it assumes its object function by virtue of a syntactic rule which moves, reattaches, or relabels the subordinate-clause subject. The rule which accomplished this was accordingly known as ‘Subject-to-Object Raising’.

Arguments that the NP in question bears (derived) grammatical relations in the main clause include its ability to undergo such rules as Passivization and Reflexivization, shown independently to be monoclausal in scope. Derivations like the following were thus adopted:

(5) a. the lawyers believed [the witness be untrustworthy] \[\Rightarrow (\text{Raising})\]
    b. the lawyers believed the witness [to be untrustworthy] \[\Rightarrow (\text{Passivization})\]
    c. the witness was believed by the lawyers [to be untrustworthy]

(6) a. Zelda believes [Zelda be virtuous] \[\Rightarrow (\text{Raising})\]
    b. Zelda believes Zelda [to be virtuous] \[\Rightarrow (\text{Reflexivization})\]
    c. Zelda believes herself [to be virtuous]

That the NP originates in the complement clause seemed evident from examples involving ‘idiom chunks’ and ‘syntactic dummies’, e.g. the it that occurs with weather verbs:

(7) a. Tabs are believed to have been kept on all the radical students.
    b. It is expected to rain this afternoon.

The surveillance tabs and the meteorological it do not occur freely; outside of raising constructions, the former is limited to the idiomatic sequence keep tabs on, and the latter can only be the subject of verbs like rain. Since these contexts are found in the subordinate clause, tabs and it must originate there despite their surface role as main-clause subject. Moreover, the discrepancy between surface position and motivating context has to be

3 Of course, expect can also act as an equi verb (e.g. They expect to finish on time). Numerous predicates can function in either capacity.
ascribed to the application of a syntactic rule, for the same discrepancy is exhibited by an element generally accepted as being inserted by such a rule, namely the existential there.⁴

(8)  
| a. | many astronomers believe [wombats be orbiting Jupiter] ⇒ (There Insertion) |
| b. | many astronomers believe [there be wombats orbiting Jupiter] ⇒ (Raising) |
| c. | many astronomers believe there [to be wombats orbiting Jupiter] ⇒ (Passivization) |
| d. | there are believed by many astronomers [to be wombats orbiting Jupiter] |

We can describe the crucial difference between ‘raising’ and ‘equi’ verbs by saying that the former display a kind of TRANSPARENCY: any element which could occur as the subject of the complement clause can also function as the raising verb’s object in the main clause; the raising verb itself imposes no restrictions on this element, whose structural motivation is entirely due to the complement. By contrast, equi verbs impose their own restrictions on their surface arguments. Elements like tabs, it, and there are consequently infelicitous with persuade:

(9)  
| a. | *She persuaded tabs to be kept on all the radical students. |
| b. | *She persuaded it to rain this afternoon. |
| c. | *She persuaded there to be wombats orbiting Jupiter. |

Clearly, the object of persuade has to be sentient and potentially volitional.

The classic transformational analysis involved not just one argument-raising rule but three. Although they have gone by various names at different times, the most perspicuous labels are Subject-to-Object Raising (SOR), Subject-to-Subject Raising (SSR), and Object-to-Subject Raising (OSR).

(10)  
| a. | SUBJECT-TO-OBJECT RAISING: |
|     | I expect [David criticize this plan] ⇒ I expect David [to criticize this plan] |
| b. | SUBJECT-TO-SUBJECT RAISING: |
|     | [David criticize this plan] is likely ⇒ David is likely [to criticize this plan] |
| c. | OBJECT-TO-SUBJECT RAISING: |
|     | [David criticize this plan] is easy ⇒ this plan is easy [for David to criticize] |

While it is SOR that has so far concerned us, the case for SSR is if anything even stronger, since the putative change in clause membership is rendered visible by a difference in linear order. This construction also exhibits transparency:

(11)  
| a. | Tabs are likely to be kept on all the radical students. |
| b. | It is likely to rain this afternoon. |
| c. | There are likely to be wombats orbiting Jupiter. |

With OSR, the situation is less straightforward. On the one hand, flexible idioms like keep tabs on and make headway behave as expected:

(12)  
| a. | Tabs are relatively easy to keep on antiabortion protesters. |
| b. | Headway was tough to make against that fierce wind. |

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⁴ That is, one could not merely allow keep tabs on and it rain to be discontinuous in underlying structure, because the transformationally inserted there would require a raising rule in any case to effect its surface position. Of course, such an analysis was never seriously contemplated—the unity of discontinuous structures like tabs...keep...on and it...rain could only be recognized on grounds of semantic coherence, but neither idiom chunks nor syntactic dummies were assigned any semantic value.
On the other hand, acceptable examples involving it and there prove impossible to construct. Since these ‘dummies’ originate as subjects, they could in any case undergo OSR only in complex expressions where they function as derived objects owing to a previous occurrence of SOR, as in (13).

(13) a. I expect it [to rain]
    b. we believe there [to be wombats orbiting Jupiter]

However, embedding them to an appropriate predicate and applying the OSR rule invariably yields an ungrammatical result:

(14) a. *It is easy for me to expect to rain.
    b. *There is tough for us to believe to be wombats orbiting Jupiter.

If one posits this rule to derive the sentences in 12, some kind of restriction is needed to block those in 14.

2. CRITIQUE OF THE CLASSIC ANALYSIS. Granted the working assumptions of transformational syntax, there is no denying that this analysis elegantly accounted for a broad array of data. It is for good reason that raising figured so prominently in presentations of generative theory and demonstrations of syntactic argumentation. A full review of the characterization and implications of raising over the history of generative grammar would represent an enormously ambitious undertaking.5 My objective here is much more modest: to show how the basic phenomena which apparently provide such strong motivation for a raising analysis can also be naturally and revealingly accommodated from a very different theoretical perspective. Comparable descriptive success is achievable in a framework which asserts the symbolic nature of grammar (hence the meaningfulness of all grammatical elements) and does not posit derivations from underlying structures.

Generative treatments have not been unproblematic. Because the autonomy of syntax is a foundational claim of generative theory, it is hardly surprising that a number of the shortcomings pertain to the semantic aspects of raising. For example, it is widely accepted that the to which occurs in raising and equi constructions is a meaningless grammatical marker induced by the absence of an overt subject (Kiparsky & Kiparsky 1970). Although the meanings of to and the other ‘complementizers’ will not be our focus here, I would argue—in accordance with the principles of cognitive grammar—that they are in fact meaningful and contribute to the conceptual import of the constructions in which they occur (see Langacker 1987b, 1991:10.2.1, Achard 1993, Wierzbicka 1988:Ch. 1). There has likewise been no really serious attempt to characterize the meanings of raising predicates. In the absence of detailed semantic descriptions, it would seem to me that arguments for raising based on ‘logical grammatical relations’ have to be regarded with caution. A revealing account of raising constructions must also ascertain the degree and nature of the semantic coherence exhibited

by their sets of governing predicates, and afford some basis for understanding why each
construction selects the predicates it does.

Another semantic problem is that sentences supposedly derived by raising sometimes
differ in meaning from their unraised counterparts. For instance, Borkin (1973) pointed out
that 15a could be used for a judgment based on indirect evidence (e.g. the results of a
consumer survey), whereas the raising sentence 15b suggests that the basis for judgment is
more direct, and 15c (derived by a further rule deleting to be) implies that the speaker has
actually sat in the chair.6

(15)  a. I find that this chair is uncomfortable.
    b. I find this chair to be uncomfortable.
    c. I find this chair uncomfortable.
Postal (1974: Ch. 11) acknowledges such differences, observing for example that 16a
indicates some kind of perceptual experience of Julius Caesar, while 16b might occur in a
present-day discussion of Rome and famous Romans.

(16)  a. Julius Caesar struck me as honest.
    b. It struck me that Julius Caesar was honest.
One could of course adopt the unenlightening (and I think erroneous) position that subtle
semantic contrasts like these are of no concern in a purely syntactic analysis. Postal does not
go quite that far, but the solution he adopts—the suggestion that rule applications are
sometimes linked to ‘assumptions’ that ‘are not part of the core meanings of sentences’—is
decidedly ad hoc.

A different kind of problem is the difficulty of distinguishing between equi and
raising constructions in the first place. The identity of their surface forms, as seen in the
original examples (She {persuaded/expected} a specialist to examine her mother), forces the
analyst to distinguish them on the basis of logical grammatical relations and the behavior of
dummy elements. In practice, however, both kinds of tests run into problems. It is hard to feel
secure about evaluating semantically unanalyzed expressions with respect to a nebulous,
unexplained notion of ‘logical grammatical relations’, and to the extent that speakers have
some intuitive idea of what is intended, judgments are often uncertain. For instance, while
Postal (1974:316) suggests that 17a is derived by raising, Newman (1981 :104) observes that
Melvin is as much the object of perception as is the action involving him, and that the
occurrence could simply be reported by 17b given the appropriate context.

(17)  a. Everyone heard Melvin enter the building.
    b. Everyone heard Melvin.
Nor does the ‘dummy’ test yield consistent and unambiguous results:

(18)  a. *I heard there be a party going on in the next room.
    b. I heard it raining.
It is also unclear whether the NP following a verb of causation should be regarded as
its ‘logical object’. The test of ‘cognitive synonymy’ under passivization suggests that have,
make, and force are equi verbs (i.e., passivization induces a change in meaning).

(19)  a. She {had/made/forced} a specialist (to) examine her mother.

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6 See Newman 1982 for further relevant data and insightful discussion, including the identification of
semantically grounded regularities in the complements that occur with different kinds of predicates.
b. She \{had/made/forced\} her mother (to) be examined by a specialist.

But while \textit{cause} arguably acts like a raising verb in this respect, intuitions are less than clear-cut; it is just not evident whether 20a and 20b should or should not be considered synonymous.

(20)   a. She caused a specialist to examine her mother.
       b. She caused her mother to be examined by a specialist.

Moreover, the behavior of these verbs with ‘dummies’ is also hard to assess:

(21)   a. She \{caused/*had/?made/?forced\} there (to) be a riot.
       b. Zeus \{caused/had/made/?forced\} it (to) rain.

Judgments are graded, and to the extent that they allow a line to be drawn between raising and equi verbs, it does not coincide with the division based on paraphrase.

Other factors render the putative distinction between equi and raising even more elusive. Both Bolinger (1967) and Borkin (1974) have cited data suggesting that sentences supposedly involving raising are sometimes more acceptable if the derived main clause is a well-formed expression in its own right, and if the proposition conveyed by the latter is compatible with the one expressed by the complement:

(22)   a. I believe the report to be true.
       b. ?I believe the rain to be falling.
       c. I believe Jennifer to be telling \{the truth/?a lie\}
       d. We confirmed the rumor to be essentially \{true/?*false\}.

An additional factor, discussed by Perlmutter (1970) in regard to \textit{begin}, is the occurrence of the same verb in both equi and raising constructions:

(23)   a. There began to be a commotion.
       b. Zeke began to scrutinize the documents.

In his study of raising vs. equi in French, Ruwet (1991:Ch. 2) established that such ambivalence is not limited to a handful of predicates but represents a widespread pattern with interesting semantic correlations. He concludes that the boundary between raising and equi constructions is fuzzy at best, that traditional tests for distinguishing them are open to question, and that the data reflects subtle and pervasive semantic considerations that the classic analysis does not even begin to deal with (see also Lamiroy 1987). Likewise, Newman (1981) presents a variety of reasons for viewing equi and raising constructions as forming a continuum. In his conception--akin to the one that I will be developing later--clear instances of ‘raising’ represent the limiting case in which the NP referent’s direct participation in the main-clause relationship approximates zero.

One of the strongest arguments for a raising analysis has been its ability to account for the displacement of ‘idiom chunks’ from their expected position within fixed idiomatic sequences, as in 7a, 11a, and 12. Even within the generative tradition, however, it has been known for many years that movement rules cannot account for all instances of discontinuous idioms. Bresnan & Grimshaw (1978:388) cited a number of cases of idiom chunks in positions where no plausible rule could have put them:

(24)   a. We didn’t make the amount of headway that was expected of us.
       b. We were fired because they expected more headway from us than we were able to make.
Therefore, they conclude, ‘the assumption that idiomatic verb-object constructions must always be base-generated together is false’. Yet the idiom-chunk argument for raising rests squarely on that assumption. More generally, the arguments based on idioms and dummies were not grounded in the extensive investigation and clear understanding of the nature of those phenomena that would be necessary to render them secure.

As a final observation, let us note the existence of sentences that seem directly parallel to those for which raising has been posited, yet which lack a subject- or object-complement clause from which the NP in question could have been extracted. OSR provides the widest array of examples. In 25, the relationship between the main-clause subject and predicate is apparently unaffected by omission of the subordinate clause:

(25)  a. A 5K is easy (to run).
     b. Trivial Pursuit is fun (to play).
     c. Portraits are tough (to paint).

In the proper context, such expressions are susceptible to an open-ended set of possible interpretations regardless of the activity to which the judgment pertains. An adverbial clause supplies that context in 26.

(26)  When it comes to \{fixing/painting/cleaning/selling/stealing/lifting\} them, Volkswagens are really easy.

With SSR and SOR, the possibilities are much more limited. Examples can however be found:

(27)  a. Another war is \{certain/sure/likely\} (to break out).
     b. When would you \{like/want/expect\} the next patient (to come)?

Data like this suggests that the expressions supposedly derived by these rules instantiate a considerably broader phenomenon for which a raising analysis cannot be made to work in general.

Despite its apparent insight, therefore, the classic analysis is seriously problematic in multiple respects. Its limitations ought to instill the suspicion that the phenomena it was designed to handle might also be accommodated in ways that are not dependent on the theory-bound mechanisms of transformational syntax. They are in fact readily and I think revealingly characterized from the perspective of cognitive grammar, whose central claim is that grammatical and semantic structure are indissociable. When grammar is properly described as residing in conventions for the structuring and symbolization of conceptual content, the seemingly special properties of raising constructions turn out to be fairly straightforward.

3. COGNITIVE GRAMMAR. As preface to the analysis, I need to review a few basic notions of cognitive grammar.\(^7\) Its organization reflects the SEMIOLOGICAL FUNCTION of language, namely to permit the symbolization of conceptualizations by means of phonological sequences. It posits only those elements that are absolutely necessary to serve that function: SEMANTIC STRUCTURES, PHONOLOGICAL STRUCTURES, and SYMBOLIC STRUCTURES (each defined by the symbolic relationship between a semantic

\(^7\) For a comprehensive introduction to this theory, see Langacker 1987a, 1990a, 1991.
and a phonological structure). Lexicon, morphology, and syntax are claimed to form a continuum and to be fully describable in terms of assemblies of symbolic structures. Moreover, the elements of a linguistic system are limited to semantic, phonological, and symbolic structures which are directly manifested as (parts of) actual expressions, as well as structures derived from these by the basic cognitive processes of SCHEMATIZATION (i.e. extraction of commonalties) and CATEGORIZATION. Linguistic categories are complex, comprising numerous structures linked by categorizing relationships to form a network (Lakoff 1987, Langacker 1987a:Ch. 10). Two basic kinds of categorizing relationships are EXTENSION from a PROTOTYPE (A ---> B), and the INSTANTIATION (or ELABORATION) of a SCHEMA (A → B).

3.1. CONCEPTUAL SEMANTICS. The fundamental claim that grammar reduces to assemblies of symbolic structures presupposes a conceptualist semantics resting on several basic principles. (i) POLYSEMY is recognized as the usual situation for a lexical item, i.e., its alternate senses constitute a complex category. (ii) As the basis for its meaning, an expression flexibly evokes a set of COGNITIVE DOMAINS; any kind of conceptualization (or mental experience) is capable of serving in this capacity (there being no sharp or rigid distinction between ‘linguistic’ and ‘extralinguistic’ knowledge). (iii) The conceptual CONTENT provided by the domains evoked is however only one facet of an expression’s semantic value--essential as well is the CONSTRUAL imposed on that content. Numerous dimensions of construal have been identified and shown to be important for both semantic and grammatical structure.

One aspect of construal is the portrayal of a situation at varying levels of precision and detail. The expressions in 28, for instance, offer progressively more specific (or less schematic) descriptions of what could be the same event.

(28) Something happened. → Somebody did something. → A boy threw an object. → The newspaper boy hurled the morning paper onto the roof.

Another aspect of construal is our ability to conceive of one structure against the background of another. Most obviously, an expression is construed against the background of the preceding discourse; its relation to what went before constitutes one dimension of its semantic value. In metaphor, the TARGET domain is construed against the background of the SOURCE domain (Lakoff & Johnson 1980). Any kind of assumption, expectation, or presupposition can be part of the background contributing to an expression’s meaning. Under this umbrella we can also fit categorization, since the categorizing structure is pre-established and taken for granted, whereas the target--the structure being categorized--is the immediate focus of concern.

Additional aspects of construal include scope, prominence, and perspective. An expression’s scope is defined as the array of conceptual content it draws upon (from all active domains) as the basis for its meaning. This tends to be organized hierarchically with respect to degree of focus or immediate relevance. An expression’s overall scope is the full array of content it evokes. Within that maximal scope, there is often an immediate scope representing the general locus of attention, the specific array of content directly relevant at a particular level of organization. The term elbow, for example, evokes as its immediate scope the conception of an arm; since an elbow only exists in relation to an arm, the latter is crucial to its characterization. Now an arm in turn is characterized in relation to the entire human body, and the conception of a body requires a spatial expanse sufficient to contain it. These other
notions therefore figure in *elbow’s* overall scope, but they do so only indirectly--it is specifically the arm which is salient and immediately relevant to the conception of an elbow.\(^8\)

Yet the conception of an arm certainly does not constitute the meaning of *elbow*--it merely provides the conceptual base with respect to which the latter notion can be characterized. The same conceptual base supports the semantic characterization of other terms, such as *hand*, *upper arm*, and *forearm*. To distinguish them, we consequently need an additional descriptive construct, my term for which is PROFILING: within its base, every expression singles out a particular substructure as its profile. An expression’s profile is the entity it designates, i.e. its conceptual referent. It can also be described as the specific focus of attention within the expression’s immediate scope (the general locus of attention). Terms like *elbow* and *hand* are therefore semantically distinct by virtue of profiling (designating) different substructures within the conception of an arm, as sketched in Figure 1. Observe that heavy lines indicate profiling.\(^9\)

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**Figure 1.**

Profiling is one of the numerous kinds of PROMINENCE that play a significant role in semantics and thus in grammar. Among these are various types of discourse prominence (notably topic and focus), as well as the salience that stems from being overtly specified rather than being left implicit (e.g. *You leave that alone!* vs. *Leave that alone!*). Also relevant here is the inherent cognitive salience of certain experiential domains and conceptual ‘archetypes’: the primacy of space and vision; the foundational status of physical experience (as the basis for abstract notions); our special concern for people and animals (vs. inanimate entities); the usual salience of a whole relative to its parts; etc.\(^10\)

Yet another kind of prominence is discernible in expressions that profile relationships. Consider *before* and *after*, as in 29:

(29)  
   a. Alice left before Bill arrived.  
   b. Bill arrived after Alice left.

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\(^8\) Here there has unfortunately been a proliferation of terminology. As the general locus of attention, the immediate scope is often called the ‘onstage region’. Regarding its status as the region within which focused observation is possible, it has also been referred to as the ‘viewing frame’ or the ‘objective scene’. Some indication of this construct’s extensive structural significance can be found in Langacker 1987b and 1993c.

\(^9\) These and other diagrams are merely heuristic and are certainly not offered as complete or formal representations. There is of course much more to the semantic characterizations of *elbow* and *hand* than just their location within an arm. Other dimensions of their meanings include the specification of their material composition (flesh, bone), an indication of their functions (bending, grasping), and the open-ended arrays of conventional knowledge in which they somehow figure.

\(^10\) Evidence for these asymmetries in salience comes from a variety of linguistic phenomena, including the typical direction of metaphoric and metonymic extension. The latter will be discussed and exemplified further on.
Each expression profiles a relationship of temporal sequencing involving two events, as shown in Figure 2. In fact, these relationships are precisely the same in terms of both conceptual content (scope) and reference (profiling)—something that qualifies as a before relationship also qualifies as an after relationship.

Figure 2.

Assuming, then, that before and after are not synonymous, just where does their semantic contrast reside? We can attribute it to the differential prominence accorded the participants in a profiled relationship. It is usual for one participant to be singled out as the PRIMARY FIGURE within the relational profile. This is called the TRAJECTOR (tr): it is the entity the expression is concerned with tracking, locating, assessing, or characterizing. Often a second relational participant is accorded the status of SECONDARY FIGURE; this is called a LANDMARK (lm). The distinction between before and after is thus a matter of whether the later event is invoked as a landmark for purposes of locating the earlier one, or conversely.

The last dimension of construal is PERSPECTIVE, which subsumes a variety of phenomena pertaining to the position vis-à-vis the ‘scene’ described of an actual or supposed ‘viewer’. For linguistic expressions, the viewer (or conceptualizer) is primarily the speaker, and secondarily the addressee. The speaker and hearer, the speech event, and its immediate circumstances are referred to as the GROUND. The ground is thus the default-case vantage point for the conceptualization comprising an expression’s meaning. We also have the basic cognitive ability to invoke one entity as a reference point for purposes of establishing mental contact with another (the target), as well as to scan mentally along some spatial or abstract path.

In 30a, for example, Roger functions as a reference point for locating the target (the woman), and the whole scene is viewed from the vantage point of the speaker and hearer (the ground). This configuration is sketched in Figure 3a, which diagrams the semantic value of the prepositional phrase. The conceptualizer situates the trajector in relation to the landmark (the aisle) by tracing a mental path from the reference point to that target. Apprehending the meaning of the profiled relationship involves scanning mentally from reference point to trajector along a path that traverses the expanse of the landmark.

(30)  a. the woman across the aisle from Roger
    b. the woman across the aisle
    c. the woman across the aisle from us

Terms like ‘scene’ and ‘viewer’ are visual in origin, but I use them here in a generalized sense equivalent to ‘conceived situation’ and ‘conceptualizer’. This metaphorical extension illustrates the directionality mentioned in n. 8. For discussion of why it is natural (if not inevitable), see Langacker 1993b.
An important facet of perspective is how SUBJECTIVELY or OBJECTIVELY a given entity is construed (Langacker 1985, 1990b). These terms are employed in a specific technical sense pertaining to the inherent asymmetry between the two members of a conceptual relationship, namely the subject and the object of conception. An entity is said to be subjectively construed to the extent that it functions exclusively as the subject of conception—an implicit conceptualizing presence that is not itself conceived. Conversely, an entity receives a maximally objective construal by going ‘onstage’ as the explicit focus of conception, being well delineated and precisely characterized. By definition, the trajector and landmark of a profiled relationship are onstage (within the immediate scope) and are the foci of viewing attention, hence objectively construed.

As the primary conceptualizer, the speaker has at least a subjective role in the meaning of every expression, even when left implicit. Usually, though, the speaker’s role is less than fully subjective. This is the case in 30b, sketched in Fig. 3b, where the speaker is not just the conceptualizer but also the reference point. This latter role carries with it a certain measure of objectivity. Even so, the ground remains offstage and receives a fairly subjective construal. It is however possible to explicitly mention some facet of the ground, thus putting it onstage as a focused participant, in which case its construal is highly objective. This is exemplified in 30c, diagrammed in Fig. 3c.

3.2. CLASSES AND CONSTRUCTIONS. Let us now turn to grammar. It is claimed that grammar and lexicon form a continuum comprising nothing more than symbolic structures and assemblies of such structures. There are two basic types of symbolic assemblies. The first type is a CATEGORIZING RELATIONSHIP, wherein one symbolic structure is categorized as an instantiation or an extension with respect to another. The second type involves COMPOSITION, whereby simpler symbolic structures combine to form symbolic structures of greater size and complexity.

Grammatical classes are complex categories consisting of categorizing relationships. Consider the noun class. Prototypically, a noun can be characterized as a symbolic structure that designates a physical object: [PHYSICAL OBJECT/...] (where ‘/’ indicates a symbolic relationship, and ‘...’ represents a schematized phonological sequence). I have claimed (Langacker 1987b) that a noun can also be described schematically as a symbolic structure

While a noun usually has a phonological realization, no specific segment sequence is characteristic of all nouns or even all prototypical nouns. Hence the intermediate-level schema representing the category prototype is phonologically schematic (e.g. ‘some segment sequence’, or perhaps ‘some segment sequence containing a vowel’) as well as semantically schematic (since no particular type of physical object is specified).
that designates a thing, in a highly abstract sense of that term: [THING/...]. A prototypical noun such as *chair* is thus a symbolic structure that instantiates the category prototype, which in turn instantiates the noun-class schema: [THING/...] \rightarrow [PHYSICAL OBJECT/...]) \rightarrow [CHAIR/chair]. In contrast, a nonprototypical noun like *idea* still instantiates the overall category schema but constitutes an extension vis-à-vis the prototype: [THING/...] \rightarrow [IDEA/idea] <--- [PHYSICAL OBJECT/...]

An expression’s grammatical class is determined by the nature of its PROFILE. Pairs like *complain* and *complainer* therefore belong to different grammatical classes despite evoking essentially the same conceptual content: the notion of an individual engaging in a certain activity. *Complain* is a verb because it profiles the activity itself, whereas *complainer* is a noun because--within the same conceptual base--it profiles the individual (the trajector of *complain*).

For our purposes, it is most important to distinguish between expressions which profile things and those which profile relationships. Among the expressions that profile things are both lexical nouns and a variety of other elements such as pronouns, articles, demonstratives, certain quantifiers, and complex nominal expressions (including full NPs). Relationships are divided into processes, which are ‘temporal’ in the sense of being followed sequentially in their evolution through time, and various kinds of atemporal relations, which may also extend through time but are nonetheless viewed holistically, as a single gestalt. A verb profiles a process, as do modals, tense markers, and certain higher-order structures (notably finite clauses). Adjectives, adverbs, and prepositions profile different sorts of atemporal relations. Infinitives and participles are derived from verbs (or complex processual structures) and thus incorporate the conception of a process, but on this conceptual base they impose an atemporal construal. This atemporalizing function is part of the meaning of *to*, *-ing*, and the past participial morpheme, which differ semantically by virtue of other specifications that do not immediately concern us.

Grammar consists of patterns for combining simpler symbolic structures to yield successively more complex ones. A structure is symbolically complex to the extent that it is decomposable into smaller symbolic structures. By definition, then, a morpheme is symbolically noncomplex, whereas a sequence of expressions like *sharp* < *sharpen* < *sharpener* < *pencil sharpener* < *electric pencil sharpener* exhibit progressively greater symbolic complexity. It happens that each element in this sequence is a specific expression (as opposed to a schematized structure) and is also ‘fixed’, i.e. familiar and conventionalized (as opposed to novel). They are therefore lexical items, under cognitive grammar’s definition of lexicon as THE SET OF FIXED EXPRESSIONS IN A LANGUAGE. By this definition, lexicon subsumes both morphological and syntactic combinations, depending on whether the composite form is (part of ) a single word or a multiword sequence. Lexicon also subsumes both regularly-formed expressions and those that are idiosyncratic in some fashion, provided that they have coalesced as fixed conventional units.

Of course, novel expressions can also be either regular or idiosyncratic, represent either morphological or syntactic combinations, and exhibit any degree of symbolic complexity; lexical items are simply expressions that recur and become conventionally established. But how do symbolically complex expressions arise in the first place? The process is not random--we speak of ‘grammar’ because there are PATTERNS of

13 Each term is used in an abstract technical sense (see Langacker 1987b). In particular, things are not limited to physical objects, nor need the entities participating in a relationship be distinct, salient, individually recognized, or explicitly coded.
morphological and syntactic combination. These patterns guide the formation of complex expressions and provide a basis for assessing their degree of regularity or idiosyncrasy. In cognitive grammar, regularities are captured by schemas (e.g., the symbolic class schema [THING/...] embodies what is common to the set of nouns). A regularity in the formation of symbolically complex expressions is therefore represented by a schema that is also symbolically complex. Fixed and novel expressions based on the pattern are categorized as either instantiations or extensions with respect to the schema describing it (and thus as either regular or idiosyncratic in relation to that particular facet of linguistic convention).

The combination of simpler symbolic structures to form a complex one is called a CONSTRUCTION. A pattern of combination can thus be called a CONSTRUCTION-AL SCHEMA. A construction comprises an assembly of symbolic structures: specific structures in the case of an actual expression, schematic ones in the case of a constructional schema. In a typical construction, two component structures are integrated-both semantically and phonologically-to form a composite structure. Integration is effected by correspondences between subparts of the two component structures. Though not entirely accurate, it is helpful to think of the composite structure as being formed by the superimposition of corresponding entities and the merger of their specifications. It is usual for one component structure, as a whole, to elaborate a particular substructure of the other, termed its ELABORATION SITE (or e-site). It is also usual for the composite structure to inherit its profile from one of the two components, which is thus called the PROFILE DETERMINANT (or HEAD).

Figure 4 provides an illustration. Sketched in Fig. 4a is the semantic integration of the two component structures, near and the door, to form the composite structure near the door. Near profiles a relationship of spatial proximity between two schematic things (represented by circles), while the door profiles a specific kind of thing. The basis for their integration is a correspondence—shown as a dotted line—between the landmark of the preposition and the profile of the noun phrase; superimposing these elements and merging their specifications yields the composite structure. There is, moreover, an elaborative relationship (→) between the schematic relational landmark and the nominal component; the hatching marks the landmark as an e-site, a schematic entity which the noun phrase specifies in finer detail. Because the composite structure derives its content from the component structures, elements at the two levels are linked by ‘vertical’ correspondences. Observe also that the composite structure inherits its profile from the preposition (since near the door designates a relationship, not a thing). Near is thus the head, or profile determinant, at this level of organization, as indicated by the heavy-line box enclosing it.

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14 Phonologically, their integration specifies temporal contiguity and sequencing, resulting in a phonological phrase. Observe that the door is itself a composite expression, obtained by the lower-level integration of door with the definite article (whose semantic value is ignored here for the sake of simplicity).
The constructional schema that *near the door* instantiates is diagrammed in Fig. 4b. The component labeled Y is schematic for the class of prepositions, and Z for the class of noun phrases. It can be seen that the relationships among the component and composite structures are directly analogous to those inherent in *near the door* and countless other specific prepositional phrases. In particular, the nominal component elaborates the prepositional landmark (the additional content is labeled X), and the preposition imposes its relational profile on the composite expression.

The diagrams in Fig. 4 each represent an assembly of symbolic structures, these structures being specific in the case of a and schematic in b. The members of each assembly are linked by correspondences and categorizing relationships. We have already mentioned the ‘vertical’ and ‘horizontal’ correspondences, as well as the categorizing relationship wherein one component elaborates a schematic substructure of the other. Yet to be discussed are categorizing relationships along the ‘vertical’ axis, i.e. between component and composite structures. In each diagram, a solid arrow indicates that the preposition is schematic with respect to the composite expression (which is more specific in regard to the characterization of the landmark). By contrast, the relationship that the noun phrase bears to the composite structure as a whole is one of extension (--->) rather than elaboration since there is a conflict in their specifications (namely in their choice of profile).

A construction, then, is an assembly of symbolic structures linked by correspondences and categorizing relationships. Within this assembly the composite structure has special status precisely because it functions as the TARGET OF CATEGORIZATION with respect to the other structures. Recall that a categorizing structure lies in the background, the target being the specific focus of concern. In a construction, it is consequently the composite structure that is focused, in the sense that it is either matched against the situation being described or used as the basis for further composition. By coding selected aspects of the composite conception, the component structures provide some degree of motivation for the composite structure and help the language user to arrive at it. Importantly, however, the components are not conceived as providing the actual ‘material’ out of which the composite structure is ‘built’—though it is useful up to a point (and impossible to avoid), the ‘building-block’ metaphor is inappropriate for complex expressions in several respects. First, unlike building blocks, component structures have overlapping content (reflected in correspondences). Second, the way an expression is actually understood is usually either

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I reiterate that the diagrams are heuristic, not formal representations. Very roughly, a preposition can be described as profiling an atemporal relation with a thing as landmark, while a noun phrase profiles a thing whose relationship to the speaker and addressee is specified in a certain fashion (cf. Langacker 1991:Part I).
more specific or divergent with respect to anything derivable from its components (i.e., linguistic semantics exhibits partial rather than full compositionality). Third, fixed expressions vary in their degree of analyzability, i.e. the extent to which their component structures are ‘active’ or individually discerned within the composite whole (Langacker 1987a:21.1). Thus, whereas complain is quite salient within complainer, we do not invariably think of a producer as being ‘someone who produces [a film]’, and seldom understand a waiter as being ‘someone who waits [on tables]’.

3.3. CLAUSE STRUCTURE. As a final preliminary, we need to briefly consider clause structure and grammatical relations as analyzed in cognitive grammar (Langacker 1990a:Ch. 9, 1991:Part II). It is proposed that fundamental and universal grammatical notions have both a prototypical semantic value involving an experientially grounded conceptual archetype and a schematic semantic value reflecting a basic cognitive ability initially manifested in that archetype. A noun, for instance, is characterized prototypically as designating a physical object, while schematically it designates a thing, i.e. any product of CONCEPTUAL REIFICATION, the basic cognitive ability that enables us to conceive of physical objects in the first place.

Providing further illustration is the possessive category, exemplified in (31a). The notion of ownership is usually considered prototypical, but kinship and whole-part (especially body-part) relationships also have a good claim to prototype status.16

(31) a. the boy’s knife; my aunt; the dog’s tail; her address; the restaurant’s ambiance; their problem; our train; Harvey’s anguish; Lincoln’s assassination; Booth’s assassination

b. *the knife’s boy; *the tail’s dog; *the ambiance’s restaurant; *the assassination’s Lincoln

Here we may merely note that all three presumed prototypes reflect very basic and ubiquitous aspects of everyday experience and are in that sense reasonably considered ‘archetypal’. Moreover, all of them incorporate our fundamental ability to invoke one entity as a reference point for establishing mental contact with another (the target). The schematic characterization of possession as a reference-point relationship accommodates the extraordinary variety of relations coded by possessive constructions, exemplified in (31a). The inherent asymmetry of reference-point relationships accounts for the usual irreversibility of possessive relations, seen in (31b). Observe that these asymmetries instantiate the salience principles described earlier: human > nonhuman, concrete > abstract, whole > part, etc.

Basic notions of clause structure—including the notion ‘clause’ itself—are similarly analyzed as complex categories with a prototype as well as a schematic characterization valid for all instances. At the prototype level, a clause can be described with reference to an archetypal conception involving time, space, force, and physical objects: it profiles an energetic agent-patient interaction construed as constituting a single event.17 Described schematically, a clause is claimed to profile a unitary process (as previously defined).

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16 In particular, kinship and body-part terms are obligatorily possessed in many languages. Taylor 1989 argues for the prototypicality of ownership. For extensive discussion and justification of the reference-point analysis, see Langacker 1993a.

17 As with possessives, there are grounds for positing a number of prototypes based on different conceptual archetypes (e.g. motion or mental experience). A transitive clause designating a physical action would nevertheless appear to have special status owing to its degree of internal differentiation and its maximal opposition to typical nominal expressions.
Conceptualizing a process requires the basic cognitive ability of conceiving entities in relation to one another, and that of tracking a relationship in its evolution through time.

The canonical event conception invoked as the clausal prototype incorporates a number of simpler conceptual archetypes that merit individual mention. First, in accordance with a basic aspect of visual experience, we generally organize a scene in terms of a global, relatively stable setting and an assortment of smaller, more mobile participants (Langacker 1987c). While participants are conceived as interacting with one another (typically in FORCE-DYNAMIC fashion--Talmy 1988), they merely occupy the setting. Next, events commonly take the form of an action chain, i.e. a series of interactions involving the transmission of energy from one participant to the next (cf. DeLancey 1981, Croft 1991). Finally, from everyday experience we extract a set of archetypal role conceptions partially characterized with reference to an action chain. Among the role archetypes having sufficient cognitive salience to be regularly appropriated for linguistic purposes are agent, patient, instrument, experiencer, and mover (often called theme).

These notions figure in the prototypical meanings of grammatical constructs as well as certain extended values. Consider sentence 32, in which a number of constructs manifest their prototypical values.

(32) In his kitchen, Phil sliced the bread with a sharp knife.

The clause in 32 is prototypical by virtue of profiling a canonical agent-patient interaction. As shown in Figure 5, the event takes the form of an action chain involving the transmission of energy from agent to patient, in this case via an instrument. (Observe that energy transmission is represented by double arrows, the patient’s change of state by a single arrow, and the agent’s volitionality by a wedge.) The subject (S) and direct object (O) assume their prototypical values by respectively coding the agent and patient participants in such an interaction.

It is also usual for a nonfocal participant such as an instrument to be expressed by a clause-internal oblique complement (with a sharp knife), and for the encompassing setting to be specified by a clause-external adverbial modifier (in his kitchen).

If the subject and direct-object relations have schematic meanings that are valid for all instances, they must be considerably more abstract than the prototypical values agent and patient. The semantic roles conventionally associated with each relation constitute a complex category. As more and more data is considered, departing ever more drastically from the prototype, a series of increasingly abstract characterizations can reasonably be proposed to represent the commonality still discernible in the roles of the subject and the object. However, even the most schematic role specification will fail to handle the full range of data. Whereas role specifications involve conceptual content, the semantic import of subject and
object status is ultimately and most fundamentally a matter of prominence (an aspect of construal).

The examples in 33 represent one major expansion of the data to subsume nonprototypical cases: the subject need not be an agent, but can also be an instrument or a patient (indeed, it can manifest most any semantic role).

(33) a. Phil sliced the bread with a sharp knife.
    [AGs ⇒ INSTR ⇒ PATo]

b. A sharp knife easily sliced the bread.
    [AG ⇒ INSTRs ⇒ PATo]

c. The bread sliced easily with a sharp knife.
    [AG ⇒ INSTR ⇒ PATs]

There is however a generalization to be drawn, which becomes apparent once profiling is taken into account. In 33a, the full agent-to-patient action chain is profiled, and the agent is chosen as subject. By contrast, only the instrument-patient interaction is profiled in 33b, and only the change of state undergone by the patient in 33c, even though both sentences invoke the full action chain as their conceptual base. The generalization emerges when we note that 33b and 33c respectively choose the instrument and the patient as their subject: in each instance, the subject is the head (i.e. the initial participant) in the profiled portion of the action chain. We can likewise characterize a direct object more generally as the TAIL (final participant) in the profiled portion of the action chain (provided that the head and tail are distinct). This generalization accommodates objects that are not patients (in the narrow sense of undergoing a change of state) but rather experiencers (e.g. She tickled me), movers (They lifted it), etc.

These notions--head vs. tail of a profiled action chain--are clearly more schematic and broadly applicable than agent and patient, yet there are broad ranges of data they do not account for. It is certainly not the case, for instance, that all transitive clauses designate the exertion of physical force. To be sure, many remaining examples can be analyzed in terms of the metaphorical projection of force-dynamic notions to other domains. Thus, in 34a, the subject and object function as head and tail of an action chain defined with reference to social or psychological force.

(34) a. The general {urged/persuaded/ordered} us to stay.
    b. Evelyn {saw/imagined/remembered} her mother.

I doubt that the kinds of perceptual and mental contact exemplified in 34b are conceived even metaphorically as involving the transmission of energy. Their conception may however refer to a mental/perceptual path, which is analogous to an action chain in that each instantiates the abstract configurational notion SOURCE-PATH-GOAL (one of the IMAGE SCHEMAS discussed in Johnson 1987 and in Lakoff 1987). We can therefore subsume these cases under the more schematic descriptions of a subject and object as the head vs. the tail of the profiled portion of an action-chain analog.

While such characterizations do, I believe, have some validity, they still fail to cover all the data. For example, they provide no basis for distinguishing the subject and object in expressions like those in 35, which designate relationships that are not only static but fully symmetrical.

(35) a. Line A intersects line B. ≠ Line B intersects line A.

It is pairs of expressions such as these which indicate most clearly that any fully general conceptual description of the subject and object relations will have to be based on construal as opposed to content. In terms of conceptual content, there is nothing that distinguishes the roles of lines A and B in 35a, or of Evelyn and Marcia in 35b. Yet the expressions in each pair are nonsynonymous. For instance, *Evelyn resembles Marcia* assesses Evelyn, taking Marcia as a standard of comparison for that purpose; *Marcia resembles Evelyn* does just the opposite.

I interpret this as a kind of prominence pertaining to the portrayal of the relational participants. On independent grounds—e.g. just to describe the semantic contrast between such pairs as before and after (which evoke the same conceptual content and profile the same relationship)—I have argued that relational expressions generally single out one or two participants for focal prominence, specifically as primary and secondary figure in the scene. The conferral of focal prominence on relational participants is not only a lexical phenomenon but is found at all levels of organization; thus in Fig. 4a we saw that the full prepositional phrase near the door distinguishes a trajector and a landmark, just as the preposition does. My proposal, then, is that a subject and direct object are properly identified as the CLAUSE-level trajector and landmark. The most schematic and most fundamental characterization of subjects and objects is that they instantiate the entities accorded primary and secondary focal prominence in the process profiled at the clausal level of organization.

This characterization is held to be valid for subjects and objects in general. Now usually the content evoked by a clause affords a nonarbitrary basis for a particular choice of trajector and landmark. For instance, by virtue of being human, active, volitional, and the initial source of energy, a canonical agent offers itself as the natural candidate for the status of primary figure. The farther one diverges from the prototype, however, the more tenuous such motivation is apt to become. At the extreme, as exemplified in 35, the intrinsic structure of the conceived situation provides no grounds whatever for choosing a particular trajector/landmark alignment as opposed to the opposite one. In that case the speaker must simply make a choice, whether arbitrarily or on the basis of discourse considerations. This is not to deny, of course, that in the final analysis the speaker ALWAYS makes such a choice (e.g. in not overriding for discourse purposes the selection suggested by semantic role).

The most schematic characterization also handles special, marked constructions. The passive can be thought of as a special construction which accommodates the frequent discourse need to put the primary focus on the tail (instead of the head) of an action chain. It can also happen that the setting, rather than any participant, is focused as the trajector. This results in a SETTING-SUBJECT construction, two kinds of which are illustrated in 36.

(36)  a. The following year witnessed another series of amazing political events.
       b. The beautifully wrapped box contained a very cheap present.

Since these sentences do not involve an action chain leading from subject to object (but rather a setting-participant relationship), the characterization of passives as focusing the endpoint of an action chain (or action-chain analog) entails the prediction that setting-subject sentences should not passivize. We see from 37 that they do not.

(37)  a. *Another series of amazing political events was witnessed by the following year.
       b. *A very cheap present was contained by the beautifully wrapped box.
4. LOGICAL GRAMMATICAL RELATIONS. We are now ready to tackle raising. Although ‘logical grammatical relations’ were important in establishing the classic raising analysis (and deep structures in general), for the most part that notion was simply taken for granted, remaining unexamined and unexplained. The basis for the notion is less than obvious, given the assumption that subject and object are GRAMMATICAL relations, the view that grammar is autonomous, and the supposed inadequacy of natural language as the vehicle of logical deduction. The lack of a clear understanding of and theory-independent motivation for these putative relations persists to this very day, and in practice linguists often disagree in assigning them (e.g. Postal vs. Newman in regard to 17a).

Be that as it may, I suggest that the argument for raising based specifically on logical grammatical relations is fallacious. I say this in retrospect, for in earlier years I accepted it and used it quite effectively in the classroom. With the following kind of reasoning, I succeeded in convincing many students of the need for an abstract deep structure and hence the need for a raising rule:

(38) (i) Consider the sentence Don is likely to leave.
(ii) Logically, the subject of likely is not a person--we do not say *Don is likely--but rather an event (as in That Don will leave is likely).
(iii) To capture this logical relationship, we must posit an abstract structure of the form [Don leave] is likely.
(iv) A raising rule is therefore needed to derive the surface form.

Step (ii) asserts the existence and nonexistence of particular logical relations, primarily on the basis of analogy to other linguistic expressions. This move rests on the implicit assumption that the meaning and logical relationships inherent in one use of a predicate, in a particular construction, are the ones it must also have in other constructions. Thus the tacit reasoning of step (ii) goes as follows:

(39) (i) In the construction X is likely, the subject can be an event (That Don will leave is likely) but not a person (*Don is likely).
(ii) This construction establishes the meaning (and hence the logical relationships) of likely in all its uses.
(iii) Likely must therefore exhibit the same meaning and logical relationships in sentences such as Don is likely to leave.
(iv) In this latter construction, however, the surface subject of likely is a person rather than an event.
(v) There is consequently a discrepancy between the surface and logical grammatical relations of likely in this construction.

The problem again lies in step (ii), which amounts to a denial of polysemy. This ignores the possibility that the same predicate might have alternate but related senses in different constructions, with the consequence that different kinds of entities might function as its ‘true’, ‘semantic’, or ‘logical’ subject or object. Basic tenets of cognitive grammar lead to a different interpretation of the data. It is claimed, first, that polysemy represents the usual situation for a common lexical item. In the case of relational elements, one aspect of lexical meaning resides in the choice of participants accorded focal prominence as trajector and landmark (primary and secondary relational figure). It is thus to be expected that the senses of a relational expression often differ in the choice of focal participants (‘argument structure’), even within the same conceptual base. Moreover, one sense of a lexical item is
commonly perceived as basic (prototypical), others as secondary (extensions). It can also happen that a particular lexical variant (with an extended meaning and resulting ‘argument structure’) has limited distribution, perhaps occurring in just a single construction responsible for inducing the extension.

All of these points have been established independently in the context of cognitive grammar. They do not seem particularly controversial, and can all be exemplified by the verb slice in 33. Further illustration is given in 40:

(40)  
  a. I washed the car.  
  b. *I washed the mud.  
  c. I washed the mud off the car.

Reasoning directly analogous to that of 38 could be used to argue that wash is a kind of raising verb. Normally things like mud cannot be the object of wash; only things like cars can be. Consequently, 40c must derive from an underlying structure like 41, where the subordinate clause describes the RESULT of the main-clause action (rather than being the logical object of wash, which is unspecified).

(41) I washed ∆[the mud ( {be/go}) off the car]  
    [⇒ 40c]

Thus, if the argument from logical grammatical relations is taken seriously and systematically applied, raising will have to be far more widespread than is generally believed, involving many different raising rules.

However, the tenets of cognitive grammar listed above permit a very different and perfectly viable analysis that does not posit any raising operation. It holds that wash is polysemous, having the alternate senses diagrammed in Figures 6a and 6b. These two lexical variants happen to have the same conceptual base (content): a volitional agent, somehow employing a water-like substance, applies force to an object’s surface containing a dirt-like substance, resulting in the latter’s removal and the object’s change of state (from dirty to clean).

Figure 6.

Within this common base, the two variants choose the same trajector but different landmarks—the object which undergoes the change of state in a, and the dirt-like substance in b. Because landmark status is a matter of focal prominence, conferring that status on a given participant tends to highlight any relationship directly involving it; the patient’s change of state is
therefore rendered salient in the first variant (it can be considered part of the profiled relationship), and the mover’s change of location in the second. These alternate choices of landmark and the resultant contrast in relational prominence constitute a difference in meaning between the two variants. Moreover, the one sketched in 6a is felt to be basic, that in 6b secondary. The latter can only be used in a construction which renders explicit (hence salient) the removal of the dirt-like substance, as in 40c.

In cognitive grammar, a precisely analogous account suggests itself for ‘raising’ constructions. The predicate likely, for example, would be considered polysemous and assigned the two related senses sketched in Figure 7. The meaning diagrammed in Fig. 7a is the one it exhibits with sentential subjects (e.g. That Don will leave is likely). Very roughly, we can say that this variant situates a process within a certain region on a scale of probability. Its trajector is the process (in this case that of Don leaving) specified by the sentential subject, and the scalar region functions as a kind of landmark (one uniquely identified by the predicate itself, hence not separately coded). Fig. 7b diagrams the semantic value that likely assumes in the raising construction (Don is likely to leave). It has the same conceptual content as 7a. The difference resides in its choice of trajector: rather than according this focal status to the process overall, it confers it on the most salient participant in that process (its trajector). This tends to highlight that participant’s role in the overall relationship; for instance, Don is likely to leave encourages the interpretation that Don’s volition is critical, whereas That Don will leave is likely is more neutral in this regard. Moreover, the first sense is felt to be more basic: it is only in the context of the special construction involving both a subject and an infinitival complement that the alternate meaning emerges.

Figure 7.

A certain objection might be raised at this juncture. It does not seem too implausible to claim that, in 40, either the car or the mud can be construed as ‘logically’ being an object of wash. But there is no sense (so the argument would go) that Don could be the logical subject of likely--likelihood can only be assessed of events or situations, not of people. However, this argument simply has no force in the absence of any explicit characterization of ‘logical’ relations and the independent demonstration that they are criterial for GRAMMATICAL relations, at least at the level of ‘underlying’ structure.

Cognitive grammar claims that the notion of underlying structure in the generative sense is erroneous, and that the subject and object relations are first and foremost matters of prominence, not of any specific conceptual content (logical or otherwise). A subject is characterized as a clause-level trajector, i.e. the primary figure within the profiled
relationship, and an object as a clause-level landmark (secondary figure). Prototypically the subject is an agent and the object a patient, but there is no specific semantic role or conceptual content that a subject or object has to instantiate. Trajector and landmark status are better thought of as spotlights of focal prominence that can be directed at various entities within a scene. Certain elements exert a natural attraction for this highlighted status; notably, an agent—being animate and an initial energy source—has intrinsic cognitive salience and tends to attract the stronger spotlight. These tendencies can, however, be overridden, particularly by discourse considerations. If trajector status is basically a matter of prominence, there is no inherent reason why, in Fig. 7b, the trajector of likely cannot be identified as the primary participant in the process located on the scale of probability, instead of the process per se. Indeed, that participant will usually resemble a prototypical subject more closely than does a process or a proposition.

A further objection might then ensue. Not just anything (it might be argued) can be illuminated by these spotlights of focal prominence. The choice has to be constrained. The most natural way to constrain it is to require that the entities selected have to participate directly in the profiled relationship. This is so with the putative extended meaning of wash, but not that of likely. That is, while the landmark of wash—namely the mud—is easily thought of as being directly involved in the activity, a comparable remark cannot be made for the supposed trajector in Fig. 7b: there is no sense in which a person (Don in this case) directly interacts with the scale of probability.

Now this objection is not altogether unreasonable. While I consider it incorrect, it does contain an important observation which captures the intuition behind the notion ‘logical grammatical relation’, and it would presumably be part of an explicit characterization of that notion. I will show, however, that direct participation in the profiled relationship is not invariably or even generally characteristic of subjects and objects.

5. THE ACTIVE-ZONE ANALYSIS. Langacker 1984 observed that it is not even typical for subjects and objects to participate directly in a profiled relationship. There is usually some discrepancy between the entities that participate most directly in such a relation and the entities profiled by its subject and object nominals.

5.1. ACTIVE-ZONE/PROFILE DISCREPANCY. Consider the following examples:

(42) the spoon in the cup; the cigarette in her mouth; the arrow in this tree; the person in that chair; the hammer in my hand

The relationship in question is the one profiled by in. To the extent that this relation is characterized in terms of spatial inclusion, it is readily seen that only portions of the entities designated by the head noun (corresponding to in’s trajector) and the prepositional object (elaborating its landmark) are directly involved in that relationship. In canonical situations, only a portion of the spoon falls within the confines of the cup (the handle protrudes), only the tip of the cigarette is in the mouth, only the point of the arrow is in the tree, etc. Likewise, only certain parts of the entities designated by the prepositional objects function as the including structures: the lips hold the cigarette; the arrow is embedded in the bark of the tree trunk (not, say, its leaves or roots); the interior surface of the hand encloses the hammer (the fingernails have no direct role); etc.

Vandeloise 1986 has established that the container-content FUNCTION is also essential to its characterization (and perhaps more fundamental).
Those facets of an entity which participate most directly and crucially in a relationship are said to constitute its ACTIVE ZONE with respect to that relationship. The essential observation is simply this: when an entity is conceived as participating in a given relationship, there is usually some discrepancy between its profile and its active zone for that relation. For example, the point of the arrow is its active zone with respect to the in relation, but an arrowhead is not an arrow--the profile (conceptual referent) of arrow is the entire object, of which the head is only a part. Similarly, in the usual scenario only the unlit end of a cigarette is put in the mouth, not the entire object designated by the noun, and the lips (the mouth’s active zone) do not themselves constitute the referent of mouth. A fragment of the bark of a tree does not by itself qualify as a tree, nor is part of the handle of a hammer properly referred to as a hammer.

The situation of an active-zone/profile discrepancy is diagrammed abstractly in Figure 8a. The absence of such a discrepancy--an instance where active zone and profile coincide--is depicted in Fig. 8b. The latter type of situation is actually somewhat unusual; it is hard to find unproblematic examples. I would take a sentence like 43 to be a good candidate, since all portions of the wombats are coming closer to Jupiter, which functions in this regard as an undifferentiated whole:

(43) The wombats are now approaching Jupiter.

(44) Joe{meditated/blinked/whistled/breathed/stretched/listened/digested/frowned/walked/ached}.

Various constructions allow one to make the active zone explicit when there is reason to do so. Prepositional phrases serve this function in 45a. In 45b, the argument structure of blink is expanded to include an overtly specified landmark.

(45) a. The wombat bit the skunk on the tail with its sharp teeth.
b. Zelda blinked her big blue eyes.

Some languages specify the active zone by means of noun incorporation in the verb (Tuggy 1986).

In the examples considered so far, a participant’s active zone (with respect to a certain relationship) constitutes a subpart of the nominal referent. It is important to realize that this is not always so: there are many instances where the active zone is merely ASSOCIATED with the profiled entity rather than being (in any strict sense) a subpart of it. Consider the commonplace expressions in 46:

(46)  a. She heard a trombone.

b. The kettle is boiling.

c. I’m in the phone book.

The sound a trombone emits is associated with it but is not a subpart. Similarly, it is only the water it contains—not any part of the kettle per se—that participates in the boiling, nor is the graphic representation of a name, address, and phone number part of a person. Because a whole-part relation is one kind of association (an intimate, privileged kind to be sure), as is identity (the closest possible association), we can describe the general situation as being one in which the active zone with respect to a given relationship is some entity associated with the nominal referent. The configurations in Figs. 8a and b are thus special cases of the general scheme depicted in Fig. 8c.

Examples like the above can be multiplied indefinitely and constitute the normal way to say things in most instances. Expressions where the profile and active zone precisely coincide are hard to find and usually less than unimpeachable. The conclusion seems inescapable: it is NOT invariably the case that the entities singled out as the trajector and landmark of a relationship participate directly in that relationship; indeed, it is usual for there to be some discrepancy between the profiled participants and those entities which are most directly and crucially involved in the relationship (their active zones with respect to it). Direct participation can therefore hardly be considered criterial for subjects and objects.

5.2. REFERENCE POINTS AND METONYMY. If the foregoing is correct, it is legitimate to ask why active-zone/profile discrepancies occur and how are they tolerated. The answer, I believe, is that they manifest some very basic conceptual and linguistic phenomena and serve an important cognitive and communicative function. Specifically, they represent a special case of METONYMY, which in turn instantiates our basic cognitive ability to invoke one entity as a conceptual reference point for purposes of establishing mental contact with another. The basic components of a reference-point relationship are diagrammed in Figure 9a. A conceptualizer (C) invokes a reference point (R) to establish mental contact with a target (T). The set of entities accessible via a given reference point constitute its DOMINION (D).
The use of reference points is fundamental and ubiquitous in cognition, with innumerable linguistic manifestations (Langacker 1993a). I have cited it here as a facet of perspective, and have also suggested that a reference-point relationship constitutes the schematic value of possessive constructions. I would further argue that a topic is a kind of reference point. A detailed reference-point analysis of pronoun-antecedent relationships is presented in van Hoek 1992.

Yet another linguistic manifestation of our reference-point ability is metonymy, whose prevalence would be hard to exaggerate. In metonymy, an expression’s usual referent (i.e. its profile) is invoked as a reference point to establish mental contact with its intended referent (the target). To serve this purpose effectively, R has to be salient with respect to T. It appears that certain principles of cognitive salience (already noted in other contexts) do in fact generally hold, including human > nonhuman, whole > part, concrete > abstract, and visible > nonvisible. These are respectively illustrated by the boldface terms in the following examples:

(47)  a. She bought Lakoff and Johnson, used and in paper, for just $ 1.50.
    b. I ate an apple.
    c. They ran out the clock.
    d. That car doesn’t know where he’s going.

In 47a, it was presumably a book that was purchased, not its famous human authors. The usual interpretation of 47b is that only part of the apple (excluding the core) was consumed. The locution in 47c, which indicates that they used up the remaining time, avoids explicit mention of this abstract entity. Finally, the car in 47d is salient by virtue of being the visible part of the car-driver assembly.

Such examples suggest that metonymy serves a particular cognitive/communicative function (Langacker 1993a:30):

‘Metonymy allows an efficient reconciliation of two conflicting factors: the need to be ACCURATE, i.e., of being sure that the addressee’s attention is directed to the intended target; and our natural inclination to think and talk explicitly about those entities that have the greatest cognitive salience for us. By virtue of our reference-point ability, a well-chosen metonymic expression lets us mention one entity that is salient and easily coded, and thereby evoke--essentially automatically--a target that is either of lesser interest or harder to name.’

Active-zone/profile discrepancy can now be recognized as METONYMY IN THE LINGUISTIC CODING OF THE PARTICIPANTS IN A RELATIONSHIP. The named participant--the profile of the nominal expression--serves as a reference point in relation to the active zone, i.e. the entity that is directly engaged in the relationship. This configuration is diagrammed in Fig. 9b. I have already noted that this represents the usual situation for the

19 For useful discussion along these lines from a related perspective, see Deane ( 1991:45, 1992: 51).
coding of relational participants; metonymy thus lies at the very core of grammar, being inherent in virtually all conventional trajector/landmark assignations (predicate-argument relationships). Observe in this regard that active-zone/profile discrepancy generally follows the same salience principles previously described: in 42 and 44 the whole is explicitly mentioned in preference to its parts; in 46a, the trombone is concrete, whereas the sound is more abstract; in 46b, the kettle is visible, while the water is not; and the subject in 46c is human (and concrete), as opposed to the graphic representation of a name, address, and phone number. The phenomenon of active-zone/profile discrepancy is therefore not only fully compatible with the view of subject and object status being a matter of focal prominence, but follows as a natural if not an expected consequence of that characterization.

5.3. ACTIVE ZONES AND RAISING. The ubiquity of active-zone/profile discrepancies invalidates a possible objection to the account of raising described earlier, as represented for the case of likely in Fig. 7b. The potential argument that focal participants must be limited to entities which participate directly in the profiled relationship simply cannot be maintained: this is not a general characteristic of subjects and objects, independently of any consideration of raising constructions. Hence there is nothing in principle objectionable about the configuration sketched in Fig. 7b, where the trajector of likely is not itself assessed for degree of probability (and thus does not interact directly with the probability scale).

Let me now support the proposed analysis in more positive terms and present it more explicitly. An essential observation is that a participant’s active zone with respect to a profiled relationship need not be a thing, but can also be another relationship in which it figures. This is precisely what is being claimed for the trajector of LIKELY in Fig. 7b: its active zone with respect to the scale of probability—the entity that mediates its interaction with that scale—is some process in which the trajector engages (in Don is likely to leave, the process of Don leaving). This kind of situation is covered by our previous characterization of active zones and active-zone/profile discrepancies, since a process in which a nominal referent engages is clearly associated with that referent. On this account, raising constructions are simply a special case of active-zone/profile discrepancy.

The notion that a relationship might function as an active zone has independent motivation. One construction in which a relationship—and specifically a process—functions in that capacity is exemplified in 48:

(48) She \{began/continued/finished\} the novel.

Since begin, continue, and finish are aspectual in nature, they do not directly engage the novel as a physical or even an intellectual entity. Mediating their interaction is some implicit process involving the novel, such as reading, writing, or reciting it (cf. Newmeyer 1970). A process can also mediate a noun’s participation in the relationship profiled by an adjective:

(49) a. That \{car/runnerprinter/barber/surgeon\} is really fast.
   b. When it comes to \{suturing/deciding to operate/sending his bill\}, that surgeon is really fast.

In 49a, the processual active zone is left implicit because the noun itself is sufficient to evoke it—there is one characteristic thing that a car, runner, printer, barber, or surgeon does that would most obviously justify its placement on a scale of rapidity. The process in question can however be made explicit when it does not represent a default and is not apparent from the context. Thus the adverbial clause in 49b specifies the surgeon’s active zone with respect to fast.
6. COMPLEX CONSTRUCTIONS. Now that the central idea has been presented, we can examine the active-zone analysis in greater structural detail. Let us start by reviewing some constructs and notations used for the description of grammatical constructions. Figure 10 diagrams the integration of wash (specifically WASH₁, previously sketched in Fig. 6a) with I and the car to yield the full clause I washed the car.²⁰ Note that S indicates the speaker, while C abbreviates the many semantic specifications of the car.

Several points need to be clearly grasped. Observe first that the nominal expression I elaborates the trajector of wash, while the car elaborates its landmark. Hatching identifies these schematic entities as elaboration sites. A second point is that the composite structure inherits its profile from wash (as a full clause, I washed the car designates a process--an instance of washing). That makes wash the head (profile determinant) in this construction. Finally, and most crucially, I and the car constitute the subject and object precisely because they respectively elaborate the trajector and landmark of the clausal head. In cognitive grammar, the subject and object of a clause are characterized as those nominals whose profiles correspond to the trajector and landmark of the process profiled at the composite structure level.

To facilitate the following discussion, I am ignoring constituency. It may well be that the configuration in Fig. 10 results from compositional relationships at two distinct levels of organization: V + O, then S + [VO]. If so, the diagram conflates two constructions into one. However, that makes no difference in regard to either correspondences or identification of the clausal head, which are the only things that matter for present purposes.²¹ Also, I will simplify subsequent diagrams by omitting any explicit representation of the composite construction.

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²⁰ To simplify matters here and in later diagrams, I will omit the representation of tense markers, articles, and complementizers. All of these are described in Langacker 1991.
²¹ To reiterate, grammatical relations are not defined configurationally in this framework, but rather with reference to semantic notions (trajector/landmark alignment, correspondence, profiling, profile determinance) that are largely independent of constituency.
structure. It is only important that one know which element functions as the clausal head (marked by the heavy-line box), and which components elaborate its substructures.

We can now examine a more complex expression, namely I washed the mud off the car, diagrammed in Figure 11. It involves the extended sense of wash (WASH2), which takes as its landmark, not the entity being cleaned, but rather the dirt-like substance initially attached to it. In accordance with the foregoing definitions, the pronoun I is the subject because it elaborates the trajector of the profiled process. Similarly, the mud is the clausal object because it elaborates the landmark. There is in addition a third elaborative relationship, responsible for the third complement of wash: the prepositional phrase off the car.

Figure 11

Part of the meaning of WASH2 is that the dirt-like substance follows a path which removes it from its initial position on the surface of the entity being cleaned. This path functions as an e-site which the prepositional phrase off the car spells out in finer detail (particularly in regard to the object the substance initially adheres to).

On the basis of Fig. 11 we can make an essential observation. A complex expression generally subsumes numerous profiled relationships, their status as conceptual referent prevailing within different component structures or at different levels of organization. Each of these relationships—when examined individually—makes its own trajector/landmark assignment (as an intrinsic part of its semantic value).22 The same conceived entity can therefore function simultaneously as the trajector or landmark of multiple relationships. In diagrams, these multiple roles are reflected in correspondence lines, which indicate that entities shown separately as participants in distinct relations are actually the same individual.

First, examining WASH2 in Fig. 11, we see that the dirt-like substance functions simultaneously as the action-chain tail, as the mover with respect to the resultant change of location, and as the entity initially located on the surface of the patient. It is to the first of these roles—as the target of the agent’s exertions—that this substance owes its selection as the landmark (spelled out by the clausal object, the mud). Observe, now, that the two nonagentive participants are also focal participants of the relationship profiled by the prepositional phrase, off the car. Confining our attention to this relational complement, we see that the mover functions as trajector, and the initial location as landmark. Correspondence lines indicate, moreover, that the landmark of wash is the same conceived entity as the trajector of the prepositional phrase, while the unprofiled patient of wash (the object being

22 Of course, the trajector/landmark assignment made at the composite structure level is the one that counts for most higher-level purposes.
cleaned) is equated with the prepositional landmark. It is entirely unproblematic for the same entity to have multiple values in regard to focal prominence, e.g. by simultaneously being the landmark of one relation and the trajector of another. There is no contradiction because the relations in question pertain to different levels of conceptual and structural organization.

When we turn now to raising constructions, we find that nothing is required for their description which has not already been introduced and motivated on independent grounds. Consider first SSR, illustrated by the contrast between That Don will leave is likely and Don is likely to leave. The two senses of likely were previously diagrammed (Fig. 7). Shown now in Figure 12 are essential aspects of the complex constructions that they head. The structure depicted in Fig. 12a--representing the sentence That Don will leave is likely--is quite straightforward. Functioning as the sole e-site is the trajector of likely, a schematic process. It is elaborated by the finite clause That Don will leave, which is consequently the subject of likely and of the complex sentence as a whole.

Our interest, however, lies with the ‘raising’ example, Don is likely to leave, diagrammed in Fig. 12b. The overall head (profile determinant) is LIKELY. Its trajector is a thing, whose location on the probability scale is mediated by a process in which it participates (also as trajector); this schematic process is thus the trajector’s active zone with respect to the scale. There are two elaborative relationships: the noun phrase Don elaborates the trajector of likely, and the infinitival expression to leave specifies the active zone. Correspondence lines show that Don functions simultaneously as the trajector both of likely and of leave.

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23 For our purposes, the semantic contribution of be can be ignored. A detailed description is presented in Langacker 1990a (Chs. 3-4).
24 Observe that the schematic process in Fig. 12b is both shaded, to signal its role as an active zone, and hatched, to mark it as an elaboration site.
Let us next examine OSR. The contrast between such pairs as *To like Don is easy* and *Don is easy to like* is once again handled by positing two related senses of the governing predicate. As shown in Figure 13a, EASY₁ has a processual trajector elaborated by the infinitival clause *to like Don*, which is consequently the subject of the former sentence. The raising sentence is sketched in Fig. 13b. The trajector of EASY₂ is a thing, whose placement on the difficulty scale is mediated by a schematic process (its active zone with respect to that scale). The difference between this construction and the one involving LIKELY₂ (Fig. 12b) is that the trajector of EASY₂ is the LANDMARK of this schematic process instead of its trajector; for this reason one speaks of Object-to-Subject (rather than Subject-to-Subject) Raising. By tracing the correspondences in Fig. 13b, we see that *Don* is simultaneously the object of *like* and the subject of *easy*.

Finally, exemplifying SOR is the distinction between *I expect that Don will leave* and *I expect Don to leave*. As shown in Figure 14a, EXPECT₁ profiles a mental relationship between a sentient trajector and a processual landmark. The former is elaborated by the subject nominal, and the latter by a finite clause which is consequently the main-clause object. EXPECT₂ incorporates the same conceptual content but construes it differently by conferring secondary focal prominence--landmark status--on a different entity: the trajector of the envisaged process, rather than that process per se (which is however the landmark’s active zone in regard to the expectation). As seen in Fig. 14b, the subject and object of expect (so identified because they elaborate its schematic trajector and landmark) are *I* and *Don*, respectively. The infinitival complement *to leave* specifies the active zone. By virtue of correspondences, we see that Don functions simultaneously as the landmark of *expect* and the trajector of *leave*. I regard it as the ‘true’ object of *expect* even though it does not participate directly in the profiled relationship.

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25 The single-headed dashed arrow stands for a relationship of mental contact: the meaning of *like* implies that its trajector conceives of the landmark and has a certain mental/emotional attitude in regard to it.
Figure 14
7. THE PROPERTIES OF RAISING CONSTRUCTIONS. I have sketched in some detail how raising constructions are analyzed in cognitive grammar, and have tried to indicate that this analysis is perfectly straightforward granted general principles of the theory and independently established linguistic phenomena. The next task is to show systematically how the proposed treatment accommodates the various considerations which originally appeared to support the raising analysis, and how it avoids the problems which arose in that analysis.

7.1. GRAMMATICAL RELATIONS. Ex. 50 lists some observations concerning overt and semantic (or ‘logical’) grammatical relations in raising sentences and in their semantically equivalent counterparts that do not exhibit raising. The ability to account for these facts by means of a single operation provided strong support for the classic transformational analysis.

(50) a. The raised NP bears a certain overt grammatical relation in the main clause.
    b. This NP bears the same semantic relation in the subordinate clause that it has overtly in the nonraising counterpart sentence.
    c. The subordinate clause bears the same semantic relation to the main clause that it has overtly in the counterpart sentence.
    d. The raised NP bears the same overt relation in the main clause that the subordinate clause has semantically, and has overtly in the counterpart sentence.

How, then, does the proposed alternative accommodate these points?

Let us consider the matter with reference to SSR (the other cases are analogous). If we examine the proposed analysis of a raising sentence and its unraised counterpart (e.g. Don is likely to leave vs. That Don will leave is likely), we find that it effectively incorporates the observations in 50. Properly interpreted, they are in fact directly discernible in Fig. 12--they can simply be ‘read off’ the two diagrams:

(i) Don is the overt subject of likely in Don is likely to leave. This is directly apparent in Fig. 12b from the fact that Don elaborates the schematic trajector of LIKELY.

(ii) Don bears the same semantic relation to leave that it has overtly in the counterpart sentence That Don will leave is likely. Tracing the correspondences in Fig. 12b reveals that Don is the trajector of leave (its ‘logical’ or ‘semantic’ subject).

(iii) In Don is likely to leave, the infinitival clause [Don to leave] is the semantic subject of likely, the same relation that the subordinate clause has overtly in That Don will leave is likely. We observe this in Fig. 12 by noting that the infinitival complement in Fig. 12b (labeled LEAVE) and the finite complement in Fig. 12a (labeled DON LEAVE) both elaborate the same substructure: the schematic process that likely situates with respect to a scale of probability. While it bears the same ‘logical’ relation to likely in each instance, this process per se is focused as the trajector only in Fig. 12a. Consequently, the elaborating clause functions as the grammatical subject only in the nonraising variant.

(iv) Don is the overt subject in Don is likely to leave, the same relation that the subordinate clause has semantically, and has overtly in the counterpart That Don will leave is likely. In other words, the raised NP appears to ‘replace’ the subordinate clause out of which it is lifted, for it assumes overtly the same relation which the clause bears semantically to the main-clause predicate. From Fig. 12, we can see that this apparent replacement reflects the metonymic relationship between the trajector and the schematic process which functions as its active zone with respect to the probability scale: the semantic extension producing the

26 In relational grammar, the 'relational succession law' stipulates that a raised NP can only assume the grammatical relation of the clause from which it ascends. This law was proposed as a syntactic universal in Perlmutter & Postal 1983.
‘raising’ predicate resides in a shift in focal prominence (trajector status) from the process as a whole to a salient participant in that process. Because the trajector is a participant in the schematic process—which would itself have focal prominence were it not for the metonymy—the NP that elaborates the trajector appears to replace, as main-clause subject, the infinitival clause which specifies its active zone.

7.2. SEMANTIC NONEQUIVALENCE. One drawback of the classic analysis is that sentences supposedly derived from the same deep structure are often not precisely the same in meaning (e.g. *I find that this chair is uncomfortable* vs. *I find this chair (to be) uncomfortable*). The differences are subtle and largely beyond the scope of this presentation. However, a basic notion of cognitive grammar is that semantic nuances like these cannot be safely ignored in grammatical analysis—in fact, they are the very essence of grammar.

‘Raising’ sentences and their ‘nonraising’ counterparts are not derived from the same underlying structure, nor one from the other. They instantiate separate and parallel constructions, each representing its own way of construing and symbolizing situations that may in some cases be the same. These differences in construal are nonetheless genuine differences in meaning, construal being central and essential to linguistic semantics. Every lexical and grammatical choice has semantic import, and the import of grammatical elements resides largely in the construal they impose on conceptual content. The semantic nonequivalence of raising sentences and their counterparts is attributable to three factors: the meanings of the grammatical elements they contain (e.g. *that*, *to*, *will*, *-ing*); the reference-point function of the ‘raised’ NP; and the highlighting effects of focal prominence (trajector/landmark status).

For a brief illustration of the first factor, consider just one point of contrast between

*That Don will leave is likely* and *Don is likely to leave*: the occurrence of the modal *will* in the first, and the infinitival *to* in the second. Although both elements can be future-oriented, they have different conceptual import. Here I will merely observe (following Talmy 1988 and Sweetser 1990) that the modals are force-dynamic in nature. On one account (Langacker 1991:6.3), *will* invokes the ‘evolutionary momentum’ of reality and places an event (*Don leave*) in the PROJECTED PATH of its future evolution. By contrast, *to* imposes a holistic (atemporal) construal on the envisaged event, and probably also places it in the future with respect to a temporal reference point (Wierzbicka 1988:Ch. 1), but it is not force-dynamic and does not focus on the evolutionary momentum of reality.27

The second factor is the reference-point status of the raised NP. Raising constructions are analyzed in terms of active-zone/profile discrepancy, a kind of metonymy, which is one manifestation of our reference-point ability. In a case of active-zone/profile discrepancy (Fig. 9b), a profiled participant functions as a reference point for the entity that most directly and crucially engages in the designated relationship—its active zone with respect to that relation. Evoking the reference point enables the conceptualizer to establish mental contact with the active zone and thus properly construe the relationship in question. To put it another way, the

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27 One should bear in mind that the heuristic diagrams used here (e.g. Fig. 12) are not intended to capture this difference, and that I have oversimplified matters in consistently referring to subordinate clauses as processes. Technically, an infinitival clause does not profile a process but rather a complex atemporal relation derived by construing a process holistically. A more precise representation would show an infinitival complement (as well as the corresponding e-site in the governing predicate) as imposing this atemporal construal on a processual base. I suspect, in fact, that both subject-complement clauses and *that*-clauses go one step further and construe the base process as an abstract *thing* (by conceptual reification). Such refinements do not affect the basic points of this paper.
active zone is ACCESSED VIA the explicitly mentioned reference point and conceived IN RELATION TO that reference point.

The semantic import of a raising construction therefore includes the status of the raised NP as a reference point with respect to the infinitival complement. For example, in Don is likely to leave (Fig. 12b), likely portrays its trajector (elaborated by Don) as a reference point which enables the conceptualizer to access the process being located on the probability scale. The trajector readily fulfills that function, because it is the most salient participant in the mediating process, and the focal participants of a process are obvious and natural reference points for it.28 Thus it is claimed that, in Don is likely to leave, Don functions as a reference point with respect to the process of his leaving: the notion of leaving is accessed via the conception of Don and conceived in relation to that individual. This reference-point relationship is absent in the corresponding sentence That Don will leave is likely, which consequently has a slightly different meaning. The ‘raised’ NP can be thought of as a kind of local topic, i.e. a topic for purposes of ascertaining the actual (or direct) participant in the profiled main-clause relationship (Don calls to mind a process involving Don, and such a process can be assessed for likelihood). It makes the prediction that raised NPs should tend to exhibit greater ‘topicality’ than their unraised counterparts.29

The third factor contributing to the semantic distinction between a raising construction and its unraised counterpart is the highlighting effect associated with conferring focal prominence on a particular element. It is of course the focal prominence of trajector or landmark status that makes the raised NP an obvious reference point. Moreover, the ‘spotlights’ of focal prominence tend to illuminate the immediate surroundings of the focused participants, thereby rendering them slightly more salient than they would otherwise be. We can see this highlighting effect in relation to the alternate senses of wash, diagrammed in Fig. 6. WASH1 chooses as its landmark (secondary figure) the object from which the dirt-like substance is removed. It thus highlights to some degree the change of state (from dirty to clean) which that object undergoes. By contrast, WASH2 chooses as landmark the dirt-like substance that is made to move, and thereby highlights that motion and the spatial path it defines. These subtle semantic differences have consequences. For instance, 51a implies that the table ought to be clean (if the washing was done properly), but 51b has no such implication. We can also observe, in 51c and 51d, that a path-specifying complement is optional with WASH1, but obligatory with WASH2.

(51) a. She washed the table.
    b. She washed the mud off the table.
    c. She washed the f table/mud} off.
    d. *She washed the mud.

The highlighting effect of focal prominence does not always have such obvious symptoms, but we might expect at least occasional observable consequences in raising constructions. A possible illustration is found in 52, involving SSR:

(52) a. Bill is certain to get the job, because he pursued it so aggressively.
    b. ?That Bill will get the job is certain, because he pursued it so aggressively.

28 For precisely this reason, the focal participants in a nominalized process are commonly specified by means of possessive modifiers—e.g. Kennedy’s assassination, Oswald’s assassination (Langacker 1991:1.2.2). Recall that a reference-point relationship is proposed as the schematic value of possessive constructions.

29 A further consequence is that pairs of sentences like those in 1 are not really synonymous, even ignoring the semantic import of the passive elements. Each sentence invokes a different reference point for purposes of accessing the subordinate process.
c. Bill is certain to get the job, because he’s the only applicant.

d. That Bill will get the job is certain, because he’s the only applicant.

Conferring trajector status on Bill, as opposed to the process of his getting the job, tends to highlight his own contribution to bringing about that event. The continuation in 52a is thus a natural one. A sentential subject allows the same continuation, as in 52b, but here there is felt to be a disjuncture between the two parts of the sentence—the presentation flows less smoothly. By contrast, the continuation in 52c and 52d emphasizes factors external to Bill, so a sentential subject is more compatible with it.

7.3. OPTIONALITY OF THE COMPLEMENT CLAUSE. A potential problem for the classic analysis was illustrated previously in 25-27—sentences whose main clause would appear to be semantically and grammatically parallel to that of so-called raising sentences, but which lack a complement clause from which the ‘raised’ NP could have been extracted. There is no obvious difference, for example, between 53a and the main clause of 53b, supposedly derived by OSR. The former would be perfectly felicitous (and nonelliptic) in the proper context, e.g. if uttered during an employee interview in a marsupial-washing facility. If wombats in 53b is the logical object of wash, becoming the subject of easy only through raising, then the subject in 53a has no apparent source. The classic raising rule would likewise fail to derive the subject of 53c.

(53)  a. Wombats are easy.
      b. Wombats are easy to wash.
      c. As for washing them, wombats are easy.

In the analysis proposed here, such examples are completely unproblematic.\(^{30}\) They are merely sentences where the processual active zone, which is normally elaborated by an infinitival complement, remains unelaborated because its nature is evident by other means. Thus 53a employs the predicate EASY\(_2\) and is directly parallel to the construction in Fig. 13b, except that only the trajector is elaborated; its active zone with respect to the difficulty scale is deemed apparent and consequently left implicit. As a general point, the complement clause in ‘raising’ constructions functions as a periphrastic device allowing the ‘raised’ NP’s active zone to be spelled out explicitly when required. In this regard it is comparable to the prepositional phrases in 45a, the ‘extra’ argument in 45b, the adverbial clauses in 26 and 49b, and the topic construction in 53c.

The omissibility of the complement specifying the active zone depends on how predictable or evident the nature of this process is. It is readily omitted in 25—A 5K is easy; Trivial Pursuit is fun; Portraits are tough—since the process in question represents a default with respect to the subject: what one normally does in regard to a 5K is to run it; the canonical activity associated with Trivial Pursuit is playing it; and the only difficult thing we typically think of doing in relation to a portrait is to paint it. With SSR and SOR, there is usually no default, so the infinitival clause cannot in general be left out.\(^{31}\) It can in certain instances, however. The complement clause is omissible in 54, because occurring is the most basic thing a war can do, and occurrence is also central to the meaning of likely.

\(^{30}\) For a proposed solution in the context of government-binding theory, see Pesetsky 1987.

\(^{31}\) This difference reflects the semantics of the raising constructions and their governing predicates. Observe that the OSR construction is mostly limited to adjectival predicates. I will argue later that an adjective ascribes a property to its trajector, and consequently that the OSR construction portrays the subject as responsible for the infinitival process engendering a certain experience. By its very nature, then, the construction tends to focus attention on a process intrinsic to the characterization of the subject.
Another war is likely (to occur/happen/come along/break out.)

If the speaker envisages a more elaborate scenario, e.g. the probability of another war causing a rise in the price of gold, that would have to be specified overtly.

People are more versatile than wars, so a human subject usually requires specification of the processual active zone. Still, the exchanges in 55 represent conventional patterns:

If the speaker envisages a more elaborate scenario, e.g. the probability of another war causing a rise in the price of gold, that would have to be specified overtly.

People are more versatile than wars, so a human subject usually requires specification of the processual active zone. Still, the exchanges in 55 represent conventional patterns:

a. Q: Who is coming to your party? A: Well, Tom is likely, and Sally is certain.
b. Q: Who is coming to your party? A: I expect Tom and Sally.

The question indicates that the event at issue is that of attending or appearing on the scene; since this is also quite close to the notion of occurrence central to the meaning of likely, certain, and expect, it need not be specified in the answer. By contrast, we see in 56 that a complement describing more than just appearance on the scene is not omissible:

a. Q: Who will win the lottery? A: *Tom is likely/certain

7.4. TRANSPARENCY. A basic argument for the classic analysis was what I have called transparency: the fact that any element which can occur in the appropriate position in the subordinate clause can likewise occur in a ‘raised’ position in the main clause. The main clause itself imposes no constraints on the raised NP--its structural motivation comes from its role in the subordinate clause.

This transparency is automatic in the proposed analysis, given appropriate semantic characterizations of the governing predicates. Consider the raising sense of expect, as represented in Fig. 14b above and repeated in Figure 15a. We have already observed that the entity focused as the landmark of expect is simultaneously the trajector of another process (typically elaborated by an infinitival complement). This schematic process functions as the landmark’s active zone with respect to the profiled relationship. Crucially, the trajector of expect does not directly interact with the landmark per se; their interaction is mediated by the processual active zone. More specifically, the trajector entertains an expectation concerning the occurrence of a process, and the landmark is invoked as a reference point by virtue of being the trajector of that process. But what it takes to be the trajector of a process is determined solely by that process itself: no constraints are imposed on its trajector just

Either response is rendered felicitous by the addition of to, which is analyzed (in accordance with general principles of cognitive grammar) as a schematic infinitival complement. The judgment in 56b assumes a continuous intonation contour: with a pause (I expect, Tom and Sally), the response is acceptable but is interpreted as being elliptic (cf. Tom and Sally, I expect).
because the process constitutes someone’s expectation. In short, the inherent constraints imposed by expect are limited to there being some process (of an unspecified nature) which the trajector can envisage and anticipate. That process will itself have a trajector, which expect puts in focus as landmark, but this predicate is quite neutral concerning its possible character.

Contrast expect with persuade, diagrammed in Fig. 15b. The landmark of persuade is also envisaged as engaging in another process (specified by an infinitival complement). However, this predicate further designates a complex DIRECT interaction between the trajector and landmark. There is some kind of communicative, typically verbal exchange (represented in the diagram by the double-headed dashed arrow). Through this exchange, moreover, the trajector exerts social or psychological force on the landmark (indicated by the double arrow). As a result of this direct interaction, the landmark has an attitude of intention or volitionality toward the envisaged process (shown as a wedge). These specifications of persuade impose a number of constraints on the landmark above and beyond its role as major participant in the infinitival process: it must be capable of envisaging a process, of engaging in a communicative exchange, of succumbing to social/psychological pressure, and of intending to do something. Hence the lack of transparency—the object nominal has to satisfy these specifications, in addition to those imposed by the subordinate clause.

Full justification of this account would of course require detailed semantic analysis of all the raising predicates. Here, though, we must limit ourselves to some initial semantic exploration. Later sections will examine in general terms the kinds of meanings exhibited by the predicates governing each raising construction. While the semantic characterizations are preliminary, they will in each case enable us to see precisely how transparency emerges.

7.5. IDIOMS. One major problem remains: the behavior of ‘idiom chunks’ and ‘syntactic dummies’, exemplified in 7-9 and 11-12. The working assumption in transformational grammar was that elements like tabs, headway, it, and there have no independent semantic value and only occur as part of fixed sequences (keep tabs on, make headway, it rain, there be). If there is no movement operation, how can these dummy elements wind up separated from the sequences in question, in the main clause, when the remainder is found in the subordinate clause? Why can they occur apart from the motivating sequences just in those places where hypothesized movement rules can put them? With respect to my proposed analysis, it might further be asked how semantically empty elements can be invoked as conceptual reference points.

The basic response is that the working assumption is simply false—these elements are indeed meaningful, and they do not occur only as part of completely fixed sequences. The original notion that idiom chunks are individually meaningless was theoretically grounded rather than empirically justified: it followed from the building-block metaphor and the assumption that, for an expression to be analyzable into meaningful components at all, it has to exhibit full analyzability and full compositionality. This is an untenable assumption based on a linguistically inappropriate metaphor. Cognitive grammar allows DEGREES of analyzability and takes PARTIAL compositionality to represent the usual situation. Hence there is no question that elements like tabs and headway ought to be considered meaningful (even if limited to certain larger structural contexts): tabs means something like
‘surveillance’ or ‘contact’ with the entity being watched, and headway means roughly the same as progress.\textsuperscript{33}

To the extent that an idiom is analyzable and a particular ‘chunk’ is assigned a certain semantic value, it has the potential to be used as permitted by that value. We should not anticipate complete freedom, since idioms—being lexical items—are indeed fixed expressions, hence not automatically and indefinitely flexible. Whether departures are permitted from the canonical manifestation of an idiom depends on such factors as its degree of analyzability, what specific value a speaker attributes to a ‘chunk’, and how that value relates to the semantic requirements of particular constructions. If these factors create the potential for variation, whether that potential is actually exploited still depends on precedent, convention, and level of speaker tolerance. All these considerations interact to produce the extraordinary complexity of the situation empirically encountered.

For us, though, the essential point is simply that idiomatic variation, including the occurrence of idiom chunks in raising constructions, is readily accommodated in cognitive grammar. The only semantic requirements that a raising construction imposes on an element like tabs or headway (apart from those internal to the idiom) is that it be capable of receiving focal prominence and being invoked as a reference point. There is no inherent reason why an element meaning ‘surveillance’ or ‘progress’ could not serve in these capacities—one can perfectly well have an expectation in regard to surveillance, as in 57a, or make an assessment of likelihood in regard to progress, as in 57b.

\begin{enumerate}
\item They expected tabs to be kept on all dissenters.
\item Headway is not likely to be made soon.
\item *We persuaded \{tabs to be kept on all dissenters/headway to be made\}.
\item *The bucket is easy to kick.
\end{enumerate}

However, since tabs and headway are not sentient creatures, they cannot be the object of persuade; the examples in 57c are therefore deviant. A further prediction is that those idiom chunks which are NOT assigned any independent meaning should resist occurrence in raising constructions. The classic example, of course, is the object of kick the bucket. Thus, in contrast to tabs and headway (cf. ex. 12), the bucket cannot undergo OSR, so 57d is ill-formed.

As noted in regard to 24, even certain generativists have pointed out that not all manifestations of an idiom can invariably be derived from a single, fixed underlying sequence. Independently of the proposed account of raising, it has to be recognized that an idiom (like any other lexical item) represents a complex category comprising multiple variants. Typically there is indeed a central variant (or prototype) realized phonologically as a contiguous sequence (e.g. keep tabs on, make headway). We should nonetheless anticipate finding other variants, perhaps limited to certain larger constructions, in which the component elements exhibit other orders and possible discontinuity. The prototype and its various extensions may well give rise to a schematized representation which abstracts away from any particular way of integrating the phonological components.

\textsuperscript{33} Fraser 1970 is a classic transformational account of idioms based explicitly on the assumption of unanalyzability. Gorbet 1973 provides strong evidence that neither their unanalyzability nor their fixed character can be maintained. In the generative tradition, Bresnan & Grimshaw 1978 demonstrated that the insertion of idioms as fixed sequences cannot account for all their manifestations (recall the examples in 24). A subtle and detailed examination of French idioms led Ruwet (1991:Ch. 5) to conclude that they could not validly be used for the justification of movement rules (see also Jones 1983). The now commonplace idea that the ‘deformability’ of an idiom correlates with its analyzability goes back to Chafe 1968.
As a concrete illustration, Figure 16 diagrams both the prototypical version of *keep tabs on* and a schematized representation. The details of their common semantic structure need not detain us; the important point is that each component of the idiom is meaningful, and that particular substructures are linked by correspondences (as in any construction). Our immediate concern is phonological structure, one dimension of which is temporal sequencing, i.e. relative position in the flow of speech (represented by an arrow). The prototype is sketched in Fig. 16a. It specifies a particular temporal sequencing: *keep, tabs, and on* are contiguous and occur in that order along the temporal axis. Shown in Fig. 16b is the schematized variant obtained by abstracting away from any differences in temporal sequence observed across occurrences of the idiom in diverse expressions. If its manifestations are sufficiently heterogeneous, the result might be a highly schematic variant that makes no specifications whatever regarding the order of elements or the nature of their phonological integration. Even so, this schematized structure incorporates the same symbolic components and the same mode of semantic integration. The lexical item can thus be recognized as such, and have its conventional meaning, even when embedded in a variety of larger constructions. It is only necessary that the correspondences in those constructions imply the semantic relationships shown.

There remains the argument that idiom chunks can only occur separately in those places where hypothesized movement rules can put them. It should first be noted that the argument has no trustworthy factual basis; examples like 24 show that plausible movement rules cannot account for all the departures from the basic forms of idioms. In the absence of a massive survey based on attested data, one cannot even be confident of a strong CORRELATION between the position of idiom chunks and their possible landing sites (granted generally accepted movement operations). Suppose, however, that a nonnegligible correlation should be empirically established. Would that argue for a movement analysis of raising and other constructions? No, because the kind of alternative analysis proposed here could also account for that correlation (as well as the cases not derivable by movement).

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34 The import of the ellipses in Fig. 16 is that the idiom is analyzed as containing a schematic prepositional object (see Langacker 1987a:313-6).
In cognitive grammar there are no movement rules, only alternate constructions. Constructions are based on correspondences, and productive constructions--those describing passive and raising sentences, for instance--embody conventional, well-rehearsed patterns of correspondence among their component elements. These patterns enable a speaker to recognize a lexical item like *keep tabs on* (in some schematized variant) even when the components occur discontinuously or in a noncanonical order. I conclude that positing movement rules to derive atypical manifestations of idioms is both unnecessary and insufficient. Instead, we need only admit that entrenched constructions specify semantic relationships permitting the recognizable use of lexical items despite perturbations in their temporal arrangement.

7.6. SYNTACTIC ‘DUMMIES’. Analogous comments apply to so-called ‘dummies’ like *it* and *there*. These elements have abstract meanings, and are basically confined to specific structural configurations (described by constructional schemas), within which they have a particular semantic and grammatical role.35 In a raising construction, they can nevertheless occur in the main clause (as exemplified in 7b, 8, and 11b-c), even though the configurations supporting their occurrence are found in the subordinate clause. How does the proposed analysis account for this separation?

Actually, there is no separation. Examination of a raising construction (e.g. Fig. 14b) shows that the imposition of main-clause grammatical relationships does not per se affect the existence or character of the subordinate-clause configuration. A raising predicate refers schematically to a process which the infinitival complement spells out in specific terms. That process has its own internal structure, including its own trajector/landmark alignment. The raising predicate does not destroy or modify that structure; it merely superimposes on it another layer of trajector/landmark alignment, representing another level of conceptual organization. In the case of *expect*, for instance, a secondary spotlight of focal prominence is directed at the trajector of the subordinated process. This spotlight from above illuminates that element but does not eliminate its role in the lower-level process: the same entity functions simultaneously as the landmark in the higher-level relationship and the trajector with respect to the lower-level one.

35 The fact that *it* and *there* are limited to particular structural configurations does not render them sharply distinct from other lexical items. Part of the characterization of every lexical item is a set of structural frames (constructional schemas) in which it conventionally occurs. The richer conceptual content of a typical lexeme lets it occur in a wider and more diverse array of symbolic assemblies, but the difference is one of degree.
Therefore, incorporation in a ‘raising’ construction does not destroy the semantic and grammatical configuration that sanctions the use of a ‘dummy’ element. While *it* and *there* function as the object of *expect* in (58), they also qualify as the subject of the infinitival clause, thus instantiating the configuration that motivates their occurrence.

(58) a. She expects it to rain this afternoon.
   b. I expect there to be some mud on the car.

We do have to recognize the same kind of flexibility observed with idioms: the surface evidence indicates that the *it-* and *there-*constructions have extended or schematized variants in which the component elements need not be phonologically contiguous or combined in any particular constituency arrangement. Such variability is quite unproblematic in cognitive grammar. Recall that this framework does not define grammatical relations in terms of constituency. Moreover, since constructions in general are described as complex categories, the existence of multiple variants is neither a problem nor anything out of the ordinary.

What, then, are the meanings of elements like *it* and *there?* They are harder to characterize than the meanings of *tabs* and *headway*, being more schematic and more abstract. I have argued (1991:8.1.3.4) that they designate ABSTRACT SETTINGS, i.e. settings (as opposed to participants) characterized with the minimum possible specificity, hence schematic even with respect to their domain of application. Rather than being specifically spatial or temporal, therefore, they should probably be thought of as abstract presentational frames serving to announce the intention of subsequently introducing something in those frames. With such an analysis, it is perfectly understandable that *it* and *there* should serve as reference points: a setting constitutes a natural and obvious reference point for the elements that occur within it.

Since *it* and *there* function as subjects, the constructions they occur in represent special cases of setting-subject constructions, discussed earlier and exemplified in 36-37. Recall that a setting and the participants within it do not form an action chain, so setting-subject constructions are not transitive, hence they do not have passive variants. The proposed characterization of *it* and *there* thus makes the correct prediction that *it-* and *there-*sentences should not passivize:

(59) a. It is raining big drops.
   b. *Big drops are being rained by it.
   c. There are seven cats on the roof.
   d. *Seven cats are been by there on the roof.

They do of course appear as passive subjects in raising sentences:

(60) a. It is expected to rain this afternoon.
   b. There is expected to be some mud on the car.

This is not a problem, for the passivization hinges on MAIN-CLAUSE relationships, whereas the setting-subject configuration resides in the subordinate clause. In the main clause, the trajector of *expect* contemplates the setting (the abstract presentational frame) and entertains the notion that a certain relationship will materialize within it. Relationships of mental contact can perfectly well be transitive, for they qualify as action-chain analogs (as in 34b).

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36 This is similar to proposals made by Bolinger (1973, 1977:Chs. 4-5), as well as the description of Dutch *er* advanced by Kirsner (1979). Pinker (1989:147) hints at something comparable. For a suggestion concerning the occurrence of *there* with a plural verb--as in 59c below--see Langacker 1991 (354-5).
The essentials of 58b are diagrammed in Figure 17. The left-hand portion of the diagram is exactly the same as in the expect-construction already presented in Fig. 14b. The right-hand portion, enclosed in the dashed-line box, represents the components of the existential there-construction. Were they to occur alone, these elements would constitute the sentence *There is some mud on the car.*

We can think of the existential be as profiling the relationship between a setting and another relation that occurs within it. The setting is focused as the trajector of be, which takes as its landmark the major participant in the other relation. In the simple sentence, be is elaborated by three complements: there specifies its setting trajector; some mud spells out its landmark; and on the car elaborates the second relation (correspondences equate its trajector with the mud). Here, in the complex sentence, everything is the same with one exception: instead of directly combining with be, there elaborates the landmark of expect, thus instantiating the direct-object construction. Nevertheless, correspondences identify it as the same setting evoked by the existential construction comprising the infinitival complement. The infinitival clause elaborates the active zone of expect’s landmark in the usual way.

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8. SUBJECT-TO-OBJECT RAISING. For further corroboration of the analysis, as well as a deeper understanding of the raising constructions, we need to examine more extensively the meanings of the governing predicates. In particular, what is the source of their transparency? Why can any element whatever occur as subject or object of the main clause, provided that it is capable of bearing a certain grammatical relation in the subordinate clause? I have already answered that question in general terms, and more specifically in the case of expect (in contrast to persuade--see Fig. 15). Basically, the referent of the ‘raised’ NP does not participate directly in the profiled main-clause relationship, which therefore imposes no
constraints on its character. Its involvement in the main-clause relationship is wholly mediated by another process (its active zone), usually specified by an infinitival complement.

From a broader examination of SOR verbs, this basic explanation appears to be borne out. Here is a representative sample.\(^{37}\)

(61) **SOME SOR PREDICATES:**
  a. like, prefer, want, need, mean, intend
  b. believe, expect, think, assume, feel, know, find, hold, imagine, recognize, judge, take
  c. allege, state, acknowledge, certify, decree, say, declare, proclaim, specify, stipulate

The governing predicates include verbs of need, desire, or intention with respect to a situation, as in 61a. Many of them express some degree of commitment to the reality of a situation, as in 61 b. Others, as in 61 c, are primarily verbs of communication serving to inform the addressee about a situation or to effect it by virtue of the speech act named.

Strikingly, all of these verbs imply a conceptualizer (the active-voice subject) who conceives of a situation and assumes some stance or attitude in relation to it. More importantly, they do not specify any direct interaction between the conceptualizer and a participant in that situation—the profiled relationship links the conceptualizer to the conceived situation per se. In the verbs of communication, for example, the ‘raised’ NP is not the addressee; thus 62a does not entail any statement to the person being evaluated (who may be locked up in a mental hospital)—the incompetent is not portrayed as the target of communication.

(62)  a. The judge declared him to be mentally incompetent.
  b. The judge told him to remain silent.
  c. *The judge told-there to be silence.

When the referent of the object NP is indeed portrayed as the addressee, as in 62b, the resulting grammatical behavior is that of a ‘control’ (or ‘equi’) construction rather than a ‘raising’ construction, as observed in 62c.

There are of course intermediate cases, where it is not so obvious whether the subject merely interacts with the conceived situation, or whether there is also some direct interaction with the object NP. Verbs of perception and causation tend to be harder to pin down. In this regard, and are probably subject to variable construal. It is not surprising, then, that such verbs resist simple, unambiguous classification as either raising or control verbs. We saw this earlier in regard to 17-21.

Although a finer-grained semantic analysis of the entire range of data is obviously needed, a preliminary conclusion does seem warranted: clear-cut examples of SOR predicates consistently have the semantic property shown to be responsible for transparency in the case of *expect*. Namely, there is no significant interaction between the conceptualizing subject and the ‘raised’ NP, hence no constraints are imposed on the latter. Apart from being invoked as a reference point, its interaction with the subject is entirely mediated in by the infinitival process, which it stands for metonymically.

\(^{37}\) This list does not pretend to be exhaustive, nor is it evident that a definitive, well-delimited inventory could be established. Postal 1974 provides a more inclusive listing and documents the limitations certain predicates exhibit when used in a raising construction. With some of them, for example, the main clause has to be passive (*He is said to be a thief/*They say him to be a thief). Others prefer a modal (*I would like you to do that/*I like you to do that). Some of the predicates listed go better with -ing than with to (*The board certified him as being/to be* fully qualified).
9. SUBJECT-TO-SUBJECT RAISING. The predicates appearing in SSR constructions are more variegated grammatically. They include auxiliary elements, listed in 63a.; diverse atemporal relations, listed in 63b.; and verbs, in 63c.:

(63) SOME SSR PREDICATES:
   a. may, will, must, can, be, have, do, used to
   b. sure, certain, liable, (un)likely, apt, bound, destined, supposed, set, gonna, about
c. seem, appear, tend, chance, turn out, prove, happen, promise, threaten, fail, get, begin, start, come, continue, cease, keep (on), persist, quit, stop, end up

Semantically, these predicates once more show a surprising degree of coherence and commonality. By and large, they are reasonably characterized as modal or aspectual in nature (those being the primary domains covered by auxiliaries). What modals and aspectuals have in common is that they pertain to the very existence of a process, its actual or potential manifestation in reality or in some other mental space: modals pertain to the likelihood of its manifestation, and aspectuals to its temporal contour.

It is also striking that these predicates--in contrast to the SOR verbs--do not make reference to an overtly specified, onstage conceptualizer. The exceptions here are seem and appear, which allow an indirect object, as in 64:

(64) There {seems/appears} (to me) to be a problem.

These are the two predicates in this class which focus not so much on reality per se, but rather on how it presents itself to some viewer. Even with seem and appear, however, the conceptualizer is usually not overtly specified; most often the viewer is only potential, remains offstage, or is construed generically or in a generalized fashion. It is worth noting that verbs which highlight the mental reaction to a situation, and thus render the conceptualizer more salient, do not occur as raising predicates, as shown in 65:

(65) a. For there to be a problem would {surprise/shock/astound/astonish/infuriate} me.
b. *There would {surprise/shock/astound/astonish/infuriate} me to be a problem.

Especially interesting are promise and threaten, which have an ‘axiological’ component (Krzeszowski 1993), indicating a prospect that is positive or negative for the potential experiencer. In their basic use, exemplified in 66a-b, the experiencer is put in focus as an object.

(66) a. You promised us that you would be more considerate.
b. He threatened us with retaliation.
c. There {promises/threatens} (*us) to be another rainstorm.

The raising analysis of auxiliaries goes back to Ross 1967, and while it is not universally accepted, they do exhibit transparency. Except for the marginal category member used to, the auxiliary elements combine with a bare verb stem (for an explanation, see Langacker 1991:6.1). Most of the aspectual verbs in 63c allow or require -ing instead of to. The atemporal predicates in 63b. include adjectives, participles, and the preposition about. Describing a predicate as atemporal does not indicate that time is irrelevant to its characterization, but only that it views a relationship holistically, as a single gestalt (whereas a verb is ‘temporal’ or ‘processual’ in the sense of tracking or rendering salient its evolution through time).

Detailed characterizations of English modals and certain aspectuals are provided in Langacker 1990b and 1991 (Chs. 5-6).
We observe in 66c, however, that as raising predicates they do not even allow the conceptualizer to be overtly expressed. Thus, while some kind of conceptualizer is always implied, the SSR predicates tend very strongly to keep it offstage and unmentioned, as an implicit conceptualizing presence rather than an explicit, focused participant. In other words, the conceptualizer tends to be SUBJECTIVELY CONSTRUED. This is important in regard to grammatical relations and transparency, since by definition a subject and object are OBJECTIVELY construed, the focal elements within a profiled, hence onstage, relationship. A subjectively construed conceptualizer is not even a candidate to be considered for focal prominence.

The transparency of SSR predicates is a consequence of the aforementioned semantic properties--namely that the modal or aspectual relationship pertains merely to the manifestation of a process, and that the conceptualizer is construed subjectively, remaining offstage and unprofiled. Together these properties imply the absence of any natural candidate for the status of trajector, other than the trajector of the ‘target’ process, i.e. the one whose manifestation is being modally or aspectually qualified. The conceptualizer’s subjectivity makes it ineligible to serve as trajector, and while the target process can sometimes be reified and accorded focal prominence, as in 67a, a clause is anything but a prototypical subject.

(67)  a. For wallabies to still inhabit this area would be quite unlikely.
    b. Wallabies would be quite unlikely to still inhabit this area.

Therefore, given that the spotlight of focal prominence has to be directed at some onstage element, the most likely candidate--the one favored by prototypicality and general principles of cognitive salience--is the central participant of the target process (as opposed to that process itself). The result, of course, is a SSR construction, as in 67b. It is nevertheless the target process whose manifestation is at issue: the modal or aspectual qualification pertains to that process as a whole, not to the focused trajector taken individually. Because the modal/aspectual relationship involves the trajector only indirectly (via the target process), it imposes no constraints on its possible nature.

In short, the basic source of transparency with SSR predicates is the absence of any likely candidate for focal prominence distinct from the focal elements of the complement clause. If the main-clause subject is properly characterized as having the highest degree of focal prominence, it stands to reason that this status would be conferred in such cases on the accessible entity with the greatest intrinsic cognitive salience, namely the trajector of the complement process. Since the choice is based on prominence, the search for a suitable candidate can perfectly well extend to entities that do not directly participate in the modal/aspectual relationship, and opting for such a candidate renders a predicate transparent. 40

10. OBJECT-TO-SUBJECT RAISING. Some predicates that govern OSR are listed in 68. These predicates describe the quality of the experience engendered by the subject in someone who interacts with it in the way specified by the infinitival complement. They pertain either

40 To be sure, the complement’s trajector will not invariably have great intrinsic salience (it may, for instance, be a setting, as in 64 and 66c). It is not claimed that the functional considerations being appealed to are necessarily active and operate de novo every time a raising sentence occurs. Rather, they are seen as motivating the emergence and conventionalization of the raising construction, which is then available for broader use. In any case, the raising of elements like there and it has its own functional motivation, since an abstract setting (presentational frame) makes a natural reference point and starting point (MacWhinney 1977) for the complex sentence as a whole.
to the degree of ease or difficulty the experiencer encounters in carrying out the activity, as in 68a, or else to how pleasureful or unpleasureful the experience is, as in 68b and 68c.

(68) SOME OSR PREDICATES:
   a. tough, easy, hard, difficult, impossible
   b. pleasant, enjoyable, nice, fun, a joy, a pleasure
   c. unpleasant, unenjoyable, disagreeable, terrible, a bitch

These predicates are mostly adjectives, but they also include noun phrases describing comparable experiences.

Even from this initial characterization, certain peculiarities of the OSR construction can be explained. First, the centrality of engendered experience is reflected in the option of explicitly mentioning the experiencer in a for-phrase:

(69) a. These diagrams are easy for anyone to interpret.
    b. The retirement village was fun for the architect to design.

To be sure, the for-phrase tends to be omitted; the construction is typically used in general statements where the experiencer is construed generically. A second peculiarity is that impossible readily occurs in this construction, whereas its positive counterpart, possible, cannot:

(70) Those wombats are {impossible/*possible} to wash.

Akatsuka (1979:6) was on the right track in claiming that the difference stems from the fact that the latter predicate is ‘totally devoid of emotional coloration’, not based on ‘private evaluation’ or ‘actual experience’. I would however amend this by emphasizing the distinct force-dynamic natures of the two predicates. If it is force-dynamic at all, possible merely indicates the absence of a barrier to something happening; it is quite neutral as to potential degree of difficulty (so that we can say either quite possible or barely possible). By contrast, impossible evokes an insurmountable barrier and thus has definite implications about the degree of resistance encountered by an experiencer trying to carry out the action, as well as the quality of the resulting experience (cf. You’re just impossible!).

Since adjectives predominate in this construction, the semantics of the adjective class should be pertinent to its further elucidation. Adjectives are commonly described as designating properties, and these properties are thought of as inhering in the adjectival subjects. I believe this characterization to be correct and important, although it does conceal certain subtle and complex issues. For example, the notion that a property inheres in an entity cannot mean, in general, that no other entity is involved in its manifestation. Adjectival properties occupy the full spectrum of possibilities in regard to how saliently they invoke the conception of other entities. Reference to other entities is relatively nonsalient with adjectives (usually considered prototypical) that designate inherent physical properties such as size, shape, and color. Toward the opposite extreme, however, adjectives like co-operative, shy, visible, and user-friendly describe properties that focus precisely on interactions with other entities. Adjectives also vary in the extent to which the designated property is defined in reference to a specific kind of interactive process, and how prominently that process figures in their conception. For instance, a color term like blue involves the process of seeing--if there were no vision there would be no color terms. Yet we think of color as characteristic of an object per se, which has it independently of whether anybody sees it; there is thus a real

41 Obviously, these remarks will be partial and provisional at best. For some varied but cogent discussions, see Dixon 1977, Givón 1979 (8.6), Wierzbicka 1988 (Ch. 9), and Croft 1991.
sense in which seeing is nonsalient in the meaning of blue. With visible, however, the process of seeing is central and highly prominent.

Ultimately, I believe that most if not all adjectival properties are best characterized with respect to some activity or process involving the entity ascribed the property—what varies is how specific and how salient that process is. Consider the adjective hard (as in hard surface or This ice cream is hard). To say that an object is hard indicates its substantial resistance to anything tending to penetrate its surface or deform it. The notion ‘resistance to deformation’ evokes a force-dynamic process with the potential to result in deformation, and this in turn invokes a source of energy, the default being a human agent. The notion of ‘resistance’ implies an intent to deform that may not succeed, and the notion of degree presupposes some kind of comparison over objects and potentially deforming events, such that success in some cases requires a greater expenditure of energy than in others. Lurking in the background, then, is an implicit, generalized human agent/experiencer who has the intention of deforming, provides energy for that purpose, experiences the outcome associated with a given level of exertion, and assesses the experience in relation to other actions of the same type.

I would thus describe hard as profiling the inherence of a property in the entity focused as its trajector. That property is, however, characterized in terms of a schematic interactive process (not per se profiled) with respect to which the adjectival trajector functions as the target or patient. Several factors contribute to the property being conceived as inherent in its trajector. For one thing, the interactive process is usually generic and potential (rather than specific and actual) in terms of both type and the agent/experiencer it implies. Moreover, instead of being transient or instantaneous, the property’s association with the trajector is generally stable over a period of time (and often permanent). Finally, some facet of the trajector is thought of as determining the nature of the interaction and the experience it engenders. In the case of hard, for instance, the object’s physical constitution is such that it tends to maintain its configuration when pressure is applied that would be sufficient to effect the penetration or deformation of other objects. The ascribed property involves the capacity to offer resistance to such forces.

If this characterization has any validity, we can begin to understand why adjectives form the nucleus for the OSR construction. The key point is that the ascribed property makes implicit reference to an interactive process, and usually to some aspect of human experience engendered by it. This process and the experience it engenders come to the fore in the raising sense of hard and tough, as well as the primary sense of adjectives like easy, difficult, pleasant, fun, and terrible. One way in which a raising sense differs from a physical-property sense is that the defining interaction is more salient, more schematic, and more extrinsic to the trajector. Concomitantly, there is more focus on the experience of the agent, and less on the trajector’s inherent constitution. Because the interaction is prominent but highly schematic, its specification by an infinitival complement is nonredundant and generally necessary. A further consequence of its schematicity is that the trajector need not be physical, and can instantiate any semantic role that the complement verb imposes on its object (see Fig. 13b). But despite the greater emphasis on the quality of the agent’s experience, this more

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42 That process is sometimes made explicit, e.g. This suitcase is heavy (for my mother) to lift. These sentences are formally indistinguishable from instances of OSR. In a classic paper, Bolinger (1961) cited this formal coincidence as a case of ‘syntactic blending’. The extraordinary proliferation of distinct yet similar and clearly related constructions is handled in cognitive linguistics by treating constructions as complex categories, i.e. networks of constructional variants linked by categorizing relations. (See, for example, Lakoff 1987 (case study 3), Brugman 1988, Langacker 1988, and Goldberg 1992.)
abstract sense still involves the conception of a property and ascribes that property to the trajector. I suggest, moreover, that the trajector is still conceived as being in some sense responsible for the nature of the experience engendered in the agent.

I am hardly the first to propose that the subject of an OSR sentence is viewed as being in some way responsible for the complement process. For instance, Berman (1973) and Akatsuka (1979) cite examples like the following, which show that the engendered experience cannot be due to external circumstances beyond the subject’s control or having nothing to do with its nature:

(71)  a. That book is impossible for Paul to read--he can’t understand the technical terms.
     b. *That book is impossible for Paul to read--it’s in the bindery.

(72)  a. Tony has been impossible to live with--he’s been churlish, irritable, and short-tempered.
     b. *Tony has been impossible to live with--he’s been in prison for the last five years.

Still, the trajector’s responsibility is not always entirely evident. In this respect it is important to bear in mind that the adjective itself is quite schematic concerning the interactive process. Because of this schematicity, and because the process may be quite extrinsic to the trajector, the latter’s responsibility is largely undetermined--it can take almost any form and may be very abstract or tenuous in nature.

The interaction may still be physical, as in 73a: physical properties of the wheel are responsible for the agent’s encountering substantial resistance to its efforts. In 73b more abstract properties of the diagrams play some role in the agent’s pleasureful reaction--for example, they may be complex enough to be challenging, yet not too complex to be frustrating.

(73)  a. This wheel is hard to turn.
     b. These diagrams are fun to draw.
     c. A 1934 penny is hard to find.

But what about cases like 73c? Can a penny be held responsible for someone’s difficulty in locating it? I think it reasonably can. Since the process of finding a penny is quite extrinsic to it, we can expect the nature of its responsibility to be rather tenuous. The statement is generic, so the subject stands metonymically for 1934 pennies as a class. If we assume that such pennies are now quite rare, their scarcity can be held responsible for rendering difficult the successful completion of the search.43

A few examples hardly prove the point; they are only meant to indicate how abstractly and flexibly this notion of responsibility must be interpreted. The trajector’s influence on the interaction and the engendered experience need not reflect any facet of it that is salient, objectively discernible, or central to its characterization. Rather, the adjectival construction IMPOSES the conception of the trajector’s influence, which the conceptualizer can then construe in any way that makes sense in terms of the scene evoked. Tenuous though it may be in some cases, this notion of responsibility is semantically and grammatically important. It is the basis for ascribing a property to the trajector, for seeing that property as inhering in the trajector, and thus for the target of the interaction being chosen as trajector in

43 Observe that adjectives like rare and scarce invoke a more specific process--one of finding or acquisition--and directly name a property responsible for impeding its accomplishment.
the first place. It is a vestige of the adjective category prototype that survives the extension of the class to encompass these noncentral members.

The schematicity of the interactive process and the extreme flexibility it affords in construing the trajector’s responsibility can now be cited as the source of the transparency exhibited by OSR predicates. Apart from being the landmark of the complement process, the only constraint the adjective imposes on its subject is that somehow—in any way the speaker can imagine—an agent’s experience in carrying out that process might be influenced by something associated with its landmark (the adjectival trajector). The requisite notion of responsibility is so flexible that it amounts to hardly any constraint at all; few entities will be wholly excluded. At least some idiom chunks will pass the test, as we saw with *headway* and *tabs* in ex. 12: it is not far-fetched to think of ‘progress’ or ‘surveillance’ having intrinsic characteristics that contribute to the experience of making or maintaining it being easy, difficult, or (un)pleasureful.

Still, the ascription of responsibility for inducing a certain kind of experience is not a totally vacuous notion. It goes beyond the mere capacity to serve as a conceptual reference point (which is all the ‘raised’ NP has to do in the other constructions). In particular, I see in this notion a way of explaining the failure of the ‘dummy’ *it* and *there* to occur in the OSR construction, as shown in ex. 14. The reason they cannot be used, I suggest, is that they are too subjective, belonging more to the construal of the scene than to the scene itself. These elements are meaningful. They designate schematic abstract settings and have the discourse function of establishing a presentational frame in which an event or situation will be introduced. This enables them to serve as reference points in the SSR and SOR constructions. But the OSR construction demands something more, however slight: its subject must have some influence on the experience engendered in the agent by the complement process. The abstract settings profiled by *it* and *there* cannot have such influence because they are external to the situation under discussion—they pertain to the presentation of a situation rather than being a part of it. Since they reside exclusively in the viewing of a situation, it is hard to think of them as having consequences within it.

11. RAISING AND CONTROL. By way of partial summary, let us briefly consider two basic questions that earlier sections may not have addressed in a sufficiently explicit and coherent way. The first question is, to what extent do the three ‘raising’ constructions constitute a unified phenomenon and merit parallel treatment? The second issue is the relationship between raising and control.

My interest lies with the constructions per se and the descriptive challenge they pose for cognitive grammar. The initial presentation and critique of the classic transformational analysis was primarily intended to lay out the pertinent data and to reveal the problem’s multidimensional character. A detailed discussion of modern generative treatments, in comparison with the one proposed here, has not been part of my agenda and would certainly require a major work in its own right. I would however observe that government-binding theory has generally considered the raising constructions to be quite distinct and has handled them in very different ways. In fact, only SSR is usually analyzed in raising terms. Standard for SOR constructions since Chomsky 1973 has been an account that eschews raising and treats the NP in question as the subject of the complement clause.\(^{44}\) As for OSR, the basic analysis since Chomsky 1977 claims that the main-clause subject originates as such, but that WH-movement (of an empty operator) figures in the complement.

\(^{44}\) See, however, Authier 1991, which argues for a raising account.
Such proposals have in large measure been motivated by theory-internal considerations and must therefore be evaluated in those terms. It can be noted, however, that the analysis proposed here from the perspective of cognitive grammar offers a more unified account. To be sure, SSR, SOR, and OSR represent distinct constructions, each described by its own constructional schema (in fact, a family of schemas and subschemas). It is also the case that OSR stands slightly apart from SSR and SOR by virtue of attributing some measure of responsibility (not merely reference-point function) to the referent of the ‘raised’ NP. The constructions are nonetheless alike in that the NP in question is analyzed as the true subject or object of the main clause, both syntactically and semantically. In each case, moreover, the nominal referent stands metonymically for its processual active zone vis-à-vis the main-clause relation. The functional motivation advanced for raising constructions suggests that they do in fact represent a unified phenomenon. This does not of course imply their full identity or the absence of conventionally determined idiosyncrasies.

I have argued that the transparency of raising constructions results from the fact that the nominal referent has no direct role in the profiled main-clause relationship; its participation in that relationship is wholly mediated by the processual active zone for which it serves as reference point. I would further like to propose, more explicitly than before, that full transparency and full nonparticipation in the profiled relation represent the limiting case, the endpoint in a continuous spectrum of possibilities. Since an entity’s involvement in a relationship is often multifaceted and subject to variable construal, participation may be a matter of degree, zero participation being a privileged special case. The qualitative distinctness of the limiting case (in particular, the transparency it engenders) has led theorists to posit distinct raising constructions which stand sharply opposed to control constructions. The superficial parallelism of raising and control constructions is then unanticipated, and the difficulty of distinguishing them empirically looms as problematic. If raising and control constructions are instead analyzed as forming a continuum, with classic examples of raising occupying one extremity, such problems evaporate.

The stark contrast observed with pairs of verbs like *expect* and *persuade* (Fig. 15) is thus not always to be anticipated. In particular, there is nothing surprising about constructions that are almost but not quite transparent, e.g. OSR, which ascribes to the subject only the most minimal responsibility (flexibly construed) for engendering an experience based on an interaction involving it. Almost anything can qualify on this score, but not quite everything (as we have seen), so that the standard tests for raising vs. control yield mixed results (cf. exx. 12 and 14). There is likewise nothing surprising about the uncertainty of classification encountered with verbs of perception and causation (cf. 17-21). Various factors are capable of influencing the extent to which the target of perception or of the causative force is construed to be a particular individual, as opposed to the entire event in which it participates. While these alternate construals correspond to control vs. raising properties, the choice is not always clear-cut, nor does one option necessarily preclude the other. More generally, the proposed description has the advantage of not forcing an arbitrary dichotomization (involving substantially different grammatical structures) on examples that vary continuously or are distinguished only by subtle semantic nuances.

12. FINAL MATTERS. It is widely agreed that aspects of linguistic structure can be related to various cognitive and communicative functions. It is further agreed that these functions have an important place in a comprehensive account of language embracing its use, acquisition, and evolution. There is, however, no consensus as to the precise role of functional considerations--whether they are SUBSIDIARY to the investigation of language
structure, hence properly undertaken after the latter has been studied independently and described autonomously, or FOUNDATIONAL to the enterprise, in that linguistic structures cannot be understood or correctly described in the first place without a clear appreciation of their function. This is the basic point of contention between so-called ‘formal’ and ‘functional’ schools of linguistics.

While I do not claim neutrality or deny that important empirical, theoretical, and methodological issues are at stake, I believe that the actual differences between these approaches tend to be exaggerated. A responsible program of functional research has to include, as one of its components, some analog of the formalist commitment to describing languages explicitly using a specific array of theoretical constructs. Recognizing the functional motivation of linguistic structures should not obscure the fact that they are conventionalized and less than fully predictable—children have to specifically learn them, and linguists have to describe them in precise detail. A prime concern of cognitive grammar has thus been to find and justify an optimal set of descriptive constructs and to use these for the explicit characterization of grammatical constructions. Although the descriptions in this paper can at best be considered partial first approximations, I have tried to characterize representative raising constructions in enough detail that central aspects of their structure would be readily apparent, as well as the source of their transparency.

Still, if the demonstration has been at all convincing, it strongly suggests that functional considerations cannot be relegated to subsidiary status. I have proposed an analysis of raising that I believe to be not only more adequate descriptively than those inspired by theories of autonomous syntax, but also more straightforward, coherent, and revealing. Based squarely on meaning and function, this analysis could never have been arrived at were these not seen as the critical factors from the very outset. In particular, raising was claimed to be just one manifestation of a far more general, even typical phenomenon characterized in terms of two semantic constructs: ACTIVE-ZONE/PROFILE DISCREPANCY. That in turn was seen to be a special case of METONYMY, with which it shares the cognitive/communicative function of allowing an entity to be evoked through the explicit mention of another that is more salient, of greater interest, or more easily coded. Metonymy instantiates our basic cognitive ability to invoke one conceived entity as a reference point for purposes of establishing mental contact with another.

Pivotal to this and previous analyses of raising is the perennially contentious issue of how to characterize subjects and direct objects. Attempts to define these notions semantically are usually considered hopeless, since there is clearly no semantic role that all subjects or all objects instantiate. In the apparent absence of a viable semantic characterization, linguists are accustomed to thinking of these as purely ‘syntactic’ notions and often seek to define them in terms of clusters of grammatical behaviors. This is of course problematic, since the behaviors vary considerably from one language to the next, to the point that some theorists have questioned the universality of the subject and object relations (e.g. Schachter 1976, Foley & Van Valin 19770. In my view this line of thought is doubly mistaken. First, the appropriate semantic characterization of subjects and objects is most essentially a matter of prominence

45 The methodology of cognitive grammar is discussed in Langacker 1991 (12.1) and 1993c. I should reemphasize (because the opposite has so often been gratuitously assumed) that diagrams like the ones used here are heuristic in nature—while they force the analyst to be explicit on many points that otherwise tend to be glossed over, they are not offered as complete or formal descriptions, nor do they imply any claim that meaning reduces to pictorial or visual representations.

46 Numerous grammatical phenomena that embody a reference-point function are presented in Langacker 1993a. For a broader functional perspective pertaining to ‘movement rules’ in general, see Langacker 1974.
(an aspect of construal) as opposed to semantic roles (or any other specific conceptual content). Second, the grammatical behaviors in question are symptomatic of the prominence constitutive of subject and object status, rather than being definitional for these grammatical relations. Entities that stand out as the primary and secondary figures in a profiled relationship tend--precisely because of that salience--to be recruited for various grammatical purposes, and each language evolves its own array of conventional constructions which involve them in some way. Semantic roles have the ancillary function of determining which relational participants are most naturally accorded focal prominence in canonical circumstances.

The case for autonomous syntax rests in no small measure on the apparent impossibility of providing general semantic characterizations of basic grammatical notions, subject and object being prime examples. Clearly, however, a proper assessment of the issue requires an appropriate view of linguistic semantics. While semantic definitions of grammatical notions are indeed impossible if meaning is equated with truth conditions, or is limited to conceptual content, the landscape is very different when one realizes that the CONSTRUAL of conceptual content is a crucial and indissociable aspect of linguistic meaning. Construal is essential to lexical semantics, and it is especially important in the meanings of grammatical elements, whose conceptual content is generally quite schematic.

From this perspective the suggested characterization of subjects and object is not only plausible but well supported. The descriptive constructs TRAJECTOR and LAND-MARK (primary and secondary relational figure) are necessary just to give an explicit account of the semantic difference between numerous pairs of lexical items (e.g. before and after) that evoke the same content and profile the same relationship. Because this asymmetry in the prominence of relational elements is manifested at every level of organizational complexity, it is both reasonable and economical to identify the notions subject and object as its clause-level manifestations. The characterization of subjects and objects in terms of focal prominence accounts for both the variability of the semantic roles they instantiate and the existence of unmarked choices in this regard, not to mention their high degree of accessibility for participation in grammatical relationships (cf. Keenan & Comrie 1977). The existence of ‘dummy’ subjects in no way contravenes the analysis once it is recognized that the elements in question are actually meaningful. Indeed, granted that there and it designate abstract settings, it seems perfectly natural to claim that these presentational frames are themselves selected for primary focal prominence in constructions which serve to introduce a new participant into the scene, or which lack a suitable participant to put in focus (e.g. with weather verbs). Finally, this characterization of subjects and objects dovetails with the analysis of raising as a special case of metonymy, whose general function is to ensure the linguistic prominence of intrinsically salient entities.

As a last remark, I would like to reiterate certain virtues of the proposed analysis. For one thing, it captures the insights and generalizations that motivated the classic

47 Newmeyer (1990:65 n. 5) therefore misinterprets the inherent logic of the enterprise when he states that cognitive grammar ‘simply...build[s] a great deal of syntactic structure directly into conceptual structures’. Instead, certain semantic constructs (in the case at hand, trajector and landmark) are first introduced and justified independently as necessary for the explicit characterization of lexical meanings. It is then argued that certain grammatical notions (in this case subject and object) are revealingly described as manifestations of those constructs, the apparent need to treat them as syntactic primitives being attributable to the failure of linguistic semantics to recognize or accommodate construal. (Newmeyer’s further remark that the conceptual structures posited in cognitive grammar ‘are linearly ordered, and consequently “fit” with phonetic representations’ is totally mysterious--I do not understand the statement and cannot imagine any textual basis for it.)
transformational account, but without adopting underlying structures or derivations. At the same time, it avoids the many problems of the classic description. Furthermore, no theoretical innovations or special devices are required just to handle raising; the framework and all the theoretical constructs employed (profile, trajectory, active zone, setting, subjectivity, etc.) have independent motivation. An additional feature is that the surface grammar of raising constructions directly reflects their semantic characterization. From this characterization, moreover, numerous properties of these constructions fall out as automatic consequences. I believe these advantages are nontrivial and ought to incline one favorably toward the analysis and toward the framework which allows its formulation.

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