Croft and Cruse. 2004. Cognitive Linguistics.
chapter 9-10

9

From idioms to construction grammar

9.1 Introduction

The cognitive linguistic approach to syntax goes under the name of **construction grammar**. It is not an exaggeration to say that construction grammar grew out of a concern to find a place for idiomatic expressions in the speaker's knowledge of a grammar of their language. The study of idioms led to calls for a rethinking of syntactic representation for many years before construction grammar emerged, and some of this work will be referred to in this chapter. At least partly independently of construction grammar, a number of researchers have emphasized the need to represent linguistic knowledge in a construction-like fashion. But in cognitive linguistics, these concerns led to a grammatical framework in which all grammatical knowledge is represented in essentially the same way. This chapter presents the arguments for a construction grammar.

Construction grammar, like any other scientific theory, did not arise in a theoretical vacuum. Construction grammar arose as a response to the model of grammatical knowledge proposed by the various versions of generative grammar over the period from the 1960s to at least the 1980s, and other syntactic theories that emerged as direct offshoots of generative grammar. (These models in turn represented extensions of the organization of a traditional descriptive grammar of a language, albeit with significant changes in terminology.)

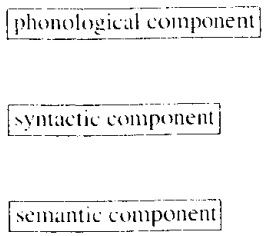
In most theories of generative grammar, a speaker's grammatical knowledge is organized into **components**. Each component describes one dimension of the properties of a sentence. The phonological component, for example, consists of the rules and constraints governing the sound structure of a sentence of the language. The syntactic component consists of the rules and constraints governing the syntax – the combinations of words – of a sentence. The semantic component consists of rules and constraints governing the meaning of a sentence. In other words, each component separates out the specific type of linguistic information that is contained in a sentence: phonological, syntactic and semantic. In addition, all versions of Chomskyan generative grammar have broken down the syntactic component further, as **levels** or strata (such as 'deep structure,' later 'D-structure,' and 'surface

structure,' later 'S-structure'; Chomsky 1981) and **modules** or theories (such as Case theory, Binding theory etc.; Chomsky 1981).

Further components have been proposed by other linguists. Some have argued that morphology, the internal formal structure of words, should occupy its own component (e.g. Aronoff 1993). Others have suggested that information structure, that is, certain aspects of discourse or pragmatic knowledge, should have its own component (Vallduví 1992). However many components are proposed, the general principle remains: each component governs linguistic properties of a single type: sound, word structure, syntax, meaning, use.

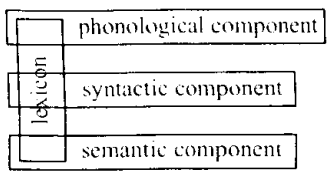
From our point of view, the number of different components is not as crucial as the fact that each type of linguistic knowledge is separated into its own component. We may describe this as a 'horizontal' model of the organization of grammatical knowledge, following its typical diagrammatic representation:

(1)



In addition to these components, there is the lexicon, which characterizes the basic units of syntactic combination. The lexicon differs from these components in that the lexicon gives, for each word, its sound structure, its syntactic category (which determines how it behaves with respect to the rules of the syntactic component) and its meaning. Thus, a lexical item combines information from the three components in (1) (and can include information from other components, such as its morphological structure and its stylistic pragmatic value). It represents a 'vertical' component as against the 'horizontal' components:

(2)

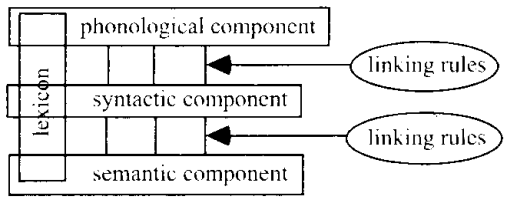


The components are intended to be highly general rules that apply to all structures of the relevant type. Thus the rules of the phonological component apply to all word forms and all phonological phrases (for prosodic and other phrasal phonology); the rules of the syntactic component apply to all sentences and sentence types; and the same applies to rules for other components.

Of course, there must be some general way to map information from one component onto another; for instance, there must be a way to map the syntactic structure of a sentence onto the semantic structure of the meaning conveyed by the sentence. These rules are called **linking rules**, and are also intended to be highly general, applying to all sentences of the language. One might ask at this point, why are the linking rules just a bunch of rules that link components, while the components define the way that grammatical knowledge is divided up in the speaker's mind? As we will see, that is essentially the question that construction grammar asks. The response of the generative grammarians is that the rules inside each component are so highly intertwined and self-contained that they represent a cohesive structure relative to the linking rules (and if they are not so highly intertwined, the components are broken down further into levels, modules etc.).

In sum, the final model of the organization of grammatical knowledge in the sorts of syntactic theories prevalent from the 1960s to the 1980s will look something like the diagram in (3):

(3)



One of the crucial characteristics of this model is that there are no idiosyncratic properties of grammatical structures larger than a single word. Phrases and sentences are governed by the highly general rules of the syntactic component and their counterparts in the semantic and phonological components, and the equally highly general linking rules. On the other hand, words represent an arbitrary and idiosyncratic joining of form (phonological and syntactic) and meaning. The restriction of arbitrariness in grammar to the lexicon is a central principle of generative grammar, reiterated in recent versions of generative grammar (e.g. Chomsky 1993:3, 4).

One of the consequences of this model is the rejection of the concept of **construction** in the traditional grammar sense of that word. In traditional grammar, one describes a syntactic structure such as is found in the sentence in (4a) as 'the passive construction':

(4) a. Janet was promoted by the company.
b. [Subject *be* Verb-PastParticiple *by* Oblique]

The passive construction would be described as necessarily possessing the combination of syntactic elements given in (4b), including the subject noun phrase, the passive auxiliary verb *be* in some form, a verb in the past participle form, and (optionally in the case of English) a prepositional phrase with the preposition *by*. In addition, a traditional characterization of the passive construction would indicate that the agent of the action is expressed by the object of the prepositional phrase, and the undergoer is expressed by the subject.

In the generative model, as many of these properties of the passive construction as possible would be described by the general rules of the various components, and any idiosyncratic properties would be placed in the lexicon. For example, the fact that the subject precedes the verb is true of a large class of constructions in English (see [5]); the fact that the auxiliary follows and is in a finite form in contrast to the verb is also true of a large class of constructions (see [6]), and the fact that the prepositional phrase follows the verb (and also a noun) it modifies, and the preposition governs the object form of the noun phrase, is also true of a large class of constructions (see [7]):

(5) a. Active: **John** ate.
b. Relative Clause: the tart that **John** ate . . .
c. Adverbial Clause: before **John** ate the tart . . .
d. Conditional: If **John** ate a tart, then **I** will have a tart as well.
e. Comparative: **John** ate a bigger tart than I did.

(6) a. Perfect: John **has** eat**en** the tart.
b. Progressive: John **is** eat**ing** a tart.
c. Future: John **will** eat [INFINITIVE] a tart.
d. Modal: John **might** eat [INFINITIVE] a tart.

(7) a. Oblique Adjunct Phrase: John ate the tart **with a fork and spoon**.
b. Prepositional Complement Phrase: John put the tart **in the refrigerator**.
c. Circumstantial Phrase: John ate the tart **in the living room**.
d. Nominal Prepositional Phrase Modifier: the tart **on the table** . . .

The logical conclusion of this process of analysis is the hypothesis that all properties of syntactic constructions – that is, a grammatical structure larger than just a single word – can be captured with the general rules of the grammatical components and their interfaces, and thus there is no need for constructions in grammatical analysis. Chomsky makes this claim explicit:

> a central element in the work discussed here, as in recent work from which it evolves, is the effort to decompose such processes as "passive", "relativization", etc., into more fundamental "abstract features". (Chomsky 1981:121)

> UG provides a fixed system of principles and a finite array of finitely valued parameters. The language-particular rules reduce to choice of values for these parameters. The notion of grammatical construction is eliminated, and with it, construction-particular rules. (Chomsky 1993:4)

Chomsky's position on the generality of syntax and the irrelevance of constructions to the analysis of grammar is the complement of his view that all arbitrary and idiosyncratic aspects of grammar should be restricted to the lexicon.

The componential model of grammatical organization given above is characteristic of the generative grammar and its offshoots. As we noted, in Chomskyan theory the syntactic component is internally complex, beginning with levels in the earliest versions and a further subdivision into modules in Government and Binding theory (Chomsky 1981). The most recent version, Minimalist theory (Chomsky 1993, 1995), apparently ends the internal organization of the syntactic component and recasts the phonological component as an 'articulatory-perceptual interface,' which links the language faculty to the perceptual-motor system and the semantic component as a 'conceptual-intentional interface,' which links the language faculty to other human conceptual activity. Nevertheless, it appears that the broad division into the three components in (3) remains, even if two components are now thought of in terms of their embedding in the cognitive system as a whole, and the third (syntactic) component is now the whole language system in between. Likewise, the notion of the lexicon as the repository of idiosyncratic information remains, and as such provides information linking the three components together (Chomsky 1993:3; 1995:235–36).

Other syntactic theories that diverge from Chomskyan theory also retain the organization into components. Earlier offshoots such as Relational Grammar (Perlmutter 1983) and its offshoot Arc-Pair Grammar (Johnson and Postal 1980) included multiple levels in the syntactic component but retained the separation of components. Later offshoots, such as Lexical-Functional Grammar (Bresnan 1982), Generalized Phrase Structure Grammar (Gazdar, Klein, Pullum and Sag 1985; see also Pollard and Sag 1993) and Categorial Grammar (Wood 1993), reject the concept of multiple levels but still retain the separation of components. In more recent theories of non-Chomskyan syntax, there is a shift in emphasis from separation of components to their interaction. But the development of construction grammar marks a more direct break from the componential view of grammatical organization.

9.2 The problem of idioms

Certain exceptions to the principle of the generality of rules governing larger grammatical structures have been made in the history of generative grammar. For example, the different syntactic structures required by different verbs, such as those illustrated in examples (8)–(9), must be represented somewhere in the grammatical model in (3):

(8) a. Tina slept.
b. *Tina slept bananas.

(9) a. David consumed the bananas.
b. *David consumed.

Until at least recently (e.g. Haegeman 1994:40–42), generative grammar has accounted for this pattern of distribution by **subcategorization frames** associated with lexical items in the lexicon, as in (10a–b):

(10) a. *sleep*: V, [–]
b. *consume*: V, [– NP]

The effect of this device is to include phrasal syntactic information in the lexicon, under the lexical entry for each verb. However, this way of handling the distributional patterns in (8)–(9) is consistent with the general principle that idiosyncratic information is to be found in the lexicon.

There is another class of syntactic phenomena that poses a much greater problem for the componential model of grammar and the principle that all grammar above the word level can be explained by highly general rules. These are **idioms**. Idioms are, by definition, grammatical units larger than a word which are idiosyncratic in some respect. Some examples of idioms are given in (11):

(11) a. It takes one to know one.
b. pull a fast one
c. bring down the house
d. wide awake
e. sight unseen
f. all of a sudden
g. (X) blow X's nose
h. Once upon a time . . .

It is difficult to give a precise definition of the category of idioms, for reasons that will soon become clear. Nunberg, Sag and Wasow (1994:492–93) offer a prototype definition of idioms with one necessary feature and a number of typical features. The necessary feature is **conventionality**: 'their meaning or use can't be predicted, or at least entirely predicted, on the basis of a knowledge of the independent conventions that determine the use of their constituents when they appear in isolation from one another' (492). The other, typical, properties of idioms they list are:

(12) a. Inflexibility: restricted syntax, as in *shoot the breeze* vs. **the breeze is hard to shoot*
b. Figuration: figurative meaning, as in *take the bull by the horns, lend a hand*
c. Proverbiality: description of social activity compared to a concrete activity, as in *climb the wall, chew the fat, spill the beans*

d. Informality: typically associated with informal speech styles or registers
e. Affect: usually have an evaluation or affective stance towards what they describe

It is the necessary property of idioms that Nunberg et al. identify – their conventionality – which is the relevant property of idioms with respect to the componential model of grammar. If expressions such as those listed in (11a–h) are conventional, then they must somehow be stored as such in a speaker's mind. If so, then idioms are part of a speaker's grammatical knowledge. However, at least some aspects of an idiom cannot be predicted by the general rules of the syntactic and semantic components and their linking rules (we will leave out the phonological component for the time being). Hence they pose a problem for the componential model. It is possible to make certain sorts of stipulations to handle the conventionality of idioms (cf. Nunberg et al. 1994:507). However, a more general treatment would be preferable to such stipulations, if such a general treatment were available.

The linguists who ended up proposing the original construction grammar (in Fillmore, Kay and O'Connor 1988) approached the problem of idioms from the opposite direction. Instead of treating idioms as a problematic phenomenon from the point of view of the componential model of grammar, they analyzed the wide variety of idioms, and their analysis became the basis for a new model of grammatical organization. The remainder of this chapter will take the reader from idioms to construction grammar.[1]

Idioms can be characterized in many different ways. The description and classification that we will begin with is drawn from Fillmore et al. 1988, who used their analysis to argue for a construction grammar. Fillmore et al. begin with three features that can be used to classify idioms. The first feature they describe, drawn from Makkai 1972, is the distinction between encoding and decoding idioms.

An **encoding idiom** is one that is interpretable by the standard rules for interpreting sentences, but is arbitrary (i.e. conventional) for this expression with this meaning. Examples given by Fillmore et al. are *answer the door*, *wide awake* and *bright red*. These are all expressions that a hearer could figure out upon hearing them. However, a speaker would not have guessed these expressions are the natural-sounding English way to describe 'open the door in response to someone knocking,' 'completely awake' and 'intense color.' Another way of looking at

[1] Fillmore et al. were not the first linguists to analyze idioms in a systematic way. There is a vast literature on idioms, particularly in Europe where the study of idioms is called 'phraseology.' Another important line of research on idiomatic expressions is the Firthian research on collocations. Nor were Fillmore et al. the first to perceive the problem of idioms for a componential model of grammar, and to propose an alternative; one such antecedent is Becker (1975). However, as in the case of many scientific ideas, variants of the idea are proposed independently but commonly only one variant is propagated through the scientific community (Hull 1988).

encoding idioms is from the point of view of someone learning a foreign language. For instance, an English learner of Spanish would not be able to give the correct way of asking 'how old are you?', if s/he did not know it already; but if s/he heard a Spanish speaker say *Cuantos años tiene?* (lit. 'how many years do you have?'), s/he would very likely figure out what the speaker meant.

A **decoding idiom** is one that cannot be decoded by the hearer: a hearer will not be able to figure out the meaning of the whole at all from the meaning of its parts. Fillmore et al. give the examples of *kick the bucket* and *pull a fast one*. Any decoding idiom is also an encoding idiom: if as a hearer you cannot figure out what it means, then you are also not going to be able to guess that it is a conventional way to express that meaning in the language. One of the reasons that a decoding idiom is a decoding idiom is because there are not any correspondences between the literal and idiomatic meaning of the parts of the decoding idiom. For example, *kick the bucket* is a transitive verb phrase, but its idiomatic meaning is the intransitive 'die,' and there is nothing that corresponds even metaphorically to a bucket.

The encoding/decoding idiom distinction corresponds rather closely to Nunberg, Sag and Wasow's distinction between idiomatically combining expressions and idiomatic phrases respectively (Nunberg, Sag and Wasow 1994:496–97). **Idiomatically combining expressions** are idioms where parts of the idiomatic meaning can be put in correspondence with parts of the literal meaning. For instance, in *answer the door*, *answer* can be analyzed as corresponding to the action of opening, and of course *the door* denotes the door. In an idiomatically combining expression such as *spill the beans*, meaning to divulge information, *spill* can be analyzed as corresponding to 'divulge' and *the beans* to 'information.' In contrast, no such correspondences can be established for *kick* and *the bucket* in *kick the bucket* ('die'). Nunberg et al. call the latter **idiomatic phrases**.

The encoding/decoding distinction is not the same as the idiomatically combining expression/idiomatic phrase distinction, however. Some idioms, such as *spill the beans*, are encoding idioms even though they are idiomatically combining expressions. The encoding/decoding distinction is rather vaguely defined: it refers to how clever (or lucky) the hearer is in decoding an expression of the language. For this reason Nunberg et al.'s distinction is preferable.

The encoding/decoding distinction, as well as the idiomatically combining expression/idiomatic phrase distinction, characterizes idioms in contrast to regular syntactic expressions with respect to the interpretation rules linking the syntactic component to the semantic component. With idiomatic phrases such as *kick the bucket*, the interpretation rules cannot apply because the parts of the syntactic phrase do not correspond to parts of the semantic phrase at all. With idiomatically combining expressions such as *spill the beans*, the parts of the syntactic phrase correspond to semantic elements, but only in an interpretation that is unique to the idiomatically combining expression (*spill* does not mean 'divulge' except in the idiom *spill the beans*). Thus, the idiomatic meaning of idiomatically combining expressions cannot be determined from the general rules of semantic interpretation for the words or for the syntactic structure.

The second distinction that Fillmore et al. offer for defining idioms is between grammatical and extragrammatical idioms. **Grammatical** idioms are parsable by the general syntactic rules for the language, but are semantically irregular (i.e. they are encoding or decoding idioms). Examples include those discussed so far, such as *kick the bucket* and *spill the beans*, and also examples such as *(X) blows X's nose*. All of these idioms follow the general English syntactic rule that direct objects follow the verb, and that a possessive modifier precedes the noun it modifies.

Extragrammatical idioms are idioms that cannot be parsed by the general syntactic rules for the language. Fillmore et al. give as examples of extragrammatical idioms *first off*, *sight unseen*, *all of a sudden*, *by and large* and *so far so good*. One might think that extragrammatical idioms are rare, but Nunberg et al. suggest that they may not be particularly rare. Nunberg et al. provide a sampling of extragrammatical idioms, which are given here (Nunberg et al. 1994:515; note there is only one idiom overlapping with Fillmore et al.'s list):

(13) by and large; No can do; trip the light fantastic; kingdom come; battle royal; Handsome is as handsome does; Would that it were . . .; every which way; Easy does it; be that as it may; Believe you me; in short; happy go lucky; make believe; do away with; make certain

The grammatical/extragrammatical distinction characterizes idioms in contrast to regular syntactic expressions with respect to the rules of the syntactic component. Grammatical idioms conform to the syntactic rules, but are idiomatic in some other fashion. Extragrammatical idioms do not conform to the syntactic rules, and for that reason alone are idiomatic.

Fillmore et al.'s third distinction is between substantive and formal idioms. A **substantive**, or lexically filled, idiom is one in which all elements of the idiom are fixed. For example, the idiom *It takes one to know one* is completely fixed; one cannot even alter the tense (**It took one to know one*). A **formal**, or lexically open, idiom is one in which at least part of the idiom can be filled by the usual range of expressions that are syntactically and semantically appropriate for the slot. For example, with the idiom *(X) blows X's nose*, the expressions I have described as *X* can be filled by a noun phrase (and a corresponding coreferential possessive pronoun) that refers to a person possessing a nose: *I blew my nose*, *Kim blew her nose*, *They all blew their noses* and so on. Fillmore et al.'s use of the term 'formal'

corresponds to Langacker's term **schematic** to indicate a more general category (see §3.2), and we will use the term 'schematic' here.

Fillmore et al. note that one potential confusion with respect to the substantive/schematic distinction is that there may be a substantive idiom that fits the pattern of a counterpart schematic idiom. For example, they posit a schematic construction which they loosely describe as *The X-er, the Y-er*. Examples of this schematic construction are given in (14a–c):

(14) a. The more you practice, the easier it will get.
b. The louder you shout, the sooner they will serve you.
c. The bigger the nail is, the more likely the board is to split.

There is also a substantive idiom that fits the pattern of the *The X-er, the Y-er* schematic idiom:

(15) The bigger they come, the harder they fall.

The existence of the schematic idiom *The X-er, the Y-er* does not preclude the existence of a substantive idiom like (15), just as the existence of a general syntactic rule where the direct object follows the verb does not preclude the existence of an idiom such as *kick the bucket*.

The substantive/schematic distinction characterizes idioms in contrast to regular syntactic expressions on the one hand and the lexicon on the other. Both substantive and schematic idioms have parts that are lexically completely specified, although schematic idioms have parts that are specified in syntactic terms (that is, by a syntactic category such as 'noun phrase' or 'possessive pronoun'). In contrast, syntactic rules make reference only to general syntactic categories such as V (verb), NP (noun phrase) and so on, as in the phrase structure rules given in (16) for simple active intransitive and transitive sentences:

(16) a. S → NP VP
b. VP → V
c. VP → V NP

The last distinction that Fillmore et al. give is for idioms with or without **pragmatic point** (Fillmore et al. 1988:506). Idioms with pragmatic point are idioms that, in addition to having a meaning in the usual sense of that term, also are specifically used in certain pragmatic contexts. Obvious examples of idioms with pragmatic point are idioms used for opening and closing conversations such as *Good morning* or *See you later*, and for other specialized discourse contexts such as telling a fairy tale (*Once upon a time . . .*; ibid.). Other idioms with pragmatic point are those that have a certain conventional pragmatic content, as with the schematic idiom illustrated by *Him be a doctor?!* On the other hand,

many other idioms such as *all of a sudden* do not have any specific pragmatic point.

The with/without pragmatic point distinction characterizes idioms with respect to the 'information structure' or 'discourse' component that some linguists have argued for. They demonstrate that some idioms have conventional information-structure or discourse-contextual properties associated with them, which again cannot be predicted from general pragmatic or discourse-functional principles. For example, it may be a general pragmatic principle that in taking leave, one may make reference to a future meeting; but it cannot be predicted that the specific phrase *See you later* is conventionally used in English for that purpose, whereas in Spanish *Hasta luego* (lit. 'until later') is used for the same function.

Fillmore et al.'s analysis demonstrates that idioms are quite varied in their syntactic, semantic and pragmatic properties, ranging from completely fixed expressions to more general expressions, which may be semantically more or less opaque and may not even correspond to the general syntactic rules of the language. The distinctions discussed above are summarized in (17):

(17) a. encoding vs. decoding
b. idiomatically combining expressions vs. idiomatic phrases
c. grammatical vs. extragrammatical
d. substantive vs. schematic (formal)
e. with pragmatic point vs. without pragmatic point

Fillmore et al. use the features given above for a final, three-way categorization of idioms. Their first category of idioms are **unfamiliar pieces unfamiliarly arranged**. The new aspect of this definition is the fact that certain words occur only in a idiom. Examples of (substantive) idioms with unfamiliar pieces are *kith and kin* 'family and friends' and *with might and main* 'with a lot of strength.' In other words, such idioms are lexically irregular as well as syntactically and semantically irregular. Unfamiliar words are by definition unfamiliarly arranged: if the words do not exist outside the idiom, then they cannot be assigned to a syntactic category in terms of a regular syntactic rule. Also, unfamiliar words unfamiliarly arranged are by definition semantically irregular.

However, an idiom containing unfamiliar pieces unfamiliarly arranged does not imply that it is an idiomatic phrase; such an idiom can be an idiomatically combining expression. This point is made clearer by the schematic idiom of this type given by Fillmore et al., the idiom *The X-er, the Y-er* illustrated in (14) above. The unfamiliar pieces are the two occurrences of *the*, which are not definite articles (in fact, they come from the Old English instrumental demonstrative *þy*). The unfamiliar arrangement is the parallel syntactic structure, with a degree expression

followed by a clause with a gap corresponding to the degree expression. In (14a) for example, the parallel gapped structures are *more . . . you practice*___ and *easier . . . it will get* ___). Nevertheless, this idiom is an idiomatically combining expression, in that the parts of the construction can be made to correspond with the parts of its meaning (roughly, 'the degree to which you practice determines the degree to which it gets easy').

Fillmore et al.'s second category of idioms are **familiar pieces unfamiliarly arranged**. These idioms do not contain unique words but are extragrammatical. In other words, such idioms are lexically regular, but syntactically and semantically irregular. Fillmore et al. give *all of a sudden* and *in point of fact* as examples of substantive idioms in this category. They give as an example of a schematic idiom of this category the phrase *Nth cousin (M times removed)*: this is a syntactically unique construction. Again, idioms made up of familiar pieces unfamiliarly arranged may be idiomatically combining expressions.

Fillmore et al.'s third and last category of idioms are **familiar pieces familiarly arranged**. Such idioms are lexically and syntactically regular but semantically irregular. Again, such idioms may be substantive or schematic; Fillmore et al. give examples of both types. The substantive idioms they list are in fact not entirely fixed expressions; they include *pull X's leg* (which can have any person-denoting noun phrase as *X*) and *tickle the ivories* 'play the piano' (which can be inflected for tense/mood). Fillmore et al.'s schematic idioms are even more schematic; they include what they call 'fate tempting expressions' such as *Watch me (drop it, slip* etc.).

The types of idioms, and their comparison to regular syntactic expressions, are given in Table 9.1.

Table 9.1 *Types of idioms compared to regular syntactic expressions*

	Lexically	Syntactically	Semantically
Unfamiliar pieces unfamiliarly arranged	irregular	irregular	irregular
Familiar pieces unfamiliarly arranged	regular	irregular	irregular
Familiar pieces familiarly arranged	regular	regular	irregular
Regular syntactic expressions	regular	regular	regular

9.3 Idioms as constructions

Having presented their analysis and classification of idioms, Fillmore et al. argue that the proper way to represent speaker's knowledge of idioms is as constructions. For Fillmore et al., a construction is a schematic idiom. That is,

some elements of the construction are lexically open on the one hand, and so the idioms fitting the description cannot simply be listed as 'phrasal lexical items.' In this respect, schematic idioms differ from substantive idioms. Fully substantive idioms, such as *It takes one to know one* or *The bigger they come the harder they fall*, can simply be listed as lexical items. Listing substantive idioms would require the allowance for multiword lexical items in the lexicon. But this concession to the linguistic facts does not conflict greatly with the principle of componential grammar that arbitrary and idiosyncratic linguistic knowledge is found in the lexicon (cf. the discussion of subcategorization frames in §9.2). Hence substantive idioms do not require any drastic departure from the componential model of the organization of grammar.

Schematic idioms, on the other hand, cannot simply be listed in the lexicon. And schematic idioms are idioms; that is, they are semantically and possibly also syntactically and lexically irregular. Syntactic, semantic and in some cases pragmatic properties of schematic idioms cannot be predicted from the general rules of the syntactic and semantic components (and the pragmatic component) or the general rules linking these components together. Instead, the syntactic, semantic (and in some cases pragmatic) properties must be directly associated with the construction. Such a representation would cut across the components in the componential model of grammatical knowledge, and hence represents a direct challenge to that model, at least for idioms.

Fillmore et al. make the case for constructions as units of syntactic representation by examining one construction in great detail, the construction containing the conjunction *let alone*, and demonstrating that it has syntactic, semantic and pragmatic properties that cannot be described by the general rules of the language, but is rule-governed within the context of the *let alone* construction and certain related constructions. The following discussion will present some of the more salient unique properties of the *let alone* construction.

The syntax of the *let alone* construction is complex. *Let alone* can be described as a coordinating conjunction; like other conjunctions, it conjoins a variety of like constituents (Fillmore et al. 1988:514; the emphasized elements represent prosody):

(18) a. Max won't eat SHRIMP, let alone SQUID.
b. We'll need shrimp and squid.

(19) a. Max won't TOUCH the SHRIMP, let alone CLEAN the SQUID.
b. I want you to cook the shrimp and clean the squid.

However, *let alone* fails in some syntactic contexts where *and* is fine, and vice versa (Fillmore et al. 1988:515–16; Fillmore et al. also discuss WH-extraction and *It*-clefts):

(20) a. Shrimp and squid Moishe won't eat.
b. *Shrimp let alone squid Moishe won't eat.
c. *Shrimp Moishe won't eat and squid.
d. Shrimp Moishe won't eat, let alone squid.

Example (20d) shows that *let alone* allows sentence fragments for the second conjunct. In this respect *let alone* is like certain other conjunctions, including comparative *than* (Fillmore et al. 1988:517, 516):

(21) a. John hardly speaks RUSSIAN let alone BULGARIAN.
b. John speaks Russian, if not Bulgarian.
c. John speaks better Russian than Bulgarian.

However, unlike comparative *than* and ordinary conjunctions, *let alone* is impossible with VP ellipsis (deletion of the verb phrase excluding the auxiliary; Fillmore et al. 1988:516):

(22) a. Max will eat shrimp more willingly than Minnie will.
b. Max won't eat shrimp but Minnie will.
c. *Max won't eat shrimp let alone Minnie will.

The *let alone* construction is a focus construction, like a number of other constructions of English (see Prince 1981b, discussed below), hence its characteristic prosody. In fact, *let alone* is a paired focus construction, like those given in (23b–c) (Fillmore et al. 1988:517):

(23) a. He doesn't get up for LUNCH, let alone BREAKFAST.
b. He doesn't get up for LUNCH, much less BREAKFAST.
c. She didn't eat a BITE, never mind a WHOLE MEAL.

The *let alone* construction allows for multiple paired foci (see [19a]), and in such sentences allows multiple *let alone*s (Fillmore et al. 1988:520):

(24) a. You couldn't get a poor man to wash your car for two dollars, let alone a rich man to wax your truck for one dollar.
b. You couldn't get a poor man, let alone a rich man, to wash, let alone wax, your car, let alone your truck, for two dollars, let alone one dollar.

In this respect, *let alone* is similar to the construction *not P but Q* (illustrated in [25]) and to the *respectively* construction (illustrated in [26]); but Fillmore et al. argue that in other respects *let alone* differs from both of these constructions (1988:521–22):

(25) Ivan sent not an album but a book, and not to Anna on her anniversary but to Boris on his birthday.
(26) Fred and Louise hated their shrimp and squid respectively.

Let alone is a negative polarity item, not unlike *any*; it occurs in negative contexts and certain other contexts (Fillmore et al. 1988:518):

(27) a. He didn't reach DENVER, let alone CHICAGO.
b. He didn't reach any major city.
(28) a. I'm too tired to GET UP, let alone GO RUNNING with you.
b. I'm too tired to do any chores.

However, unlike these polarity items, *let alone* is allowed in certain contexts where other negative polarity items are disallowed (Fillmore et al 1988:519; example [29a] is attested):

(29) a. You've got enough material there for a whole SEMESTER, let alone a WEEK.
b. *You've got enough material for any semester.

The semantics as well as the syntax of *let alone* is complex and not entirely predictable from more general rules of semantic interpretation from syntactic structure. As mentioned above, the *let alone* construction has at least one paired focus (e.g. the pair *semester* and *week* in [29a]). The interpretation of a *let alone* sentence requires the following steps. First the interpreter must recognize or construct a semantic proposition in the fragmentary second conjunct that is parallel to the proposition in the full first conjunct. Second, the interpreter must recognize or construct a semantic scale underlying the elements in the propositions. This is not always easy. For instance, the scale for (18a) may have to do with the assumed degree of distastefulness of shrimp versus squid, or it may have to do with the relative cost of shrimp versus squid (and Fred's stinginess; Fillmore et al. 1988:524–25).

More specifically, the interpreter must perform the following semantic operations. The interpreter must construct a **scalar model**, which ranks propositions on a scale – for example, the scale of distastefulness of eating seafood or the cost thereof. The propositions in the two conjuncts must be from the same scalar model – in this case, 'Fred not eat shrimp' and 'Fred not eat squid.' The two propositions are of the same polarity (in this case, negative). Finally, the initial, full conjunct denotes the proposition that is stronger or more informative on the scale – Fred not eating shrimp is more informative than Fred not eating squid, on the assumption that people who would eat squid would also eat shrimp but not vice versa. This semantic analysis can be generalized to multiple paired focus versions of *let alone* (see Fillmore et al. 1988 for details). This whole semantic apparatus is required for the interpretation of the *let alone* construction, and is not necessary (as a whole) for other constructions.

Finally, there is a specific pragmatic context in which the utterance of a *let alone* construction is felicitous (Fillmore et al. 1988:532). First, the discourse context is one such that the weaker (less informative) proposition, that is, the underlying

proposition of the fragmentary second conjunct, is at issue – for example, the issue of whether or not Fred eats squid. The weaker proposition accepts or rejects this context - in this case, *Fred doesn't eat squid* rejects it. But simply uttering the less informative proposition is not cooperative since the speaker knows that the strong proposition represented by the initial conjunct is true. So the speaker utters the *let alone* sentence. Fillmore et al. note that *let alone* is similar pragmatically to other conjunctions allowing sentence fragments, such as those illustrated in (21b–c) above. However, some of these conjunctions present the stronger proposition in the second, fragmentary conjunct, unlike *let alone*:

(30) a. He didn't make colonel, let alone general.
b. He didn't make general; in fact, he didn't even make colonel.

The preceding discussion has presented some of the evidence that the *let alone* construction has its own syntactic, semantic and pragmatic properties that cannot be predicted from more general rules of syntax, semantics and pragmatics. A number of other studies done in the emerging framework of construction grammar demonstrate that other constructions also have unique syntactic, semantic and pragmatic properties. A reading of these studies gives rise to two general observations.

First, the construction on which attention is focused by the researcher(s) turns out to be just one of a family of related constructions. For example, the *let alone* construction turns out to be just one of a family of coordinate constructions that allow certain kinds of sentence fragments in the second conjunct, two of which were illustrated in (21b–c). The *let alone* construction also turns out to be just one of a family of paired focus constructions, two of which were illustrated in (23b–c). Paired focus constructions are in turn related to a family of single focus constructions. The phrase *let alone* is itself related to other negative polarity items, and *let alone* is also related to a number of items that require a scalar model for their semantic interpretation, such as *even*, *almost*, *few* and *merely* (Fillmore et al. 1988:530).

Likewise, Lakoff's seminal study of the *There*-construction, as in *There's a fox in the garden*, uncovered a large family of related constructions with slightly different syntactic and semantic properties, which are illustrated in examples (31)–(32) (see Lakoff 1987, Appendix 3 for the analysis of the differences among *There*-constructions):

(31) *Deictic* There-*Constructions*:
a. *Central:* There's Harry with the red jacket on.
b. *Perceptual*: There goes the bell now!
c. *Discourse*: There's a nice point to bring up in class.
d. *Existence*: There goes our last hope.
e. *Activity Start*: There goes Harry, meditating again.

f. *Delivery*: Here's your pizza, piping hot!
g. *Paragon*: Now there was a real ballplayer!
h. *Exasperation*: There goes Harry again, making a fool of himself.
i. *Narrative Focus*: There I was in the middle of the jungle . . .
j. *New Enterprise*: Here I go, off to Africa.
k. *Presentational*: There on that hill will be built by the alumni of this university a ping-pong facility second to none.

(32) *Existential* There-*Constructions*
a. *Central*: There's a fox in the garden.
b. *Strange [Event]*: There's a man been shot.
c. *Ontological*: There is a Santa Claus.
d. *Presentational*: Suddenly there burst into the room an SS officer holding a machine gun.

Michaelis and Lambrecht's (1996) study of Nominal Extraposition, illustrated in (33a), reveals a family of related exclamative constructions, illustrated in (33b–e):

(33) a. It's AMAZING the amount I SPENT!
b. I can't believe the AMOUNT I spent!
c. The AMOUNT I spent!
d. I can't BELIEVE how much I SPENT!
e. It's INCREDIBLE how much I SPENT!

The Nominal Extraposition construction in (33a) is characterized by extraposition of the NP and a metonymic interpretation of the extraposed NP as referring to a scale, unique to exclamatives (the exclamative character of the sentence is due to the assertion of an excessive degree on the scale). The constructions in (33b–c) share the metonymic interpretation of (33a), but the NP is not extraposed (33b) or is an independent utterance on its own (33c). The exclamative constructions in (33d–e) directly express the scale (*how much*), unlike (33a–c). The construction in (33e) extraposes the degree expression, not unlike the extraposed (33a), while the construction in (33d) does not. All five constructions in this family are distinguished by the fact that they are a distinct speech act (expressed by the simple present tense), and they assert an affective stance, namely contravention of expectation (this fact restricts the main clause predicate to a gradable, contrary to expectation assertion).

The second observation upon surveying these studies of particular constructions follows from the first. The number and variety of constructions uncovered in these studies imply that speakers possess an extraordinary range of specialized syntactic knowledge that goes beyond general rules of syntax and semantic interpretation on the one hand, and a list of substantive idioms on the other. The detailed analysis of such constructions is not the exclusive preserve of construction grammarians. Linguists working in a variety of approaches to syntax and semantics have examined schematic idioms/constructions and demonstrated that

they represent rule-governed and productive linguistic behavior, albeit limited to the family of constructions analyzed.

One of the linguistic schools that calls itself 'functionalist,' which we will call 'autonomous functionalist' (cf. Croft 1995:496–99), identifies constructions that possess a specific discourse-functional or information-structural value. For instance, Prince (1978) argues that the constructions known as *It*-cleft (illustrated in [34]) and WH-cleft (35) each have their own discourse-functional value (Prince 1978:885):

(34) It is against pardoning these that many protest (*Philadelphia Inquirer*, February 6, 1977)

(35) What you are saying is that the President was involved (Haldeman, Watergate tapes)

Prince notes that WH-clefts and *It*-clefts differ syntactically, in that the former allow clefted adverbs or prepositional phrases as well as clefted noun phrases, and the latter commonly allow verb phrases or sentences as clefted items (Prince 1978:884). Discourse-functionally, WH-clefts can be used when the information in the subordinate clause is in the hearer's consciousness (Prince 1978:894). In contrast, Prince identifies at least two distinct 'sub-senses' for *It*-clefts, illustrated in (36) (37) (1978:896, 898):

(36) So I learned to sew books. They're really good books. It's just THE COVERS that are rotten. (Bookbinder in S. Terkel, *Working*, 1974)

(37) It was just about 50 years ago that Henry Ford gave us the weekend. (*Philadelphia Bulletin*, January 3, 1976)

Example (36) illustrates what Prince calls a stressed focus *It*-cleft. In the stressed focus *It*-cleft, the subordinate *that*-clause is given but not assumed to be in the hearer's consciousness. The stressed focus *It*-cleft is interesting also in that it has a phonological property associated with it: only the focused part (in small capitals in [36]) has strong stress; the *that*-clause is weakly stressed. Example (37) is an informative-presupposition *It*-cleft: the *that*-clause presents information that is a general known fact, albeit not to the hearer and hence new to the hearer (and therefore also not in the hearer's consciousness). Informative-presupposition *It*-clefts have a normal rather than weak stress on the *that*-clause. These examples indicate that constructions may have phonological features associated with them as well as syntactic, semantic and pragmatic/discourse features.

Birner and Ward (1998) analyze a wide range of preposing constructions, such as Topicalization (illustrated in [38]; Birner and Ward 1998:51), postposing constructions, such as right-dislocation (as in [39]; Birner and Ward 1998:146) and argument reversal constructions, such as inversion (as in [40]; Birner and Ward 1998:159):

(38) As members of a Gray Panthers committee, we went to Canada to learn, and learn we did. (*Philadelphia Inquirer*, June 16, 1985)

(39) It's very delicate, the lawn. You don't want to over-water, really. (father in the movie 'Honey, I Shrunk the Kids')

(40) Behind them, moving slowly and evenly, but keeping up, came Pa and Noah. (J. Steinbeck, *The Grapes of Wrath*, 1939)

Birner and Ward argue that, although there are commonalities among the different constructions with respect to the discourse status of the preposed element and the status of the postposed elements for syntactically similar constructions, each has its own unique discourse properties. In other words, the various preposing, postposing and inversion structures they discuss must each be analyzed as distinct grammatical constructions.

Wierzbicka has discussed the properties of several families of constructions in various publications (see the papers collected in Wierzbicka 1980, 1988, as well as the examples discussed here). For example, Wierzbicka argues that the schematic idiom *have a V* and the related types *give a V* and *take a V*, illustrated in (41)–(43), represent rule-governed constructions (Wierzbicka 1988:293, 338):

(41) a. have a drink
b. *have an eat

(42) a. give the rope a pull
b. *give the window an open

(43) a. take a look at
b. *take a look for

Wierzbicka argues that the item following the indefinite article is a verbal infinitive, not a noun, and hence differs from other *have* constructions that do take a noun, or more generally a noun phrase. For example, the phrase *have a cough* is nominal, in that one can also *have a headache/have pneumonia* and so on in which the word is indubitably a noun (Wierzbicka 1988:295–96). In this respect, the *have a V* construction is syntactically unique.

Semantically, Wierzbicka argues that *have a V* represents an action as limited in time but not punctual, lacking an external goal, and repeatable, and is of benefit to the agent/experiencer (1988:297–302). Wierzbicka argues that this semantic characterization is still incomplete, since it provides necessary but not sufficient conditions for the occurrence of verbs in this construction. Instead, she presents ten subtypes of the *have a V* construction, just as Prince offers two subtypes of the *It*-cleft. One of these types she describes as 'aimless objectless action which could cause one to feel good,' exemplified by *have a walk/swim/run/jog/lie-down* and so on. In this subclass, the verbs are intransitive but durative and atelic (Wierzbicka

1988:303), hence the unacceptability of (44b–c):

(44) a. He had a walk.
b. *He had a walk to the post office.
c. *He had a get-up.

The verb cannot describe a purposeful action (one with an external goal), other than a recreational activity, hence the unacceptability of (45b–c):

(45) a. He had a swim.
b. *He had a work.
c. *He had a pray.

One indicator of the conventional character of the interpretations of schematic idioms/constructions, particularly pragmatic ones, is the lack of translatability of the idiom. For example, it has been argued that the tautological statement in (46) is inferred to mean something like 'That's the kind of unruly behavior you would expect from boys' on general pragmatic principles (Levinson 1983:125):

(46) Boys will be boys.

Wierzbicka (1987) points out that in fact, the literal translation of (46) in various languages (see examples [47]–[50]) does not have the same pragmatic meaning as (46). Instead, different constructions are used to obtain approximately the same pragmatic force (Wierzbicka 1987:96–97). In examples (47)–(50), the (a) sentence is the closest literal translation to (46), the (b) sentence the one with the closest pragmatic meaning to that of (46), and the (c) sentence is the literal translation of the (b) sentence:

(47) *French*:
a. *Les garçons sont les (des?) garçons.
b. ?Les garçons seront toujours les (des) garçons. [still questionable]
c. 'Boys will always be boys'

(48) *German*:
a. *Knaben werden Knaben sein.
b. ?Knaben bleiben (immer) Knaben.
c. 'Boys remain (always) boys'

(49) *Russian*:
a. *Mal'čiki budut mal'čiki.
b. (Čego ty xočeš'?) oni že mal'čiki.
c. '(What do you expect?) They are boys'

(50) *Polish*:
a. *Chłopcy będą chłopcy.
b. (Jednak) co Paryż to Paryż.
c. '(However) what (is) Paris this (is) Paris'

These examples indicate that the pragmatic interpretation in (46) is in fact conventionally associated with the equational tautology in which it occurs in English. In fact, Wierzbicka argues for several different equational tautological constructions in English, which cannot be substituted for each other (Wierzbicka 1987:104):

(51) $N_{abstract}$ *is* $N_{abstract}$.
a. War is war.
b. *Kid is kid.

(52) N_{plural} *are* N_{plural}.
a. Kids are kids.
b. *Wars are wars.

(53) N_{plural} *will be* N_{plural}.
a. Boys will be boys.
b. *Wars will be wars.

(54) *An N is an N.*
a. A party is a party.
b. *A war is a war.

(55) *The N is the N.*
a. The law is the law.
b. *The war is the war.

Wierzbicka argues that the semantic interpretations for the constructions exemplified in (51)–(55) can be characterized as follows: a 'sober' attitude toward complex human activities (51); tolerance for human nature (52–53), the future subtype indicating 'the willful and uncontrollable spontaneity' of the human type (1987: 107); obligation with respect to a human role, activity or institution ([54]–[55]; Wierzbicka argues that [54] has other readings as well). These semantic differences cannot be inferred either from general rules of semantic interpretation in English or general rules of the pragmatics of communication.

Even in the generative grammatical tradition, which is the theory most closely identified with the componential model, there have been studies of schematic idioms, in particular by Jackendoff (1990, 1997; see also Akmajian 1984 and Lambrecht's 1990 reanalysis in construction grammar terms). For example, Jackendoff (1997) analyzes the 'time'-*away* construction, illustrated in (56):

(56) Bill slept the afternoon away.

Syntactically, the noun-phrase after the intransitive verb acts like a direct object complement, and normally cannot occur with a transitive verb ([57a–b]). In some cases the 'normal' direct object can appear in a *with* phrase, which it cannot do in an ordinary active construction ([57c–d]; Jackendoff 1997:535):

(57) a. Fred drank the night away.
b. *Fred drank scotch the night away.
c. Fred drank the night away with a bottle of Jack Daniels.
d. *Fred drank with a bottle of Jack Daniels.

Semantically, the 'time'-*away* construction appears to have the same interpretation as the durative adverbial with *for* (Jackendoff 1997:536):

(58) Bill slept for the (whole) afternoon.

However, unlike the durative adverbial, the 'time'-*away* construction requires a volitional subject ([59a–b]) and an activity rather than a state ([60a–b]; Jackendoff 1997:537):

(59) a. The light flashed for two hours.
b. *The light flashed two hours away.
(60) a. Celia sat for two hours.
b. *Celia sat two hours away.

The particle *away* as an aspectual particle seems to have a meaning and behavior similar to *away* in the 'time'-*away* construction:

(61) Bill drank away.
(62) *Celia sat away.

But the particle *away* is atelic (unbounded), while the 'time'-*away* construction is telic, as indicated by the *It take* NP_{time} construction:

(63) a. *It took a month for Lois and Clark to finally get to dance away.
b. It took a month for Lois and Clark to finally get to dance two blissful hours away.

These properties indicate the uniqueness of the 'time'-*away* construction with respect to general syntactic and semantic rules. Jackendoff further argues that the 'time'-*away* construction's properties cannot be predicted from the properties of other semantically related constructions, such as the resultative construction (64) and the *way* construction ([65]; see Jackendoff 1997):

(64) The river froze solid.
(65) Dora drank her way down the street.

Jackendoff weighs two analyses of the 'time'-*away* construction, the construction-based account of the construction grammarians, and an account in which a lexical rule derives the relevant verb that governs this type of construction. Jackendoff concludes that the only substantive difference between the two

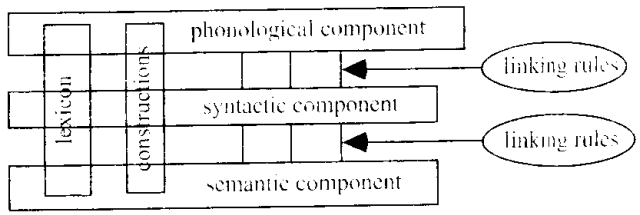
accounts is that if one wants to 'preserve the assumption that the lexical verb's argument structure always determines the argument structure of the VP' (Jackendoff 1997:557), then one must commit oneself to the lexical rule analysis. Jackendoff himself inclines to the constructional analysis for the 'time'-*away* construction, since he believes that constructions are necessary in other contexts anyway (ibid.).

Jackendoff's inclination in his 1997 paper is another step away from the componential model of generative grammar toward a construction grammar model. Jackendoff's inclination is also a step toward the construction grammarian's bolder hypothesis. Since one must posit constructions in order to account for a substantial part of a speaker's grammatical knowledge, is it possible to generalize the concept of construction to account for all of a speaker's grammatical knowledge? The next section presents construction grammar's arguments for the bolder hypothesis.

9.4 From constructions to construction grammar

The preceding section presented a number of case studies that argue for the need to posit constructions as a unit of syntactic representation. A construction is a syntactic configuration, sometimes with one or more substantive items (e.g. the words *let alone*, *have a . . .* and *away*) and sometimes not (as with the focus constructions, the exclamative constructions and the resultative construction). A construction also has its own semantic interpretation and sometimes its own pragmatic meaning (as with the tautological constructions). Hence a construction as a unit cuts across the componential model of grammatical knowledge. The existence of constructions would require a revision to the componential model in (3) that we may represent as in (66):

(66)



Constructions, like the lexical items in the lexicon, are 'vertical' structures that combine syntactic, semantic and even phonological information (for the specific words in a construction, as well as any unique prosodic features that may be associated with a construction). As more and more constructions are discovered and analyzed, construction grammarians came to argue that, in fact, grammatical

organization is entirely 'vertical' (indeed, this approach is already suggested in Fillmore et al. 1988).

We begin with the syntactic structure of constructions. In §9.3, constructional analyses were proposed for schematic idioms. Schematic idioms were defined in §9.2 as idioms in which some element or elements are lexically open, indicated by a category label as in *have a V*. Schematic idioms were contrasted with substantive idioms such as *It takes one to know one*, in which there are no lexically open elements. Hence, substantive idioms can be listed in the lexicon without substantially altering the basic principles of the componential model.

But Fillmore et al. observe in a footnote that there is in fact a continuum from substantive to schematic (1988:505, n. 3). Although we described all idioms with any lexically open elements as schematic idioms in §9.2, in fact schematic idioms vary considerably in their schematicity. Some schematic idioms such as the verb-phrase idiom *kick the bucket* are fixed except for grammatical inflectional categories:

(67) a. Jake kicked the bucket.
b. Jake's gonna kick the bucket. [etc.]

Other schematic idioms have one or more open argument slots as well as inflectional flexibility, such as *give NP the lowdown* 'tell NP the news':

(68) a. I gave/I'll give him the lowdown.
b. He gave/He'll give Janet the lowdown. [etc.]

Still other schematic idioms have open classes for all 'content' words, leaving just a salient form such as the connective *let alone* as a substantive element:

(69) a. She gave me more candy than I could carry, let alone eat.
b. Only a linguist would buy that book, let alone read it.

Finally, a constructional analysis has been proposed for some schematic idioms in which all elements are lexically open, such as the resultative construction (Goldberg 1995:181; attested examples):

(70) a. This nice man probably just wanted Mother to . . . kiss him unconscious. (D. Shields, *Dead Tongues*, 1989)
b. I had brushed my hair very smooth. (C. Brontë, *Jane Eyre*, 1847)

Yet the resultative construction has no lexically specific element. It can be described only by a syntactic structure, in this case [*NP Verb NP XP*], with a unique specialized semantic interpretation.

It is a very short step from analyzing the resultative construction as a construction to analyzing all the syntactic rules of a language as constructions (Fillmore et al. 1988:501, 534; Langacker 1999:19). After all, a syntactic rule such as $VP \rightarrow V\ NP$ describes a completely schematic construction [*V NP*], and the semantic interpretation rule that maps the syntactic structure to its corresponding semantic structure is unique to that schematic construction. Indeed, Goldberg suggests that there is a transitive construction just as there are more specialized schematic syntactic constructions such as the resultative construction (Goldberg 1995:116–19). Reanalyzing general syntactic rules as the broadest, most schematic constructions of a language is just the other end of the substantive- schematic continuum for idioms/constructions.

Turning to semantic interpretation, one can also argue that constructions and compositional semantic rules differ only in degree, not in kind. As we noted in §9.2, Nunberg et al. (1994) argue that most idioms are idiomatically combining expressions. In an idiomatically combining expression, the syntactic parts of the idiom (e.g. *spill* and *beans*) can be identified with parts of the idiom's semantic interpretation ('divulge' and 'information'). Nunberg et al. argue that idiomatically combining expressions are not only semantically analyzable, but also semantically compositional.

Nunberg et al. observe that idiomatically combining expressions are only the extreme end of a continuum of conventionality in semantic composition. The other end of the continuum is represented by **selectional restrictions**. Selectional restrictions are restrictions on possible combinations of words which are determined only by the semantics of the concepts denoted by the word. For example, the restrictions on the use of *mud* and *car* in (71)–(72) follow from the fact that mud is a viscous substance and a car is a machine:

(71) a. Mud oozed onto the driveway.
b. ?*The car oozed onto the driveway.

(72) a. The car started.
b. ?*Mud started.

The restrictions on *mud* and *car* are not dependent on the conventional form in which the concepts are expressed. If one used the word *goo* instead of *mud* or *automobile* instead of *car*, the judgements in (71)–(72) would remain the same. The combinations in (71a) and (72a) are semantically compositional: the meaning of the whole can be predicted from the meaning of the parts.

An intermediate point on this continuum involves what are called **collocations**. Collocations are combinations of words that are preferred over other combinations that otherwise appear to be semantically equivalent. For example, Matthews argues that *toasted* and *roasted* describe essentially the same process, but are restricted in their acceptable combinations (Matthews 1981:5):

(73) a. roasted meat
b. toasted bread

(74) a. ?*toasted meat
b. ?*roasted bread

Most linguists would analyze (73a–b) as semantically compositional as well. In both cases, the meaning of the whole can be predicted from the meaning of the parts. It is just that speakers of English conventionally use *toasted* with *bread* and *roasted* with *meat*, but not the other way around. This convention does not affect the semantic compositionality of the expressions in (73a–b).

Typically, collocations are expressions that can be interpreted more or less correctly out of context, but cannot be produced correctly if the conventional expression is not already known to the speech community (Nunberg, Sag and Wasow 1994:495). In other words, collocations are encoding idioms. For example, the expressions in (75a) and (75b) are the American and British terms for the same type of object; each is compositional to the speakers of that dialect, but a speaker of the other dialect would not be able to know what conventional expression is used to refer to that type of object:

(75) a. thumb tack (American English)
b. drawing pin (British English)

Nunberg et al. argue that exactly the same reasoning applies to idiomatically combining expressions. Idiomatically combining expressions are largely fixed in their words; any substitution leads to ungrammaticality, as in (76b–c) and (77b):

(76) a. Tom pulled strings to get the job.
b. *Tom pulled ropes to get the job.
c. *Tom grasped strings to get the job.

(77) a. She spilled the beans.
b. *She spilled the succotash.

However, given the meanings of the words in the idiomatically combining expression, the meaning of the whole expression is compositional:

> By convention . . . *strings* [in *pull strings*] can be used metaphorically to refer to personal connection when it is the object of *pull*, and *pull* can be used metaphorically to refer to exploitation or exertion when its object is *strings*. (Nunberg et al. 1994:496)

> When we hear *spill the beans* used to mean 'divulge the information', for example, we can assume that *spill* denotes the relation of divulging and *beans* the information that is divulged, even if we cannot say why *beans* should have been used in this expression rather than *succotash*. This is not to say, of course, that *spill* can have the meaning 'divulge' when it does not co-occur with *the beans*, or that *beans* can have the meaning 'information' without *spill*. The availability of these meanings for each constituent can be dependent on the presence of another item without requiring that the meaning 'divulge the information' attach directly to the entire VP. Rather it arises through a convention that assigns particular meaning to its parts when they occur together. (Nunberg et al. 1994:497)

At first, Nunberg et al.'s analysis may look odd. To say that *pull* and *strings* each have a meaning found only in *pull strings*, and that those meanings are compositional in the idiomatically combining expression, seems ad hoc. The more natural description is the traditional one, that the meaning of the idiomatically combining expression is 'noncompositional.' In fact, it is sometimes said that one of the strongest pieces of evidence for constructions as independent syntactic objects is that there is some degree of 'noncompositionality' in the meaning of the construction. But there is evidence that Nunberg et al.'s analysis is the right one.

Some English words exist only in idiomatically combining expressions, such as *heed* in *pay heed*. It makes sense to say that *heed* has a meaning, that is of course found only in *pay heed*. It has been argued that *heed* is idiomatic, because it is essentially synonymous with *attention* in *pay attention*, and yet does not behave the same way (Radford 1988; see Nunberg et al. 1994:505):

(78) a. You can't expect to have my attention/*heed all the time.
b. He's a child who needs a lot of attention/*heed.

Nunberg et al. argue that *heed* does not in fact mean the same thing as *attention* does, when *attention* is the object of *pay* (Nunberg et al. 1994:505):

(79) a. The children paid rapt attention/?*heed to the circus.
b. I pay close attention/?*heed to my clothes.
c. They paid attention/??*heed to my advice, but didn't follow it.

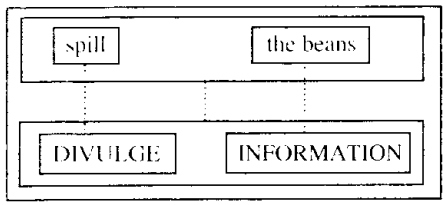
The semantic differences are related to the difference between the verbs *attend* and *heed*: 'we clearly attend to much that we do not heed . . . one can take heed but not attention, and . . . attention but not heed can wander' (Nunberg et al. 1994:506). In other words, *heed* in *pay heed* does have its own meaning even though it occurs (as a noun) in only that combination. Hence, it is reasonable to assume that other words have specialized meanings in idiomatically combining expressions, and that those meanings are compositional.

Another important line of evidence for the compositionality of idiomatically combining expressions is psycholinguistic. Speakers of English recognize the meanings of words in idiomatically combining expressions, and recognize them as figurative meanings, even though the figurative meanings are found only in the idiomatically combining expressions (Gibbs 1990). These two pieces of evidence

point to Nunberg et al.'s conclusion that 'The dependency among the parts of idiomatically combining expressions is thus fundamentally semantic in nature' (Nunberg et al. 1994:505).

From a construction grammar perspective, Nunberg et al.'s analysis of idiomatically combining expressions looks more natural. An idiomatically combining expression such as *spill the beans* is a construction. As a construction, it has unique syntax: the verb must be *spill* and its object must be *the beans*. It also has a semantic interpretation, namely 'divulge information.' All Nunberg et al. are saying is that this construction has its own semantic interpretation rules, mapping *spill* onto 'divulge' and *the beans* onto 'information.' The constructional analysis is presented in the diagram in (80), using lowercase to describe form and uppercase to describe meaning, boxes to represent the construction and its parts, and dotted lines to indicate the syntax-semantics mapping (see §10.1):

(80)



What Nunberg et al. have done is to dissociate **conventionality** from **noncompositionality**. Idiomatically combining expressions are not noncompositional. There exist truly noncompositional expressions; these are idiomatic phrases such as *saw logs* and *kick the bucket*. Idiomatically combining expressions differ from collocations and ordinary expressions only in that the conventional way of expressing the parts of its meaning are conventional and also relatively opaque, compared to collocations and ordinary expressions.

Earlier analysts have assumed that an idiomatically combining expression is 'noncompositional' because the meaning of the whole is not predictable from the meaning of the parts when those parts appear in other expressions than the idiom. More precisely, idiomatically combining expressions have been treated as 'noncompositional' because their meanings do not conform to the semantic interpretation rules of regular syntactic expressions such as [VERB OBJECT]$_{VP}$ in the case of *spill the beans*. But *spill the beans* is compositional in the sense that the parts of the syntactic expression can be mapped onto components of the meaning of the idiom, as in (80). The way that *spill the beans* differs from regular syntactic expressions is that there are rules of semantic interpretation associated with just that construction that are not derivable from the [VERB OBJECT]$_{VP}$ pattern of which *spill the beans* is an instance.

Thus, the common perception that a particular construction must be represented as an independent syntactic unit because it is 'noncompositional,' is technically incorrect. Constructions other than idiomatic phrases are compositional, that is, the meanings of the parts of the construction are combined to form the meaning of the whole construction. The reason that they must be represented as independent constructions is that semantic interpretation rules associated with the construction are unique to that construction, and not derived from another more general syntactic pattern, as construction grammarians carefully note (see, e.g., Goldberg 1995:13 and Michaelis and Lambrecht 1996:219).

Indeed, one can think of the general 'compositional' rules of semantic interpretation as being semantic rules associated with general (schematic) syntactic structures, just as specialized rules of semantic interpretation are associated with syntactically specialized extragrammatical idioms. Nunberg et al.'s analysis of idiomatically combining expressions can easily be extended to the general rules of semantic interpretation that link syntactic and semantic structures. Consider, for example, the English predicate adjective construction, illustrated in (81), and its semantic interpretation:

(81) Hannah is smart.

The English predicate adjective construction has the form [*NP be Adj*]. It differs from the ordinary verbal construction in requiring the copula verb *be*. One can analyze the semantics of the predicate adjective construction as follows. The members of the Adjective category have a meaning that requires them to be combined with the copula *be* in order to be interpreted as ascribing a property to a referent (unlike verbs). The copula *be* has a meaning that requires combination with a member of the Adjective category in order to be interpreted as doing the job of ascribing (a property) to the subject NP. This analysis is in fact essentially the semantic analysis that Langacker argues for (Langacker 1987:214–22; 1991a:204–5). In Langacker's terminology (see §3.5), Adjective symbolizes an atemporal relation, and the copula *be* symbolizes a process that Adjective meanings must be combined with in order to be predicated.

In like fashion, semantic interpretation rules can be provided for any schematic construction describing the most general syntactic structures of the language. In other words, all syntactic expressions, whatever their degree of schematicity, have rules of semantic interpretation associated with them, although some substantive idioms appear to inherit their semantic interpretation rules from more schematic syntactic expressions such as [*Verb Object*] (see §10.2.1). Hence, the difference between regular syntactic expressions and idiomatically combining expressions is not that the former are 'compositional' and the latter are 'noncompositional.' Instead, the former's rules of semantic composition are more general and the

latter's rules of semantic composition are more specialized. In semantics as well as syntax, the concept of a construction can be generalized to encompass the full range of grammatical knowledge of a speaker.

If syntax and semantics as a whole can be represented as constructions, what about morphology and the lexicon? Morphology, like syntax, represents complex grammatical units, made up of morphemes. From a structural point of view, the only difference between morphology and syntax is that morphemes are bound within a word, while words are morphologically free within a phrase or sentence. Interestingly, analogs to almost all of the peculiar phenomena of idioms can be found in morphology.

There are unfamiliar morphemes that exist only in single combinations, such as *cran-* in *cranberry* (cf. *kith and kin, pay heed*). Such morphemes caused problems for American structuralist analysis, because one had to assign a meaning (if any) to the unfamiliar morpheme only in that word. This is, of course exactly the analysis advocated by Nunberg et al. for their syntactic analogs.

There is also 'extragrammatical' morphology, that is, morphological patterns that do not obey the general morphological rules of the language. The general rule for plural formation in English is suffixation of an allomorph of *-s* to the noun stem. The abfaut plurals of English such as *feet, geese* and so on are outside the general plural formation rule. Arguably, the plural of *brother-in-law*, either *brothers-in-law* or *brother-in-laws*, is also outside the general rule. Such examples are common across languages. For example, the general rule for the position of agreement affixes in K'iche' Mayan is as a prefix immediately following the aspect prefix: *x-**at**-w-il-oh* 'I saw you [familiar].' However, the second person formal morpheme is a free word following the verb form, and hence is an 'extragrammatical' morpheme: *x-w-il **alaq*** 'I saw you [formal]' (Mondloch 1978:27).

Morphological expressions can be placed on a continuum of schematicity. A maximally substantive morphological expression is fully specified, as in *book-s*. Partially schematic morphological expressions include *book-*NUMBER and NOUN-S. Fully schematic morphological expressions include NOUN-NUMBER.

Finally, many words are what one might call 'idiomatically combining words,' where the meaning of a morpheme is specific to the stem it combines with (or a subclass of stems). For example, *-en* is the plural of *brother* only when it refers to a member of a religious community, and *brother* refers to a member of a religious community when it is combined with *-en*.[7] The derivational suffix *-er* refers to the agent of the event denoted by the verb stem when that verb stem is in a class including *write, run* and so on, but refers to the instrument if the verb stem is *clip, staple* and the like, or the patient if the verb stem is *fry, broil* and so on. All of

[7] We ignore here the fact that the plural stem for the plural in *-en* is distinct from the singular stem.

these observations suggest that in fact morphology is very much like syntax, and that a constructional representation is motivated for morphology as well.

Lastly, the lexicon differs only in degree from constructions. Words in the lexicon are pairings of syntactic form (and phonological form) and meaning, including pragmatic meaning. Constructions are also pairings of syntactic form (and phonological form, for the substantive elements) and meaning, including pragmatic meaning. The only difference is that constructions are **complex**, made up of words and phrases, while words are syntactically simple. Some words are morphologically complex, of course. But we have just argued that construction grammar would analyze morphologically complex words as constructions whose parts are morphologically bound. Morphologically simple words are **atomic**, that is, they cannot be further divided into meaningful parts. But a word is again just the limiting case of a construction (Fillmore et al. 1988:501).

The end point of this argument is one of the fundamental hypotheses of construction grammar: there is a **uniform representation of all grammatical knowledge** in the speaker's mind, in the form of generalized constructions. Table 9.2 compares the different types of grammatical entities found in the componential model of grammar and their analysis as constructions in construction grammar.

Table 9.2 *The syntax-lexicon continuum*

Construction type	Traditional name	Examples
Complex and (mostly) schematic	**syntax**	[SBJ *be-* TNS VERB *-en by* OBL]
Complex, substantive verb	**subcategorization frame**	[SBJ *consume* OBJ]
Complex and (mostly) substantive	**idiom**	[*kick*-TNS *the bucket*]
Complex but bound	**morphology**	[NOUN-*s*], [VERB-TNS]
Atomic and schematic	**syntactic category**	[DEM], [ADJ]
Atomic and substantive	**word/lexicon**	[*this*], [*green*]

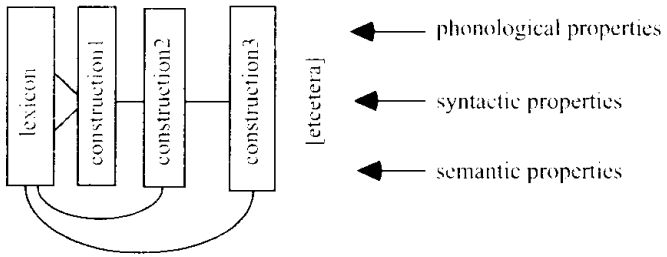
Syntactic rules (and the accompanying rules of semantic interpretation) are schematic, complex constructions. The subcategorization frames required to handle verbal syntactic behavior are schematic constructions with a substantive verb. Idioms are complex and (at least partly) substantive constructions. Morphology describes complex constructions, but constructions of bound morphemes. Words in the lexicon are atomic substantive constructions, while syntactic categories are schematic atomic constructions. In other words, grammatical knowledge represents a continuum on two dimensions, from the substantive to the schematic and from the atomic to the complex. This continuum is widely referred to as the

syntax-lexicon continuum. Thus, construction grammar conforms to Langacker's content requirement for a grammar: the only grammatical entities that are posited in the theory are grammatical units and schematizations of those units (Langacker 1987:53–54).

The notion of a construction in construction grammar is much more general than the traditional notion of a construction. In construction grammar, a construction can be atomic or complex; it can have parts that are morphologically bound as well as free; and any or all of the parts may be substantive or schematic. All constructions in construction grammar, though, are pairings of a syntactic and morphological (and, where relevant, phonological) form with a meaning, including pragmatic meaning.

The model of grammatical knowledge in construction grammar is represented in (82):

(82)



A construction grammar consists of a large number of constructions of all types, from schematic syntactic constructions to substantive lexical items. All of the constructions possess properties of form (syntactic and phonological) and meaning (semantic and pragmatic). All of these constructions are organized in a particular way in a speaker's mind. The next chapter describes how these generalizations are elaborated in various theories of construction grammar.

10 An overview of construction grammars

10.1 Essentials of construction grammar theories

In chapter 9, we presented the argument for representing grammatical knowledge as constructions. In this chapter, we will examine the structure of constructions and their organization in the grammatical knowledge of a speaker.

This section introduces fundamental concepts and descriptive terms for the analysis of the structure of a grammatical construction. The concepts in this section form the basis of any syntactic model, although they are combined in different ways in different syntactic theories. Any grammatical theory can be described as offering models of **representation** of the structure of an utterance, and models of **organization** of the relationship between utterance structures (presumably, in a speaker's mind). The latter are sometimes described in terms of levels of representation, linked by derivational rules. But construction grammar is a nonderivational model (like, for example, Head-driven Phrase Structure Grammar), and so a more general description of this aspect of grammatical theory is 'organization.'

Different versions of construction grammar will be briefly outlined in §10.2. We survey four variants of construction grammar found in cognitive linguistics – Construction Grammar (in capital letters; Kay and Fillmore 1999; Kay et al. in prep.), the construction grammar of Lakoff (1987) and Goldberg (1995), Cognitive Grammar (Langacker 1987, 1991) and Radical Construction Grammar (Croft 2001) – and focus on the distinctive characteristics of each theory.

10.1.1 Grammatical representation: the anatomy of a construction

Grammatical constructions in construction grammar, like the lexicon in other syntactic theories, consist of pairings of form and meaning that are at least partially arbitrary (but see §10.2.1). Even the most general syntactic constructions have corresponding general rules of semantic interpretation. Thus, constructions are fundamentally **symbolic** units, as represented in Figure 10.1 (compare Langacker 1987:60).

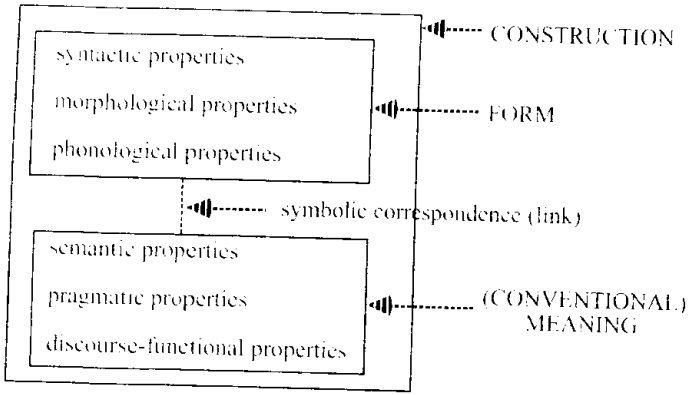


Figure 10.1 *The symbolic structure of a construction*

The term 'meaning' is intended to represent all of the **conventionalized** aspects of a construction's function, which may include not only properties of the situation described by the utterance, but also properties of the discourse in which the utterance is found (such as the use of the definite article to indicate that the object referred to is known to both speaker and hearer) and of the pragmatic situation of the interlocutors (e.g. the use of an exclamative construction such as *What a beautiful cat!* to convey the speaker's surprise). We will use the terms 'meaning' and 'semantic' to refer to any conventionalized function of a construction.

The central difference between componential syntactic theories and construction grammar is that the symbolic link between form and conventional meaning is internal to a construction in the latter, but is external to the syntactic and semantic components in the former (i.e. as linking rules). Figures 10.2 and 10.3 compare a componential syntactic theory and construction grammar on this parameter, highlighting in boldface the essential difference in the two models.

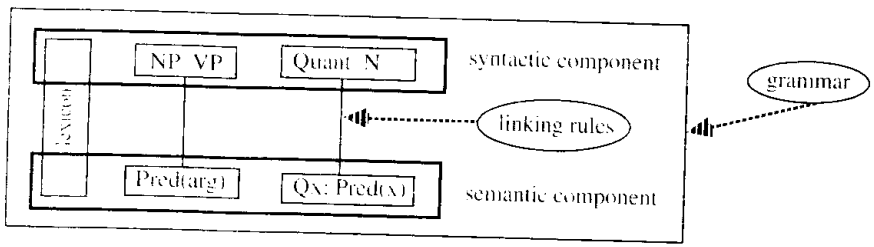


Figure 10.2 *The relation between form and function in a componential syntactic theory*

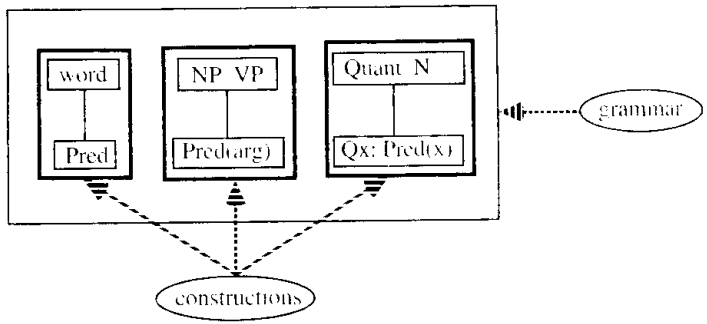


Figure 10.3 *The relation between form and function in construction grammar*

In the componential model, the various syntactic structures are organized independently of the corresponding semantic structures, as represented by the highlighted boxes in Figure 10.2. In construction grammar, the basic linguistic units are symbolic, and are organized as symbolic units, as represented by the highlighted boxes in Figure 10.3.[1] As a consequence, the internal structure of the basic (symbolic) units in construction grammar is more complex than that of basic units in the componential model.

The internal structure of a construction is the morphosyntactic structure of sentences that instantiate constructions. For example, a simple intransitive sentence such as *Heather sings* is an **instance** of the Intransitive construction. If we compare a simplified representation of *Heather sings* in generative grammar to a simplified representation of the same in construction grammar, we can see that they are actually rather similar except that the construction grammar representation is symbolic.

The box notation used in Figure 10.4b (on page 260) is simply a notational variant of the bracket notation used in Figure 10.4a (Langacker 1987; Kay and Fillmore 1999). Thus, we can see that both the generative grammar representation and the construction grammar representation share the fundamental part-whole or **meronomic** structure of grammatical units: the sentence *Heather sings* is made up of two parts, the Subject *Heather* and the Predicate *sings*.

The brackets in Figure 10.4a are labeled with syntactic category labels, while the corresponding boxes in the syntactic structure of Figure 10.4b are not labeled. This does not mean that the boxed structures in Figure 10.4b are all of the same syntactic type. Construction grammarians assume, of course, that syntactic units belong to

[1] Other theories that share construction grammar's basis in symbolic units are Head driven Phrase Structure Grammar (HPSG; Pollard and Sag 1987, 1993), and Semiotic Grammar (McGregor 1997). However, these theories are not explicitly construction based, although HPSG and Fillmore and Kay's version of construction grammar have converged in many respects.

(a) Generative grammar:

$[[\text{Heather}]_{NP}\ [\text{sings}]_{VP}]_{S}$

(b) Construction grammar:

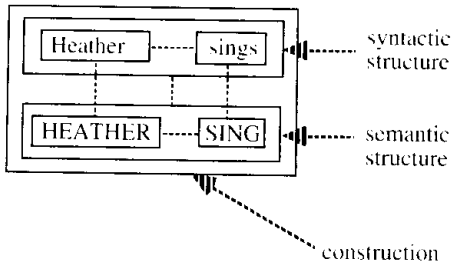


Figure 10.4 *Simplified generative grammar and construction grammar representations of* Heather sings

a variety of different syntactic categories. The boxes have been left unlabeled because the nature of those categories is one issue on which different theories of construction grammar diverge. That is, we may ask the following question of different construction grammar theories:

(i) What is the status of the categories of the syntactic elements in construction grammar, given the existence of constructions?

Beyond the meronomic structure of grammatical units, generative grammar and construction grammar diverge. First, as we have already noted, construction grammar treats grammatical units as fundamentally symbolic, that is, pairings of grammatical form and the corresponding meaning or **semantic structure**. As a consequence, the representation of a construction includes correspondence relations between the form and the meaning of the construction. We will call these correspondence relations **symbolic links**.

It will be convenient to use different names for the parts of a syntactic structure and the parts of a semantic structure. We will call the parts of the syntactic structure **elements** and parts of the semantic structure **components**. Thus, a symbolic link joins an element of the syntactic structure of a construction to a component of the semantic structure of that construction. There is also a symbolic link joining the whole syntactic structure to the whole semantic structure (the middle symbolic link in Figure 10.4b). This symbolic link is the construction grammar representation of the fact that the syntactic structure of the Intransitive construction symbolizes a unary-valency predicate-argument semantic structure. Each element plus corresponding component is a part of the whole construction (form + meaning) as well. We will use the term **unit** to describe a symbolic part (element + component) of a construction. That is, the construction as a symbolic whole is made up of symbolic units as parts. The symbolic units of *Heather sings* are not indicated in Figure 10.4b

for clarity's sake; but all three types of parts of constructions are illustrated in Figure 10.5 (compare Langacker 1987:84, Fig. 2.8a; Figure 10.5 suppresses links between parts of the construction for clarity).

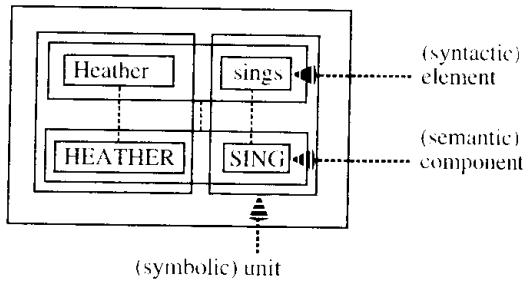


Figure 10.5 *Elements, components and units of a construction*

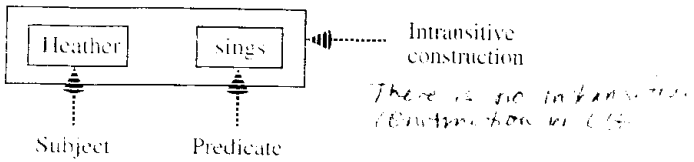
Figure 10.4b has two other relations apart from the symbolic relation: one joining the two syntactic elements and one joining the two semantic components. The link joining the two semantic components describes a **semantic relation** that holds between the two components, in this case some sort of event-participant relation. Thus, the semantic structure of a construction is assumed to be (potentially) complex, made up of semantic components among which certain semantic relations hold.

The link joining the two syntactic elements in Figure 10.4b is a **syntactic relation**. The syntactic relation does not obviously correspond directly to anything in the generative grammar representation in Figure 10.4a. This is because the representation of syntactic relations in most syntactic theories is more complex than a simple syntactic link. One layer is the syntactic relation itself, such as the subject-verb relation holding between *Heather* and *sings* in the construction grammar representation in Figure 10.4b. A second layer is the means of representing syntactic relations. Different syntactic theories use different means for representing abstract syntactic relations. For example, generative grammar uses constituency to represent syntactic relations, while Word Grammar (Hudson 1984) uses dependency. The third layer is the overt manifestation of syntactic relations, such as word order, case marking and indexation (agreement). We strip away the latter two layers in comparing construction grammar theories.

An important theoretical distinction is made regarding the internal structure of constructions (Kay 1997). The analysis of syntactic structure is unfortunately confounded by an ambiguity in much traditional syntactic terminology. We can illustrate this with the example of the term 'subject' in the Intransitive Clause construction in Figure 10.5, illustrated once again by the sentence *Heather sings*. The term 'subject' can mean one of two things. It can describe the **role** of a

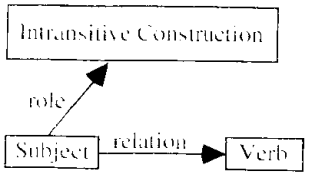
particular element of the construction, that is, a part-whole (meronomic) relation between the element labeled 'subject' in the Intransitive construction and the Intransitive construction as a whole. This is the sense in which one says that *Heather* is the 'subject of the Intransitive Clause' *Heather sings*. This part-whole relation is represented implicitly in (1) by the nesting of the box for *Heather* inside the box for the whole construction *Heather sings*.

(1)



The subject role defines a grammatical category. But the term 'subject' can also describe a syntactic **relation** between one element of the construction – the subject – and another element of the construction – the Verb. This is the sense in which one says that *Heather* is the 'subject of the Verb' *sings*. In other words, the term 'subject' confounds two different types of relations in a construction: the role of the part in the whole, and the relation of one part to another part. The difference between the two is illustrated in (2):

(2)



Different construction grammar theories develop different models of the internal relations between elements of constructions and components of constructions. These differences can be elucidated by answering question (ii):

(ii) What sorts of syntactic relations are posited?

10.1.2 The organization of constructional knowledge

Constructions are not merely an unstructured list in construction grammar. Constructions form a **structured inventory** of a speaker's knowledge of the conventions of their language (Langacker 1987:63–76). This structured inventory is usually represented by construction grammarians in terms of a **taxonomic network** of constructions. Each construction constitutes a **node** in the taxonomic network of constructions.

A taxonomic relation describes a relationship of schematicity or generality between two constructions. For example, in §9.2 we noted the existence of a schematic

idiom *The X-er, the Y-er*, and also of a substantive idiom *The bigger they come, the harder they fall*. We noted (following Fillmore et al. 1988) that the existence of the schematic idiom was not incompatible with the existence of the substantive idiom. A construction grammarian captures the fact that the substantive idiom is an instance of the schematic idiom by representing this relationship with a taxonomic link, as in (3):

(3) [The X-er, the Y-er]
|
[The bigger they come, the harder they fall]

Any construction with unique idiosyncratic morphological, syntactic, lexical, semantic, pragmatic or discourse-functional properties must be represented as an independent node in the constructional network in order to capture a speaker's knowledge of their language. That is, any quirk of a construction is sufficient to represent that construction as an independent node. For example, the substantive idiom [SBJ *kick the habit*] must be represented as an independent node because it is semantically idiosyncratic. The more schematic but verb-specific construction [SBJ *kick* OBJ] must also be represented as an independent node in order to specify the verb's argument structure (or in older generative grammar terms, its subcategorization frame). Finally, the wholly schematic construction [SBJ TRVERB OBJ] is represented as an independent node.

These constructions are independent but related in terms of schematicity. For example, several levels of schematicity can be represented between the substantive idiomatic phrase *kick the habit* and the most schematic representation of the verb phrase in (4).

(4) [VERBPHRASE]
|
[VERB OBJ]
|
[*kick* OBJ]

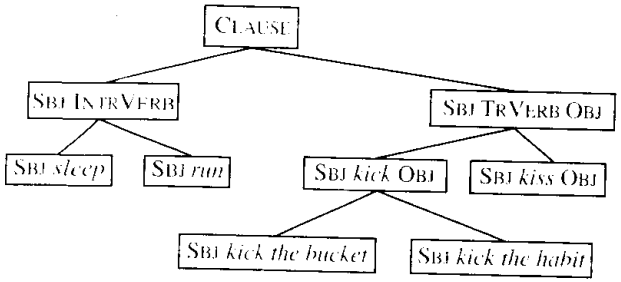
[*kick* [*the bucket*]]

Taxonomic relations between constructions allow construction grammarians to distinguish and yet relate the grammatical knowledge that is represented by different formal devices in the componential model of grammar. In (4), the top two levels in the taxonomy corresponds to the phrase structure rule VP → V NP in a componential model; the third level corresponds to the subcategorization frame *kick*: [_ NP]; and the lowest level an idiomatically combining expression *kick the habit*, which would be listed in the lexicon in the componential model. Thus, taxonomic relations complement the uniform representation of grammatical knowledge posited by construction grammar. Taxonomic relations allow a

construction grammarian to distinguish different kinds of grammatical knowledge while acknowledging the existence of the syntax-lexicon continuum.

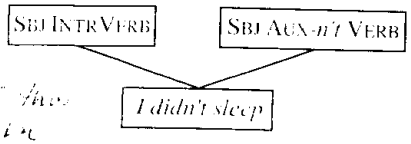
Of course, *kick the habit* has the same argument structure pattern as ordinary transitive uses of *kick*, and ordinary transitive uses of *kick* follow the same argument structure pattern as any transitive verb phrase. Each construction is simply an instance of the more schematic construction(s) in the chain [*kick the habit*] – [*kick* OBJ] – [TRVERB OBJ]. Thus, these constructions can be represented in a taxonomic hierarchy, as in (5):

(5)



However, grammatical constructions do not form a strict taxonomic hierarchy. One of the simplifications in the hierarchy of constructions in (5) is the exclusion of tense-aspect-mood-negation marking, expressed by auxiliaries and verbal suffixes. If those parts of an utterance are included, then any construction in the hierarchy in (5) has multiple parents. For example, the sentence *I didn't sleep* is an instantiation of both the Intransitive Verb construction and the Negative construction, as illustrated in (6):

(6)



The sentence *I didn't sleep* thus has multiple parents in the taxonomy of constructions to which it belongs. This is a consequence of each construction being a **partial specification** of the grammatical structure of its daughter construction(s). For example, the Negative construction only specifies the structure associated with the subject, verb and auxiliary; it does not specify anything about a verb's object (if it has one), and so there is no representation of the object in the Negative construction in (6).

A construction typically provides only a partial specification of the structure of an utterance. For example, the Ditransitive construction [SBJ DITRVERB OBJ1 OBJ2], as in *He gave her a book*, only specifies the predicate and its arguments. It does not specify the order of elements, which can be different in different constructions: compare the Simple Declarative example just given above with

the *It*-Cleft construction *It was a book that he gave her*. Nor does the Ditransitive construction specify the presence or position of other elements in an utterance, such as modal auxiliaries or negation, whether in a declarative sentence (where they are preverbal; see [7a]) or an interrogative sentence (where the auxiliary precedes the subject; see [7b]):

(7) a. He **won't** give her the book.
b. **Wouldn't** he give her the book?

Hence, any specific utterance's structure is specified by a number of distinct schematic constructions. Conversely, a schematic construction abstracts away from the unspecified structural aspects of the class of utterances it describes.

All versions of construction grammar employ taxonomic relations between constructions in the organization of grammatical knowledge. Constructions may be linked by relations other than taxonomic relations. A third question we may ask of different construction grammar theories is:

(iii) What sorts of relations are found between constructions?

Finally, the taxonomic hierarchy appears to represent the same or similar information at different levels of schematicity in the hierarchy. For example, the fact that *the habit* is the direct object of *kick* in *kick the habit* is, or could be, represented in the idiom construction itself [*kick the habit*], or at any one or more of the schematic levels above the hierarchy, all the way up to [TRVERB OBJ]. Different theories of construction grammar have offered different answers to the question of how information is to be represented in the taxonomic hierarchy of constructions:

(iv) How is information stored in the construction taxonomy?

In §10.2, the answers that various theories of construction grammar give to questions (i)–(iv) are presented.

10.2 Some current theories of construction grammar

This section surveys current theories of construction grammar in cognitive linguistics. All of the theories conform to the three essential principles of construction grammar described in chapter 9: the independent existence of constructions as symbolic units, the uniform representation of grammatical structures, and the taxonomic organization of constructions in a grammar. Of course, the exact means by which constructions and grammatical information are described in each theory, and the terminology used, varies. In each of the following subsections, the basic terminology used for the essential construction grammar features, and the approach to the four questions introduced above, will be presented for each

theory. The different answers to the four questions bring out some current issues of debate in construction grammar. It should be noted that the different theories tend to focus on different issues, representing their distinctive positions vis-à-vis the other theories. For example, Construction Grammar explores syntactic relations and inheritance in detail; the Lakoff/Goldberg model focuses more on categorization relations between constructions; Cognitive Grammar focuses on semantic categories and relations; and Radical Construction Grammar focuses on syntactic categories and typological universals. Finally, the last three theories all endorse the usage-based model, which is described in chapter 11.

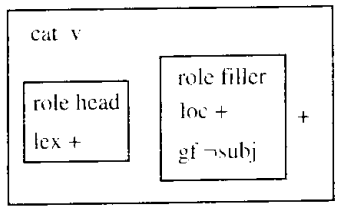
10.2.1 Construction Grammar (Fillmore, Kay et al.)

Construction Grammar (in capitals) is the theory developed by Fillmore, Kay and collaborators (Fillmore and Kay 1993; Kay and Fillmore 1999; Kay et al., in prep.). Construction Grammar is the variant of construction grammar (lower case) that most closely resembles certain formalist theories, in particular Head-driven Phrase Structure Grammar, which also calls itself a sign-based theory (i.e. a theory whose fundamental units are symbolic; Pollard and Sag 1993:15). Nevertheless, Construction Grammar conforms to the essential principles of construction grammar; Fillmore and Kay were among the first to articulate these principles (Fillmore, Kay and O'Connor 1988). Construction Grammar's distinguishing features are its elaborate, and still evolving, descriptive language for the internal structure of constructions, which can be only briefly sketched here (the version described here is essentially that of Kay and Fillmore 1999).

In Construction Grammar, there is a uniform representation of all grammatical properties, formal and functional, as **features** with **values**, such as **[cat v]** (syntactic category is Verb) and **[gf –subj]** (grammatical function is not Subject; Kay and Fillmore 1999). The value of a feature may itself be a list of features with their own values. The overall set of features with their values (including features) are more generally called **feature structures**. A simple example of a feature structure is the Verb Phrase construction (Kay and Fillmore 1999:8, Fig. 2). The Verb Phrase construction may be represented by brackets around the features and feature structures, as in (8), or by an equivalent box notation, as in (9):

(8)
$$\left[\begin{array}{l} [\text{cat v}] \\ \left[\begin{array}{l}[\text{role head}] \\ [\text{lex} +]\end{array}\right] \\ \left[\begin{array}{l}[\text{role filler}] \\ [\text{loc} +] \\ [\text{gf} \neg\text{subj}]\end{array}\right] \end{array}\right]^{+}$$

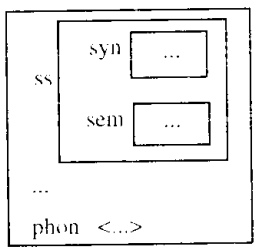
(9)



The equivalent diagrams in (8)–(9) are read as follows. The two inner boxes (feature structures) indicate the features of the verb and its complements (if any). The first box specifies that the first constituent of the VP construction is its head and that it must be lexical. For example, in *found her bracelet* the first constituent is the head of the VP and it is a word, not a larger constituent. The feature-value pair **[cat v]** above it is actually a simplification of a more complex feature structure (Kay and Fillmore 1999:9, n. 13), which specifies that the syntactic category of the head of the VP, in this case *found*, must be 'verb.' The second box specifies the complements, if any, of the verb. The + sign following the second box ('Kleene plus') indicates that there may be zero, one or more complements in the VP. In the VP *found her bracelet*, *her bracelet* is the one and only complement. In the VP construction, the complements are given the role value 'filler' (see below). The feature **[loc(al) +]** indicates that the complement is not extracted out of the VP. An example of an extracted, **[loc –]**, complement of *find* would be the question word *What* in the question *What did he find?*

The internal structure of a construction in Construction Grammar can be most easily understood by working from the parts to the whole. Minimal parts are words (or more precisely, morphemes; we will ignore this distinction for now). Each part has syntactic features, grouped under the feature **syn**, and semantic features, grouped under the feature **sem**. Construction Grammar separates the phonological features under a feature **phon** if the construction is substantive. The **syn** and **sem** features are themselves grouped under the feature **ss** (formerly **synsem**), which represents the symbolic structure of that part of the construction. The basic symbolic structure for Construction Grammar is given in (10):

(10)



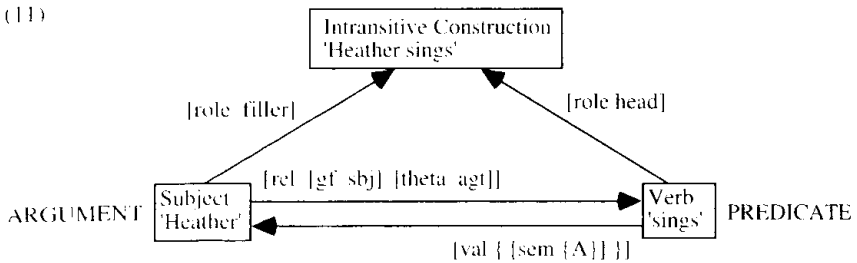
(i) What is the status of the categories of the syntactic elements in construction grammar, given the existence of constructions?

The elements of constructions in Construction Grammar fall into a small set of atomic category types, such as **[cat v]** and **[gf sbj]**. That is, constructions in Construction Grammar can be described in terms of complex combinations of a set of primitive atomic units. This is a **reductionist** model of syntactic structure: the atomic units are primitive and the complex units are derived. Why are constructions not superfluous, then, in Construction Grammar? It is because specific constructions as a whole will contain syntactic and semantic information that is not found in the units of the construction that make up its parts. For example, the *What's X doing Y?* or WXDY construction (Kay and Fillmore 1999), illustrated by *What's this cat doing in here?*, possesses a number of syntactic and semantic properties not derivable from other constructions or the words in the construction. Its distinctive semantic property is the presupposition of incongruity of the event, which Kay and Fillmore argue cannot be derived by conversational implicature (1999:4). The WXDY construction is found only with the auxiliary *be* and the main verb *do* in the progressive (yet the progressive form here can be used with stative predicates), and excludes negation of *do* or *be*, all properties not predictable from the words, related constructions, or the constructional meaning (1999:4–7).

(ii) What sorts of syntactic relations are posited?

The manner in which Construction Grammar assembles the parts of a construction into a whole uses three different sets of features: **role, val** and **rel**. The use of **role**, **val** and **rel** are illustrated in (11), based on the diagram contrasting roles and relations in (2) and using *Heather sings* as the example:

(11)



The **role** feature is used to represent the role of the syntactic element in the whole. The **role** feature is associated with each part of a complex construction and defines syntactic roles such as **mod**(ifier), **filler** and **head**. For instance, the subject-predicate (Intransitive) construction in (11), *Heather sings*, has the roles **head** for *sings* and **filler** for *Heather* (Kay and Fillmore 1999:13).

In addition to roles, each part of a complex construction has a relation to some other part of the construction in Construction Grammar. The relations between parts of a construction are all cast in terms of predicate-argument relations. For example, in *Heather sings*, *Heather* is the argument and *sings* is the predicate. The predicate-argument relation is symbolic, that is, both syntactic and semantic. Semantically a predicate is relational, that is, inherently relates to one or more additional concepts. In *Heather sings*, singing inherently involves a singer. The semantic arguments of a predicate are the concepts to which the predicate relates, in this case, Heather. Syntactically, a predicate requires a certain number of arguments in specific grammatical functions to it: *sing* requires an argument in the subject grammatical function. And syntactically, arguments are related to the predicate by a grammatical function: in this case, *Heather* is the subject of *sings*.

The remaining two features used to describe meronomic relations in Construction Grammar, **val** and **rel**, are used on predicates and arguments respectively. The **val** feature structure is used to indicate the relation of the predicate to its argument(s), and the **rel** feature structure is used to indicate the relation of each argument to its predicate. The **val** feature is found in the predicate's representation. The value of the **val** feature will be a set, indicated by the set notation {}; the **val** feature will be a set consisting of more than one member for predicates with multiple arguments. For the predicate *sings* in (11), the **val** set consists of just one member, namely the singer argument. Construction Grammar indicates the argument of a predicate by a cross-reference to the set of semantic arguments, which is part of the **sem** feature structure. In this example, we simply indicate that the singer argument corresponds to the argument A in the **sem** feature structure for *sings*.

The **rel** feature structure in the representation of the argument phrase indicates what grammatical function the argument is found in, and what semantic role it should have with respect to the predicate. The **rel** feature structure takes a syntactic feature, **gf** (for 'grammatical function'), and a semantic feature θ (for 'thematic role,' indicated as 'theta' in [11]).[2] In (11), the argument *Heather*'s **rel** feature structure has a grammatical function of 'subject' and a thematic role of 'agent.'

Finally, predicates and their arguments in a construction are matched with each other such that each argument's **rel** is matched up with one of the elements in the **val** list of its predicate. This is achieved through indexes on the relevant feature structures in the construction (not indicated in [11]). Kay and Fillmore call this matching principle the Valence Principle (Kay and Fillmore 1999:10).

[2] The version of the feature geometry given in Kay and Fillmore 1999:9, n. 10 includes another syntactic feature under **rel**, namely **case**.

Construction Grammar keeps distinct part-whole relations (**role**) and part-part relations (**val** and **rel**). Predicate-argument relations are independent of the role relations each predicate and argument has. For example, in both *The book is red* and *the red book*, *red* is the predicate and *(the) book* is the argument. However, in *The book is red*, *be red* is in the head role while in *the red book*, *book* is in the head role. Furthermore, Construction Grammar keeps distinct the **val** feature for predicates and the **rel** feature for arguments. The reason that **val** and **rel** are kept separate is that a single element in a construction can be a predicate taking arguments and at the same time be an argument for another predicate. For example, in *You should read this*, the element *read* is a predicate taking the argument *this*, but is itself an argument of the predicate *should* (Kay 1997).

The meronomic relations of a construction in Construction Grammar are analyzed in terms largely familiar from other syntactic theories (head, modifier, predicate, argument), although they are defined somewhat differently. In Construction Grammar, predicate-argument relations between elements are syntactic and semantic, and they are clearly distinguished from syntactic roles held by elements in the construction as a whole.

(iii) What sorts of relations are found between constructions?

(iv) How is grammatical information stored in the construction taxonomy?

We address both of these questions together because the answer to (iii) in Construction Grammar is dependent on the answer to (iv).

Construction Grammar, like all construction grammars, allows taxonomic relations between constructions. In examining a construction taxonomy such as those illustrated in (4)–(5), it can be noted that what is more or less the same information is represented at multiple levels in the taxonomy. For example, the taxonomy in (4) appears to represent the fact that the object follows the verb at each of the lower three levels. Redundant representation of information need not be the case, however. One can represent the fact that the object has the grammatical function **[gf obj]** just once, at the highest possible level in the taxonomy – in (4), the [VERB OBJ] level. The constructions at the lower taxonomic levels will then **inherit** this property by virtue of being an instance of (an instance of) the [VERB OBJ] construction. For example, the idiom *kick the habit* does not separately and redundantly represent the fact that *the habit* bears the object grammatical function to *kick*: it inherits this feature from the [VERB OBJ] construction.

Following Goldberg (1995:73–74), we will describe a model in which information is represented nonredundantly and is inherited as a **complete inheritance** model. Construction Grammar is a complete inheritance model (Kay and Fillmore 1999:7–8, 30–31). That is, Construction Grammar represents information only

once in the construction taxonomy, at the highest (most schematic) level possible.

A consequence of the complete inheritance model is that some constructions may not be pairings of form and meaning, contrary to the general principle given in §10.1 that constructions are symbolic (Fillmore 1999:121, n. 11). Consider, for example, the following examples of constructions in English (Fillmore 1999:126, 122, 123, 121):

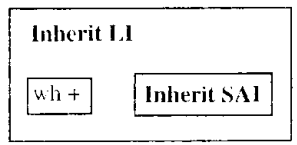
(12)	Did you understand what I said?	*Polarity question (positive)*
(13)	Boy, was I stupid!	*Subject-auxiliary inversion exclamation*
(14)	Don't you even touch that!	*Emphatic negative imperative*
(15)	May I live long enough to see the end of this job!	*Blessings-Wishes-Curses*

All of these constructions have in common the syntactic property that the auxiliary verb precedes the subject argument. In a complete inheritance model, one would posit a Subject-Auxiliary Inversion (SAI) construction possessing this syntactic property, which would be inherited by the constructions in (12)–(15) (Fillmore 1999). However, there is no common semantic property that is inherited in all of these constructions. Hence the schematic SAI construction will lack any semantic specification, and thus will be a purely syntactic construction. Nevertheless, this is only a limiting case in a model of grammar that is organized in terms of symbolic units.

In a complete inheritance model, a construction can inherit the feature structures of its parent constructions; this is the significance of the taxonomic relation between constructions in this model. Complete inheritance is an all-or-none relation, and so the categories defined by a construction taxonomy in Construction Grammar are classical (see chapter 4).

Kay and Fillmore also allow parts of a construction to inherit feature structures from another construction (Kay and Fillmore 1999:18; see also Fillmore 1999; Kay 2002). Kay and Fillmore argue that the nonsubject WH-question construction, instantiated in *Why did she leave him?*, is made up of a left-isolated (traditionally called 'fronted') WH question word and an inverted clause. Thus, the nonsubject WH-question construction as a whole inherits the feature structure of the schematic left-isolation (LI) construction, while the non-left-isolated part of the construction inherits the feature structures of the SAI construction:

(16) *Nonsubject WH-question construction:*



In other words, parts of constructions can be children of other constructions, whose feature structures they inherit. Thus, Construction Grammar models meronomic relations between constructions by taxonomic relations between a parent construction and the corresponding parts of other constructions.

10.2.2 Lakoff (1987) and Goldberg (1995)

Lakoff (1987) develops a variant of construction grammar in his important study of the *There*-construction in English. Lakoff's analysis emphasizes the complex, nonclassical structure of the category of *There*-constructions, in keeping with his interest in prototypicality and radial category structure. Lakoff's student Goldberg also adopts Lakoff's emphasis on constructional relations in her analysis of argument structure constructions (Goldberg 1995). Goldberg also addresses the other issues raised above, either explicitly or implicitly, in the context of analyzing argument structure constructions. But the chief distinguishing characteristic of Lakoff's and Goldberg's version of construction grammar is the exploitation of nonclassical categorization in the analysis of relations between constructions.

(i) What is the status of the categories of the syntactic elements in construction grammar, given the existence of constructions?

Space prevents us from examining Goldberg's model of argument linking in detail; we touch only on those topics relevant to the representation of constructions. Goldberg argues that one should analyze participant roles in complex events as derived from the event itself, following the principles of frame semantics (see chapter 2). For example, the participant roles for *rob/steal* are 'robber' and 'victim' (Goldberg 1995:47–48). This analysis of participant roles is an example of a nonreductionist representation: the complex event or situation is treated as the primitive unit of semantic representation, and the definitions of the roles in the events are derived from the situation as a whole.

In contrast, Goldberg's analysis of syntactic roles and relations in argument structure constructions is reductionist. As in Construction Grammar, Goldberg employs a set of atomic primitive grammatical relations such as subject and object, and primitive syntactic categories such as verb.

(ii) What sorts of syntactic relations are posited?

This question has not figured centrally in Lakoff's and Goldberg's theories. In Lakoff's study of *There*-constructions, he represents constructions with the following parameters of form (Lakoff 1987:489), which allow for relations between syntactic elements as well as relations between the elements and the construction as a whole:

- Syntactic elements (e.g. clause, noun phrases, verb etc.)
- Lexical elements (e.g. *here*, *there*, *come*, *go*, *be* etc.)
- Syntactic conditions (e.g. linear order of elements, grammatical relations such as subject and object, optionality of elements etc.)
- Phonological conditions (e.g. presence or absence of stress, vowel length etc.)

Goldberg's monograph analyzes argument structure constructions, focusing on relations between constructions (see immediately below), the semantics of argument structure, and the linking to syntactic roles. Because of the ambiguity of terms such as 'subject' between role and relation interpretations, Goldberg's representation of the syntactic structure of argument structure constructions (e.g. Goldberg 1995:50–55) is compatible with either interpretation.

(iii) What sorts of relations are found between constructions?

Schematic constructions in taxonomies represent a categorization of utterances in accordance with certain of their grammatical and semantic properties. As such, it might be expected that construction taxonomies would display some of the same properties as conceptual categories, properties that we have discussed in chapters 4, 5 and 8. Two of the most central properties of category structure are polysemy and prototype-extension structure. Both of these properties are found in construction taxonomies.

Lakoff and Goldberg discuss a variety of relationships (links) among constructions, including taxonomic relations (Lakoff 1987, Appendix 3; Goldberg 1995:74–81). One of the links Goldberg discusses, the instance link (1995:79–81), corresponds to the taxonomic links described above. A second type of link, the subpart link, corresponds to a meronomic link: 'one construction is a proper subpart of another construction and exists independently' (1995:78). This formulation appears to represent the meronomic relation as a distinct type of link, unlike Construction Grammar where a proper subpart of one construction may be an instance of another construction. Elsewhere, Goldberg describes all links as inheritance links (1995:74–75), but the direction of inheritance in her diagrams is the opposite to that in Construction Grammar (see 1995:80).

Goldberg also proposes a third type of construction link, the **polysemy** link, for subtypes of a construction that are identical in syntactic specification but different in their semantics. For example, Goldberg argues that the ditransitive construction [SBJ VERB OBJ1 OBJ2] has a general meaning involving a transfer of possession of OBJ2 to OBJ1. However, there are semantic variations on this syntactically unified construction (1995:38, Fig. 2.2):

(17) *SBJ causes OBJ2 to receive OBJ1:*
Joe gave Sally the ball.

(18) *Conditions of satisfaction imply SBJ causes OBJ2 to receive OBJ1:*
Joe promised Bob a car.

(19) *SBJ enables OBJ2 to receive OBJ1:*
Joe permitted Chris an apple.

(20) *SBJ causes OBJ2 not to receive OBJ1:*
Joe refused Bob a cookie.

(21) *SBJ intends to cause OBJ2 to receive OBJ1:*
Joe baked Bob a cake.

(22) *SBJ acts to cause OBJ2 to receive OBJ1 at some future date:*
Joe bequeathed Bob a fortune.

Goldberg treats the first sense (the one in [17]) as the central, prototypical sense and the other senses as extensions from the prototype. The extensions from the prototype inherit the syntactic construction schema from the prototype.

Goldberg does not explicitly argue for a schema subsuming all of the senses of the ditransitive construction. However, inheritance is a characteristic of taxonomic links, so Goldberg's analysis suggests that there is a schematic syntactic ditransitive construction, even if there is not a semantic schema (Goldberg does not propose a schematic meaning of the ditransitive). In other words, there is a syntactic construction schema that has as instantiations the six senses in (17)–(22), and the actual successful causation meaning in (17) is the prototype for the ditransitive construction.

In fact, however, the syntactic schemas for the six subsenses are all slightly different, because each sense has a distinct subclass of verbs associated with it (Croft 2003a). Thus, each subsense has associated with it a syntactic schema specifying the verbs or verb classes that each subsense applies to. In general, semantic differences in the grammatical constructions such as the ditransitive or the perfect are likely to have syntactic consequences, and so distinct constructional senses are likely to also have distinct syntactic schemas.

It is still possible to posit a superordinate ditransitive construction specifying what is common to all of the subordinate constructions. Such a construction would have a syntactic schema such as [SBJ DITRV OBJ1 OBJ2]. The DITRV category in the ditransitive construction would be a polysemous category, that is, there are no necessary and sufficient conditions to describe all and only the ditransitive verbs in the language. But as we saw in chapter 3, this is true of many linguistic categories, and so it is not surprising that a syntactic category turns out to be the same. Likewise, the semantics of the superordinate ditransitive construction would also be polysemous: although there would be a necessary condition that some modulated transfer of possession is involved (actual, intended, future etc.), this condition is not a sufficient condition defining the ditransitive construction's use.

The most important property of the polysemy analysis is that one construction sense is central and another is an extension from it. A clear case of extension from a central sense in constructions is a **metaphorical** extension, another type of link proposed by Goldberg, following Lakoff (1987) in his analysis of *There*-constructions.

Lakoff argues that many of the extensions of the central *There*-construction involve metaphorical extension. For example, the Perceptual Deictic *There*-construction, illustrated in (23), involves a number of metaphorical extensions from the Central Deictic *There*-construction illustrated in (24) (Lakoff 1987:511, 509):

(23) a. Here comes the beep.
b. There's the beep.

(24) There's Harry.

The Perceptual Deictic describes the impending (23a) or just-realized (23b) activation of a nonvisual perceptual stimulus, for example an alarm clock that is about to go off. To express this meaning, the Presentational Deictic uses the metaphor of deictic motion of a physical entity in physical space. The extension of the Central Deictic to the Perceptual Deictic requires the following metaphorical mappings (Lakoff 1987:511):

(25)

Perceptual Deictic domain		*Central Deictic domain*
NONVISUAL PERCEPTUAL SPACE	IS	PHYSICAL SPACE
PERCEPTS	ARE	ENTITIES
REALIZED	IS	DISTAL
SOON-TO-BE-REALIZED	IS	PROXIMAL
ACTIVATION	IS	MOTION

A metaphorical extension (or any other semantic extension, for that matter) need not establish a schema of which the basic construction and the metaphorical extension are both instantiations. Lakoff's based-on link, like Goldberg's polysemy link, involves inheritance of both syntactic and semantic properties, and so is not unlike a taxonomic link. Lakoff, however, does not posit a superordinate Deictic *There*-construction schema. On the other hand, Goldberg argues that there is a superordinate schema subsuming both a central construction and its metaphorical extension (Goldberg 1995:81–89).

(iv) How is information stored in the construction taxonomy?

Goldberg and Lakoff differ from Construction Grammar in allowing **normal** (or **default**) **inheritance** (Goldberg 1995:73, citing Flickinger, Pollard and Wasow 1985). Normal inheritance is a method for accommodating the fact that much of what we know about a category is not true of every instance of a

category. For example, we know that most birds fly, to the point that if we hear reference to 'a bird,' we will assume that it can fly. Of course, if we are further informed that the bird in question is an ostrich or a penguin, or that it has a broken wing or it is dead, we would cancel that assumption. One model for representing this information is to store the information FLIES with the category BIRD, instead of with the many instances of bird species and individual birds that can fly. The property FLIES is inherited in those cases, but inheritance can be blocked if it conflicts with information in the more specific case, such as penguins, ostriches, a bird with a broken wing, a dead bird and so on. This is normal inheritance.[3]

Lakoff uses normal inheritance in his analysis of *There*-constructions. Normal inheritance is part of Lakoff's based-on link between constructions (Lakoff 1987:508); so does Goldberg (1995:74). For example, Lakoff argues that the Presentational Deictic *There*-construction in (26) is based on the Central Deictic *There*-construction in (27) (Lakoff 1987:520, 482):

(26) There in the alley had gathered a large crowd of roughnecks.
(27) There's Harry with the red jacket on.

One of the properties of the Central Deictic is that the verb must occur in the simple present tense, because the semantics of the Central Deictic is to point out a referent in the speech act situation (Lakoff 1987:490–91). The Presentational Deictic is based on the Central Deictic but also specifies that the verb may appear in a variety of tenses as expressed in auxiliaries (Lakoff 1987:521). This specification blocks the inheritance of the simple present tense requirement from the Central Deictic.

Goldberg also allows for the representation of information at all levels in the taxonomic hierarchy of constructions. Goldberg describes such a model as a **full-entry** model (Goldberg 1995:73–74). She gives an example of a situation that virtually requires a full-entry representation, namely a conflict in multiple inheritance. If there are multiple parents, then there will be inheritance from multiple 'parents' in the taxonomic network. It may be that the multiple parent nodes have conflicting specifications of some properties, and this conflict has to be resolved for the specific instance. Normal inheritance cannot handle this problem. Normal inheritance adjudicates a conflict in specification between parent and child nodes in the taxonomy (the child always wins). In multiple inheritance the conflict is between the two parent nodes, and there is no principled way to choose which parent would win in a conflict.

[3] Construction Grammar eschews default inheritance; instead, default values are left unspecified and default constructions fill in unspecified values (Fillmore 1999:115, n. 3; Kay 2002:470).

Goldberg gives an example of a conflict in multiple inheritance with the resultative construction, illustrated in (28), and the verb-particle construction, illustrated in (29) (Goldberg 1995:97–98):

(28) a. She hammered the metal flat.
b. The metal was flat.

(29) a. He cleaned the mess up.
b. He cleaned up the mess.

Goldberg notes (following Bolinger 1971) that some resultatives allow for word order variation of the same type as is found in the verb-particle construction:

(30) a. Break the cask open.
b. Break open the cask.
c. The cask is open.

Goldberg proposes that the class of resultatives illustrated with *break open* in (30) are instances of the verb-particle construction as well as of the resultative construction. However, the two parent constructions have conflicting properties. While the verb-particle construction allows word order variation (compare [29]), the resultative construction does not:

(31) *She hammered flat the metal.

In this case, *break open* inherits the word order variation of the verb-particle construction, not the fixed word order of the resultative. Conversely, while the resultative allows for a simple predication (compare [28b]), the verb-particle construction does not:

(32) *The mess is up.

In this case, *break open* inherits the predicability of resultatives, not the ungrammatical predication of the verb-particle construction.

The two parent constructions of (30) give conflicting specifications as to whether the word order change is acceptable or not, and whether the predication of the result phrase is acceptable or not. Goldberg suggests that, in this case, the information about the specific construction types is provided in the specific construction, even if it is redundant with the information contained in (one of) the parent constructions: then the problem of how to resolve the conflict of multiple inheritance does not arise. In other words, Goldberg argues that a full-entry model in this situation is desirable.

Is full entry plausible when the information could be represented nonredundantly by inheritance? It might appear to the reader that, a priori, the inheritance model is to be preferred over the full-entry model for reasons of parsimony.

However, most cognitive linguists argue that a cognitively based grammar should not be constructed in an a priori fashion, because grammatical knowledge is a psychological phenomenon. Clearly, speakers do not store a representation of every utterance they have ever used or heard. Speakers form schemas that generalize over categories of utterances heard and used. But it does not necessarily follow from this observation that speakers store every piece of grammatical knowledge only once. It does not even necessarily follow that actual speakers form a more schematic category for every linguistic generalization that clever linguists have found (see Croft 1998c and §11.2.5).

The principle that information should not be stored redundantly is motivated by the desire for parsimony in representation. But parsimony in representation simply pushes complexity to the processes of language use. A complete inheritance model maximizes **storage parsimony**, that is, it minimizes the redundant storage of information. A complete inheritance model thus requires maximum on-line processing in order to access and use the information in the production and comprehension of utterances (see Goldberg 1995:74; Barsalou 1992b:180–81). A full-entry model maximizes **computing parsimony**: as much information as possible is stored in multiple places, so that on-line computation is minimized during production and comprehension (Barsalou 1992b:180–81; see §§12.1, 12.2.5).

On the whole, the psychological evidence suggests that 'concepts and properties in human knowledge are organized with little concern for elegance and [storage] parsimony' (Barsalou 1992:180). This does not mean that full entry is to be preferred in all situations, however: such a model is just as a priori as the inheritance model. Instead, Goldberg, following Langacker (1987, chapter 10) and other cognitive linguists, advocates a **usage-based model**, in which patterns of language use are taken as evidence for the independent representation of grammatical information (see especially Goldberg 1995:133–39). In chapter 11, we will examine some suggested criteria for positing schematic constructions and the degree to which information is stored redundantly in the mind.

10.2.3 Cognitive Grammar as a construction grammar

Cognitive Grammar is a detailed, carefully worked out theory of syntax and semantics (Langacker 1987, 1991a, 1991b, 1999, inter alia; see also Taylor 2002). Langacker's seminal volume (Langacker 1987) gives an abstract exposition of the framework, and although the word 'construction' rarely appears there, and a completely different set of terms is used, Cognitive Grammar's model of syntactic representation is a construction grammar model. The distinguishing feature of Cognitive Grammar as a construction grammar is its emphasis on symbolic

and semantic definitions of theoretical constructs traditionally analyzed as purely syntactic.

Langacker defines a grammar as a structured inventory of conventional linguistic units (1987:57). Most conventional linguistic units are symbolic units, with their two halves, form and meaning.[4] Like Construction Grammar, Cognitive Grammar assumes the symbolic character of the linguistic **sign** (to use the Saussurean term). Cognitive Grammar, also like Construction Grammar, nevertheless emphasizes a uniform representation of constructional form and function. Langacker argues that all semantic, pragmatic and discourse-functional properties are ultimately conceptual, a part of what he calls semantic space, which he describes as 'the multifaceted field of conceptual potential within which thought and conceptualization unfold' (1987:76; see chapter 1).

In the Cognitive Grammar representation of a construction, the symbolic unit itself must link the form (signifier) and meaning (signified) of the construction. Langacker describes the link as a **symbolic correspondence**. Langacker describes the functional structure (the signified) of the construction as the **semantic pole** of a symbolic unit, and its formal structure (signifier) as the **phonological pole**. The term 'phonological pole' may sound odd: syntax at least is not 'phonological,' particularly with respect to schematic constructions. However, Langacker argues that a schema such as NOUN in the description of a construction should be thought of as phonologically as well as lexically schematic: the schema ranges over possible nouns, and those nouns are all phonologically contentful, even if their exact phonological form cannot be specified schematically.[5]

(i) What is the status of the categories of the syntactic elements in construction grammar, given the existence of constructions?

Cognitive Grammar argues that fundamental syntactic categories such as Noun, Verb, Subject and Object are abstract (schematic) semantic construals of the conceptual content of their denotations. Thus, fundamental syntactic categories

[4] Langacker also allows for independent phonological and semantic units, but not independent syntactic units.

[5] Cognitive Grammar and Construction Grammar, like Head-driven Phrase Structure Grammar (Pollard and Sag 1993), eschews the use of phonologically 'null' or 'empty' elements (see also Kay 2002). Construction Grammar replaces the concept of a null element with the concept of **null instantiation**, that is, some constructions have a feature that indicates that there is a (semantic) argument that is not formally instantiated (Fillmore 1986b; Fillmore and Kay 1993, chapter 7). Fillmore and Kay distinguish three types of null instantiation: definite (equivalent to null anaphora), indefinite (as in *The dog ate*) and free (corresponding to unspecified adjuncts). Fillmore and Kay argue that null instantiation is associated with either constructions or individual words; Croft (2001:275–80) argues that instantiation is associated with constructions only.

have an essentially semantic basis, but in terms of the construal of experience, not in terms of semantic classes. As described in chapter 3, Langacker has developed semantic construal analyses of a wide range of syntactic categories, including parts of speech, grammatical roles (subject and object), the count/mass distinction, various English tense/aspect inflections and auxiliaries, the English possessives *-'s* and *of*, ergativity, English complementizers and complement types, Cora locatives and the Yuman auxiliary (see Langacker 1987, 1991a, b, 1999).

One question that can be raised about the Cognitive Grammar analysis of grammatical categories is the relationship between the abstract semantic construal definitions and the variation in both formal distribution and semantic polysemy of such categories across languages. It has been suggested that cross-linguistic variation in putatively universal semantic categories can be accommodated in terms of conventionalized construal: the same semantic category is found everywhere, but the construal of specific experiences as belonging to the semantic category is language-specific:

> When we use a particular construction or grammatical morpheme, we thereby select a particular image to structure the conceived situation for communicative purposes. Because languages differ in their grammatical structure, they differ in the imagery that speakers employ when conforming to linguistic convention. (Langacker 1991b:12)

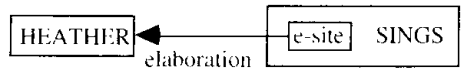
For example, the English root *sick* is construed as an adjective or atemporal relation, that is, summarily scanned (see §3.2), and requires a copula verb *be* for predication/sequential scanning; but the equivalent Russian root *bol(e)-* is construed as a verb (sequentially scanned) and requires an adjectival derivational suffix to be construed atemporally. But it is not clear that there is any difference between positing a universal semantic category plus language-specific conventionalized construal for specific cases on the one hand, and positing a polysemous category with a semantic prototype and language-specific semantic extensions on the other.

(ii) What sorts of syntactic relations are posited?

Cognitive Grammar takes a more radical departure from the more familiar analyses of relations among parts of a construction (Langacker 1987, chapter 8). The Cognitive Grammar concept of **valence**, like that of Construction Grammar, is symbolic. Unlike valence in Construction Grammar, however, valence in Cognitive Grammar is gradient. We will begin by looking at a straightforward predicate-argument relation, where the Cognitive Grammar and Construction Grammar notions of valence coincide, and then examine the extension of valence in Cognitive Grammar to other semantic relations.

In a sentence such as *Heather sings*, *sings* is a predicate because it is relational. The relationality of *sings* is due to the fact that singing requires a singer. Hence, the semantic structure for *sings* includes a schematic singer as a **substructure**. In *Heather sings*, *Heather* is an argument: it is nonrelational and it fills the role of the singer for *sings*. *Heather* is nonrelational because the concept of a person does not presuppose another concept. Langacker's term for an argument filling the role of a predicate is that the argument **elaborates** the relevant substructure of the predicate. The substructure that can be elaborated by an argument is an **elaboration site** or **e-site** (Langacker 1987:304). These relations are illustrated in (33):

(33)



As we noted in §10.2.1, a unit in a construction may be simultaneously a predicate and an argument, as is *read* in *You should read this article*. How is this possible? It is because the event of reading elaborates a substructure of the modality expressed by *should*, and the thing read, *this article*, elaborates a substructure of the event of reading. Hence, predicate and argument status – valence – is relative: predicate and argument status depend on what two semantic structures are being compared.

Not only is valence relative, it is gradient. In a sentence such as (34), I and what I am reading are traditionally analyzed as **complements** of *read* while *on the train* is an **adjunct** to *read* (we ignore the progressive *be* in this example):

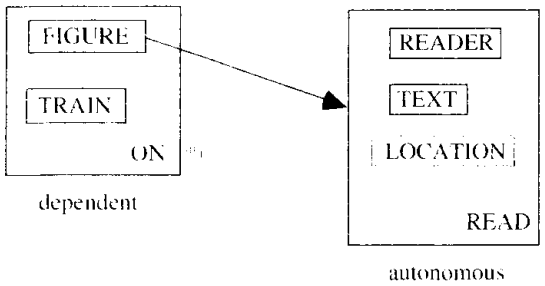
(34) I was reading this on the train.

Complements are arguments of a predicate: reading inherently involves a reader and a thing read. Adjuncts are predicates and their head is the argument: *on the train* inherently involves a Figure (the event) whose location is described by the spatial relation. Hence, *read* elaborates a substructure of *on the train*.

But this description is an oversimplification. Reading is a localizable activity: reading takes place in a location, as well as involving a reader and a thing read. This is not true of all predicates; one cannot say for instance that **John was widowed on the train*. Hence the location of the reading event is a substructure of the semantic structure of *read*, and *on the train* also elaborates that substructure of *read*. The solution to this apparent paradox is that the substructure of *read* elaborated by *on the train* is much less salient in the characterization of the reading event than the substructures of *read* elaborated by *I* and *this*. Conversely, the substructure of *on the train* that is elaborated by *read* is highly salient in the characterization of the spatial relation. *On the train* is more of an adjunct of *read* than a complement because *read* elaborates a salient substructure of *on the train*, whereas *on the train*

elaborates a not very salient substructure of *read*. The relative strength of the two relations is illustrated in (35):

(35)



Langacker use the terms **autonomous** and **dependent** to describe the gradient reinterpretation of the predicate-argument distinction: 'one structure, *D*, is dependent on the other, *A*, to the extent that *A* constitutes an elaboration of a salient substructure within *D*' (1987:300). Conversely, *A* is autonomous relative to *D* to the extent to which it does not elaborate a salient substructure of *D*. In (35), *on the train* is dependent on *read* because *read* elaborates the highly salient figure role of the locative relation *on the train*. Conversely, *read* is autonomous relative to *on the train* because *on the train* elaborates only the not very salient substructure of the location of the reading event.

The Cognitive Grammar analysis of concepts of 'head,' 'modifier' and so on are both similar and different from the analysis in Construction Grammar. In Construction Grammar, the roles represent a relation between the parts of a construction and the whole, and are defined syntactically. In Cognitive Grammar, the analogous concepts also represent a relation between the parts of a construction and the whole, but they are defined semantically and symbolically.

Cognitive Grammar defines a semantic relation between part and whole as the **profile determinant**: the profile determinant is the part of the construction whose semantic profile the whole construction 'inherits' (Langacker 1987:289). The profile is the concept designated by the unit, against the background knowledge presupposed by that concept (see chapter 2). Langacker combines the concepts of profile determinacy and autonomy/dependence to define 'head,' 'complement' and 'modifier' in the intuitively expected way (1987:309). A head is a dependent predication that is a profile determinant; a complement is an autonomous predication that is not a profile determinant; and a modifier is a dependent predication that is not a profile determinant.

(iii) What sorts of relations are found between constructions?

Langacker advocates what he calls a unified approach to categorization (1987, chapter 10). A category has a nonclassical structure, in that there is typically a prototypical member or set of members, and nonprototypical members are categorized by extension from the prototypical members. However, it is also possible for there to exist a schema subsuming both prototype and extension, which has a classical category structure, with necessary and sufficient conditions specifying its instances. Langacker's model of categorization is of course applied also to constructions. Hence, for Langacker, as for Lakoff and Goldberg, one may have both construction schemas and also nonclassical relations between constructions, such as prototype-extension relations, including metaphorical extensions.

(iv) How is information stored in the construction taxonomy?

Cognitive Grammar is a usage-based model, in which the establishment of schematic constructions is the result of language use as described briefly in §10.2.2 and in more detail in chapter 11.

10.2.4 Radical Construction Grammar

Radical Construction Grammar (Croft 2001) was developed to account for typological variation in a construction grammar framework, and to address basic questions of syntactic argumentation. Radical Construction Grammar adopts the nonclassical category structure and the usage-based model of the Lakoff-Goldberg theory and Cognitive Grammar. Radical Construction Grammar takes a thoroughly nonreductionist approach to constructions, and rejects autonomous syntactic relations between elements in a construction. Radical Construction Grammar adopts the usage-based model, and brings in the semantic map model and the notion of a syntactic space from typological theory to provide organizing principles for constructions.

(i) What is the status of the categories of the syntactic elements, given the existence of constructions?

The standard analysis of meronomic relations between syntactic structures is reductionist (§11.2.1): a construction such as the intransitive or transitive construction is made up of parts, and those parts are themselves defined independently of the constructions in which they occur. For example, various clausal constructions have verbs, which are analyzed as belonging to the same part of speech no matter what construction they occur in. This analysis is motivated in part because they have the same inflections (present in third person singular *-s* and non-third person singular zero, past in *-ed* or other allomorphs):

(36) Present third singular:
a. *Intransitive:* Toni dances.
b. *Transitive:* Toni plays badminton.

(37) Present non-third singular:
a. *Intransitive:* We dance-**Ø**.
b. *Transitive:* We play-**Ø** badminton.

(38) Past:
a. *Intransitive:* We danc**ed**.
b. *Transitive:* We play**ed** badminton.

In other words, the same units occur as the parts of many different constructions. Ultimately, the decomposition of a construction will lead to a set of basic or primitive elements that cannot be analyzed further, and out of which constructions are built. These atomic elements include syntactic categories such as Verb or Noun and relations such as Subject or Object and so on. A model of grammatical structure of this type is a reductionist model: more complex structures are treated as built up out of primitive and ultimately atomic units. In the example given here, the atomic units are the basic categories and relations.

The reductionist model has a significant shortcoming: it does not capture certain empirical facts about the distribution of words. For example, while many English verbs occur in either the transitive or intransitive constructions, many others do not:

(39) a. Judith danced.
b. Judith danced a kopanica.

(40) a. Judith slept.
b. *Judith slept bed.

(41) a. *Judith found.
b. Judith found a 20 dollar bill.

One solution is to divide Verbs into Transitive Verbs and Intransitive Verbs. If so, then a decision must be made about verbs such as *dance*, which occur in both constructions: do they simultaneously belong to both subclasses? or do they form a third distinct class? One effect of dividing Verbs into Transitive Verbs and Intransitive Verbs is that one is essentially defining the categories in terms of the construction they occur in, Transitive or Intransitive. These problems are multiplied in cross-linguistic comparison, where the variation found is more extreme (Croft 2001).

One can deal with such problems in the reductionist model by adding syntactic features that prevent certain category members from occurring in the unacceptable constructions, as in (40b) and (41a). Again, the effect is that one is introducing a feature that specifies the category in terms of the construction it occurs in/does not occur in (in this case, Transitive and/or Imperative and/or VP Conjunction).

Radical Construction Grammar takes a different approach to the relations of constructions to their parts. It takes the constructions as the basic or primitive elements of syntactic representation and defines categories in terms of the constructions they occur in. For example, the elements of the Intransitive construction are defined as Intransitive Subject and Intransitive Verb, and the categories are defined as those words or phrases that occur in the relevant role in the Intransitive construction. In other words, Radical Construction Grammar rejects the existence of atomic schematic units (see Table 9.2 in §9.4), because atomic schematic units are defined independently of constructions. This differentiates Radical Construction Grammar from reductionist theories.

Radical Construction Grammar is a **nonreductionist** model because it takes the whole complex structure as basic and defines the parts in terms of their occurrence in a role in the complex structure. In effect, Radical Construction Grammar takes to its logical conclusion one of the strategies for handling these problems in reductionist theories, namely the subdividing of classes and the employment of syntactic features that essentially specify which constructions a particular word or phrase occurs in (see Croft 2001, chapter 1).

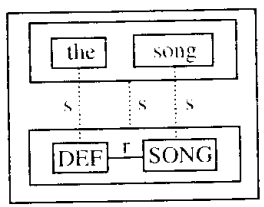
Constructions are individuated like any other conceptual object, by categorization. Constructions possess formal features, including word order, patterns of contiguity and specific morphemes (or very small classes of morphemes) in particular roles. Constructions are also symbolic units, and typically possess discrete meanings. Radical Construction Grammar assumes a nonclassical category model, and allows for prototypes and extensions of constructions, as well as the possibility of gradience between construction types.

(ii) What sorts of syntactic relations are posited?

Radical Construction Grammar, like Construction Grammar and Cognitive Grammar, represents the role of a part of a construction in the whole construction. Radical Construction Grammar differs from Construction Grammar in that it defines relations between parts of a construction in purely semantic terms, that is, there are no syntactic relations in Radical Construction Grammar.

One motivation for the Radical Construction Grammar analysis is that relations between syntactic elements are not strictly necessary in a construction grammar framework, from the point of view of language comprehension. Consider the phrase *the song*, illustrated in (42) below with the semantic relation between [DEF] and [SONG] now indicated by a link (labeled **r**):

(42)



If a hearer recognizes the phrase *the song* as an instance of the construction [[DEF/*the*] [THING/*Noun*]] – that is, the hearer can retrieve the semantic structure of the whole construction, and identifies the elements of the construction (i.e. the words *the* and *song*), and can identify the corresponding components of the semantic pole (i.e. [DEF] and [THING]), then the hearer can identify the semantic relation **r** by virtue of the semantic relation between [DEF] and [THING] in the semantic pole of the construction. Hence the hearer need not rely on any syntactic relation between *the* and *song*.

In Radical Construction Grammar, the various morphosyntactic properties that are taken to express syntactic relations in other theories – case marking, agreement, adpositions, word order, contiguity and so on – are interpreted as expressing the symbolic links from the elements in the phonological pole of the construction to their corresponding components in the semantic pole of the construction. The evidence for this analysis of symbolic relations would take us too far afield (see Croft 2001, chapters 5–6). We mention here only two cross-linguistically widespread phenomena arguing against syntactic relations. The relationship between putative syntactic relations and semantic relations is noniconic in many cases (Croft 2001:206–20). This fact defeats attempts to construct general mapping relations between syntactic structures and semantic structures; if there are no syntactic relations, this problem disappears. More seriously, the absence of elements allegedly related syntactically, such as the absence of controllers of agreement, and the absence of the morphosyntactic expression of the alleged syntactic relation (Croft 2001:226–33), makes it impossible to represent syntactic relations without ad hoc devices. Again, if syntactic relations are abandoned, this problem disappears.

The morphosyntactic properties that appear to indicate syntactic relations in fact aid the hearer in identifying the role that construction elements fill in the meaning of the construction as a whole (Croft 2001:233–36). Also, the combination of morphosyntactic properties in an utterance taken as a whole aid the hearer in identifying a construction (Croft 2001:236–37). For example, the Gestalt combination of auxiliary *be*, the past participle form of the verb, and the preposition *by*, in the proper syntactic combination with the subject phrase, the verb and the oblique phrase, uniquely identifies the passive construction, while the individual elements identify the action (verb inflection and position after auxiliary), the agent (*by* plus oblique phrase) and patient (subject position). In other words, the syntactic properties that seemingly encode syntactic relations in fact encode symbolic relations, between individual elements and components of the construction and between the constructional form as a whole and its meaning.

Thus, in Radical Construction Grammar, concepts such as 'head,' 'argument' and 'adjunct' that are syntactically defined in other theories must be given semantic

definitions, as in Cognitive Grammar (Croft 2001, chapter 7). Moreover, such definitions must ideally be defined relative to constructions, rather than individual components. For example, Croft argues that the Cognitive Grammar concept of profile determinacy (§10.2.3), which is defined in Langacker 1987 as the element whose profile determines the profile of the construction as a whole, is better defined as **profile equivalence**, that is, the element whose profile most closely matches the profile of the construction as a whole (Croft 1996:51–53; 2001:254–57). Profile equivalence allows for the cases where a construction has no profile determinant or more than one profile determinant. For example, a conjoined phrase such as *Bill and Tim* profiles a pair, but none of its elements has a profile matching that of the construction as a whole. Also, in the determiner-noun construction, the construction as a whole profiles the referent, but so do both elements. In *the song*, for example, *song* profiles the entity as an instance of a type or class, and *the* schematically profiles the entity as an entity in the shared knowledge of the interlocutors.

(iii) What sorts of relations are found between constructions?

As a nonreductionist model, Radical Construction Grammar makes a radical shift in the conception of grammatical structure. Radical Construction Grammar does not posit a set of atomic primitive elements out of which constructions are built. Instead, complex constructions are the basic units of grammatical representation, and the categories defined by the parts of the construction are derived. However, the effect of the nonreductionist hypothesis on the organization of grammatical knowledge in the constructional network is minimal.

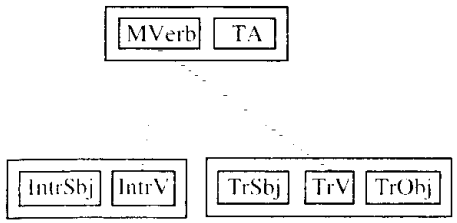
In Radical Construction Grammar, each part (unit) of a construction constitutes a category whose members are defined solely by their occurrence in that role in the construction. In order to differentiate categories, we append the name of the construction to the labels for each unit in the construction. A representation of the Intransitive and Transitive constructions is given in (43):

(43)

The establishment of a category Verb is a linguistic generalization over the categories IntrV and TrV. This generalization is thus a taxonomic relationship, with Verb superordinate to IntrV and TrV. However, any superordinate category, such as Verb, must be linguistically motivated. The motivation for a superordinate category such as Verb must be its occurrence as the category in some other construction. For example, the standard motivation for positing a category Verb is the ability of its members to be inflected with the tense/agreement suffixes. In a construction

grammar, this linguistic fact is essentially another construction, the morphological construction [MVerb-TA]. We use the label MVerb to emphasize that this category is defined by a morphological construction, namely its occurrence with the tense/agreement suffixes (abbreviated TA):

(44)



In other words, Radical Construction Grammar represents meronomic relations between constructions in a similar way to Construction Grammar (§10.2.1), namely as instances of a schema.[6] That is, the treatment of meronomic relations is not a distinctive characteristic of nonreductionist models. The primary difference between a nonreductionist model such as Radical Construction Grammar and a reductionist model such as Construction Grammar is that the latter uses syntactic features and values for roles that are defined independently of the constructions in which the units occur. (In addition, Radical Construction Grammar differs from Construction Grammar in allowing for nonclassical relations between constructions, as in the Lakoff-Goldberg and Cognitive Grammar theories.)

(iv) How is information stored in the construction taxonomy?

Although Radical Construction Grammar is identical to Construction Grammar in its handling of part-whole relations between constructions, it is like Cognitive Grammar and the Lakoff-Goldberg model in that it allows for redundant representation of grammatical information in accordance with the usage-based model (see §10.2.2 and chapter 11).

One salient feature of Radical Construction Grammar's organization of grammatical knowledge is derived from typological theory but conforms to the usage-based model. This is the **semantic map** model. In the semantic map model, constructions are mapped onto a conceptual space according to their function, and thus constructions can be related to one another by virtue of having overlapping or neighboring functions in the conceptual space. The semantic map model is described in relation to the usage-based model in §11.3.3.

[6] More precisely, Radical Construction Grammar allows parts of constructions to be instances of a part of another construction (as in [44]), as well as allowing them to be instances of another whole construction. It does not appear that Construction Grammar allows the former possibility.

A second salient feature of Radical Construction Grammar, also inspired by typological research, is the introduction of the notion of a **syntactic space** (Croft 2001, chapters 8–9). Constructions that are functionally similar or identical across languages (and sometimes within a single language) vary considerably in their grammatical properties, so that, for example, one cannot posit a universal passive construction based on a fixed set of grammatical properties. The typical European passive has the grammatical properties of patient as Subject, agent as Oblique (or prohibited, in many languages), and a special passive verb form distinct from the active:

(45) **The children** [patient = Subject] were tak**en** [distinct verb form] to school **by their parents** [agent = Oblique].

This construction is by no means universal (even setting aside the problems of defining Subject etc. across languages): many structurally distinct voice constructions occur cross-linguistically, three of which are illustrated in (46)–(48) (examples from Croft 2001:292–94):

(46) *Upriver Halkomelem: patient = Subject, agent not Oblique, distinct verb form*

tə́s	-l	**əm**	θúχ'à	tə	swíyəqə
bump.into	-ACCID	**-3SG.PASS**	she	ART	man

'She was bumped into by the man'

(47) *Bambara: patient = Subject, agent = Oblique, verb form not distinct:*

o	fo'ra	dugutigi	**fɛ̀**
3SG	greet'COMPL.INTR	chief	**with**

'S/he was greeted by the chief.'

(48) *Maasai: patient not Subject, agent prohibited, distinct verb form:*

aa-	dɔl	**-i**
1SG.OBJ-	see	**-PASS**

'I am seen.'

Instead of representing constructions as discrete universal formal types that occur across languages, Radical Construction Grammar represents constructions as language-specific structures occupying positions in a syntactic space defined by the structural properties that vary across languages (in this case, patient coding, agent coding and verb form). The syntactic space allows one to formulate universals of the relationship between formal properties of constructions and their function, of the sort discovered by typologists. For example, the more 'passive-like' voice constructions are associated cross-linguistically with higher-animacy and higher-topicality patients, where distributional restrictions or structurally contrasting voice constructions exist (Croft 2001, chapter 8).

10.3 Conclusion

This chapter has presented the essential features of a construction grammar, and some of the different positions on basic representational issues found in different theories of construction grammar. Unfortunately space prevents us from describing analyses of more specific grammatical phenomena in the various theories, such as argument structure, so-called movement phenomena, information structure constructions, word order variation and so on; or specific grammatical constructions (other than those illustrated in chapter 9). There are also a variety of issues of representation and the processes that use that representation which have not been fully addressed by the construction grammar models at the time of writing. Nevertheless, there is a large and growing body of construction grammar analyses of a wide range of grammatical constructions, and a lively debate on basic issues of grammatical representation and process in a construction-based approach.

11

The usage-based model

11.1 Grammatical representation and process

Grammatical knowledge is not merely a representational structure in the mind of a speaker. In a recent survey of knowledge representation models in psychology, Markman argues that there are four basic elements to a model of knowledge representation (1999:5–10). One element is the representing world, that is, the domain of the representations themselves. In the cognitive linguistic approach to language, the representing world is of course the mind. A second element is the represented world. For grammatical knowledge, the represented world is utterances, that is, the form of utterances and their meaning in the discourse context. The third and fourth elements in Markman's analysis are some mechanism to link the representing world to the represented world, and processes using the representation. This last element is particularly important:

> It makes no sense to talk about representations in the absence of processes . . . Only when there is also a process that uses the representation does the system actually represent, and the capabilities of a system are defined only when there is both a representation and a process. (Markman 1999:8)

The primary processes in which grammatical knowledge is involved are communication – the production and comprehension of utterances; the acquisition of grammatical knowledge by children and by adults; and the changes in grammatical knowledge of speakers over time. These processes link the representing world – the grammatical knowledge – and the represented world – the world of utterances and their meanings. These processes are the locus for the link between the representing and represented worlds, Markman's third element of a representation model.

Many cognitive linguists propose a **usage-based model** for language use, language acquisition and language change (§§11.2.2–11.2.4; see inter alia Langacker 1987, chapter 10; Barlow and Kemmer 2000; Bybee and Hopper 2001).[1] The

[1] Construction Grammar, on the other hand, is intended to be a competence model (Paul Kay, pers. comm., 1999).