

Logical and typological arguments for Radical Construction Grammar*

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1. Introduction: vanilla construction grammar and Radical Construction Grammar

This paper gives a brief overview of some of the primary arguments for Radical Construction Grammar (Croft 2001). Radical Construction Grammar is a theory of syntactic representation which is compatible with—in fact, I believe, is a consequence of—the facts of the grammars of human languages. In fact, Radical Construction Grammar proposes an extremely minimalist model of syntax from a universal perspective, as will be seen below.

Radical Construction Grammar, as its name indicates, is a variety of construction grammar. I take construction grammar to be a term that describes a family of theories of syntactic representation found in cognitive linguistics, and which has attracted considerable interest outside cognitive linguistics as well. In this section, I will describe what I believe all varieties of construction grammar to have in common, which I have christened in Silicon Valley style ‘vanilla construction grammar’ (see Croft & Cruse to appear, ch. 9-11 for a fuller treatment and comparison of construction grammar theories). I will then present the three additional theses that define Radical Construction Grammar. The following three sections will outline the arguments for each of the theses of Radical Construction Grammar.

Vanilla construction grammar assumes that our grammatical knowledge is organized in constructions. The traditional definition of the term ‘construction’, as in the passive construction, is a holistic description of a complex syntactic unit. For example, the passive construction consists of a subject noun phrase, the auxiliary verb *be*, a verb in the past participle form, and (optionally) an oblique noun phrase governed by the preposition *by*.

The term ‘construction’ has been generalized in cognitive linguistics. The general definition of a construction in cognitive linguistics is as a *conventional symbolic unit*, using those terms in Langacker’s meaning (Langacker 1987:57-63). Roughly, a construction is an entrenched routine (‘unit’), that is generally used in the speech community (‘conventional’), and involves a pairing of form and meaning (‘symbolic’; I will return to this aspect of the definition below).

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The following abbreviations are used in this paper: 1 first person; 2 second person; 3 third person; A transitive subject; ABS absolutive; ACC accusative; ACT active; ActObj active object phrase; ActSbj active subject phrase; ActTrV active transitive verb; ADJ adjective; AI animate intransitive; ART article; ASSOC associative; AUX auxiliary; COMP complement; DEF definite marker; DEM demonstrative; DIR direct; ERG ergative case; FUT future; IMPF imperfective; IND indicative; IND.OBJ indirect object; INF infinitive; INTERR interrogative; INV inverse; MOM momentaneous aspect; NEG negative; NP noun phrase; NPST nonpast; OBJ object; OBL oblique; P transitive object; PASS passive; PassAg passive agent phrase; PassSbj passive subject phrase; PassV passive verb; PE plural exclusive; PF perfective; PI plural inclusive; POSS possessive; PP past participle; PRS present; PST past; REL relative clause marker; S intransitive subject; SBJ subject; SG singular; SUB subordinate verb form; TNS tense; TA transitive animate; TI transitive inanimate; TOP topic; V verb. Examples are glossed in accordance with the system developed in the Framework for Descriptive Grammars and the EURO TYP projects. In order to make the typological examples easier to follow, the morphemes being discussed and their interlinear gloss is emphasized with boldface.

The generalized definition means that there is a single way to describe any sort of symbolic grammatical unit in vanilla construction grammar. Fillmore, Kay & O'Connor (1988) distinguish syntactic constructions by degree of schematicity. A more schematic construction describes a complex structure with few (if any) component units specified as particular morphemes. For example, the Declarative Passive construction, which can be represented as something like [SBJ *be*-TNS VERB-*en* by OBL], is largely schematic, except for the specification of the auxiliary verb *be* and the oblique preposition *by*.¹ In contemporary construction grammar, constructions such as the passive need not specify the linear order of their constituent elements; in many cases they do not, linear order being determined by other constructions with which they are combined.

Fillmore et al. were particularly interested in describing what are traditionally called idioms, which are constructions which are less schematic and more substantive than something like the passive construction.² An example of an idiom would be the verb phrase [*kick*-TNS *the bucket*], in which only the verbal inflection is schematic (i.e. this idiom can be used in different tense-mood forms: *He kicked the bucket*, *He's gonna kick the bucket*, etc.).

One can also extend the notion of a construction to a maximally schematic syntactic unit, such as the transitive argument linking construction [SBJ VERB OBJ] (see Goldberg 1995, Kay & Fillmore 1999; Langacker 1999). In other words, syntactic phrase structure rules are reinterpreted as maximally schematic constructions in vanilla construction grammar.

Cognitive linguists have also extended the notion of construction to smaller units. Morphology represents word forms, including affixes and compounds. These are also complex symbolic units. Morphological structures can be described in varying degrees of schematicity, just as syntactic structures can. The pattern [VERB-TNS] describes a fully schematic morphological structure, while the pattern [NOUN-*s*] describes a partially substantive, partially schematic morphological structure.

Finally, cognitive linguists have extended the notion of construction to include atomic as well as complex symbolic units. An atomic schematic unit would be a syntactic category such as [DEM] or [ADJ]. An atomic substantive unit would be a word or lexical item such as [*this*] or [*green*].

This fully generalized notion of construction allows for a uniform representation of grammatical knowledge, subsuming what in other syntactic theories is divided into syntactic rules, idioms, morphology, syntactic categories and the lexicon; see Table 1.

Table 1. The syntax-lexicon continuum

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

¹I have chosen the relatively specific example of the Declarative Passive construction for illustrative purposes. The Declarative Passive could be further abstracted into a Passive argument linking construction, independent of sentence mood and without a specified word order, and a (Nonverbal) Declarative construction, specifying the copula and the order of elements. The circumstances under which such abstractions are made depend on one's model of the organization of construction (e.g. complete inheritance vs. the usage-based model; see below).

²Fillmore et al. use the term *formal* instead of schematic. Since substantive constructions are also formal in the sense of specifying linguistic form, I use Langacker's term schematic here.

The uniform representation of grammatical knowledge as generalized constructions generally goes under the name *syntax-lexicon continuum* (cf. Langacker 1987:25-27, 35-36; Langacker does not use this term in his book). The syntax-lexicon continuum is a salient distinguishing feature of vanilla construction grammar in contrast to syntactic theories in the generative tradition, which divides up different formal structures into separate grammatical components (Croft 2001:14-15).

The second general characteristic of vanilla construction grammar is that the basic units of grammatical representation are symbolic. Grammatical units specify both the form—including morphology and even phonology and prosody as well as syntactic structure—and the function/meaning of that form—semantics and conventional discourse or information-structural properties. (To avoid confusion, I will use the term *element* to refer to parts of the formal or syntactic structure of a construction, and the term *component* to refer to parts of the semantic structure of a construction.) This is another salient distinguishing characteristic of construction grammar theories. Most contemporary syntactic theories in the generative tradition split symbolic units so that the form of symbolic units is represented in formal components of the grammar (syntax, morphology, lexicon) and the conventional function of symbolic units is represented in functional components (semantics and information structure). If one represents symbolic units with the classic Saussurean diagram of a sign with the signifier (form) on top and the signified (function) below, then one can describe construction grammar as offering a “vertical” organization of grammatical knowledge into signs, in contrast to a generative theory’s “horizontal” organization of the formal structure and functional structure as separate components (as the components are normally displayed in diagrams).³

The third general characteristic of vanilla construction grammar is that the constructions of a language form what Langacker calls a structured inventory (Langacker 1987:63-76) of a speaker’s knowledge of the conventions of their language. This inventory is widely characterized as a network (Lakoff 1987, Langacker 1987, Goldberg 1995). The network has (at least) taxonomic links—links of greater or lesser schematicity—among constructions. The exact nature and structure of this network is a matter of debate: some view it as a knowledge network of the sort pioneered in cognitive science research in the 1970s, while others view it as an activation network of the sort that became popular in cognitive science research from the mid 1980s onward; some advocate complete or at least default inheritance, while others advocate a usage-based model. The nature of the network organization of a speaker’s grammatical knowledge in construction grammar will not be examined here. Again, the network structure distinguishes construction grammar theories from most generative theories. Construction grammar’s network structure can be thought of as the alternative mode of grammatical organization to a generative theory’s system of components and rules encapsulated within components.

Vanilla construction grammar as I have described it does not assume more specific universals of syntactic representation. In particular, vanilla construction grammar is neutral as to any hypotheses as to what types of constructions (if any) are universal, or at least found across languages, or what types of component grammatical categories are universal. Of course, specific theories of Construction Grammar such as Fillmore & Kay’s Construction Grammar (Fillmore & Kay 1993, Kay & Fillmore 1999) do make specific claims. And all of the standard formal theories of grammar make specific claims about the inventory of syntactic primitives to be used in describing syntactic structure, and about what complex constructions are universal across languages. Vanilla construction grammar as I have described it also does not specify any more structure to complex constructions other than the part-whole relationship of complex constructions to the units that make them up. (These units may themselves be complex, of course.)

³Construction Grammar allows for constructions which have formal values but no semantic value (Fillmore 1999:121, fn 11). However, this is a limiting case in a model that is organized in terms of symbolic units like other construction grammar theories.

Radical Construction Grammar adds the following three theses to vanilla construction grammar as described above—perhaps they should be thought of as anti-theses. First, constructions, in particular complex syntactic units, are the primitive elements of syntactic representation; grammatical categories as such are derived from constructions. That is, there are no formal syntactic categories such as ‘noun’, ‘verb’, ‘subject’ or ‘object’ per se. (In the classification in Table 1, there are no atomic schematic units.) Second, the formal representation of constructions consists only of a (complex) construction and its component parts. That is, there are no syntactic relations at all. Third, there are no universal constructions (e.g. a universal passive). That is, all constructions are language-specific. In other words, virtually all formal grammatical structure is language-specific and construction-specific. This is to say: what I have described as vanilla construction grammar is all that is universal in formal syntactic representation. Vanilla construction grammar, with no toppings, *is* Radical Construction Grammar.

These anti-theses may appear radical, and in fact they are, in comparison to almost all theories of syntactic representation that I am aware of. The next three sections will defend each of these theses. For the first two theses, there are logical as well as typological arguments to support them. For the third thesis, the nonuniversality of constructions, there is chiefly typological evidence to support it. Of course, one must also specify what theoretical constructs do the work of the theoretical constructs whose existence is denied in Radical Construction Grammar. These will be described at the end of each section.

2. From syntactic categories to semantic maps

The argument for the nonexistence of syntactic categories as universal categories or as primitive elements of syntactic representation will be outlined briefly here (see Croft 1999a,b; 2001, chapter 1).

The basic typological—indeed, empirical—problem is in the application of the distributional method to cross-linguistic data and language-internal data. The distributional method is used explicitly or implicitly in most syntactic research in a wide range of linguistic theories, from cognitive linguistics to various functionalist theories to various formal theories. The distributional method is used to identify a syntactic category such as ‘noun’ or ‘subject’ within a language or across languages. The distributional method itself is to examine the occurrence of members of the candidate category in certain constructions, in the general sense of a construction given above.⁴ For example, one can distinguish transitive verbs from intransitive verbs in English by the distributional method. Transitive verbs occur in the transitive active construction, while intransitive verbs do not (see examples 1a-b); conversely, intransitive verbs occur in the intransitive construction, while transitive verbs do not (examples 2a-b):

- (1) a. *Jack devoured the doughnut.*
- b. **Jack slept the doughnut.*
- (2) a. **Jack devoured.*
- b. *Jack slept.*

The constructions that are used by the analyst are assumed to be criteria or tests for the syntactic category in question. In many cases, more than one construction is considered to be diagnostic of the syntactic category in question.

In §2.1, I present the typological problems with the applicability of the distributional method. In §2.2, I present a logical inconsistency with using the distributional method to establish syntactic categories, and argue that there is nothing wrong with the distributional method; instead, there is something wrong with the syntactic theory it is being used to justify.

⁴In transformational syntactic theories, occurrence in a construction such as the passive which is the output of a transformational rule is described as *undergoing* the rule, e.g. undergoing passivization. Hence, distributional analysis in generative grammar is described as testing whether or not the putative category member undergoes the rule.

2.1. The typological argument

The first typological problem with the application of the distributional method is that the construction used as a diagnostic for a syntactic category in one language may be absent in another language. For example, many theories of parts of speech use morphological inflections to divide words into the parts of speech: case marking for nouns, person indexation for verbs, etc. However, an analytic language such as Vietnamese lacks these inflections, and so inflections cannot be used to identify nouns, verbs etc. in that language. Likewise, a number of constructions are used to identify “subject” and “object” in a language such as English, for example, the occurrence and behavior of NPs in coordinate clause constructions and in nonfinite complement constructions. Wardaman, an Australian aboriginal language, lacks coordination and infinitival complements, so these tests for subjecthood in English cannot be applied in Wardaman.

In these situations, an analyst appears to have basically two options. The first is to look for other constructions in the language and use those constructions to identify the grammatical category in question. For example, one might look at other constructions in Vietnamese that yield the familiar noun-verb-adjective classes. However, this looks suspiciously like the analyst has already decided that Vietnamese has nouns, verbs and adjectives, and s/he is looking for any construction that will get the results that s/he wants to find. The reason that this illegitimate practice often is used is because there is no a priori means to decide which constructions should be used as the diagnostics for a given syntactic category.

The other option is to deny that the language in question has the category noun or subject, although English and languages similar to English do. For example, one might argue that Vietnamese has no word classes, or at least not the word classes noun, verb, etc. If so, one can ask, why are the English categories considered to be the syntactic primitives of a theory that is intended to describe properties of universal grammar applicable to all languages? Why not use the Vietnamese categories instead? A more legitimate approach, and the one advocated by American structuralists (and Dryer 1997), is that English noun, verb etc. are just language-specific categories, no different in theoretical status than the categories of Vietnamese or of any other language.

A second problem is that when there is an equivalent diagnostic construction in the language in question, its distribution is dramatically different from that in English and similar languages. For example, Makah does have the morphological inflections equivalent to those in European languages to identify the category of verb (aspect and subject indexation), but the word class that allows these inflections includes not only European-type “verbs”, but also “nouns”, “adjectives” and even “adverbs” (examples from Jacobsen 1979):

- (3) *k'upšil* *baʔas ʔu:yuq*
point:MOM:INDIC:3 house OBJ
'He's pointing at the house.'
- (4) *babaʔdis*
white.man:INDIC:1SG
'I'm a white man.'
- (5) *ʔi:ʔi:χ^wʔi*
big:INDIC:3
'He's big.'

As with the first problem, two options to deal with such cases are commonly chosen. One option is, again, to look for other constructions that would differentiate the parts of speech in Makah. (This is the option that Jacobsen takes.) This option suffers from the same problems referred to above: there is no a priori means to decide which construction can be used to

define parts of speech in a language like Makah (or English, for that matter). In addition, choosing some other construction to differentiate parts of speech in Makah does not explain why verbal inflection does not differentiate parts of speech in that language, unlike European languages.

The other option is to say that Makah has only one part of speech, and it is ‘verb’, since it is defined by the same construction that defines verb in English and other languages. This option is fine as far as it goes, but it falls into the opposite trap from the first option: there are other constructions that differentiate word classes in Makah, and there is no a priori reason to ignore them either.

But the most direct manifestation of the basic problem is when two constructions that are commonly used to define a single syntactic category in a single language differ in the distributional patterns that they define. For example, some languages appear not to have subjects in the English sense, that is, a category including the one argument of intransitive verbs (labeled S by typologists) and the “subject” argument of transitive verbs (labeled A). Instead, such languages have an *ergative* category consisting only of A, while S falls in the same category as the “object” of transitive verbs (labeled P); this category is called *absolutive*.

In many languages, however, some constructions define an ergative (A) - absolutive (S+P) pair of categories while other constructions define a subject (A+S) - object (P) pair of categories. For example, Tongan case marking defines an ergative-absolutive pattern; it is S and P that have the absolutive preposition ‘a, while A is marked with the ergative preposition ‘e (Anderson 1976:3-4):

- (6) *na'e lea 'a etalavou*
 PST speak ABS young.man
 ‘The young man spoke.’
- (7) *na'e ma'u 'e siale 'a e me'a'ofa*
 PST receive ERG Charlie ABS DEF gift
 ‘Charlie received the gift.’

However, in infinitival complements, it is the S (example 8) and A (example 9) that are left unexpressed in the complement, not the P (example 10; all examples from Anderson 1976:13):

- (8) *'oku lava 'a mele 'o hū Ø ki hono fale*
 PRS possible ABS Mary TNS enter to his house
 ‘Mary can enter his house.’
- (9) *'oku lava 'e siale 'o taa'i Ø 'a e fefine*
 PRS possible ERG Charlie TNS hit ABS DEF woman
 ‘Charlie can hit the woman.’
- (10) **'oku lava 'a e fefine 'o taa'i 'e siale Ø*
 PRS possible ABS DEF woman TNS hit ERG Charlie
 *‘The woman can Charlie hit’

Thus, there is a conflict between case marking and the infinitival construction as to whether Tongan has the categories subject-object or the categories ergative-accusative.

The option most commonly taken in this case is to choose one construction as diagnostic. For example, Anderson argues that the infinitival construction is diagnostic of grammatical relations in Tongan, and hence Tongan possesses the categories subject and object in the usual European sense. The same problem arises here as in the cross-linguistic examples, however: there is no a priori reason to choose one construction over another, and so choice of

construction looks suspiciously like making the language fit the assumptions of the analyst. The same problem holds if one argues instead that case marking is diagnostic and therefore Tongan has ergative-absolutive categories. Whichever construction is chosen as diagnostic, there would remain the problem of explaining why the other construction has a different distribution pattern.

Having chosen one construction as diagnostic, one must then deal with the anomalous distribution pattern by marking it as exceptional in some way. Consider the different distribution of the “object” and “oblique” noun phrases in English:

- (11) a. *Jack kissed Janet.*
b. *Janet was kissed by Jack.*
- (12) a. *The old man walked with a cane.*
b. **A cane was walked with by the old man.*
- (13) a. *Jack weighs 180 pounds.*
b. **180 pounds is weighed by Jack.*

The object NP *Janet* in 11 occurs postverbally without a preposition in 11a, and can be the subject of the counterpart passive construction in 11b. In contrast, an oblique requires a preposition as in 12a, and cannot be passivized; see 12b. However, the NP *180 pounds* occurs postverbally without a preposition in 13a, yet cannot be passivized; see 13b. The usual analysis here is to take passivizability as diagnostic of the direct object. Hence *180 pounds* in 13a is not a direct object. In this case, some exceptional feature has to be associated with *180 pounds* either to allow it to occur without a preposition, or to block it from passivizing even though it occurs in 13a without a preposition. Such an account is clearly ad hoc.

These are not the only problems with using the distributional method to identify categories. Analogous difficulties arise in trying to decide whether two distributionally defined classes are separate categories or are subcategories of a more general category; trying to decide whether a particular distributional pattern reflects multiple category membership of a distributional class or a separate category; and in dealing with variable class membership, both in nonce uses and conventional uses of a particular word (The first two problems are discussed in Croft 1999b; all three problems are discussed in Croft 2001:34-40).

2.2. The logical argument

All of the examples above illustrate one fundamental empirical fact: distributional tests/criteria do not match, both across languages and within languages. That is, different constructions define different distributional patterns, within and across languages. This is a very well known fact; I am not saying anything surprising here, and many interesting syntax articles discuss these conflicts. Nevertheless, the commonest analytical response to this fact is one of two strategies: to look around for distributional patterns that produce the results that the analyst is looking for; or not to look for distributional patterns that might produce results that the analyst is not looking for (i.e., ignore conflicting distributional patterns). But neither of these strategies can be justified without a priori principles for choosing which constructions are diagnostic of which syntactic categories. Yet the distributional method does not give one such principles, and no such principles are generally provided by the analyst.

There is a deeper problem here than has been recognized before. This is that there is a logical inconsistency between the distributional method and the theoretical assumption that the categories/relations defined by constructions are the syntactic primitives used to represent grammatical knowledge, given that distributional variation exists. Constructions are used to define categories—this is the distributional method. But then the categories are taken as primitives which define constructions—this is the syntactic model of representation. This approach is circular. Hence we must discard either the distributional method, or the assumption that syntactic categories are the primitive elements of syntactic representation.

Discarding the distributional method ignores the empirical facts of languages. Yet that is the most common strategy, in essence: ignoring distributional patterns that conflict with the categories that the analyst expects to find violates the distributional method. In other words, for these syntacticians the model of syntactic primitives is more important than the empirical facts of syntactic differences within and across languages.

Radical Construction Grammar takes the opposite position: it discards the assumption that syntactic categories are the primitive elements of syntactic representation. Instead, constructions are the primitive elements of syntactic representation. Constructions are not built up out of a small inventory of atomic categories. Categories are defined by constructions, that is, the elements that can fill the roles defined by the components of a construction. In other words, syntactic categories exist, but only derivatively, since they are defined by the construction(s) that they occur in.

This way of thinking about syntactic categories and constructions is difficult to comprehend at first. Although the purpose of this paper is simply to state the arguments as to why this way of representing grammatical knowledge is to be preferred over other ways, I will say a few words here about how constructions can be primitive elements of syntactic representation.

What occurs in natural discourse are constructions, that is, complex syntactic units: we do not hear individual words with category labels attached to them. Utterances are instances of constructions. In other words, from the point of view of the language learner (and the fieldworker), the larger units come first. Categorizing utterances as instances of constructions is one way of abstracting away from the input. But analyzing constructions into component parts is another way of abstracting from the input.

Constructions can be defined primitively. It is essentially a categorization problem, that is, categorizing the utterances one hears into discrete construction types. There are discontinuities in the input: constructions have distinctive structures and their elements define distinctive distribution classes. For example, there are significant discontinuities between the structure of an active transitive clause and a passive clause in English, so that the two can be reliably separated. There are also other important cues to categorization of constructions. First, many constructions involve some unique combination of substantive morphemes, such as the passive combination of *be*, past participle verb form, and *by*. Finally, and perhaps most important of all, constructions are symbolic units. The semantics of a construction plays a significant role in differentiating constructions for the purpose of categorization and identification. The different participant role of the subject of a passive is a major cue in identifying the passive construction in contrast to the active construction.

Radical Construction Grammar is a *nonreductionist* theory of syntactic representation. A *reductionist* theory begins with the smallest units and defines the larger or more complex units in terms of combinations of atomic primitive units. All contemporary theories of syntactic representation are reductionist; they differ chiefly in the inventory of syntactic primitives and the rules governing their combination. A nonreductionist theory begins with the largest units and defines the smaller ones in terms of their relation to the larger units. The Gestalt theory of perception is a nonreductionist theory. Radical Construction Grammar is another nonreductionist theory. The possibility of a nonreductionist theory demonstrates that the theoretical concepts 'atomic' and 'primitive' are logically independent notions and can be dissociated.

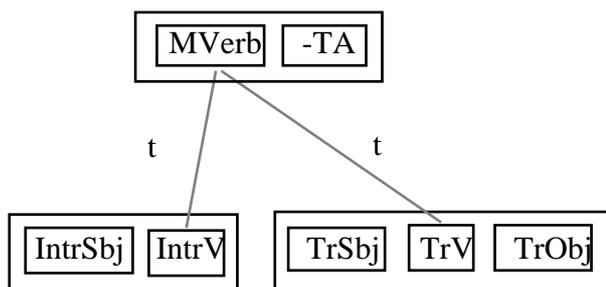
For example there is no construction-independent syntactic category Verb: there are Transitive Verbs in the Transitive Construction, Intransitive Verbs in the Intransitive construction, and so on. Reductionist theories overlook the differences in distribution between, say, the verb category in the intransitive and transitive constructions: some verbs can occur in both constructions, while others can occur in only one (and some ditransitive verbs occur in neither). In Radical Construction Grammar, the Intransitive Verb category is defined in terms of the Intransitive construction, not the other way around: it consists of all

and only the words that can occur in the Intransitive Verb role. The same is true of the Transitive Verb category. In terms of Table 1, Radical Construction Grammar rejects the existence of atomic schematic units, because these would be defined independently of the constructions in which they occur.

This is not to say that generalizations over parts of different constructions—e.g. the identical inflections of verbs, no matter whether they are intransitive, transitive or ditransitive—are impossible in Radical Construction Grammar (see Croft 2001:53-57; Croft & Cruse to appear, ch. 10). But it is essential to recognize that the commonalities across all verbal subcategories must themselves be justified linguistically. In the case of “verbs”, the justification comes from the occurrence of the verb category in another construction, namely the morphological construction of tense-agreement (TA) inflection. I will label the category defined by TA inflection MVerb (mnemonic for “morphological verb”), to remind the reader that this category is not an independent category, but itself defined by another construction (in the generalized concept of construction in construction grammar).

The (morphological) verb category is represented in Radical Construction Grammar as a taxonomically superordinate category to the Intransitive Verb category, the Transitive Verb category, and other verbal categories. The representation of the relationship between these constructions and the verbal categories in Radical Construction Grammar is given in Figure 1 (t = taxonomic link; argument phrase categories are left out of Figure 1 for clarity):

Figure 1. Radical Construction Grammar representation of verbal categories (final version)



The Radical Construction Grammar analysis in Figure 1 is empirically adequate: it captures both the generalizations across verbal subclasses and the unique distribution defined by each verbal subclass in each construction. (Part/whole relations are represented in constructions by the nesting of the boxes describing conventional grammatical units of the language.)

In fact, the representation of similar parts between constructions by taxonomic relations in Radical Construction Grammar is similar to the representation in Construction Grammar, in which parts of constructions can inherit properties of other constructions (see e.g. Kay & Fillmore 1999:18).⁵ 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.

The adoption of Radical Construction Grammar would mean the abandonment of the fruitless search for the ideal set of syntactic primitive elements and rules of combination in

⁵More precisely, Radical Construction Grammar allows parts of constructions to be instances of a part of another construction (as in Figure 2), as well as allowing them to be instances of another whole construction. It does not appear that Construction Grammar allows the former possibility.

syntactic theory. Radical Construction Grammar recognizes that categories are construction-specific (and as we will see in §4, language-specific), and no more formal structure is needed than what was specified for vanilla construction grammar in §1.

Nevertheless, categories defined by constructional roles are similar across constructions, and one must represent the similarities as well as the differences. This is accomplished in Radical Construction Grammar by employing a model that has come into wide use in typology, the semantic map model (Croft 2003, chapter 5; Haspelmath 2003). A *semantic map* represents the functions of particular constructions and constructional roles in terms of their degree of similarity. In typology, the similarity of functions is defined inductively by comparing the range of functions of similar constructions across languages and constructing an underlying conceptual space of functions and their relations. The conceptual space is constructed in such a way that the semantic map of any construction in any language will bound a connected region in conceptual space (the Semantic Map Connectivity Hypothesis; Croft 2001:96; Croft 2003:). But one can also construct a semantic map of different constructions in a single language. This is done for English parts of speech in Figure 2, using a typologically justified conceptual space defined in terms of lexical semantic class and the proposition act functions of the relevant constructions (adapted from Croft 2001:99, Figure 2.3):

Figure 2. Semantic map of English parts of speech constructions

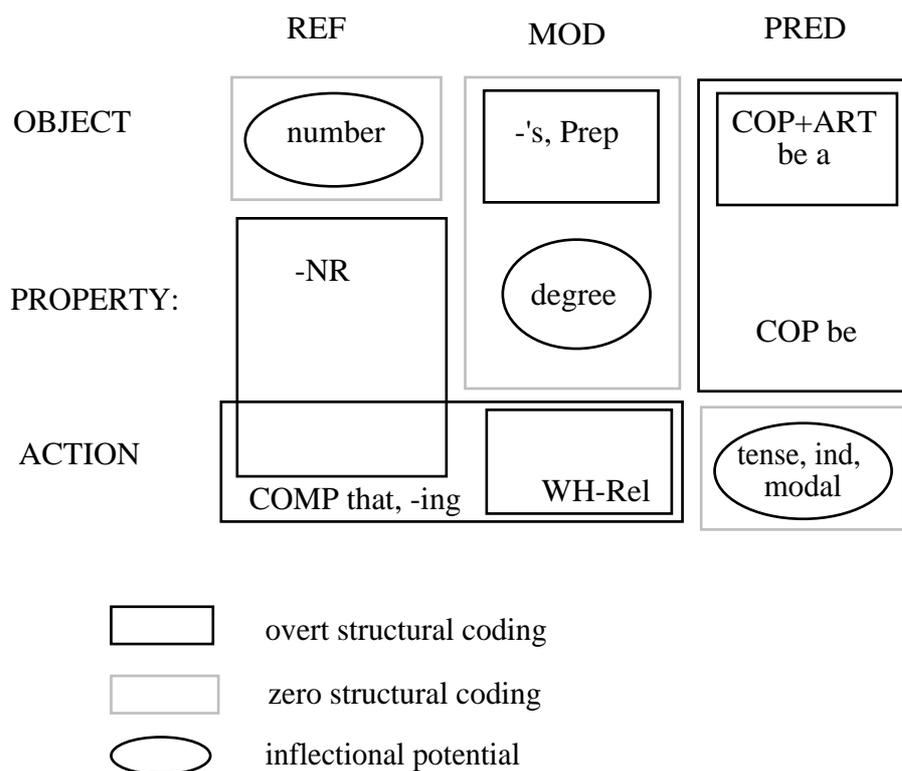


Figure 2 represents the semantic maps for English constructions for referring expressions (noun phrases), modifying expressions, and predications. English conforms to a number of typological universals for parts of speech constructions, represented by the different shape and shading of the maps in Figure 2. The typological universals of parts of speech include the prototypes for noun, adjective and verb, given in 14 (Croft 2001:89):

- (14) noun = reference to an object
verb = predication of an action
adjective = modification by a property

Constructions with zero structural coding map onto a region that includes the prototypical “point” (actually also a region) in conceptual space. For example, the Verbal predication construction of English uses no copula or auxiliary to encode the predication function. Constructions with overt structural coding map onto a region that includes a nonprototypical point in conceptual space: the copula constructions are found with predication of objects and properties (the Predicate Nominal and Predicate Adjectival constructions respectively). Finally constructions exhibiting behavioral potential, such as the ability to inflect for tense and subject indexation, map onto a region that includes the prototypical point in conceptual space (in this case, action predication). Moreover, in English there is a scale of overt coding of predication such that object predication requires two morphemes (copula *be* and article *a*), property predication only one (copula *be*), and action predication none. This hierarchy of predication is also found cross-linguistically (Croft 1991:130; Stassen 1997:168-9). More generally, cross-constructional variation in single languages should reflect the same patterns as cross-linguistic variation in typology (Croft 2001:107). This observation allows us to integrate typological and language-specific generalizations into a single model of grammar.

It should be noted that the same arguments against reductionist theories of syntactic representation apply to reductionist theories of phonological and semantic representation. In phonology, there are problems in defining vowel vs consonant, in defining the set of primitive features for classifying natural classes of segments, and even in defining segment and syllable from a phonetic point of view. In a nonreductionist phonological theory, which we may call Radical Templatic Phonology, phonetically specified word forms and schematic phonotactic/prosodic templates generalized from them are the representational primitives, and syllable and segment categories would be derivative (Croft & Vihman, submitted).

In semantics, distributional analysis is used to identify semantic categories (see e.g. Cruse 1986). Not surprisingly, problems arise in defining various sorts of semantic categories, and even such basic concepts as identity and distinctness of word senses (Croft & Cruse to appear, chapter 5). In a nonreductionist semantic theory, complex semantic structures such as frames and the complex semantic structures found in constructions are the representational primitives, and the categories of components of semantic frames and other complex semantic structures are derivative. This, Radical Frame Semantics, is essentially Fillmorean frame semantics (Fillmore 1982, 1985; Fillmore & Atkins 1992).

3. From syntactic relations to symbolic relations

As the reader has no doubt recognized, the first anti-thesis of Radical Construction Grammar, the nonexistence of syntactic categories, was a bit of an overstatement. Radical Construction Grammar does not deny the existence of syntactic categories. It only argues that syntactic categories are derivable from constructions and hence are not the basic building blocks of syntactic representation. The second anti-thesis of Radical Construction Grammar, on the other hand, is not an overstatement. I am going to argue that there really aren't any syntactic relations. This is another respect in which Radical Construction Grammar is radically different from other syntactic theories.

In this section, I will present the logical argument before the typological argument. The logical argument in §3.1 demonstrates that if one accepts vanilla construction grammar (not even Radical Construction Grammar), one doesn't need syntactic relations (well, almost none; see §3.3). The typological arguments in §3.2—just a selection of a larger range of arguments (see Croft 2001, ch. 6)—give reasons why one would not want to have syntactic relations in one's theory of syntactic representation.

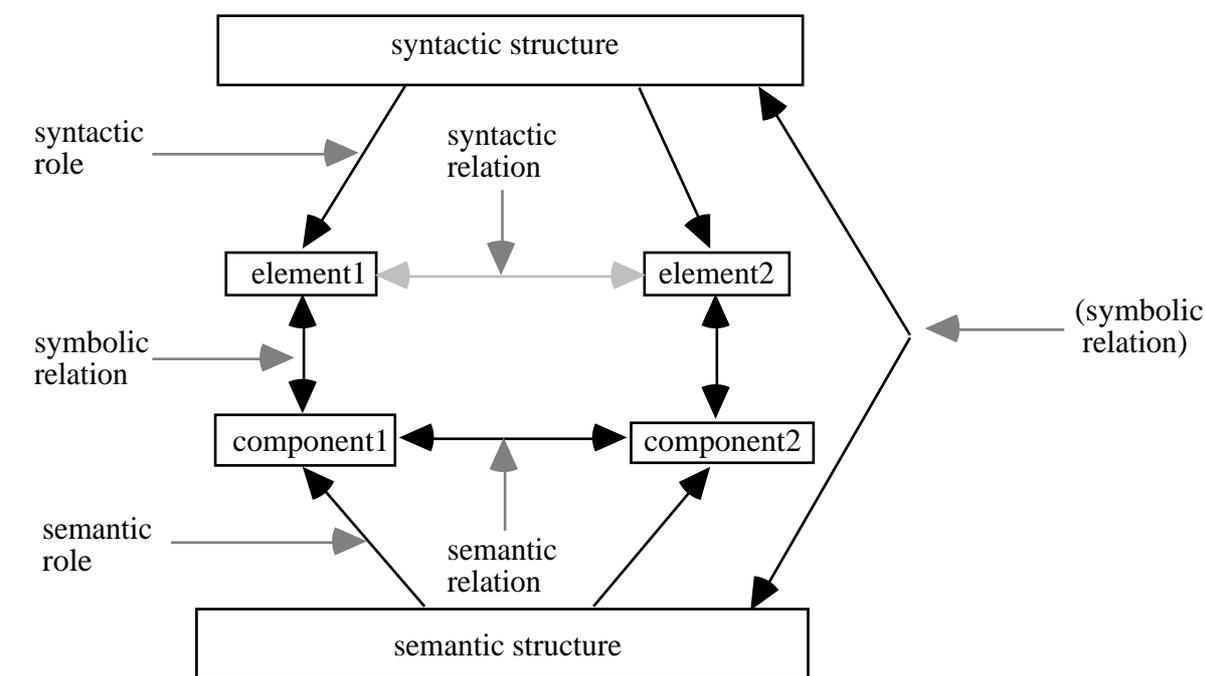
3.1. The logical argument

The argument against the necessity of syntactic relations in vanilla construction grammar follows from the model of a speaker's knowledge of a construction. Since syntactic relations hold between the elements of a complex construction, references to constructions in this section will pertain to complex constructions.

A construction is a pairing of a complex syntactic structure and a complex semantic structure. In vanilla construction grammar as described in §1, the complex syntactic structure consists of the formal elements of the construction but not any syntactic relations that might hold between the elements of the construction. The complex semantic structure consists of both the components of the semantic structure and the semantic relations that hold between the components of the semantic structure. The representation of a construction must also specify the correspondences between elements of the syntactic structure of a construction with the appropriate components of its semantic structure—*symbolic* relations (compare Langacker 1987:76-86). These symbolic relations are necessary whether or not the syntactic structure also represents syntactic relations between elements: without correspondence relations, one would not be able to deduce the meaning of the utterance from its form.

The internal structure of a construction in ordinary construction grammar is illustrated in an exploded format in Figure 3 (Croft 2001:176, Fig. 5.1; compare Langacker 1987:84, Fig. 2.8b):

Figure 3. The internal structure of a construction (exploded diagram)



Given that description of a construction, it is straightforward to demonstrate that it is not necessary to assume the existence of syntactic relations for the purpose of communication. If a hearer hears an utterance and is able to identify (i) the construction's form, (ii) its meaning, and (iii) the correspondence between the syntactic elements of the construction and the components of its semantic structure, then he will be able to identify the semantic relations between the components denoted by the syntactic elements. That is, the hearer will have

understood what the speaker meant. Understanding the meaning of an utterance is the goal of communication. Syntactic relations are not necessary to achieve this goal.

The argument in the preceding paragraph is an application of Ockham's razor to render an analysis simpler and more elegant: if a theoretical entity is not necessary in the analysis, eliminate it. In this case, the unnecessary theoretical entity are syntactic relations between elements in a construction. However, with constructions we are talking about a psychological entity, namely the speaker's knowledge of a construction. I do not believe that simplicity or elegance of an analysis is a sufficient argument for the nonexistence of some psychological entity. There is a considerable body of psychological research that strongly suggests that psychological representations possess redundant information (see Barsalou 1992 for references). All that the preceding paragraph indicates is that if we have empirical linguistic reasons for abandoning syntactic relations, then doing so will not render our model of grammatical knowledge inadequate for the purposes to which language is put. The next section will offer some empirical reasons why syntactic relations are problematic.

3.2. The typological argument

The argument against syntactic relations is in two parts: first, that many allegedly syntactic relations are in fact semantic, and second, that it is in fact problematic to analyze what remains as syntactic relations.

Nunberg, Sag & Wasow (1994) argue that what I call *collocational dependencies* are essentially semantic. Collocational dependencies represent a continuum from what were called selectional restrictions in earlier versions of generative grammar (illustrated in examples 15-16), to collocations in the British tradition (examples 17-18; from Matthews 1981:5), to the majority of idiomatic expressions, those which Nunberg et al. call *idiomatically combining expressions* (examples 19-20):

- (15) a. *Mud oozed onto the driveway.*
b. *?*The car oozed onto the driveway.*
- (16) a. *The car started.*
b. *?*Mud started.*
- (17) a. *roasted meat*
b. *toasted bread*
- (18) a. *?*toasted meat*
b. *?*roasted bread*
- (19) a. *Tom pulled strings to get the job.*
b. **Tom pulled ropes to get the job.*
c. **Tom grasped strings to get the job.*
- (20) a. *She spilled the beans.*
b. **She spilled the succotash.*

Nunberg et al. argue that the phenomena in 15-20 represent a continuum which varies in the degree of conventionality of the forms encoding the semantic relation between the components of the semantic representation. Selectional restrictions are widely recognized to be semantic in nature. Nunberg et al. argue that idiomatically combining expressions also are fundamentally semantic in nature:

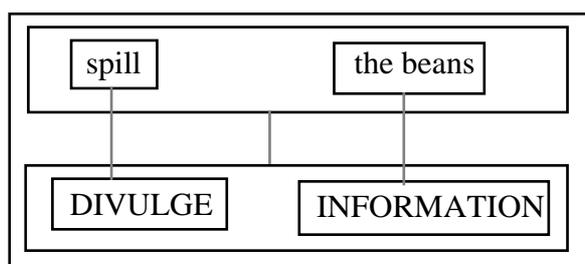
When we hear *spill the beans* used to mean 'divulge the information', for example, we can assume that *spill* denotes the relation of divulging and *beans* the information that is divulged, even if we cannot say why *beans* should have been used in this expression rather than *succotash*. This is not 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)

In other words, *spill the beans* is compositional, because *spill* means ‘divulge’ when it is combined with *(the) beans* and *(the) beans* means ‘information’ when it is combined with *spill*. Nunberg et al. have demonstrated that the concepts “conventional” and “noncompositional” are logically independent, and they have dissociated them. Idiomatically combining expressions are conventional—their elements have conventional meanings specialized for just that idiomatically combining expression—yet compositional—those conventional meanings combine sensibly to produce the meaning of the whole expression.

Nunberg et al.’s analysis seems odd, but if it is rephrased in construction grammar terms, one can see that it is not really that odd. There is a construction $[[spill\ the\ beans]/[DIVULGE\ THE\ INFORMATION]]$; *spill* corresponds to DIVULGE, and *beans* corresponds to INFORMATION. The form of the construction is complex and its meaning is complex, and the elements of the syntactic structure correspond to the components of the semantic structure. This construction is illustrated in Figure 4 (dotted lines indicate form-meaning correspondences):

Figure 4. Construction grammar representation of *spill the beans*



In Radical Construction Grammar, Nunberg et al.’s analysis is even more straightforward. The construction $[[spill\ the\ beans]]$ is the primitive syntactic unit and the elements $[[spill]]$ and $[[the\ beans]]$, including their specialized meanings, are derived from the construction taken as a whole, namely $[[spill\ the\ beans]/[DIVULGE\ THE\ INFORMATION]]$.

One of the consequences of Nunberg et al.’s analysis—one which they explicitly draw—is that many of the arguments for underlying syntactic structures in transformational generative theories are crucially dependent on collocational dependencies. If these dependencies are in fact semantic, then they should be represented in semantic structure and not in syntactic structure, and hence the arguments for underlying syntactic structures (and transformations) disappear. More generally, certain arguments for syntactic relations—the ones captured by underlying structures in transformational syntactic theories—disappear.

If this is the case, and I believe it is, then arguments for syntactic relations must be based on *coded dependencies*: overt morphology—case marking, agreement, classifiers, linkers, etc.—or constituency and word order patterns that are purported to express syntactic relations (Croft 2001, ch. 5; 2003, ch. 2). In Croft (2001, ch. 6), I argue that coded dependencies in fact code symbolic relations, not syntactic relations, and so syntactic relations should be dispensed with. In order to make this case, I argue first that syntactic relations are not simply notational variants of symbolic relations, rendering the two interchangeable. Then I argue that syntactic relations are not simply notational variants of syntactic roles, the part-whole relations of constructions which are assumed in all syntactic theories, including Radical Construction Grammar. These arguments are typological, in that they depend on cross-linguistic empirical evidence.

If symbolic relations and syntactic relations are notational variants, then we could preserve syntactic relations and dispose of symbolic relations. This would lead us back to a componential model of syntax, i.e. not a construction grammar model. In a componential model of syntax, formal structure is represented in one module and semantic (or more broadly, functional) structure in a separate module. Of course, the two modules must be connected. These connections are performed by linking rules in componential models. Linking rules are the equivalent of the symbolic relations in a construction grammar. In fact, if linking rules are associated with specific syntactic structures, then they are indistinguishable from symbolic relations in a construction. Thus, to have any sort of substantive difference between a componential model with linking rules and a construction grammar model, one must have highly general linking rules.

In fact, most componential theories do have highly general linking rules. These rules generally exploit the widespread iconicity of syntactic structure: the linking rules provide one-to-one mappings between syntactic elements and relations on the one hand and semantic components and relations on the other. But many grammatical constructions are not iconic. More specifically, the putative syntactic relations in many grammatical constructions are not iconic. In this case, one must simply specify for the construction what the linking rule is. But this is essentially adopting the construction grammar model. The next few paragraphs offer a sampling of such constructions.

The first example is the phenomenon usually described as possessor ascension, but now also called external possession. In some languages, the semantic possessor of a referent appears to have a syntactic relation to the verb, not the noun phrase expressing the referent. One such language is Tzotzil (Aissen 1980:95):

- (21) *l- i- k'as -b -at j- k'ob*
 PF- **1SG.ABS**- break -IND.OBJ -PASS 1SG.POSS- hand
 'My hand was broken.'

In example 21, the first person semantic possessor is encoded as the (passive) subject of the verb, with the indexation prefix *i-*. It is also encoded as a morphosyntactic possessor of the NP denoting the possessum (*j-*).

Possessor ascension with verbs of this type is a common type of possessor ascension across languages. It can plausibly be argued that there really is a semantic relation between the 1st singular referent and the action in 21: the breaking of my hand affects me. Such an iconic analysis is plausible for many such examples in many languages. But in some languages, including Tzotzil, there is a semantic possessor argument of a verb for which a corresponding semantic relationship is much less plausible (ibid.):

- (22) *mi muk'bu x- av- il -b -on j- tzeb*
 INTERR NEG IMPF- 2SG.ERG- see -IND.OBJ -**1SG.ABS** 1SG.POSS- daughter
 'Haven't you seen my daughter?'

It seems implausible that there might be a semantic relation between the seeing event and the referent first person verbal indexation suffix *-on* in example 22.

A similar observation can be made for the phenomenon usually described as quantifier float. In quantifier float, a quantifier is in a syntactic relation with a verb rather than the NP whose referent it quantifies. A language exhibiting quantifier float is Pima (Munro 1984:273); the quantifier immediately precedes the verb instead of being contiguous to the other elements of the noun phrase it is associated with semantically:

- (23) *hegai 'uuvi 'o vees ha- ñeid hegam cecej*
 that woman 3.AUX **all** them- see those men
 'The woman saw all the men.'

As with the possessor ascension example in 21, it is plausible to argue that there is a semantic relation between quantifier and event in example 23: the seeing event is either collective and so ‘all’ describes its collectiveness, or the verb+quantifier sums up all of the individual seeing events of the woman seeing a man.

Again, the iconic analysis applies to most cases of quantifier float in the literature. But some languages, including Pima, extend quantifier float to cases where it is implausible to assume a corresponding semantic relation (Munro 1984:275):

- (24) *vees ñei ’ant heg heñ- navpuj ha- maakaika*
all see 1SG.AUX ART my- friends their- doctor
 ‘I saw the doctor of all of my friends.’

It seems implausible that seeing a single doctor can be construed as a collective or summation event that could be described as “all”.

In the above cases (and also in anomalous agreement relations and so-called Neg-raising, discussed in Croft 2001:201-13), it would be difficult to identify a semantic relation corresponding to the putative syntactic relation. But if we abandon the assumption that there is a syntactic relation, the remaining syntactic structure—the part/whole relation—is iconic with the semantic structure. And there is no inherent difficulty in the hearer figuring out the semantic relations: the hearer can find the possessor or quantifier easily enough (verbal indexation affix in Tzotzil, preverbal position in Pima), and construction-specific symbolic relations license the NP argument to whose denotation the possessor referent or quantifier applies.

Finally, there is a plausible explanation as to how these “noniconic” constructions arose. The constructions originated in the cases where there is a plausible semantic link between the possessor/quantifier and the event denoted by the verb; this is why these cases are widely found. Then in some languages, the construction was extended to other verb classes where the possessor/quantifier is not in a semantic relation with the situation denoted by the verb; these examples are found only in languages where the plausibly iconic cases are also found.

Another large class of problematic cases for iconicity if one assumes the existence of syntactic relations is found with “moved” arguments. In all of these examples, a syntactic argument is not found in a putative syntactic relation with the verb describing the state of affairs that the argument’s referent participates in. Instead, the syntactic argument is found in a putative syntactic relation with a verb in a different clause, usually the main clause.

The first example given here is an instance of what has been called *Tough*-movement. In English examples of *Tough*-movement such as *Bill is easy to fool*, the referent of the subject *Bill* can be plausibly construed as having a semantic relation to the predicate (*be*) *easy to fool*; this is a way of characterizing some property of the person (see for example Langacker 1990:199-201). It is less plausible to posit a semantic analysis for the relationship between ‘Mary’ and ‘be hard’ in the following example from Moose Cree (James 1984:210):

- (25) *ālimēliht -ākosi -w mēri kihči- tot -aw -iyan kihči- tāpwē -ht -amān*
 hard -AI -3 **Mary** SUB- make -TA -2→1 SUB- believe -TI -1
- ē- āhkosi -t*
 SUB- sick:AI -3

‘It is hard for you to make me believe that Mary is sick.’
 [lit. ‘Mary is hard for you to make me believe is sick.’]

On the other hand, a description of the construction indicating just the correspondence relation between the subject of ‘be hard’ and the undergoer of the sickness, as in Radical Construction Grammar, would enable the hearer to comprehend the sentence.

Another example is the phenomenon called clitic climbing. Napoli gives an attested example 26 to illustrate clitic climbing from Italian (Napoli 1981:861):

- (26) *me lo sa dire?*
 to.me it you.can tell:INF
 ‘Can you tell it to me?’

In 26, the object clitic pronoun *lo* is apparently in a syntactic relation with the verb *sa* ‘[you] can’. It is implausible to posit a semantic relation holding directly between the thing said and the ability auxiliary; but it is easy for the hearer to identify the semantic relation between *lo* and *dire*, given knowledge of the construction and the correspondence relations between the syntactic elements and the syntactic components.

Similar arguments can be applied to examples of what has been called raising. In all of the following examples, an argument that semantically “belongs” to the lower clause is found in a putative syntactic relation to a verb in the higher clause, but there is no plausible semantic relationship between the argument’s referent and the event denoted by the verb in the higher clause:

Ancash Quechua: argument-raising (Cole 1984:111)

- (27) *noqa Huaraz -chaw muna -a wayi -ta rura -y -ta*
 I Huaraz -in want -1 house -ACC make -INF -ACC
 ‘I want to make a house in Huaraz.’ [lit. ‘I want in Huaraz to make a house’]

Moose Cree: raising across two clauses (James 1984:210)

- (28) *itēliht -ākosi -w mēri ē- kī- alamotam -ātan ē- ākhkosi -t*
 seem -AI -3 Mary SUB- PST- tell -TA:1→2 SUB- sick:AI -3
 ‘It seems that I told you that Mary is sick.’
 [lit. ‘Mary seems that I told you that (she) is sick.’]

Japanese: passive of evidential complement subject (Tsukiashi 1997:49; attested example)

- (29) *watasi wa [haitte -iru -koto] o satorarenu -yoni*
 I TOP be.in -PROG -COMP OBJ notice:PASS:NEG so.that
 ‘so that it will not be noticed that I am in’
 [lit. ‘so that I will not be noticed to be in’]

In 27, *Huaraz-chaw* ‘in Huaraz’ appears to be in a syntactic relation with *muna* ‘want’; but I can want to make a house in Huaraz without the wanting event taking place in Huaraz. In 28, it seems implausible to construct an analysis in which my telling you that Mary is sick is an apparent property of Mary. Example 29 seems more plausible, in part because the English construction seems plausible (as a passive of *?They noticed me not to be in*). Nevertheless, I am somewhat reluctant to posit a semantic relationship between the 1st person referent and ‘be noticed’, since what is being noticed is a state of affairs, not a person (in fact, the person is absent).

In all of these examples, it is pushing commonsense plausibility, to a greater or lesser degree, to posit a semantic relation corresponding to the putative syntactic relation. But in all of these examples, if we assume knowledge of a construction that specifies only symbolic relations between syntactic elements and semantic components, it is not at all difficult for the hearer to identify who did what to whom where, in the commonsense intuition of the meaning

of these sentences. And if we dispense with syntactic relations, the elements of the construction map iconically onto the components of the semantic structure.

And again, there is a plausible historical scenario for the occurrence of these noniconic constructions. They are all examples of the early stages of the process of two clauses being reanalyzed as a single clause, with the former matrix verb becoming an auxiliary indicating tense, aspect or modality (possibility, evidentiality, etc.) of the state of affairs denoted by the former subordinate clause. This diachronic change is a gradual process, and the examples in 25-29 show that for some languages, one of the first steps in this process is the reassignment of syntactic arguments to the higher clause.

Finally, one should not underestimate the role of discourse/information structure in motivating the constructions in 25-29. The assignment of the syntactic argument to the main clause is almost certainly an indicator of the topicality of the argument's referent, regardless of whether or not there is a semantic relationship between the topical referent and the event denoted by the main verb.

The examples of noniconic constructions given in this section can be multiplied (see Croft 2001, chapter 6). Although a plausible iconic analysis can sometimes be provided for particular cases, and in some cases motivates the creation of the construction, I believe that one cannot always provide a plausible iconic motivation. If on the other hand, we abandon syntactic relations, the remaining syntactic structure—the syntactic elements and the semantic components—is iconic. Most important of all, hearers can still succeed in understanding what the speaker said, with the knowledge of construction structure that remains in Radical Construction Grammar.

The second argument against syntactic relations addresses their relationship to syntactic roles, the part-whole relations that hold between elements of a construction and the construction as a whole. If semantic roles and syntactic relations are notational variants, then again one could use syntactic relations and possibly dispense with syntactic roles. But in fact, syntactic relations are notational variants with semantic roles only when there are two elements in a construction. If there are three or more elements, there are four or more logically possible sets of syntactic relations that hold between the elements. But there is only one semantic role representation, the one that indicates that each element is a part of the construction as a whole. Even worse, a syntactic relation representation assumes the existence of the two elements that are syntactically related, and of the relation itself. Neither of these is commonly the case.

A syntactic relation is a formal relation that holds between two formal elements in a construction. But in many cases, one of the elements in the syntactic relation is absent. A very common case is the absence of the element “agreed with” in a putative syntactic relation encoded by agreement (indexation as I have called it so far). For example, in Warlpiri, the NP “agreed with” does not always appear in the sentence: it is absent from 30 (Jelinek 1984:43, from Hale 1983:6), but present in 31 (ibid., 49, corrected by Ken Hale, pers. comm.):

(30) *wawirri -∅ kapi -rna -∅ panti -rni yalumpu -∅*
 kangaroo -ABS FUT -1SG.SBJ -3SG.OBJ spear -NPST that -ABS
 ‘I will spear that kangaroo.’

(31) *ngajulu -rlu kapi -rna -∅ wawirri -∅ panti -rni yalumpu -∅*
 I -ERG FUT -1SG.SBJ -3SG.OBJ kangaroo -ABS spear -NPST that -ABS
 ‘I myself will spear that kangaroo.’

A number of proposals have been made to deal with this problem. One is to say that in 30, the “agreement” marker is actually a bound pronominal. If so, then there is a problem in analyzing 31: either one says that it is not a bound pronominal in this sentence, or that it is, and the NP *ngajulu* is then an “adjunct” or “appositive” NP. Another proposal for 30 is to posit a null NP which the verb “agrees” with; the methodological dangers of positing null

NPs are fairly obvious. Both of these analyses make a hidden assumption, that there can be only one syntactic argument per clause (or one syntactic argument per phrase, in phrases containing “agreement”). If we abandon this assumption, then the problem disappears; but so does the syntactic relation of “agreement”—we have simply two argument expressions that index the same referent (hence the choice of the term indexation here). And indexation is a symbolic relation.

A further problem is that “agreement” is not actually agreement in the sense of matching features of the agreement marker with features of the “controller” NP; there is a complex interplay of factors between the agreement marker and the “controller” NP (Barlow 1988). Barlow surveys a wide range of complex interactions between “agreement markers” and the NPs to which they are alleged to be syntactically related, and compares them to the relationship between an anaphoric expression and the NP that the anaphorical expression is coreferential with—a relation which is generally not syntactic (especially across clauses). Barlow concludes, ‘there are many similarities and no major distinction between local and anaphoric agreement’ (Barlow 1988:154). In other words, there is no strong motivation to analyze local agreement any differently than anaphoric agreement. That is, there is no strong motivation to analyze local agreement as a syntactic relation, rather than as two coreferential expressions.

If one assumes there is no syntactic relation between the verbal inflection in examples such as 30-31 and an NP as in 31, then comprehension by the hearer in processing is not affected. The construction specifies that the verbal inflection and the NP (if present) in the syntactic structure indexes the relevant participant referent in the semantic structure, and that information is sufficient for the hearer to identify the participant role of the referent in question. In other words, a symbolic relation—indexation—is a superior analysis to “agreement”—a syntactic relation—because of the frequent absence of the “controller” of agreement.

The second common and serious problem for syntactic relations is the optionality or absence of the element alleged to encode the syntactic relation. For example, in Rumanian the preposition *pe* codes the direct object of a verb, but is only obligatory for human and definite referents, or for definite referents in certain constructions; it is optional if the referent is human and specific or nonhuman and pronominal; and it is prohibited if the referent is a nonspecific indefinite, generic or partitive (Nandris 1945:183-85). Likewise, in Kanuri the “agreement” (indexation) affix is optional for objects (Hutchison 1981:139):

(32) *nyí -à rú -kǎ -nà*
2SG -ASSOC see -1SG -PF
 ‘I saw/have seen you.’

(33) *nyí -à nzú- rú -kǎ -nà*
2SG -ASSOC **2SG-** see -1SG -PF
 ‘I saw/have seen you.’

Another example is that numeral classifiers, which could be argued to encode the syntactic relation between a numeral and a noun, are often found only on lower numerals, and is often absent from base numerals (‘10’, ‘20’, etc.; Aikhenvald 2000:117).

In these cases, one would be forced to say that the syntactic relation appears when the morpheme encoding it appears, and it disappears when the morpheme encoding it disappears. One might object that if the morpheme is absent, there would be other criteria to determine the existence of the syntactic relation. But what other criteria? Most of the other criteria offered for syntactic relations are in fact indicators of collocational dependencies, which I have argued are semantic, not syntactic. There may be some other morphosyntactic coding of the putative syntactic relation, but they do not always match the optional coding in question

(Croft 2001:199-201). Hence we cannot make inferences for the existence of a syntactic relation beyond the type of coding in question.

It is far more natural to conclude that the syntactic relation does not appear and disappear with its encoding, but that there is no syntactic relation and the morphosyntactic means of encoding the “syntactic” relation is encoding something else, namely the symbolic relation between the syntactic element and the semantic component that it denotes or symbolizes (see §3.3).

There are other problematic aspects of analyzing morphosyntactic coding as encoding syntactic relations, such as using word order for syntactic relations among three or more units, second position elements “breaking up” constituents, and some difficulties analyzing coded dependencies between clauses (see Croft 2001:221-26). All of these examples indicate that syntactic relations are highly problematic; yet all of these phenomena can easily be represented in a model with syntactic roles and no syntactic relations, such as Radical Construction Grammar.

3.3. Comprehending constructions without relations

The reader who may be willing to accept the arguments in §3.2 on why positing syntactic relations is empirically problematic may still be wondering if a hearer really has enough information to recognize the construction and the correspondence relations that are necessary to understand the speaker’s utterance. In this section, I will briefly discuss how the hearer can successfully understand the speaker, given no more structure than is postulated in Radical Construction Grammar.

First, it should be noted that syntactic structure in Radical Construction Grammar is not completely flat, as the absence of syntactic relations may imply. Constructions can be nested inside other constructions. The universal example of this is phrasal constructions nested in clausal constructions. Hence there is some hierarchical structure to constructions in Radical Construction Grammar (though one must not underestimate the extent to which the hierarchical structure can be blurred; see e.g. the phenomena discussed in Sadock 1991). Also, I am specifically arguing against syntactic relations between elements in a construction. A syntactic element still has a formal relation to the construction as a whole, namely the part/whole relation. After all, a hearer must be able to identify which part of the construction is which.

Second, the logical argument against syntactic relations given in §3.1 goes through only if a hearer hears an utterance and is able to identify (i) the construction’s form, (ii) its meaning, and (iii) the correspondence between the syntactic elements of the construction and the components of its semantic structure. In the rest of this section, I argue (again) that the formal properties of constructions that are interpreted as evidence for syntactic relations in standard syntactic theories can be analyzed, and are better analyzed, as aiding the hearer in identifying (i) and (iii), thereby accessing (ii) and hence understanding the speaker.

What I called coding morphosyntax—morphemes such as case marking, adpositions, agreement markers, classifiers, linkers etc., and groupings based on contiguity, prosody, etc.—is of course present in the world’s languages. I argued in §3.2 that coding morphosyntax does not code relations between syntactic elements. However, coding morphosyntax does perform other important functions. First, it helps to identify which part of the construction is which—the first part of (iii). But equally important, coding morphosyntax codes the correspondence relation between a syntactic element and its counterpart semantic component in the construction—the rest of (iii). that is, coding morphosyntax codes symbolic relations, not syntactic relations.

And cross-linguistically, coding morphosyntax tends to be around when you need it, and absent when you don’t. For example, overt case marking in clauses is typically found when the referent is unexpected for the participant role it is playing in the event (Croft 1988). The

Rumanian ‘object preposition’ *pe* is present when the object referent is most likely to be mistaken for the subject referent, i.e. when it is human and/or definite. In other words, overt case marking is there when the hearer might mistake the referent’s role. Indexation markers index highly salient referents (Givón 1976, Croft 1988), i.e. those referents which are most likely to be left unexpressed as NPs (and thus unavailable to the hearer) because they are highly accessible (Ariel 1990). Referents of objects and especially obliques are less likely to be highly accessible, and so will be typically overtly expressed as NPs; and indexation is much rarer cross-linguistically (or in the case of obliques, virtually absent).

Similar arguments apply for so-called constituency relations. In standard syntactic theories, constituency, like categories, is argued for by using syntactic tests or criteria. These have the same problems as we found for syntactic categories: certain tests don’t exist in many (let alone all) languages, two different tests yield different results, etc. (Croft 2001:185-97). As in §2, we infer from this that there is no unique constituent structure valid across all constructions in a language. But there are many different kinds of clues for identifying syntactic elements in a construction and linking them to the right semantic components. There is physical contiguity of elements, which occurs in greater and lesser degrees of tightness; there are grammatical units defined by their occurrence in intonation units (Chafe 1980, 1994; Croft 1995) and other prosodic properties; there are grammatical units defined by the point where speakers initiate self-repair (Fox & Jaspersen 1995); and these are probably not the only clues present. These are all properties of the utterance’s actual physical (phonetic) form, and as such are available to the hearer without positing any abstract constituent structure.

Also, despite the fact that I showed in §3.2 that there are many cases of noniconic syntactic structures, I would stress that the great majority of constructions in the world’s languages do have a substantially iconic relationship between syntactic structure and semantic structure, even for physical relations between elements (linear order, contiguity, prosodic unity, etc.). Why is syntactic structure mostly iconic? Because that’s one of the easiest ways to allow a hearer to identify the semantic components corresponding to the syntactic elements of a construction—item (iii). But as the examples in §3.2 show, it’s not the only way. Any reasonable way for the hearer to get the symbolic relations of the speaker’s utterance will do.

So far I have discussed how a hearer can identify the elements of the syntactic structure of a construction, and the correspondence relations between syntactic elements of a construction and the semantic components of that construction, thereby identifying the relevant semantic relations without having to have recourse to syntactic relations. This task presupposes that the hearer can identify the construction in the first place—item (i). But there are clues in the structure of constructions that aid the hearer in this task as well.

For example, the English passive construction has rigid word order of its essential elements, and it has two unique parts—the auxiliary verb *be* and the past participle verb form—which jointly specify that this construction is a passive (and not a progressive or a perfect); the agent phrase provides a third unique part, the preposition *by*. These cues taken as a whole provide a structural Gestalt which aids the hearer in identifying the construction, and hence its elements and the correspondence relations to its semantic structure.

Functionalist analyses of grammatical structure have been criticized because language possesses substantial redundancy, and this redundancy is assumed to be dysfunctional. For instance, Durie describes redundancy as a case of functional overkill:

...with respect to *The farmer killed a duckling* it is clear that ducklings don’t kill farmers, and if English did have ‘free’ word order, there would be no need for a speaker to further disambiguate the sentence. Such further disambiguation would be redundant. As a disambiguating device, English SVO word order displays functional over-generalization, or *overkill*: it is there even when you don’t need it (Durie 1995:278, emphasis original)

But word order and other role-identifying devices have another function besides identifying roles: they identify constructions (in Durie's example, the English [Nontopicalized] Declarative Transitive Active construction). Without being able to identify constructions, semantic roles would be much harder to identify. Much "functional overkill" in language is not really dysfunctional because it (also) serves the function of identifying constructions; it is there because the hearer still needs it.

Finally, the discourse context and the shared knowledge between speaker and hearer, including knowledge of their immediate surroundings, offers clues as to what the semantic structure of the speaker's utterance is. In other words, even item (ii), in some schematic form, may be identifiable to the hearer in context. What a speaker will say at a certain point in the conversation is not entirely unpredictable. In fact, many aspects of what a speaker will say are probably quite predictable in many cases, to a hearer that has been paying attention to the conversation. To the extent that what a speaker will say is predictable, certain constructions will be primed in the hearer's mind, and that will facilitate recognizing the syntax of the speaker's utterance when it does come.

The abandonment of syntactic relations allows us to escape a number of serious empirical problems in syntactic analysis, some of which were illustrated in §3.2. It also dramatically simplifies the syntactic structure of our grammatical knowledge. Instead, analysis is focused on the correspondence relations of a construction: the relation between the construction as a whole and the complex semantic structure it symbolizes, and the relation between the elements of the syntactic structure and the corresponding components of the semantic structure. This is in fact where the real work by speaker's grammars is done in actual language use, and where the real work should be done in syntactic theory.

4. From universal constructions to syntactic space

The last anti-thesis of Radical Construction Grammar is rather anticlimactic. This is the hypothesis that the formal structures of constructions themselves are not universal. There is no logical argument for this position, of course, only the typological argument. The typological argument is that one cannot find a fixed set of formal syntactic properties that can unambiguously define the "same" construction across languages. Clearly, formulating a set of formal syntactic properties would be quite difficult, given the radically language-particular character of syntactic categories argued for in §2. But even if we leave aside those objections, one still finds a remarkable diversity of syntactic structures employed by languages for similar functions.

Obviously, the only fully convincing argument for the last thesis of Radical Construction Grammar would be to demonstrate that every construction proposed as a universal construction does not hold up under empirical scrutiny. From a typologist's point of view, I must admit that I feel that the burden of proof is on the linguist who wants to argue in favor of a universal construction. My experience suggests that in fact this would be very difficult, and probably impossible, for the reasons to be given at the end of this section. Hence the final anti-thesis. In this section, I will illustrate with just a few examples of the diversity of a subset of voice constructions in the world's languages, focusing on the passive and inverse constructions.⁶

The English passive, illustrated in 34, can be described structurally as in 35, using A as the abbreviation for "transitive subject participant roles" and P for "transitive object participant roles":

(34) *The boy was taken to school (by his parents).*

⁶Croft (2001, ch. 8) gives fuller details of voice constructions, and also discusses complex sentence constructions (ibid., ch. 9). Croft 1997 presents the continuum of constructions in the domain of external possession and ditransitive constructions.

- (35) a. A encoded as oblique (if it can be expressed at all)
 b. P encoded as subject
 c. Morphology distinguishes passive verb form from active (usually, an overt morpheme for passive contrasting with zero marking of active)

The description in 35 reflect proposals for a universal passive construction that is said to be found across languages. Of course, identifying categories such as “subject”, “oblique”, “verb” and “active”, both within a language and across languages, is highly problematic (see §2); but we will ignore those problems here for the sake of argument (see Croft 2001:284-88 for further discussion; there will turn out to be problems enough with the definition in 35).

Some languages have voice constructions which, while similar to the passive, most contemporary linguists would not describe as passive. Instead, a different voice category has been defined, the inverse construction. The inverse construction contrasts with the direct construction just as the passive contrasts with the active. The standard type of an inverse voice construction is taken to be that found in Algonquian languages. Examples of Cree direct and inverse constructions are given in 36-37 (Wolfart & Carroll 1981:69, analysis as in Wolfart & Carroll, *ibid.*), and the structural description of the inverse in 38:

- (36) *ni- wāpam -ā -wak*
 1- see -DIR -3PL
 ‘I see them’

- (37) *ni- wāpam -ikw -ak*
 1- see -INV -3PL
 ‘They see me.’

- (38) a. A encoded as a direct argument (not unlike P in direct construction)
 b. P encoded as a direct argument (not unlike A in direct construction)
 c. Morphology distinguishes inverse from direct (sometimes, overt morpheme for inverse contrasting with zero marking of direct)

Unlike the passive, in the inverse the A argument remains a direct argument of the verb. An additional feature of inverse constructions is that the inverse is typically used when the P argument is higher than the A argument on the person hierarchy $1,2 < 3$.⁷ It should be pointed out, however, that there is sometimes a similar constraint on the use of passive constructions, as defined by the structural description in 34; this will become important later.

Field work and typological research on the properties of passives and inverses across languages has yielded a wide range of problematic cases which clearly belong in the same general syntactic domain, but are missing key structural features of the standard type of passive or inverse. Space prevents me from presenting all of the examples found in the literature. I will restrict myself to just two examples.

The first example is the Arizona Tewa construction illustrated in 39-40. This construction has been called a passive (Kroskrity 1985; examples from pp. 311, 313) and an inverse (Klaiman 1991, citing the same examples). The structural description of the Arizona Tewa construction is given in 41, following the format of the descriptions of the passive and inverse in 35 and 38 above.

- (39) *hɛ’i sen -di nɛ’i kwiyó ’ó:- tɨ -’án -’i dó- tay*
 that man -OBL this woman 3SG/3.PASS- say -COMP -REL 1SG/3.ACT- know
 ‘I know the woman who was spoken to by the man.’

⁷In Algonquian, the person hierarchy is $2 < 1 < 3$; in other languages it is $1 < 2 < 3$. In many languages, there are also special unique forms for 1st person acting on 2nd person or vice versa.

(40) μ *khóto hç'i sen -di wó:- mégi*
 you bracelet that man -OBL 2/3.PASS- give
 'You were given a bracelet by that man.'

- (41) a. A is encoded as oblique (case marking; Kroskrity 1985:314), and with special indexation forms
 b. P is encoded as subject (case marking, and also relativization and reference tracking; Kroskrity 1985:313-14), and with special indexation forms
 c. No overt morphology distinguishes Passive verb form from Active

The oblique case marking of A and subject case marking of P invites analysis as a passive. However, the verb is transitive, and it indexes both A and P (albeit with special indexation forms). Also, there are restrictions on the occurrence of the Arizona Tewa construction that are reminiscent of inverse systems:

- (42) a. 1,2→3: always Active
 b. all→1,2: always Passive
 c. 3→3: either Active or Passive

These latter facts invite analysis of the Arizona Tewa construction as an inverse. In fact, of course, the Arizona Tewa construction is somewhere between the two: it has some structural properties of the standard passive, and some of the standard inverse.

In my survey of voice constructions, a third type that is significantly different from the “passive” and “inverse” types cropped up in various parts of the world. This is a voice system which looks like an inverse system, but has a special set of agreement affixes for P, instead of agreement affixes looking like the A affixes of the direct forms. An example of this system is the Inverse system of Guaraní (data from Gregores & Suárez 1968:131-32, analysis mine):

Table 2. Distribution of Guaraní agreement forms

SBJ	OBJ						
	1SG	1PE	1PI	2SG	2PL	3SG	3PL
1SG	—	—	—	ro-	po-	a-	a-
1PE	—	—	—	ro-	po-	ro-	ro-
1PI	—	—	—	—	—	ya-	ya-
2SG	še-	ore-	—	—	—	re-	re-
2PL	še-	ore-	—	—	—	pe-	pe-
3SG	še-	ore-	yane-	ne-	pene-	o-	o-
3PL	še-	ore-	yane-	ne-	pene-	o-	o-

Table 3. Analysis of Guaraní agreement forms

<i>Direct</i>	<i>Inverse</i>	<i>Unique</i>
a-: 1SG	še-: 1SG	po-: 1→2PL
ro-: 1PE	ore-: 1PE	ro-: 1→2SG
ya-: 1PI	yane-: 1PI	
re-: 2SG	ne-: 2SG	
pe-: 2PL	pene-: 2PL	
o-: 3		

The special P “subject” indexation prefixes are those listed under Inverse in Table 3; the forms in the third column are unique (see footnote 5). Examples of direct and inverse prefixes are given in 43-44 (Gregores & Suárez 1968:156, 131), and the structural description of the construction is given in 45:

(43) *ho-* *ǰú soʔó*
 3.DIR- eat meat
 ‘He eats meat.’

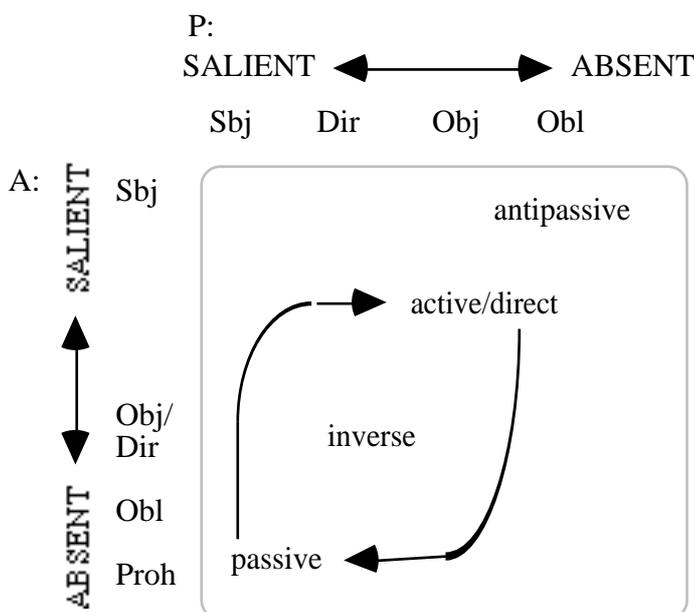
(44) *ne-* *peté*
 2.INV- hit
 ‘He/she/it/they hit thee.’

(45) a. A encoded like P (i.e., no indexation)
 b. P encoded like A (indexation), but with special forms
 c. No morphology distinguishes Inverse verb form from Direct

Anomalous voice constructions are relatively easy to find in the syntactic literature because so much attention has been paid to hypotheses of a universal passive construction and a universal inverse construction that many linguists have published analyses of the anomalous constructions in their native language or field research language. Also, typological surveys of both passive and inverse have been made. In both cases, the typologists who conducted the surveys concluded that there were no identifying structural properties of passives and inverses across languages: “The analysis of the various constructions referred to in the literature as *passive* leads to the conclusion that there is not even one single property which all these constructions have in common” (Siewierska 1984:1); “I know of no structural features which can define inverse constructions and distinguish them from passives” (Thompson 1994:61). Hence I believe that it is safe to conclude that there is no universal passive or inverse construction.

This is not to say that there is no pattern in the distribution of structural features of this subdomain of voice constructions. One can construct a *syntactic space* of voice constructions using the structural descriptions given above. The dimensions of this syntactic space include how P is coded (in a “subject-like” fashion, i.e. like A in the active/direct construction, to an “object-like” fashion), and how A is coded (from “subject-like” to “oblique-like” to “prohibited”); case marking and indexation sometimes do not match. What results is a continuum of voice constructions from the active/direct through inverse-like constructions to passive-like constructions. The syntactic space then maps onto a conceptual space representing the salience or topicality of A and P, which often manifests itself as an animacy or person hierarchy constraint. Figure 5 (adapted from Croft 2001:317, Fig. 8.16) superimposes the syntactic space of the coding of A and P onto the conceptual space of the relative salience of A and P (and extends it to antipassives, not discussed here).

Figure 5. The syntactic and conceptual spaces for voice and transitivity



Moreover, there is a clear relationship between the relative topicality of A and P and the typological markedness of the voice construction (see Croft 2003, chapter 4).⁸ The typologically less marked voice constructions are used when A is more topical than P, and the typologically more marked voice constructions are used when P is more topical than A. In other words, although there are no simple (unrestricted) structural universals for particular types of voice constructions, there are structural universals of how the relative topicality of A and P are encoded in the variety of voice constructions found across the world's languages.

In this section, I have presented a few examples to argue that there is no universal structural description of passive or inverse voice constructions that will hold empirically. As mentioned at the beginning of this section, a demonstration of the final thesis of Radical Construction Grammar, that there are no universal constructions in structural terms, would require examining all proposed construction types across languages. While this is an impossible task from a practical point of view, I would like to close this section with two reasons why I believe that the last thesis of Radical Construction Grammar probably holds.

First, language change is gradual; there is overwhelming evidence in support of this view (see e.g. Croft 2000, §3.2 and references therein). The consequence of this for construction grammar is that syntactic change in constructions will also be gradual. Each intermediate step in the process represents an intermediate construction type in structural terms. Hence a cross-linguistic survey that uncovers the intermediate construction types will yield a synchronic continuum of construction types in structural terms. Figure 6 indicates the broad paths of syntactic change of active to passive and back again.

Second, there are usually multiple paths of grammatical change. For example, it is known that there are different paths by which passives arise: from a resultative predicate, from a third person plural construction, from a reflexive construction, etc. (see for example Haspelmath 1990). All of these processes are gradual (see Croft 2001:314 for a more detailed description of paths of change in voice constructions). The uncovering of the multiple paths

⁸Ranking on the person hierarchy is a common conventionalized manifestation of argument topicality. The fact that similar restrictions on person ranking exist for "inverse" and "passive" constructions is further evidence of the two voice constructions and their intermediate types as having a single general explanation.

of grammatical change and their intermediate stages further fills out the syntactic space of structural possibilities for a given construction type.

5. Conclusion

In this paper, I have briefly outlined the logical and typological arguments in favor of Radical Construction Grammar. Radical Construction Grammar recognizes that virtually all formal grammatical structure is language-specific and construction-specific. This confirms what some field linguists and typologists have long suspected, having faced the diversity of grammatical structures in the world's languages.

This is not to say that syntactic categories and constructions are random. There are universals underlying the grammatical diversity of the world's languages. But the universals are functional, that is, semantic/pragmatic/discourse-functional. As a number of typologists have now proposed, the distributional patterns of categories defined by constructions can be mapped onto a conceptual space that is hypothesized to hold for all languages (see Croft 2001:92-102; 2003, ch. 5-6; Haspelmath 2003 and references therein). Also, structural variation across languages fall into broad patterns of form-function mapping described by such generalizations as typological markedness and typological prototypes.

Radical Construction Grammar also shows how formal syntactic structure is much simpler than is widely believed. One does not need syntactic relations, and therefore one may dispense with both syntactic relations and the various add-ons that are required where the empirical data is problematic for the establishment of syntactic relations. There still exist, of course, the morphological elements and syntactic groupings that are generally taken to indicate syntactic relations. I have argued that these supposed indicators of syntactic relations are really indicators of the correspondence relations between syntactic elements and semantic components in a construction, and (taken as a whole) are indicators of the construction's identity, facilitating understanding by the hearer.

Radical Construction Grammar is in one sense the "syntactic theory to end all syntactic theories". Radical Construction Grammar does not set up yet another representation language to describe syntactic structure, applicable to all languages. There is no such representation language, because syntactic structure is construction-specific and language-specific. On the other hand, there are many important issues in Radical Construction Grammar, and in other construction grammar theories, that remain unresolved.

Of these unresolved issues, one in particular stands out. This is the nature of the network organization of constructions. As mentioned in §1, this is a matter of debate among construction grammarians of all flavors. I know of no large-scale attempt to model the construction network of English or any other language. I am sure that important and interesting problems will arise when this task is finally taken on. For those construction grammarians who support the usage-based model, and I count myself as one, fundamental issues about the establishment of schemas and the interaction between frequency and similarity of utterances in constructing the network need to be addressed both theoretically and empirically.

Thus, the arguments presented here, and in fuller detail in Croft (2001), are only a first step. Nevertheless, I hope that they are a step in the right direction.

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