

The Main Determinants of Sentence Meaning: Verbs or Constructions?

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Abstract: What types of linguistic information do people use to construct the meaning of a sentence? The purpose of this paper is to provide a plausible argument against CONSTRUCTIONAL APPROACHES to grammar. The basic idea in them is that the simple sentence types in English are directly correlated with one or more semantic structures. In this paper, I argue that there is evidence supporting the traditional view that the basic sentence patterns are determined by semantic or syntactic information specified by the main verb. What I will propose is that a PROJECTIONIST APPROACH is at least possible.

Keywords: Construction, Constructional Meaning, Projectionist Approach, Frame Semantics

1. Introduction

What types of linguistic information do people use to construct the meaning of a sentence? The purpose of this paper is to provide a plausible argument against constructional approaches to grammar. The basic idea assumed in them is that the simple sentence types in English are directly correlated with one or more semantic structures. In this paper, I argue that there are motivations supporting the traditional view that the basic sentence patterns of a language are determined by semantic or syntactic information specified by the main verb. What I will advocate is that a projectionist approach is at least possible.

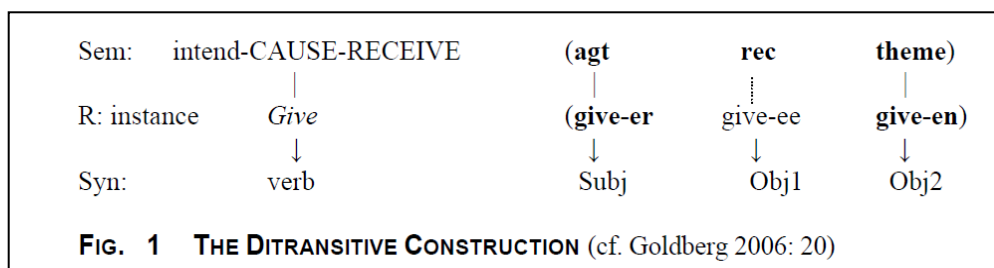
2. Why Constructions?

What aspects of a sentence convey contentful meaning? Verbal predicates seem to play a privileged role in determining a sentence's meaning and overall form. It is often assumed that the general overall form and meaning of a sentence is determined by the main verb, because in simple cases, this does seem to be the case. Sentences in (1) clearly show that there exists a natural correspondence between the number and types of actors as it were in the scene, and the number and types of actors typically associated with the predicate.

- (1) a. She *sneezed*.
- b. She *kicked* the table.
- c. Pat *gave* Chris a book.
- d. She *threw* her glass across the room.

Adopting the notation of Goldberg (1995), we might characterise the ditransitive construction instantiated by the verb *give* as in Fig. 1.

(2)



The first line in Fig. 1 provides the semantics of the construction. The ditransitive involves a predicate with three (semantic) arguments; these three arguments are labelled "ag(en)t", "rec(ipient)", and "theme" for convenience but there is no assumption that these thematic (semantic) role labels are drawn from a universal or limited set. Instead the roles are determined by the meaning of the construction. In this case the main predicate is "intend-CAUSE-RECEIVE" and the three argument roles correspond to the three entities that satisfy the semantics of giving.

However, a careful look at other sentences with this double object form reveals that the form and the associated meaning are not naturally attributed to the main verb in all cases.

Notice that (3)a entails that Pat intended to give Chris the cake. The sentence cannot be used if Pat baked the cake simply as a favour to Chris because Chris was too busy to do it. On the other hand, this latter interpretation is available for the paraphrase of (3)a in (3)b:

(3) a. Pat *baked* Chris a cake.

b. Pat *baked* a cake for Chris (because Chris was unwell with a flu).

The question arises, where does the semantics of intended transfer associated with (3)a come from? It is not a necessary part of the meaning of *bake* (as witness (3)b), and it is not associated with any of the noun phrases. The core meaning of *bake* is simply 'creation of something by making' (cf. FrameNET). As is discussed in more detail in Goldberg (1995), the construction can add roles not contributed by the verb. For example, the semantic roles of *bake* are **bake-er** and **bake-ed**, and the arguments (in Goleberg's terms) of the ditransitive construction are agent and patient. The ditransitive construction therefore contributes a recipient role not associated with a thematic (semantic) role of the verb. The possible method is to allow the additional meaning component, the semantics of "someone (intending to) cause someone to receive something" to be attributed directly to the formal pattern, Subj V Obj1 Qbj2 (see TABLE 1 and TABLE 2; Goldberg 1992, 1995). The roles are fused as in Fig. 2.

(4)

Sem:	intend-CAUSE-RECEIVE	(agt	rec	patient)
			⋮	
R: instance	<i>Bake</i>	(bake-er		bake-ed)
	↓	↓	↓	↓
Syn:	verb	Subj	Obj1	Obj2

FIG. 2 THE DITRANSITIVE CONSTRUCTION (cf. Goldberg 2006: 20)

There is another piece of evidence showing that the construction does have a meaning of its own. Consider the following pair in (5).

(5) a. I brought a glass of water to John/the table.

b. I *brought* John/*the table a glass of water. (Partee 1965: 60)

We can see from (5)a that *bring* itself does not entail that the goal must be an animate, although such a constraint does hold of (5)b. Instead of positing a special sense of *bring* to account for (5)b, we can assign the constraint that the goal be animate (a recipient) directly to the double object construction. There is no such constraint on the construction in (5)a, so the paraphrased sentence allows the goal to be a nonanimate location in space.

Implausible verb senses also support the validity of constructional

meanings. To take another example, *sneeze* is a textbook example of an intransitive verb (see (6)a) and yet, it can appear transitively in (6)b:

- (6) a. Pat *sneezed*.
b. Pat *sneezed* the foam off the cappuccino. (Ahrens 1995: 35)

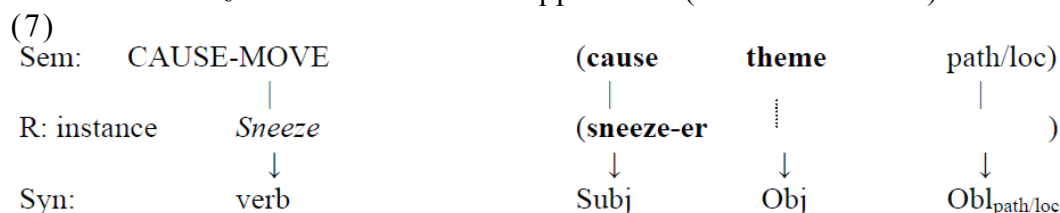


FIG. 3 THE CAUSED-MOTION CONSTRUCTION (cf. Goldberg 2006: 20)

It is unreasonable to assume that it is *sneeze* that is responsible for the fact that there are three syntactic complements involved in (6)b or for the fact that the sentence entails that someone caused something to move somewhere.

If we wanted to retain the assumption that the main verb is responsible for the overall form and meaning of the sentence, we would need to posit special senses of *sneeze* to account for (6)b. These are just a few reasons why Goldberg and other Constructionalists claim that we need constructions as categories of language in grammar, distinguishing between the verb's meaning and the construction's semantics.

If the verb's meaning is solely responsible for the verb's syntactic behaviour, then the following array of syntactic frames the verb *kick* appears in cannot be explained unless the verb's senses are proliferated, which is of course against linguistic economy.

- (8) a. The horse *kicks*.
b. Some children will bite and *kick* when they get angry. [*MED*²]
c. Take your baby's nappy off and let her *kick* a bit. [*MED*²]
d. Joe *kicked* the wall.
e. Mum! Jimmy *kicked* me! [*MED*²]
f. Joe *kicked* Bob black and blue.
g. Joe *kicked* the football into the stadium.
h. He *kicked* the bottle towards the bin and missed. [*MED*²]
i. Joe *kicked* at the football.
j. Joe *kicked* his foot against the chair.
k. Joe *kicked* the chair with his foot.
l. Joe *kicked* Bob the football.
m. Joe *kicked* his way out of the operating room.

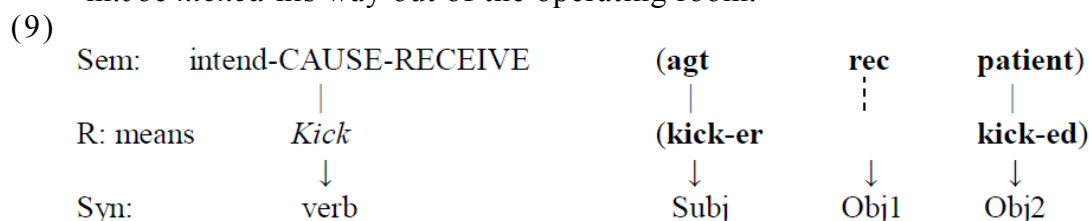


FIG. 4 THE DITRANSITIVE CONSTRUCTION (cf. Goldberg 2006: 20)

Further, the following contrast in the pairs is caused by sentential effects, which is closely related with constructional meaning.

- (10) a. ?TV is watched.
b. TV is watched an average of six hours per day.

- (11) a. *She sent the countryside a package.
b. She sent the Countess a package.

Finally there is support from language acquisition.

- (12) Children use the syntactic frames that a verb is heard used with in order to determine the verb's meaning (Landau and Gleitman 1985).
(13) Experimental evidence that children do pay attention to the syntactic frames and that they can use that information to narrow down the choice of possible verb meanings (Naigles 1990; Sethuraman *et al.* 1997).

All the arguments so far support in some way or other the claim that construction has a meaning of its own, not derived from its components.

3. Constructions: what they are

Instead of positing a new verb sense whenever a new syntactic frame is available, it makes sense to associate some aspects of meaning directly to the formal pattern itself. This allows us to account for the full semantic interpretation without positing implausible and ad hoc verb senses (for additional arguments, see Goldberg (1995)). In this view, each of these formal patterns and its associated meaning(s) forms a construction of the language. Goldberg's definition of a CONSTRUCTION is given below:

- (14) C is a CONSTRUCTION iff_{def} C is a form-meaning pair $\langle F_i, S_i \rangle$, such that some aspect of the form F_i or some aspect of S_i is not strictly predictable from C's component parts or from other previously established constructions. (Goldberg 1995: 4)

According to this definition, constructions are considered to be stored pairings of form and function, including morphemes or words, idioms, partially lexically filled and fully general linguistic patterns.

Within the theory of Construction Grammar (also Cognitive Grammar, see Langacker 1987, 1991), grammar consists of a network of interrelated constructions (see Fillmore, Kay, and O'Connor 1988; Goldberg 1995, 2006).

Instead of positing different verb senses without having independent evidence for those verb senses, the constructional approach assigns meaning directly to various abstract argument structure types, thereby recognising the argument structure patterns as linguistic units in their own right (Goldberg 1995; Jackendoff 1997; Michaelis and Lambrecht 1996; Rappaport Hovav and Levin 1998). Examples of English argument structure constructions with their forms and proposed meanings are shown in TABLE 2.

(15)

TABLE 2. English Argument Structure Constructions

Construction	Form	Meaning	Example
Transitive	Subject Verb Object	X act on Y	<i>Pat opened the door.</i>
Ditransitive	Subject Verb Object1 Object2	X causes Y to receive Z	<i>Sue gave her a pen.</i> <i>Sue faxed her a letter.</i>
Resultative	Subject Verb Object Complement	X causes Y to become Z	<i>Kim made him mad.</i> <i>Kim talked himself silly.</i>
Caused motion	Subject: Verb Object Oblique	X causes Y to move Z	<i>Joe put the cat on the mat.</i> <i>Joe sneezed the foam off the cappuccino.</i>

(cf. Bencini and Goldberg 2000: 642)

On the constructional view, argument structure patterns contribute directly to the overall meaning of a sentence, and a division of labour can be posited between the meaning of the construction and the meaning of the verb in a sentence. While the constructional meaning may, perhaps prototypically, be redundant with that of the main verb, the verb and construction may contribute distinct aspects of meaning to the overall interpretation. For example, the ditransitive construction has been argued to be associated with the meaning of transfer or “giving” (Goldberg 1995; Green 1974; Pinker 1989).

4. Three Arguments against Constructional Meaning

After having seen the nutshell of Construction Grammar (CxG) and the constructional approach to the syntax and semantics, let me lay out three arguments against constructionist approaches and support projectionist approaches. Thus far it seems to me that there are at least three reasons for supporting the projectionist’s foundational assumption that verb meaning provides a key to verb behaviour.

4.1. New Denominal Verbs

First, the argument realisation option of new denominal verbs provide support for this assumption. The new lexical items *fax* and *wand* can be used transitively as in (16):

- (16) a. He *faxed* the letter.
b. The librarian *wanded* the barcode.

Fax can be extended to the ditransitive construction while *wand* is not as in (18). It has been a long standing puzzle that the ditransitive construction may be used somewhat but not completely productively. That it can be used somewhat productively is clear from evidence that syntactic pattern can be extended to new and hypothetical verbs on the condition that these verbs signify an instance of transfer. No doubt the sense derives from the meaning of a verb. That is to say, whether or not *fax* or *wand* can appear in the ditransitive construction depends on whether or not the verb designates the scene of transfer. *Fax* is a verb of information transfer, and it can appear in the ditransitive construction as its lexical meaning projects three semantic roles syntactically realised as Subject, and Obj1 and Obj2. As *wand* is not, it cannot be used in the construction.

- (17) a. *fax* is a verb of information transfer
b. *wand* is not a verb of information transfer

- (18) a. He *faxed* me the letter.
b. *The librarian *wanded* me the barcode. (Levin 2007)

mail, *cable*, *radio*, and *e-mail* are verbs of information TRANSFER, therefore they can be used ditransitively.

- (19) He *mailed/cabled/radioed/e-mailed* me the letter.

4.2. Argument Structure Construction

Second, as I reviewed in the previous sections, an alternative way to account for alternations and the fact that verbs occur in many argument structure patterns is to assign meaning directly to various abstract argument structure types as shown in TABLE 2, thereby recognising the argument structure patterns as linguistic units in their own right. This approach is referred to as the constructional approach (Kay and Fillmore 1999; Goldberg

1995; Jackendoff 1997; Michaelis and Lambrecht 1996; Rappaport Hovav and Levin 1998).

Here the question arises how it could be possible to absorb such a variety of meanings into the prototypical meaning of the transitive constructions as is shown in (20).

(20) ‘X ACT ON Y’ (TABLE 2 in 0)

Consider the following sentences instantiating the transitive construction, whose meaning is “X ACT ON Y” as is defined in TABLE 2. Notions such as “subject”, “object”, and “transitive” alone are not very revealing. It should be recognised that a variety of verbs are transitive, and their objects bear a range of semantic relations to the verb as is shown in brackets by Levin’s (2007) examples in (21).

- (21) a. The engineer *built* the bridge. (effected object/factitive)
 b. The engineer *destroyed* the bridge. (consumed object/patient)
 c. The engineer *widened* the bridge. (patient)
 d. The engineer *moved* the bridge. (theme)
 e. The engineer *washed* the bridge. (location/surface)
 f. The engineer *crossed* the bridge. (location)
 g. The engineer *reached* the bridge. (goal)
 h. The engineer *left* the bridge. (source)
 i. The engineer *saw* the bridge. (object of perception)
 j. The engineer *hated* the bridge. (stimulus)
 k. The engineer *avoided* the bridge. (?)
 l. The engineer *studied* the bridge. (?) (Levin 2007)

How could we account for this variety of meanings in the transitive construction by using the skeletal meaning such as “X ACT ON Y” without referring to the verb’s meaning or the semantic roles of objects? It seems almost impossible with the present framework of Construction Grammar.

Again it is obvious that the meaning of the verb and the semantic role of the direct object make a richer contribution to the sentence meaning than the meanings of abstract constructions.

4.3. Event Structure and Augmentation

A third reason lies in a lexical semantic analysis of the verb meaning, which augments the event structure of a verb to make a complex construction. Following Pustejovsky (1995), Rappaport Hovav and Levin (1998), Levin and Rappaport Hovav (1991, 1995, 1999), Pinker (1989), and Jackendoff (1997), among others, verb meanings may be encoded using event templates. An event template consists of a constant (<...>), the verb-specific core meaning that supplies spell-out, and an event structure, common to all verbs of a class, that specifies the relation between arguments of the verb. For example, *sweep* of activity sense is a manner verb which takes its name from a manner constant <SWEEP> enclosed by angle brackets. Because of the nature of the activity of sweeping, this constant is associated with two arguments or participants: a sweeper (x) and a surface (y) (or the place swept).

(22) An activity sense

- a. [x ACT <SWEEP> y]
 b. Terry *swept* [the floor].

If we use the augmentation of event structures as is explained in detail in Rappaport Hovav and Levin (1998), the resultative construction in TABLE 2 is considered to be the event structure of a main verb being augmented. The

resultative construction can be derived via template augmentation on the basic event structure template associated with this verb, given in (22). As an activity template, this basic template is a subpart of several of the other possible event structure templates; thus, this template can be augmented to give these other templates as long as the resulting complex event structure meets the well-formedness condition on syntactic realisation. For a detailed example, one potential event structure that could be derived by applying template augmentation to (22) is (23). This event structure is associated with the resultative construction as in (23), where it is shown that the resultative construction is in fact formed compositionally by connecting two subevents by a clausal link between them. A change of state sense of *sweep*, on the other hand, has the following semantic template as in (23).

(23) A change of state sense

- a. $[[\mathbf{x} \text{ ACT } \langle \text{SWEEP} \rangle \mathbf{y}] \text{ CAUSE } [\text{BECOME } [\mathbf{y/z} \text{ } \langle \text{STATE} \rangle]]]$
- b. Terry *swept* the floor clean. ($\mathbf{y:y}$)
- c. Terry *swept* the leaves into a pile. ($\mathbf{y:z}$)
- d. The causing subevent \rightarrow the result subevent [change of state]

4.4. How Constructions are Derived

Based on the preceding discussion, I want to claim that frame semantic knowledge of the concept associated with the verb is a key factor to determine what type of construction the verb can appear.

(24) Joe *kicked* Bob the football. (=81))

- Frame semantic knowledge of the concept associated with the verb
- ‘Kicking’ involves an abrupt forceful motion of the leg such that the leg is brought away from the body and then returned.
- The ditransitive construction will make reference to the fact that it can occur with verbs which can cause ballistic motion. The fact that *kick* is such a verb will be inferred from **ITS FRAME SEMANTICS**, i.e. from the fact that ‘kicking’ can be used to cause an object to move by an abrupt motion of the leg. We do not need to claim that the semantics of *kick* undergoes any change when used as a ditransitive verb.

Therefore, the meaning of a sentence is determined by the meaning of a verb, because argument roles in a construction actually are projected from the frame semantics of a verb (i.e. verb meaning).

5. Conclusion

Why is a theory of verb meaning important? Verbs name events or states with participants, making them the organisational core of the sentence, so their meaning is a key to sentence meaning (as witness Word Grammar (Sugayama and Hudson 2005)). To the extent that a verb’s meaning appears to determine its argument realisation options, looking at verbs with shared or overlapping patterns of argument realisation provides a way of isolating linguistically-relevant components of verb meaning.

In this paper, I have attempted to show that aspects of the sentence meaning still perpetuate the projectionist approach. Constructional and projectionist approaches are often contrasted, yet both incorporate the same important assumption about the nature of the meaning of sentences with verbs and their arguments. The contrast is stark, and, in my own view, the

reality of grammar lies somewhere in the middle between two extremes.

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