Lexical units and syntactic constructions: the caused-motion construction

Marta Rebolledo Lemus
Universidade da Coruña
marta.rebolledo.lemus@gmail.com

Margarita Alonso Ramos
Universidade da Coruña
lxalonso@udc.es

Abstract

This work aims at discerning to what extent syntactic differences in the use of a word must lead to the distinction of different lexical units. To study this question, we examine the relation between the caused-motion construction and lexical units that can enter into in two theoretical models: FrameNet and Meaning Text Theory.

1 Introduction

This paper focuses on the relation between lexical units and the syntactic constructions they can accept. The objective is to evaluate if the different syntactic constructions a word can bear are a strong enough criterion to distinguish lexical units. This problem is especially relevant when dealing with the different senses of a verb. The study of verbal alternation developed by Levin (1993) is a good example of the importance of the contexts in the delimitation of verbal classes. From a different point of view, Van Valin & LaPolla (1997), among others, maintain that the semantic properties of predicates, especially verbs, establish the core semantic representations of a clause or a sentence. From this perspective, the problem of how the arguments of predicates are linked to syntax is one of the central questions (Tenny 1994; Van Voorst 1988, among others). The Construction Grammar approach (Fillmore et al. 1988, Goldberg 1995, 1996, Jackendoff 1997) as well as other approaches, offers a different solution to this problem. Given that its basic proposal is that syntactic constructions bear independent meanings, it transfers the problem from the delimitation of different verb senses to the description of the relation between constructions and lexical units.

In this work we concentrate on how the relation between syntactic context and lexical units is treated in two theoretical models: FrameNet (FN) and the Meaning Text Theory (MTT). More specifically, we examine the analysis these two models offer, to describe the so-called *caused-motion construction* (Goldberg 1995), as it can be seen in the following examples:

(1) a. *Bob sneezed*
b. *Bob sneezed the napkin off the table*

(2) a. *Bob laughed*
b. *Bob laughed his son out of the room*

In this alternation, a generally intransitive verb, in this case, *sneeze* or *laugh*, adopts a transitive realization with a locative element. The use of this syntactic construction is associated to another meaning that joins the meaning of the verb and the meaning of movement: roughly, 'sneeze / laugh of X causes Y moves from/to Z'. One theoretical possibility could be to establish two different lexical units, a transitive and an intransitive one, so that they both have their own lexicographic entry. Another possibility would be assigning the change of meaning to the syntactic construction, as it is suggested by Construction Grammar (Goldberg 1995). As we will see, none of these explanations seem totally adequate. In what follows, we will show the solutions given by FrameNet and the TST.

There are important differences between the two models revised in this work. One of the most important for our concerns is that establishing word senses is not one of the objectives of FrameNet. However, this project is engaged in giving an account of all the syntactic information of a lexical unit. Therefore, we think that the study of the treatment of the causative-motion construction in both models will lead us to evaluate the terms in which the relation between lexical units and syntactic constructions is posed.

2 The Caused-motion construction in FrameNet

As it is known, the original objective of the FrameNet project is the description of lexical units in terms of the semantic frames they evoke, as well as the description of these frames themselves. Besides, the FrameNet research aims at defining the range of combinatorial possibilities as valence patterns. This implies the description of the syntactic realization of each lexical unit:

> The goal of FrameNet lexical descriptions is, for each frame-bearing word, to match the word's semantic combinatorial requirements with the manner of their syntactic realization (Fillmore 2008, 51-52).

As Fillmore et al. (2002) point out, an efficient disambiguation depends on the information about the combinatory of each word for each of its senses, so it becomes fundamental that the models reflect this combinatory as precisely as possible.

In FrameNet, predicates belong to frames based on their shared semantics, not on similar syntactic alternations as in Levin (1993) (Baker & Rupenhoffer 2002). This means that FrameNet may be able to reflect the fact that verbs with similar semantics show different syntactic patterns, but as we will see, it has difficulties in presenting the peculiarities of verbs with a particular behaviour.

The Lexicon contained in the initial project is being complemented by the elaboration of a *constructicon* defined by Fillmore (2008) as 'a record of English grammatical *constructions*'. This project is aimed at the labelling of constructions which ordinary parsers are not likely to notice or which grammar checkers are likely to question:

> Some of them involve purely grammatical patterns with no reference to any lexical items that participate in them, some involve descriptions of enhanced demands that certain lexical units make on their surroundings, and some are mixtures of the two (Fillmore 2008: 49).

But the analysis of these units shows a wide range of problems. Fillmore (2008) displays 21 constructions which present annotation difficulties. Some of them are the following (using his labels):

1. Lexical constructions*: sneeze the napkin off the table*
2. Verbs with contextual requirements outside of their phrasal projection: *it's too dark to tell what they're doing*
3. Templatic constructions: *Six is to three as four is to two*
4. Presentative constructions: *Here she is*
5. Constructions similar to *Wherewithall*: *I don't have the resources to landscape the garden*, [John]…*who will provide me the wherewithal to accomplish this* (…).
6. Gapping: *John loves, but Mary hates, rock music*
7. *Let alone*
8. Verb one's way: *Let's start making our way home*.
9. In one's own right: *The son of a poet can be a fine poet in his own right*.
10. Measurement phrases*: five meter long/wide*.
11. The + Adjective*: the rich, the poor*.
12. Adjective comparison*: she's much more intelligent than you said.*
13. (...)

The variety of units shown in this list is derived from the fuzziness of the notion of *construction* itself. Following authors such as Fillmore & Kay (1999) or Jackendoff (2002), constructions are defined with a high degree of abstraction:

> A construction (e.g. the subject-auxiliary inversion construction) is a set of conditions licensing a class of actual constructs of a language (Fillmore & Kay 1999, 3).

Langacker (1987, 25-27) identifies every grammatical unit, from morphemes to syntactic structures, as constructions. He proposes a lexicon-syntax continuum based on this notion. Fillmore (2008) assumes both the definition and the continuum: 'I count myself among the linguists who believe in a continuity between grammar and lexicon' (Fillmore 2008, 49).

The construction-building work includes various kinds of idioms or other multiwords. Fillmore (2008) points out that FrameNet tools are enough when describing phrasal verbs (*pick up, take up*) or words with selected prepositional complements (*depend on, fond of, interest in*). However, with the same tools, they find difficulties in describing and annotating the constructions in the corpus; in contrast to the lexicographic annotation that is linked to a target lexical item, in the constructional annotation there is no target lexical item to link the construction to (Fillmore 2008, 59).

As for the caused-motion construction, the relation with the lexical unit is not clear, as the change in the verbal valence and its associated meaning can be attributed to the construction itself. More explicitly, the use of *sneeze* in this construction implies the use of two arguments that lack a corresponding frame element:

(3) *Bob sneezed the napkin off the table*

Usually, this verb evokes a frame where there are no elements such as Theme or Goal. The only way to describe this pattern and its meaning would be relating this *sneeze* to another frame as Cause-Motion, evoked by verbs such as *push* or *throw*. In this frame we can find the Theme and the elements related to the described movement (as Goal, Area, or Source) as core elements. For instance,

(4) *She would not throw her coin into the Trevi Fountain*

It might be questionable whether we really face two different phenomena in *sneeze* (3) and in *throw* (4). It can be said that in examples such as (3), the element *off the table* has the role Source, in a similar way to *into the Trevi Fountain* in the previous example represents the Goal of *throw*. However, to say that this *sneeze* (3) evokes another frame entails the creation of another lexical unit for this meaning, which goes against the constructional approach that avoids the multiplication of lexical entries. Fillmore (2008, 60) leaves this question open when he points out that there is no automatic way of deciding whether the lexicographer must list in the lexicon the behaviour of the word used in the construction (*sneeze*, in this case) or he must merely recognize it as an instance of the construction.

This question does not arise for other practitioners of the constructional approach, such as Goldberg (1995). She argues against the derivation of constructional meaning from the individual elements of the construction (the verb and the preposition), and thus she asserts that a construction must be posited in the grammar. For this author, the verb carries the specific meaning, and the construction adds another part of the meaning ('X causes Y to move Z'). In this case, the Theme and the Goal of *sneeze* are provided by the construction, and thus there is no need to create a new lexical entry. Besides, a sort of compatibility between the semantics of the verb and the construction is necessary; as Goldberg (1995, 166) shows, the construction imposes certain semantic restrictions on the verbs that can enter into it:

(5) a. *Pat coaxed him into the room.*
b. **Pat encouraged/convinced/ persuaded/instructed him into the room.*

What all of the verbs in (5b) have in common is that they entail that the entity denoted by the direct object makes a cognitive decision. However, the caused-motion construction imposes as a semantic constraint that no cognitive decision can mediate between the causing event and the entailed motion.

Goldberg points out other constraints that serve to characterize semantically the construction. Nevertheless, she does not give any indication about how the caused-motion construction could be registered in a constructicon.

It seems that the difficulties shown by FrameNet when describing the caused-motion construction can be explained by four related aspects of the approach examined:

a. The conceptual base of the frames. Even though it allows for stating the semantic similarities of a group of verbs, it disallows to reflect all the different syntactic patterns a verb can bear.
b. The lack of precision in determining all the frames a verb is related to.
c. The fuzziness of the notion of *construction*, which leads to the following point:
d. The indetermination of the structure of the possible constructional entries. More precisely, it should be indicated how they will include the relevant information about the lexical items that participate in them.

3 The Caused-motion construction in the ECD

The lexicon-syntax continuum lying under the model illustrated by Fillmore (2008) doesn't hold in the Meaning Text Theory (MTT) and the *Explanatory and Combinatorial Dictionary* (ECD). As it is known, for this model the central aspect of language is the lexicon. This centrality, far from avoiding the differentiation of linguistic domains, strengthens their distinction: 'a lexicon of L describes L's individual lexical signs, and the grammar of L covers a) L's individual grammatical signs, and b) the behaviour of sets of L's signs' (Mel'čuk 2006, 3).

This will to establish boundaries, which is rejected by Construction Grammar, allows to describe in a dictionary many of the entities Fillmore cannot give account for (especially, multiword units of the kind of *let alone*). However, the main advantage is not the possibility of including more multiword units in the lexicon, but the highest precision the ECD seems to achieve in the identification of the semantic variations of a word in relation to its morphological properties and its syntactic realizations. This highest precision is acquired by a set of rules used to describe in which cases and in what manner different contexts modify word meanings. Basically, in the ECD, formal clues of semantic differences are observed in three well-defined domains (Mel'čuk 2006, 295):

1) Morphological properties (e.g., different inflection patterns for different L' uses)
2) Government Pattern (different means for the expression of actants with different L' uses)
3) Semantic derivations and collocates (paradigmatic and syntagmatic lexical relations)

The analysis of these three levels related to a LU allows for a decision as to whether we have to split a lexical unit (LU) into two or maintain just one. With this purpose, we will evaluate the weight of the formal differences found. In other words:

> If the semantic difference between two uses of L is correlated with two subsets I1 and I2 of differentiating lexicographic information which show more than one formal difference, then L should be split in two LUs L1 and L2 (Mel'čuk 2006, 295).

That is to say, within the most rigid functional tradition, different lexical units are distinguished only if there are enough formal differences. On the contrary, the absence of enough formal differences will indicate that the semantic differences being considered are not strong enough to split a lexical unit:[1]

This methodological procedure stands out due to its rigorousness and descriptive precision, but it is far from simplifying the huge question. In fact, it illustrates the thin gradation between a contextual difference and a change of lexical unit, by signaling that a different constructional pattern not always leads to a different lexical unit: the same lexical unit can present different constructional patterns, and we must describe these possibilities. To endeavour this task, the MTT has developed an exhaustive

[1] Some examples of formal differences and their incidence in the delimitation of lexical units can be seen in Mel'čuk (2006 76-77). For example "the case of AUNT: taken in any of its three possible uses, this noun has the same morphology, syntax and cooccurrence", and this allows to conclude that we are in front of only one lexical unit.

theoretic mechanism that will be applied here to the cases of the caused-motion alternation, already seen in examples (1) and (2) and now exemplified with the verb *dance* (6):

(6) a. *Bob danced.*
b. *Bob danced her into the corridor.*

As we have already seen in the previous section, verbs admitting this construction undergo a variation on their actantial structure. While in the (a) examples we face a verb with only one actant, referring to a situation with only one participant, the (b) examples refer to a situation[2] with three participants: the agent causing motion, the object moved, and the goal or the source. The question is to what extent this alternation implies the creation of a new LU.

In order to provide an answer to this question, it must be noted that this construction, although not completely predictable, is quite regular in English. As Mel'čuk (forthcoming) has pointed out, "not all theoretically possible conversional derivations of this type are actually acceptable to speakers". As we have said before, whereas you can *coax someone onto somewhere*, it is not possible **to encourage someone onto somewhere*. Apparently, this unsystematic behaviour could be attributed to the typical properties of derivation processes. As these transitive verbs are considered to be derived LUs that share with the basic LU (the intransitive one) only the first actant, they could have their own lexical entry. But apart from implying an unnecessary duplication of lexical entries, this solution would not reflect the partially regular character of this derivation process.

In fact, LUs which are regularly derived do not need a lexical entry, because they are not considered *actual* lexical units, but *potential* lexical units. In MTT a potential unit is a lexical unit that can be created in an almost systematic way from an actual lexical unit, which is a unit with a lexical entry. These potential LUs are divided into two major classes: compound potential LUs and derived potential LUs.

A compound LU is built out of two or more actual LUs (as in *Chinese-born*). A derived lexical unit can be affixally derived or conversionally derived. An affixally derived lexical unit is built out of an actual LU by a derivational affix, as in *amorphous+ness*. A conversionally derived lexical unit is built out of an actual LU by changing its syntactic valence, so that the LU is suited to be used in a particular syntactic construction, in which it cannot be employed without the aforementioned derivation, as in *Bob sneezed the napkin off the table* or *Bob was rumored into this marriage*. Therefore, the transitive *sneeze* is a derived LU regularly created through a derivational semantic rule. The rule, which describes the caused-motion sense, will have the following general form (Mel'čuk 2007):

(7)
'by affecting Y, action P of X
causes1 Y to move
from Z to W over the trajectory T' <==> UL**n^{o}** ('P') | with modification of the GP

In the particular case of *sneeze*, it is stated as follows:[3]

(8)
'by affecting Y, sneeze of X
causes1 Y to move from Z ' <==> SNEEZEn^{o*}[4]| Add two columns to the GP of sneeze 1

This rule describes the meaning of a derivational means, that is, a derivateme. The derivateme under consideration is expressed by a conversion that changes the government pattern (GP) of the basic lexical unit of the vocable (Mel'čuk forthcoming). This rule reflects the possibility of creating a lexical unit with three arguments from the one-argument *sneeze*. As the potential LUs are not listed as

[2] About the notion of linguistic situation, see Mel'čuk 2004 and Alonso Ramos 2007.

[3] The [cause1] value denotes no agentive causation, opposite from [cause2].

[4] This asterisk indicates the provisional or ephemeral character of any potential LU.

such in the dictionary, the GP of the derivate LU is described as a condition of the derivational semantic rule. For example, the potential LU SNEEZE [N_Y *off* N_Z], adds the following two columns to the lexicographic GP of its underlying lexical unit:[5]

(9) GP added to SNEEZE 1

Y ⇔ **II**	Z ⇔ **III**
1. N	1. *off* N

By means of this analysis, the DEC can reflect a unit's change of syntactic structure without unnecessarily multiplying the number of entries of a word, which is one of the main problems of current dictionaries, as Battaner & Torner (2008) point out. These potential derivate lexical units are not listed in the lexicon, but are constructed by word-formation rules out of actual LUs (based, of course, on the lexical entries of the latter). We are dealing with a potential LU, specifically created through a derivational word-formation rule that allows an English speaker to use the 'normal' verb [*to*] SNEEZE in the causative motion sense.

All LUs derived by this 'caused-move' rule share the same "constructional" meaning. They distinguish themselves in the instantiation of the predicate P ('sneeze', 'laugh', etc.) and in the movement arguments chosen: some choose the path, as *dance* (*her across the corridor*), some choose the goal, as *dance* (*her into the corridor*). However, the rule does not give account of the difference between *coax* and *encourage*, that Goldberg (1995) has pointed out. Let's recall the examples:

(10) a. *Pat coaxed him into the room.*
b. **Pat encouraged/convinced/ persuaded/instructed him into the room.*

Goldberg (1995) chooses this example, among others, to argue against the claimed idiosyncrasy that would force the multiplication of lexical entries. As we have already mentioned, she explains that there is no idiosyncrasy but a semantic reason: "no cognitive decision can mediate between the causing event and the entailed motion" (Goldberg 1995, 167). The MTT derivational semantic rule would be able to describe this difference by the addition of a semantic component, as we propose here (marked in bold):

(11)
'by affecting Y, action P of X
causes1 Y to move
from Z to W over the trajectory T
without Y makes a cognitive decision' <==> UL**n°** ('P') | with modification of the GP

With this added semantic component, the rule prevents the possibility of deriving *encourage* or *convince* with the meaning of cause-motion without the necessity of lexical stipulations, as criticised by the constructional approach. However, even with this formulation the cause-move derivation rule does not cover all the possibilities. Thus, it does not give account of the derivation from transitive verbs, such as *kick the dog into the bathroom* or *break the eggs into the bowl*. The rule should be generalized to cover these cases, or should be split in several more specific rules. This decision will depend on a deeper study, but what counts here is that in MTT the means to describe thoroughly this construction exist.

4 Resemblances and divergences between the two approaches

In the previous sections, the treatment of the caused-motion construction in both approaches has been presented. It has been shown that FrameNet presents certain difficulties in treating adequately the fact that verbs such as *sneeze* or *laugh* enter in two constructions without creating a new lexical entry. It is

[5] To maintain the caused-motion sense, the preposition introducing the expression of DSyntA **III** is semantically full, and it has to be present in the DSyntS.

still not clear how the Construction Entries will look, where they will include information about lexical items that participate in them, and more particularly, how the caused-motion construction entry will look like. However, it must be highlighted that Fillmore's linguistic conception in this respect is not very different from Mel'čuk's: both assume a dynamic creation of lexical units such as *sneeze* transitive, instead of creating a new lexical entry. For MTT, as we have just seen, the depicted derivational semantic rule describes the meaning associated with the syntactic valence change without opening a new lexical entry for SNEEZE. In a similar way, Fillmore (2008, 67) explicitly mentions the generation of lexical units:

> Some products of a construction are simply lexical units in essentially every way, except in that they are "generated" rather than requiring individual listing in a dictionary's wordlist: this is true of the products of argument structure constructions.

Another resemblance between both approaches is the importance given to the lexicon. Both Fillmore and Mel'čuk refuse the old vision of the lexicon as a grammar appendix, and it is not fortuitous that both have undertook the task to compile a lexicon or dictionary. Mel'čuk could also sign the following words, written by Fillmore (2008, 49): "each lexical item carries with it instructions on how it fits into a larger semantic-syntactic structure, or, alternatively, on how semantic-syntactic structures are to be built around it".

Differences appear in the relation between lexicon and grammar. As we said before, Fillmore speaks in terms of "continuity between grammar and lexicon", whereas, for Mel'čuk, the lexicon primes logically on the grammar. This different conception of grammar may be the source of the diverse treatments of linguistic phenomena observed in the two approaches. The constructional approach that nourishes the constructicon proposes the vague notion of *construction* for very different phenomena, as if the notion of construction in itself was explanatory. On the contrary, MTT offers different solutions to the so-called constructions.

In this paper, we have focused on the treatment of the caused-motion construction by a derivational semantic rule. However, not all of the argument structure constructions would be treated by derivational semantic rules. For example, the description of the so-called *ditransitive construction*, as in *Mary made John a cake* strongly differs from the one of caused-motion constructions. In this case, we do not have a potential LU *make*, with a "special meaning", but a verb that allows the realization in surface syntax of an Indirect Object not predicted by its government pattern. The Beneficiary Indirect Object (*John*) corresponds not to a deep syntax actant, but to a circumstantial. At this moment, Mel'čuk (forthcoming) proposes the uses of deep fictitious lexical units to represent at the deep syntax level the fact that a lexical-type meaning is expressed by a syntactic construction (i.e. a surface-syntactic relation or a configuration of such relations). In the case of Beneficiary Indirect Object, the fictitious lexical unit is the preposition "FOR".

In FrameNet, the description of this Beneficiary Indirect Object is simple. Verbs such as *bake* or *make* evoke the Cooking-Creation Frame, where the Recipient is an Extrathematic Frame Element. For example, in the entry for MAKE, we find the following examples with Recipient:

(12) a. *Phoebe MADE all three of them hot chocolate.*
b. *We'll MAKE a big pot of tea for all of us.*

The Recipient can be realized as prepositional phrase with "for" or as an object, without more distinction. In contrast, in MTT, the deep syntactic representation of (12a) and (12b) will be different: for the first one, a fictitious "for" is needed, whereas for the second one, we have the genuine semantically full preposition "for". Evidently, they will be different in surface syntax: for the first one, we have an Indirect Object, but not for the second one, where we have an oblique object.

If the caused-motion construction is treated in MTT by a semantic derivational rule, and the ditransitive construction is treated by a fictitious lexical unit, there are transitive-intransitive alternations, such as in the transitive/intransitive verb *to rise,* for which MTT does not propose a special solution, but simply the splitting of lexical entries. While only one lexical entry is established for *sneeze*, (being the cause-motion sense obtained by a derivational rule), two different lexical entries are suggested to explain the behaviour of the verb in examples such as the following:

(13) a. *Indonesian government rises electricity price this year.*
b. *Electricity prices rise.*

The alternation exemplified in (13) is much more frequent than the *sneeze* one. But then we should wonder to what extent frequency is a parameter to differentiate lexical units (as, for instance Kilgarriff 1992 does). These kind of examples reveal the fact that the creation of a new lexical entry implies a wide range of different criteria, and it is always a gradual matter. The relevant aspect of the MTT approach is that it allows for evaluating if a new LU must be considered in relation to the formal differences observed.

5 Conclusion

The analysis based on the theoretical premises of the ECD shows that not every syntactic difference leads to the creation of a new lexical entry. The distinction between actual and potential lexical units, together with the system of derivational rules, makes it possible to describe the actantial modification observed when *sneeze* is constructed in a caused-motion sense, without the necessity of creating a new lexical entry.

In FrameNet, the grounding of the frame elements on the conceptual frames allows to reflect the semantic similarity of a group of verbs with dissimilar syntactic patterns (opposite from Levin 1993), but disallows to reflect the syntactic peculiarities of individual lexical units. The creation of a record of constructions or *constructicon* related to the lexical units of FrameNet adds the problem of the delimitation of these units. Besides, the concept of *construction* is so wide that it becomes inoperative. On the one hand, it includes a diverse variety of units and, on the other hand, it hinders from determining whether the behaviour of the elements in the constructions must be considered as part of the lexical units or as instances of the constructions they appear in.

These problems question the lexicon-semantic continuum placed on the foundations of Construction Grammar, and return us to the lexicon-syntax division as established in traditional grammar. Following this division, the MTT clearly establishes the difference between semantics, syntax and morphology. Thanks to this division, the ECD theoretical apparatus happens to be adequate to specify the level where the contextual differences of a lexical unit merge form, and consider whether they establish a new lexical unit or not. This avoids one of the main problems highlighted by Construction Grammar in 'lexical-based' theories, as it allows to establish the uses of words without unnecessarily multiplying their senses. Nevertheless, as the creation of a new LU is a gradual task, the MTT theoretical apparatus does not close the problem: questions like why do we establish two lexical entries for *rise* but only one for *sneeze* are not easily answered, and this leaves open the question of how must be reflected in the dictionary the way word meaning is modified by different contexts.

References

Alonso Ramos, Margarita. 2007. Actantes y colocaciones. *Nueva Revista de Filología Hispánica*, 55 (2): 435-458.

Baker, Collin F. & Josef Ruppenhofer. 2002. FrameNet's Frames vs. Levin's Verb Classes. In J. Larson, M. Paster (eds.), *Proceedings of the 28th Annual Meeting of the Berkeley Linguistics Society*, 27-38 [http://framenet.icsi.berkeley.edu/]

Battaner, Paz & Sergi Torner. 2008. La polisemia verbal que muestra la lexicografía. *Actas del II Congreso Internacional de Lexicografía Hispánica: el diccionario como puente entre las lenguas y culturas del mundo*. Alicante: Universidad de Alicante, 204-216.

Fillmore, Charles. 2008. Border Conflicts: FrameNet Meets Construction Grammar. In E. Bernal, J. DeCeasaris (eds.), *Proceedings of the XIII EURALEX International Congress*. Barcelona: Edicions a Petició, 49-68.

Fillmore, Charles, Paul Kay & Mary Catherine O'Connor. 1988. Regularity and idiomaticity in grammatical constructions: The case of *let alone*. *Language* 64: 501-38.

Fillmore, Charles J. & Paul Kay. 1999. Grammatical constructions and linguistic generalizations: The *What's X doing Y?* Construction. *Language* 75: 1-33

Fillmore, Charles J., Baker, Collin F. & Sato, Hiroaki. 2002. Seeing Arguments through Transparent Structures. In *Proceedings of the Third International Conference on Language Resources and Evaluation (LREC)*. Las Palmas, 787-91. [http://framenet.icsi.berkeley.edu/]

Goldberg, Adele E. 1995. *Constructions. A Construction Grammar approach to Argument Structure*. Chicago: University of Chicago Press.

Goldberg, Adele E. 1996: Construction Grammar. In Keith Brown, Jim Miller (eds.), *Concise Encyclopedia of Syntactic Structures*. Oxford/New York/Tokyo: Pergamon, 68-71.

Jackendoff, Ray. 1997. Twistin' the night away. *Language* 73:534-59.

Jackendoff, Ray. 2002. *Foundations of Language: Brain, Meaning, Grammar, Evolution*. Oxford/New York: Oxford University Press.

Kilgarriff, Adam. 1992. *Polisemy*. Brighton: University of Sussex.

Levin, Beth. 1993. *English Verbs Classes and Alternations: A Preliminary Investigation*. Chicago: University of Chicago Press.

Langacker, Ronald W. 1987. *Foundations of Cognitive Grammar. I. Theoretical Prerequisites*. Standford (California): Standford University Press

Mel'čuk, Igor. 2006. Explanatory Combinatorial Dictionary. In G. Sica (ed.), *Open Problems in Linguistics and Lexicography*. Monza (Italy): Polimetrica Publisher, 225-355.

Mel'čuk, Igor. 2007. Semantic Transition Rules (of the Semantic Module of a Meaning-Text Linguistic Model). In K. Gerdes, T. Reuther, L. Wanner (eds.), *Proceedings of the 3rd International Conference on Meaning-Text Theory*. München, Wien: Wiener Slawistischer Almanach.

Mel'čuk, Igor. Forthcoming. *Semantics*. Amsterdam/Philadelphia: John Benjamins.

Tenny, Carol L. 1994. *Aspectual Roles and the Syntax-semantics Interface*. Dordrecht: Kluwer.

Van Valin, Robert D. & Randy J. LaPolla. 1997. *Syntax: Structure, Meaning and Function*. Cambridge: Cambridge University Press.

Van Voorst, Jan G. 1988. *Event Structure*. Amsterdam: John Benjamins.