

Argument Structure in Usage-Based Construction Grammar

Florent Perek

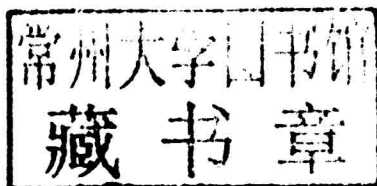
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Experimental and corpus-based perspectives

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Argument Structure in Usage-Based Construction Grammar

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by Florent Perek

Acknowledgments

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CHAPTER 1

Introduction

1.1 Overview: Argument realization

All languages provide ways to talk about events and their participants; this function is typically assumed in great part by verbs. It is precisely for this reason that, more so than other content words, verbs are rarely uttered in isolation but are usually accompanied by certain other words, called the *arguments* of the verb. This book is concerned with the topic of argument realization, i.e., that part of the grammar that determines how participants to verbal events are expressed in the clause.¹

For example, the verb *kill* is typically used with reference to at least two arguments, a killer and a victim. Speakers of English must know that each of these arguments is identified by a specific position in the clause: in the canonical word order, the killer is realized in the pre-verbal position (called the subject in traditional grammar), while the victim is realized in the post-verbal position (the direct object), as in *Brutus killed Caesar*. This knowledge constitutes the *argument structure* of the verb *kill*. By contrast, there are other two-place predicates that behave differently. For instance, the verb *stare* is commonly used in conjunction with two arguments, an observer and a target. The latter of these arguments is not realized as a direct object but as a prepositional phrase headed by *at*, as shown by (1a) vs. (1b) below.

- (1) a. *He stared me.
b. He stared *at* me.

The observations made so far may give the impression that argument structure trivially consists of knowledge tied to individual verbs. However, the following examples from the Corpus of Contemporary American English (COCA; Davies, 2008) do not fit well with this view.

1. It should be duly noted at the outset that the terms “argument realization” and “argument structure” are not restricted to verbs, but can *a priori* apply to any kind of word that can be seen as “governing” other elements in the sentence. It is, however, verbs that have received the most attention in the literature on argument realization, probably because they can be seen, as Levin & Rappaport Hovav (2005, p. 33) put it, as “the prototypical predicators, that is, argument-taking words”. Some studies also apply the related term of “valency” to other parts of speech, such as nouns, adjectives, and prepositions (Herbst, 1983; Herbst & Schüller, 2008).

- (2) a. He stared her into immobility.
- b. Chess coughed smoke out of his lungs.
- c. [H]er nose was so bloodied that the ref whistled her off the floor.
- d. Navin sneezed blue pollen onto his shirt.

These examples strike us as rather creative. What they have in common is that they feature an unusual use of each of the verbs. As previously mentioned, *stare* usually takes two arguments and describes an event of looking, but its use in (2a) with a third argument (*into immobility*) also conveys the causation of a change of state. Similarly, the verbs *cough*, *whistle*, and *sneeze* typically refer to actions involving a single individual, and we certainly do not want to claim that they inherently convey the idea that these actions may result in the motion of some external entity (*smoke/her/blue pollen*), as in (2b–d).

In the face of such examples, the idea that argument structure is primarily knowledge about verbs loses some of its appeal. Speakers are able to use verbs in new, creative ways to fit their communicative needs, which points to broader principles of argument realization. As a matter of fact, such principles are necessary to explain certain facts about children's early use of language, in particular their *overgeneralization errors* (Baker, 1979), as exemplified by (3a) and (3b) below (from Bowerman, 1982a).

- (3) a. I'm just gonna fall this on her.
- b. I disappeared a bear in the back of the car.

These two naturally occurring sentences uttered by preschoolers involve the combination of a verb (*fall* and *disappear*) with an argument structure that is not acceptable in adult usage. Since the children cannot have heard these odd combinations from their caregivers, they must have applied a generalization beyond what is normally acceptable. They would not be able to do so if they had only learned facts about individual verbs.

It is sometimes difficult to decide on purely intuitive grounds whether a given use of an argument structure can be attributed to the main verb alone, or whether it is better captured as a creative application of a generalization. Such problems will be the central concern of Part I of this book. For example, many transitive verbs in English can be used with an indirect object to refer to the intended recipient of the result of the action described by the verb, as exemplified by (4) and (5) below (also from COCA).

- (4) a. Ask the butcher to grind you a little pork.
- b. Jerry lit us a candle from the emergency kit.
- c. I'll just chop you a bit of wood.
- (5) a. His mother cooked us an Indian-style meal.
- b. Can I buy him a cookie?
- c. I'll write you a letter every day.

It is unproblematic to claim that the sentences under (4) are creative uses, since the verbs *grind*, *light*, and *chop* do not in themselves make reference to an intended recipient or beneficiary (*you* in [4a] and [4c], *us* in [4b]), and there is nothing in the meaning of these verbs that could predispose them to occur with one. The sentences under (5) could be analyzed along similar lines, although the term “creative” seems less apt. Certainly, *cook*, *buy*, and *write* do not necessarily involve an intended recipient of, respectively, the prepared food, the purchased goods, or the written material. However, preparing meals for other people, purchasing items for someone, or writing some text (a letter, a prescription, a recommendation, etc.) intended for somebody else, are common occurrences, and the corresponding formulations “cook/buy/write someone something” will most likely be familiar to speakers of English. Tallying such uses with those under (4) fails to capture this perceived conventionality. A similar problem arises more generally with optional arguments. For example, the verbs *rent* and *sell* arguably presuppose a recipient, which can be specified as an indirect object, but can also be omitted, in which case the recipient argument receives a generic or indefinite interpretation:

- (6) a. She rented (them) the apartment.
- b. They sold (us) the house.

If there is some mechanism that allows speakers of English to use transitive verbs with an additional recipient argument, and since the transitive use of *rent* and *sell* is possible and does not produce a sense of “incompleteness”, why would it not be assumed that *rent* and *sell* are essentially transitive and that their occurrence with a recipient argument is licensed by the same mechanism that produces (4) and (5)? Linguists have traditionally relied on their intuitions to decide such matters. I will suggest an alternative approach, based on linguistic usage (cf. Chapters 2 and 3).

The examples discussed so far also illustrate another important property of argument structure, i.e., that it produces meaning. Verbs can typically occur with more than one argument structure, with systematic variations in meaning. For instance, using a transitive verb with an indirect object, as in (4) and (5), introduces the idea of an intended transfer. The following examples from Goldberg (1995, p. 11) illustrate how different argument structures introduce semantic differences between uses of the same verb, *kick*:

- (7) a. The horse kicks.
- b. Pat kicked the ball.
- c. Pat kicked at the football.
- d. Pat kicked Bob the ball.
- e. Pat kicked the football into the stadium.
- f. Pat kicked Bob black and blue.

These sentences share the notion that the agent performs some gesture, namely a forward motion of the foot, but they differ in many other respects. In (7a), the horse acts alone, in (7b) and (7c), Pat's action is targeted at a specific object, and in (7d), it causes Bob to receive the ball. In (7e), Pat's action on the football causes it to move along a defined trajectory, and in (7f), Pat's action on Bob imparts a change of state on the latter.

Trivially, sentences with a different number of arguments are likely to differ in meaning, to the extent that the semantic interpretation must be adapted to accommodate additional arguments. Yet, even pairs of sentences with the same number and type of arguments also exhibit meaning differences, as seen in the contrast between (7b) and (7c). In the most likely scenario, (7b) refers to a situation in which John kicks and makes contact with the ball, which causes it to move. However, (7c) does not necessarily imply that the ball was set in motion, neither that contact was made; rather, it merely describes an attempt by John to cause the ball to move (cf. Levin, 1993, pp. 64–65).

While descriptive accounts of the semantic aspects of argument structure abound (Jackendoff, 1983; Dixon, 1991; Rappaport Hovav & Levin, 1998; Pinker, 1989; Goldberg, 1995, *inter alia*), linguists have more rarely addressed the question of how argument structure comes to be associated with meaning in the first place, and what determines this meaning. Part II will be concerned with this question. One popular view is that argument structures derive their meaning from the verbs that frequently occur in them (cf. Goldberg, Casenhiser, & Sethuraman, 2004; Stefanowitsch & Gries, 2003). For instance, the notion of transfer conveyed by the ditransitive argument structure is taken to originate in its frequent occurrence with *give* and other verbs of giving. While this view seems adequate for argument structures that have a relatively concrete and stable meaning, it is less apt at capturing cases where the semantic contribution is more abstract and variable (cf. Chapter 4). As already mentioned, the insertion of *at* after the transitive verb *kick* usually produces an interpretation where contact with the direct object referent is not made. For one thing, it is not clear what verb(s) the meaning 'lack of contact' could stem from. Also, there are similar pairs of sentences with other verbs that do not display the same semantic contrast, as exemplified with *pull* in (8a) vs. (8b) below. Both sentences certainly entail that Bill made contact with the lever; the difference between them lies in that (8a) but not (8b) entails that the lever was successfully moved.

- (8) a. Bill pulled the lever.
b. Bill pulled at the lever.

This issue relates to the question of what level of generalization best captures argument structure: how can the structures used in (7c) and (8b) be considered the same if they do not constitute a consistent semantic generalization? Can a single overarching

construction be maintained, or is it preferable to posit several low-level generalizations? In Chapter 5, I present usage-based evidence for the latter of these alternatives.

Finally, a last aspect that has received some attention in the literature is how different argument structures may be related. For instance, many verbs conventionally used in the double-object pattern exemplified by (4) and (5) may also occur with the same number and type of arguments in another construction with *to*, as exemplified by (9a) and (9b) below.

- (9) a. He gave/lent/promised/offered/sent/sold Larry a book.
 b. He gave/lent/promised/offered/sent/sold a book to Larry.

The fact that many of such sentence pairs involve little variation in meaning (if any) might lead us to consider the two patterns as grammatical variants, and suggest that one could be derived from the other (and possibly vice versa), or at least related to it in some way. On the other hand, each variant is associated with particular constraints that restricts its use (cf. Erteschik-Shir, 1979; Thompson, 1990; Bresnan, Cueni, Nikitina, & Baayen, 2007). For instance, the double-object variant is unacceptable with lexical recipients and pronominal themes (at least in American English), ruling out sentences such as **He gave Larry it*. Hence, the two variants are not always interchangeable, which suggests that they should be regarded as separate patterns. Similar observations can be shown to hold to varying extents for many other pairs of argument structures (see Levin, 1993 for a number of potential examples), which could be analyzed along the same lines.

Theories of argument structure have favored either one or the other position, although there is arguably some merit in both: the former position explicitly captures the relatedness between variants (e.g., Jackendoff, 1975; Pinker, 1989), while the latter emphasizes the specific function of each (e.g., Goldberg, 1995, 2002; Michaelis & Ruppenhofer, 2001). This begs the question of whether these two seemingly opposite views could in fact be reconciled (cf. Chapter 6). A more interesting question, however, is whether both are needed to account for the linguistic behavior of speakers (cf. Chapter 7). For instance, to what extent does the occurrence of a verb in one of two related variants trigger the expectation that it can also be used in the other variant, and how adequately do the two perspectives capture that behavior?

This book examines argument realization from the perspective of a usage-based approach to grammar, i.e., under the assumption that crucial aspects of grammatical organization are tied to the frequency with which particular words and syntactic structures are used. More particularly, it addresses the issues sketched above by appealing to usage-based explanations. In the next section, I briefly introduce the theoretical framework of usage-based linguistics and its basic tenets, and I motivate its use for the study of argument realization.

1.2 Usage-based linguistics

Usage-based theory takes the view that the cognitive representation of language emerges through, and is shaped by, language use (Langacker, 1987, 2000; Hopper, 1987; Barlow & Kemmer, 2000; Bybee, 2006, 2010, 2013; Bybee & Hopper, 2001; Bybee & McClelland, 2005). Hence, usage-based approaches reject the strict separation of grammar (or *competence*) and usage (or *performance*) typical of generative approaches, and rather than construing grammar as a mere repository to be accessed in language use, they take the view that grammar is itself the product of usage. In Bybee's (2006, p. 1) words, "grammar [is] the cognitive organization of one's experience with language". Methodologically, it follows from this approach that one can gain insights into the language system by analyzing usage data.

In usage-based approaches, grammar is commonly seen as a vast inventory of symbolic conventions that are extracted from full-fledged utterances through a gradual process of schematization, retaining the syntactic and semantic commonalities across different usage events. In line with this account of the emergence of grammar, another important point of departure from generative approaches is the exposure of the so-called "rule/list fallacy" (Langacker, 1987, p. 29), whereby linguistic units must either be produced by maximally abstract rules of grammar, or be listed in a lexicon containing all the irregularities. Instead, in a usage-based approach, grammatical patterns may be defined at any level of abstraction. Specific instances and the structures abstracted from them can be stored simultaneously; in other words, lower-level units need not be discarded once a higher-level generalization over these units has been made. In line with current thinking on categorization in cognitive psychology (Medin & Schaffer, 1978; Nosofsky, 1986, 1988; Nosofsky, Pothos, & Wills, 2011, *inter alia*), some recent versions of the usage-based approach (notably Pierrehumbert's [2001] and Bybee's [2006, 2010, 2013]) propose that the cognitive representation of language essentially consists of a large number of exemplars stored in all their details in the course of language use. In these models, abstract structures tend to be viewed as an emergent property of exemplar storage rather than as explicit rules and schemas.

While the core tenets of usage-based linguistics can in theory be understood independently of particular grammatical frameworks, they are in practice susceptible to displaying varying degrees of compatibility with specific models. Functionalist approaches (e.g., Givón, 1984, 1990; Dik, 1989; Halliday, 1994; Van Valin & LaPolla, 1997) will generally tend to have more affinity with a usage-based conception of grammar than generative frameworks (e.g., Chomsky, 1965, 1981, 1995; Borer, 2003; Ramchand, 2008; Randall, 2010). Due to their theoretical kinship with usage-based linguistics and some shared assumptions about the nature of language and its relation to the rest of cognition, cognitive-linguistic approaches

to grammar and in particular the various strands of *construction grammar* (Fried & Östman, 2004; Kay & Fillmore, 1999; Lakoff, 1987) are highly compatible with usage-based theory. In fact, several constructionist frameworks explicitly adopt a usage-based approach, such as Langacker's (1987, 1991, 2000, 2008) Cognitive Grammar, Goldberg's (1995, 2006) Cognitive Construction Grammar, and Croft's (2001) Radical Construction Grammar. In the present study, I will also adopt a constructional approach. As I argue in Chapter 2, the concept of construction allows a better account of the facts of argument realization (especially regarding its verb-general aspects), which provides further motivation for adopting an approach along the lines of construction grammar.

A wealth of evidence has been accumulated over the past few decades in support of a usage-based view of language. Many findings indicate that frequency of occurrence appears to be an important factor in linguistic representations (cf. the reviews by Ellis [2002] and Diessel [2007]). Frequent words tend to be phonologically reduced; for example, Bybee (2000) finds that deletion of final /t,d/ in American English is more common in highly frequent forms (e.g., *can't*, *don't*) than in less frequent ones, and Gahl (2008) reports that vowel duration tends to be shorter in the more frequent member of homophone pairs (e.g., *time* and *thyme*) than in the less frequent one. Frequent words are also more resistant to morphosyntactic change (Bybee, 1985, 1995; Bybee & Slobin, 1982; Hooper, 1976). Thus, high frequency is one of the factors that may lead to the formation of morphologically irregular forms, like for instance the irregular English past tense forms (e.g., *brought*, *took*, *went*, etc.). This is congruent with evidence that frequent inflected forms are stored and retrieved as whole units and not computed "on the fly", even if they are fully regular (Stemberger & MacWhinney, 1986, 1988; Hare, Ford, & Marslen-Wilson, 2001); hence, such forms may endure and outlive the word formation process that licensed them if the latter loses productivity and falls into disuse. Along similar lines, behavioral and neurological evidence indicates that the tendency of morphologically complex words (e.g., *happiness*, *insane*) to be stored and retrieved as a whole (as opposed to being compositionally derived, for instance by affixation) correlates with the frequency of the complex form (e.g., *childish*) relative to the frequency of the base form (e.g., *child*) (Hay, 2001; Blumenthal-Dramé, 2012).

Similar frequency effects are also reported at the phrasal level. Frequent sequences of words (e.g., *all over the place*, *don't have to worry*, *you don't want to*) are processed more easily (Tremblay, Derwing, & Libben, 2009; Arnon & Snider, 2010) and are repeated faster and with fewer mistakes (Bannard & Matthews, 2008; Bod, 1998; Tremblay, Derwing, Libben, & Westbury, 2011) than infrequent ones. Bybee & Scheibman (1999) also report that the phonological reduction of *don't* mostly occurs in high-frequency phrases such as *I don't know*. By the same token, Jurafsky, Bell, Gregory, & Raymond (2001) show that phonological reduction is more likely