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The Relationships Between Verbs and Constructions¹

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Introduction

This paper focuses on the types of possible semantic relationships between a verb's semantics and a construction's semantics. In order to understand this topic, it is important to make clear what I have in mind by "constructional semantics." Section 2 briefly reviews this idea and provides three arguments in support of recognizing constructional semantics. Section 3 explores the range of possible semantic relationships that the verb can bear to the construction. It is suggested that the analysis sheds light on the larger issue of which actions within a given scene are the most salient.

Constructional Semantics

The basic idea I will be assuming is that the simple sentence types in English are directly correlated with one or more semantic structures. For example,

- | | | |
|-------------------|------------------|----------------------------|
| 1. Ditransitive: | Subj V Obj1 Obj2 | X CAUSES Y to RECEIVE Z |
| 2. Caused-Motion: | Subj V Obj Obl | X CAUSES Y to MOVE Z |
| 3. Resultative: | Subj V Obj Pred | X CAUSES Y to BECOME Z |
| 4. Transitive: | Subj V Obj | X ACTS on Y; X EXPRESSES Y |

This idea is at odds with the widespread view that assumes that the basic sentence patterns of a language are determined by semantic or syntactic information specified by the main verbs. Thus, the sentence pattern in (1) appears to be determined by the specifications of *put*.

1. Pat put the ball on the table.

That is, *put* is a verb which requires an agent, a theme and a location, and it appears overtly with those 3 arguments. Below I argue that while (1) represents the prototypical case, sentence patterns of a language are not reliably determined by independent specifications of the main verb.

¹ I would like to thank Mark Turner, Michael Israel, an anonymous reviewer for this volume, my graduate students at UCSD, and the audience at the ICLA in Albuquerque for helpful discussion on this topic. Some of the issues addressed here are discussed in compact form in Goldberg (1995:61-65). The analysis here supersedes that analysis.

Three Arguments for Constructional Meaning

Goldberg (1995: chapter 1) lays out several arguments for distinguishing a verb's semantics from the semantics of the construction in which the verb can appear (cf. also Goldberg 1991, Goldberg 1992a,b). Although the particular implementations vary, there appears to be a growing consensus that it is necessary to distinguish a verb's "core" semantics from the semantics of the expression when the verb appears in different argument structure arrays (Fauconnier & Turner 1994, 1995; Pinker 1994, Hovav & Levin 1996; see Leek 1995 for an alternative view). Below, I briefly outline three motivations for distinguishing between the verb's meaning and the construction's semantics.

Implausible verb senses are avoided

The first argument for constructional meaning comes from the following types of sentences:

- 2a. The train screeched into the station.
- b. Elena sneezed the foam off the cappuccino.
- c. Pat smiled her appreciation.

If argument structure were projected exclusively from the verb's semantics, we would need a special verb sense for each of the verbs in the above expressions. In particular, we would require a special sense of screech that would mean, "Y MOVES while screeching," a special sense of sneeze, "X CAUSES Y to MOVE Z by sneezing," and a sense of smile that would mean, "X EXPRESSES Y by smiling." Such senses are intuitively implausible; one does not find unique stems to code such meanings in other languages. For example, one does not find a unique stem *blink* alongside an unrelated term for "sneeze" that means, "X CAUSES Y to MOVE Z by sneezing." Similar attested examples include:

- 3a. If time is money then save yourself rich at Snyder's! (found by Mark Turner)
- b. The people of this small town...have been unable to pray Mrs. Smith's two little boys home again. (found by Mark Turner)
- c. She tried to avoid blinking the tears onto her cheeks (Anne Tyler, 1992, *Dinner at the Homesick Restaurant*, NY: Knopf)

Again, the senses that would be required if one wished to project the clausal pattern exclusively from the verb's lexical semantics, are intuitively implausible.

A generalization about construction meaning is predicted

A second motivation stems from an observation made by Pinker (1989). He points out that what he terms, "the syntactically relevant aspects of verb meaning" are like the meanings of closed class items. What he has in mind by the syntactically relevant aspects of verb meaning are the skeletal meanings such as "X CAUSES Y to MOVE Zpath" "X CAUSES Y to RECEIVE Z," "X ACTS ON

Y," etc. Pinker observes that the elements of meaning involved, e.g., CAUSE, MOVE, ACT, PATH etc., are like the meanings of closed class items.

On a constructional account, these semantic elements combine to form constructional meanings, and constructions are closed class items. Therefore, Pinker's observation is predicted: we expect constructions to have the semantics of closed class elements because they are closed class elements.

Support from language acquisition

The third motivation arises from a debate in the language acquisition literature. Landau and Gleitman (1985) propose that children use the syntactic frames that a verb is heard used with in order to determine the verb's meaning. There is in fact 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, 1995; Naigles et al. 1993; Sethuraman et al. to appear).

However, Pinker (1994) points out that the syntactic frame cannot help the learner directly identify what is intuitively the meaning of the verb. The syntactic frame corresponds to more abstract meanings such as ``X CAUSES Y TO MOVE Z," ``X CAUSES Y TO RECEIVE Z." He notes that the conjunction (or disjunction) of all of the more abstract meanings will not lead to inferences about the ``root" meaning of the verb.²

For example, hearing (4) should not lead the child to infer that rumble has a motion component to its meaning, since rumble can be used in expressions that do not entail motion as in (5):

4. The bus rumbled down the alley. (motion)
5. Elena's stomach rumbled loudly. (no motion)

Once constructions are recognized to be distinguishable from verb meanings, we need not assume that the constructional frame directly reflects the meaning of the verb. Instead, the constructional frame can be used by the child in a more subtle way. Instead of the child assuming that the construction's semantics directly reflects the verb meaning, the child instead uses the construction to determine the general scene that is being referred to. That is, the construction encourages the learner to focus on the particular scene under discussion (see Fisher et al. 1994; Gleitman 1994, Sethuraman et al. 1996).

On this view, the verb is recognized to code some salient action within the scene. For instance, the first time a child hears the verb kick as in (6) the child need not assume that

² Pinker also correctly points out that such abstract meanings will not serve to distinguish between *kick* and *throw* or between *give* and *hand*. But the proponents of syntactic bootstrapping have not claimed that this type of finer grained learning takes place solely on the basis of syntactic frames. They assume that context plays a crucial role in acquiring these distinctions.

kick itself lexically codes ``transfer," the meaning associated with the ditransitive construction.

6. Pat kicked Chris the ball.

Instead, the construction focuses the child's attention on the scene of transfer being described. The verb can be used to pick out a salient action within that scene. In this case, the action of ``giving" is certainly one choice of a salient action, but another salient action is that of ``kicking." If the child chooses the latter meaning, then she will have correctly determined the content of the verb upon a single exposure.

Assuming this proposal for how constructions aid in the acquisition of verb meaning is roughly correct, the main subject of the present paper is to determine what actions are considered salient within a given scene; or, more concretely, what is the range of possible semantic relationships that verbs can bear to constructions?

Relating Verb and Construction

Elaboration

It is clear that the most prototypical, the most common and the most universal case is one in which the verb designates an elaboration of the meaning of the construction.³ For example, if we assume that the ditransitive construction has roughly the meaning of transfer, ``X CAUSES Y to RECEIVE Z" then it is clear that verbs such as *give* or *pass* lexically code this meaning. Similarly, if we assume that the caused-motion construction has roughly the meaning, ``X CAUSES Y to MOVE Zpath" then it is clear that *put* lexically codes this meaning.

7. Hana gave/passed Martin the salt.

(ditransitive: X CAUSES Y to RECEIVE Z approximately = ``give", ``pass")

8. Laura put the book on the table.

(caused-motion: X CAUSES Y TO MOVE Zpath approximately = ``put")

It is perhaps the prototypicality of this case, that the verb codes an elaboration of the meaning of the construction that has led so many researchers to assume that the verb must always code an elaboration of the meaning of the construction; i.e., that the verb's meaning determines, or ``projects," the meaning associated with the entire sentential frame.

Means

More interestingly for the present purposes are cases wherein the verb does not itself lexically designate the meaning associated with the construction. For example,

³ Goldberg (1995) refers to this case as instance instead of elaboration.

a common pattern in English, Chinese, and Dutch is that the verb codes the means of achieving the act designated by the construction (Talmy 1985). This is the case in each of the following examples:

9. Amy kicked Paul the ball.
10. Elena sneezed the foam off the cappuccino. (from Kathleen Ahrens)
11. Ken wrote his way to fame and fortune.

Kicking is the means of achieving transfer; sneezing is the means of achieving caused-motion; writing is the means of achieving metaphorical motion.

Pinker (1989) discusses the following example from Talmy (1985):

12. The bottle floated into the cave.

He notes that this sentence is not felicitous in the situation in which the bottle is carried into the cave in a bowl of water. It is only acceptable in the case that the floating was the means by which the bottle moved into the cave.

Croft (1991) similarly observes the difference in the following two examples:

13. a. The boat sailed into the cave
- b. *The boat burned into the cave.

He notes that 13a is acceptable because sailing is the means by which the the boat moves into the cave; 13b is not acceptable because the burning is not the means of effecting motion. As an anonymous reviewer points out, example 13b is of course acceptable if it is construed to mean that the boat embedded itself into the cave by burning. However, as the reviewer notes, this is what is predicted since on that construal, the burning is the means of achieving the relevant effect. On the basis of these examples, Croft proposes that "individual lexical items appear to denote only causally linked events."

It is an interesting question as to whether or not Croft's generalization is actually true for lexical items. It raises a number of issues including what should count as a distinct subevent within a lexical item's designation. I do not attempt to address this question here, but see Goldberg (ms) for a comparison of the range of possible relationships between a verb and construction on the one hand, with the range of possible relationships between subevents within a single lexical item's designation on the other. In the following section the question concerning the nature of the relationship between verb meaning and constructional meaning is addressed.

Causal Relations Hypothesis

If we leave aside the question of whether individual lexical items only denote causally linked events, we can ask a different question: are the meaning of the verb and the meaning of the construction always causally related? In answer, we might propose the following hypothesis:

Causal Relation Hypothesis:

The meaning designated by the verb and the meaning designated by the construction must be integrated via a (temporally contiguous) causal relationship.

In this section it is shown that verb and constructional meanings are typically related by some kind of causal relation if the verb does not simply designate an elaboration of the constructional meaning. In the following sections, however, it is argued that the Causal Relation Hypothesis must be broadened to allow several other types of semantic relations as well.

A clue that the Causal Relations hypothesis may play some role is clear from the following pairs of examples:

- 14a. The car screeched out of the driveway.
- b. The truck rumbled down the street (Levin \ Rappaport 1990)

Notice the same verbs, screech and rumble, are used in both (14) a-b and (X+1) a-b, and yet the examples in (14) are fully acceptable to all speakers, while those in (X+1) are rejected by many. The difference seems to be that in the examples in \ex{-1}, the sound is caused by the motion, whereas in the examples of \ex{0}, the sound is not caused by the motion, but is simply a co-occurring event. Thus verbs of sound emission provide tentative support for the Causal Relation Hypothesis: that the meaning of the verb and the meaning of the construction must be causally related (at least for speakers who reject (Xa)-b).⁴

In order to look more closely into whether the Causal Relations Hypothesis plays an important role, I looked for novel uses of verbs in various constructions. Many of my examples were drawn from Clark & Clark (1979), "When nouns surface as verbs." Consider the following sorts of examples:

- 15. Ken Houdini'd his way out of the mailbag.
- 16. Arthur wristed the ball over the net.
- 17. The trainer kennelled the dogs.
- 18. The Jones' summered in New Hampshire.

The first thing to notice is that each of these cases involves a metonymy. In (15), a general metonymy, Agent stands for the Action associated with that Agent, licenses

⁴ The dialect which accepts (Xa)-b is addressed in section 3.4.3.

Houdini to be used to convey the action(s) associated with Houdini. This metonymy is at work in many cases involving both proper and common nouns, including:

19. Nixon the tapes
20. Reagan the public
21. butcher the cow
22. jockey the horse

Example 16 involves the metonymy, Instrument stands for the Action associated with that Instrument. In this case, wrist is interpreted as an instrument conveying the action associated with the wrist. Other examples include (examples again from Clark & Clark 1979):

23. Crisco the pan
24. sweater the child
25. badge the members

There are also cases which have become conventionalized, so that what was initially an on-the-fly metonymy has become an lexicalized verb meaning:

26. Azita elbowed her way through the crowd.
27. Kathleen handed Dave a letter.

Example 17, (*The trainer kennelled the dogs*), involves the metonymy: Result stands for the Action leading to that Result. In this case kennel is the result of the trainer acting on the dogs. The question arises as to how it is that the result involves the dogs being in the kennel. I would like to suggest that the containment relation follows from general world knowledge about kennels and dogs.

Support for this idea can be found in an experiment described by Clark (1973). She asked 18 month olds to "Do this," as she placed a block in a crib. The children dutifully did as they were asked. But the experiment continued with Clark placing the block beside or under the crib and asking the child to "Do this." In these conditions as well, the child put the block in the crib. That is, given a block and a crib, or a movable object and a container, children construe the natural relation between the two to be one of containment. It is claimed here that adults do the same.

As we saw was the case with instrumental denominal verbs, there is some conventionalization in this class as well. That is, many denominal result verbs are highly conventionalized. These include not only cases in which the verb codes the resulting location ((X+1a)-b), but also cases in which the verb codes other types of result, e.g. the resulting shape:

28. They housed the furniture.
29. She booked reservations at the Bed and Breakfast.

30. The chef cubed the meat.

More generally, verbs often designate the result achieved by some action, and they do not need to be denominal:

31. Herb melted some butter.

32. Ann burped her grandchild.

To summarize, earlier examples, repeated in (33) each involve a particular metonymy:

33a. Ken Houdini'd his way out of the mailbag.

Metonymy: Agent for Action performed by Agent

b. Arthur wristed the ball over the net.

Metonymy: Instrument for Action performed with Instrument

c. The trainer kennelled the dogs.

Metonymy: Result for Action leading to that Result

If we consider a simple causal event an event that has an agent, an optional instrument and a result, it becomes clear that the denominal verbs fall into a pattern. These verbs can metonymically stand for the action associated with the agent, the action associated with the instrument or the action leading to the result. Thus each of the denominal verbs in 15-33 is used to stand for a critical part of a causal event.

[insert Figure 1]

The verb can also code the causally related notion of enablement, as noted by Fauconnier and Turner (1994):

34. Carolyn let the water out of the tub.

This case also falls squarely within the purview of the Causal Relations Hypothesis.

The fact that many of these verbs are conventionalized should not take away from the fact that the larger generalization also exists: verbs are often related to a construction by lexicalizing a critical part of a causal event: the action, the instrument or the result.

Examples 35-36 seem to pose a clear challenge to the Causal Relations Hypothesis:

35. The Jones' summered in New Hampshire.

36. They were going to weekend in Catalina.

Clark & Clark describe these cases as involving denominal verbs of duration. Let us assume that the construction involved, Subj V Obl, has roughly the semantics, X BE-

LOCATED Y. The verbs live, reside, stay can be considered semantic elaborations of this meaning. It is clear that the duration of a stay is not causally related to being in a location. Thus the appearance of denominal verbs such as summer and weekend appears to pose a challenge to the Causal Relations Hypothesis.

However note that this pattern is severely restricted:

- 37. *She was going to summer where she lived.
- 38. *She was going to weekend at work.

Notice further that not every denominal verb of duration is acceptable:

- 39. *The Jones' were going to month in New Hampshire.
- 40. *They were going to week in Catalina.

What seems to be critical is that the noun be construed as conventionally associated with travel, for example, a vacation, not that it designates a temporal duration. Summer and weekends are conventionally associated with vacations. Weeks and months are not. If the noun itself designates a vacation, the expressions are as expected, fully acceptable:

- 41. They planned to vacation in Spain.
- 42. Azita and Peter were going to honeymoon in Greece.
- 43. Carolyn was going to holiday in France.

Other nouns that designate periods in which travel can be expected are also acceptable:

- 44. The Goldstein's sabbaticalled in England.
- 45. Nina sojourned in Italy.

Once it becomes clear that the denominal verbs must designate periods of expected travel, it is clear that they are in fact causally related to the meaning of the construction. The travel is the cause of being in a location. Thus these cases are not exceptions to the Causal Relations Hypothesis after all.

Recall our initial question, what are the most salient actions within a given scene? It should not come as a surprise that causally related events are particularly salient, because causally related events have been argued to be central to other cognitive phenomena as well. In particular, they have been argued to be among the most likely inferences to map from source to target domain both in metaphorical mappings and in explicit analogies (Carbonell 1982, Gentner 1983). It is clear that when choosing which aspects of a scene are relevant, causality plays a central role.

Nonetheless, there exist certain cases that do violate the Causal Relations Hypothesis as stated at the outset of this section. These cases are discussed in the following section.

Other types of Relationships between Verb and Construction of the frame designated by construction

In certain cases, the verb may specify that the scene designated by the central sense of the construction does not hold. For example, again, assuming the ditransitive construction designates roughly "X CAUSES Y to RECEIVE Z," the verbs in the following serve to deny that entailment:

- 46. Pat denied Chris a popsicle.
- 47. Pat refused Chris a kiss.

This is also possible in the caused-motion construction, the basic sense of the construction being "X CAUSES Y to MOVE Z" (Goldberg 1995). Example (48), for example, entails that Pat caused Chris not to move into the room, thereby contradicting the entailment of motion associated with the construction.

- 48. Pat locked Chris out of the room.

A parallel possibility exists with the transitive construction. If we take the relevant constructional sense to be "X ACTS ON Y", the following verbs serve to contradict the meaning of the construction:

- 49. Pat ignored Chris.
- 50. Adam resisted the marshmallows.

These cases are interesting in that the meaning of the construction and the meaning of the verb are not simply composed in an additive or monotonic fashion. Instead, the meaning of the verb is integrated with the meaning of the construction, resulting in entailments that neither the verb or construction have independently.

In these cases involving verbs with negative import, the claim as to how verb meanings relate to constructional meanings must be adapted slightly. The construction does not serve to pick out a scene and the verb a salient causally related action within that scene. Therefore the Causal Relation Hypothesis does not apply straightforwardly. Still, there is a sense in which the negation of a proposition is closely related to its assertion. It has often been noted that sentences with negative import typically presuppose that the corresponding positive assertion is "on the table" (Givón 1979; Horn 1989 and references therein). That is, the scene associated with the construction is accessible in the discourse. Support from this idea comes from a number of sources. Horn (1989) discusses this idea at length. He cites an early reference from Baldwin (1928):

In order that a negative statement may have any value, there must have been some reason to suppose that the affirmative statement of which it is the exact denial was true, either that it had been proposed for our acceptance by an interlocutor, that it had been part of our stored-up knowledge or purported knowledge, or that we had in mind what we took at the moment to be sufficient ground for its

acceptance...Negation is a secondary function of thought, which presupposes the existence of positive judgments. (Baldwin 1928:146-48 cited by Horn 1989:68)

Givón similarly states, "Negatives in general are uttered in a context where the corresponding affirmative has been discussed, or else where the speaker assumes ... the hearer's bias toward or belief in--and thus familiarity with--the corresponding affirmative" (1979:139).⁵ In fact in many other cases as well as these cases with negative import, the scene designated by the construction does not have a real world physical correlate in the context. For example, we can and often do talk about hypothetical, past or future events. In all of these cases, the scene designated by the construction is one that is interpretable in the discourse context, but is not directly reflected in the immediate real world context. It is possible that in these situations, the constructional meaning does not aid in the acquisition of verb meaning, although it still would be available when the scene designated by the construction is instantiated in context. More likely, speakers may be able to use the scene as construed in a given discourse (instead of in the real world) as a way of determining the meaning of the verb in much the same way: the verb would be assumed to code a salient action associated with the scene designated by the construction, whether or not that scene or the action itself are directly instantiated in the non-linguistic context.

The close relationship between a positive assertion and its negation is also evident in the interpretation of sarcasm. For example, I'm sure the cat likes you pulling its tail, can be used to convey that the cat does not like having its tail pulled. The close relation between positive and negative is also attested in certain diachronic meaning shifts, e.g. words like bad and nasty coming to be used to mean "good."

It is in this way that the meaning of the verb is related to the meaning of the construction. The verb serves to negate the positive meaning of the construction. As noted above, these cases do not conform to the Causal Relation Hypothesis in a straightforward way. However, like causal notions, the negation involved is in each case "force-dynamic" in the sense of Talmy (1985b). Force dynamic relations are those relations that involve causes, forces, counterforces and tendencies. Thus, we might broaden the Causal Relation Hypothesis to include all force-dynamic relations as follows.

Force Dynamic Relation Hypothesis:

The meaning designated by the verb and the meaning designated by the construction must be integrated via a (temporally contiguous) force-dynamic relationship.

⁵ The fact that the scene designated by the construction does not hold in the real world requires that novel verbs that are related in this way are not learned by simply recognizing a salient action within a scene as suggested in section 2.3.1.

This reformulation allows us to include both causal relations and denial under the broader notion of force-dynamic relations. However, in the following two sections, two more ways in which verbs can be related to constructions are discussed. Neither of these is a force-dynamic relation. Interestingly, however, each of these cases is somewhat limited in its application and judgments often vary across speakers. Thus, it seems there is a hierarchy of possibilities, with elaboration being the most prototypical, force-dynamic relations being the next prototypical, and the following cases being possible, but non-prototypical.

Preconditions

If we assume that the ditransitive construction has roughly the meaning of transfer, i.e., "X CAUSES Y to RECEIVE Z" (e.g., Goldberg 1992b), then we find that this construction allows the verb to designate a precondition of transfer, namely, the creation or preparation of the transferred entity. For example:

51. Dave baked Elena a cake.

Here the preparation of the cake is a precondition for Dave's transferring the cake to Elena. Transferring something from an agent to a recipient is associated with certain frame-semantic knowledge. In particular, we know that what is transferred from one person to another is often prepared for that purpose. The preparation or creation of the transferred entity can thus be viewed as a salient action within our frame semantic knowledge of transferring.

Interestingly, for many speakers, the verb does not designate a precondition as readily in other English constructions. For example, for a theme to move in a direction requires the precondition that the theme be free of physical restraints. In the following construction which designates caused motion, the verb designates the precondition of removing constraints that will enable motion. However, judgments on the following examples vary, with speakers ranging from finding them fully acceptable to clearly unacceptable:

52. % The warden freed the prisoner into the city.

53. % Pat unleashed the dog into the yard.

The reason that the precondition of preparation in the scene of transfer may be more available than the precondition that restraints be removed in the scene of caused motion may be simply that we preparation preceding transfer may be a more frequent occurrence in our experience than removal of restraints enabling motion. In transferring something from one person to another it often happens that the transferred goods have to be prepared or created for the purpose. On the other hand, it is generally not necessary to remove any restraints before causing an entity to move: most movable entities in the world are unrestrained.

Co-occurring activity

The *way* construction allows the verb to designate a co-occurring activity that is not causally related to the action designated by the construction. For example,

54. "He seemed to be whistling his way along." (Oxford University Press Corpus)

Certain speakers find the same relation possible with the intransitive motion construction:

55. % He whistled out of the room.

Notice a co-occurring activity is not possible in the resultative (56) or ditransitive (57) constructions:

56. *She whistled the metal flat.
(to mean, she caused the metal to become flat while whistling)

57. *She whistled him a box.
(to mean, she gave him a box while whistling.)

On the one hand, a co-occurring activity in a scene can be salient. In a collection of attested examples of the *way* construction, a good percentage of the cases involving a non-causally related co-occurring activity actually had conjoined verbs, their status as salient all the more apparent. For example:

58. "...youth swore and snarled and sloganised its way round the lovely arcades..."
(Oxford University Press corpus)

At the same time, however, there is by definition no inherent relationship between the co-occurring activity and the scene designated by the construction, except for a temporal overlap. Therefore insofar as the co-occurring activity is deemed salient, attention would seem to be naturally drawn away from the scene designated by the construction. This may be why this possibility is so limited.⁶

Conclusion

We started out by framing the question of what types of semantic relationships verbs could bear to constructions in terms of a more general question, what types of actions are most salient within the event-types designated by simple clauses. The generalization that emerges from the data discussed here involves the following hierarchy of possibilities:

⁶ It could be that the cooccurring activity is possible with the *way* construction and, for some speakers, with the intransitive motion construction because of a similarity with the intransitive plus motion adjunct:

She whistled all the way to the bank.

Hierarchy of Ways Verbs can be Related to Constructions:

Elaboration >

Force-dynamic Relation (means, instrument, result, denial) >

Precondition, Co-occurring activity

In particular, the most prototypical case is that in which the verb codes an elaboration of the construction. That the verb's meaning and the construction's semantics be related force-dynamically is the next most prototypical possibility. Correspondingly less common are cases where the verb codes a precondition or a co-occurring activity. These last possibilities appear to be somewhat construction specific, with a fair amount of variation among speakers.

More specifically, we can state the following hypothesis relating to the above hierarchy:

For any two relations in the hierarchy such that $A > B$, we predict that if a construction allows B then it allows A;

It follows that if a language allows B then it allows A.

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