

Alternations in constructional models of argument structure

Towards an integrated approach

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Overview

- Overview
 - Research domain: argument structure
 - Brief comparison of projectionist and constructionist approaches
 - Re-appraising the role of alternations
 - Alternations in a constructionist model
 - Conclusion and prospects



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Research domain

- Research domain: argument structure
 - i.e., knowledge about how verbs realize their arguments
 - A (once) prevalent view:
 - Verbs are stored with their “subcategorization frames” in the lexicon (Chomsky 1965); e.g., *kill*: [NP ___ NP]
 - Knowledge of argument structure amounts to knowledge about individual verbs
 - But an incomplete account
 - Neither predictive nor explanatory: it misses potential generalizations and regularities
 - From a psycholinguistic point of view:
 - Speakers can store a huge amount of lexical information
 - But they are also aware of more general principles



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Research domain

- Overgeneralization by children but also by adults
 - *She fell the cup (vs. She made the cup fall)
 - *What's fussing her? (vs. What is she fussing about?)
 - Speakers are able to extend the syntactic possibilities of verbs to fit their communicative needs
- A theory of argument structure:
 - is concerned with defining the principles of argument realization which speakers are aware of
 - has been argued to be a solution to Baker's paradox in LA



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Theories of argument structure

- Large body of evidence for the semantic basis of AS
 - Verbs cluster in argument realization classes that seem to be to a large extent semantically motivated (Levin 1993)
 - Argument realization is determined by some aspects of verbal semantics:
 - thematic roles (Gruber 1965, Jackendoff 1983)
 - event structure (Rappaport and Levin 1998)
 - aspectual structure (Tenny 1987)
 - causal structure (Croft 1998)
 - ...



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Theories of argument structure

- Many verbs present multiple argument realizations

John kicked the ball. (transitive)

John kicked at the ball. (conative)

John kicked Bo the ball. (ditransitive)

John kicked the ball to Bo. (*to*-dative)

John kicked the ball off the field. (caused-motion)

John kicked the man unconscious. (resultative)

- The theory must account for:
 - The mapping of verbs to frames
 - The variation in meaning between each frame



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Theories of argument structure

- Two positions:
 - Projectionist approaches
 - All grammatically relevant information is projected by the verb
 - Therefore, several frames correspond to as many verbs
 - Variation in meaning = verbal polysemy
 - Limits: rampant polysemy, hard to account for “creative” uses of verbs (the *sneeze*-sentences, e.g., *John sneezed the foam off the cappuccino*)
 - Constructionist approaches
 - Verb meaning does not (always) change with AS
 - The syntax itself provides the missing aspects of meaning
 - Do not suffer from the limits of projectionist approaches
 - Goldberg (1995), Borer (2003)



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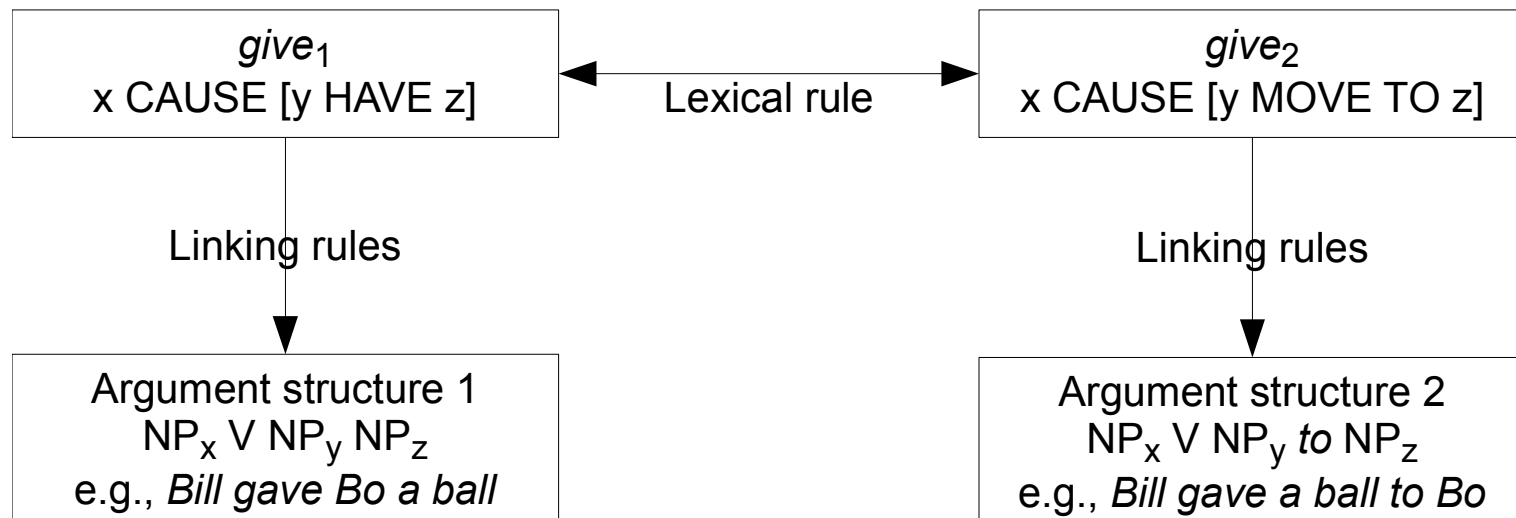
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Theories of argument structure

- A projectionist approach: Pinker (1989)
 - Subcategorization projected from a verb's semantic structure according to general linking rules
 - Lexical rules relate semantic structure templates and can derive new lexical entries from existing ones
 - Implementation of alternations (e.g., the dative alternation below)



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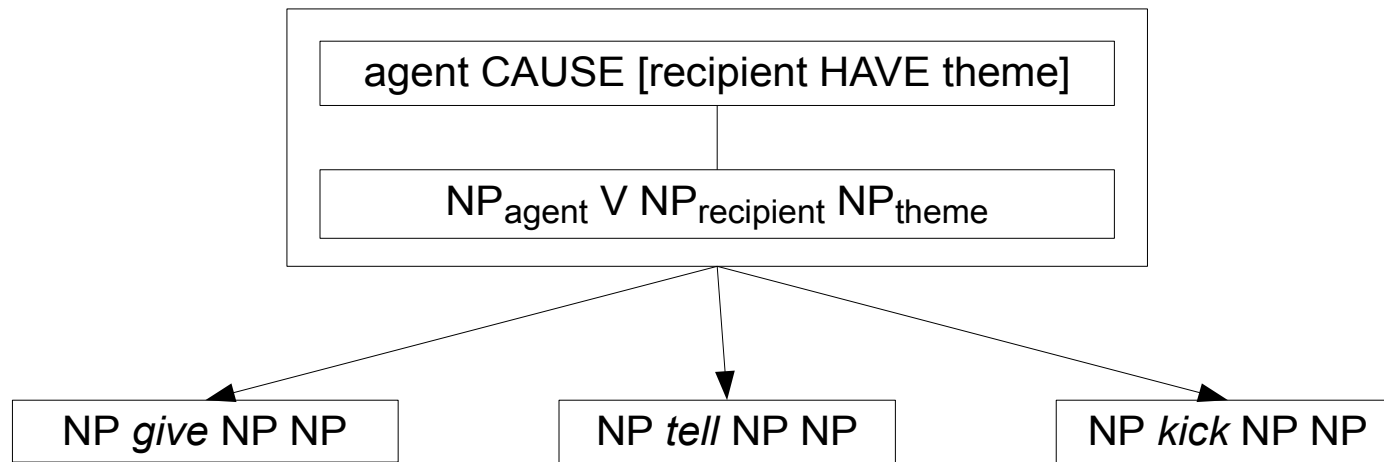
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Theories of argument structure

- A constructionist approach: Goldberg (1995)
 - Argument structure = independent construction, i.e., pairing of a syntactic form with a semantic template
 - Verb meaning is reduced to a minimum
 - A verb can instantiate the construction if its meaning is compatible with the semantic template



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Theories of argument structure

- Projectionist models = alternation-based
 - Emphasize “horizontal” relations between different syntactic uses of the same verb
 - Alternations are linguistic structures themselves
- Constructionist models = fusion-based
 - Emphasize “vertical” relations of instantiations between abstract constructions and verbs in context
 - Alternations are epiphenomenal: they result from a verb being able to “fuse” with two distinct constructions



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Theories of argument structure

- The two types of model are functionally equivalent
 - Verb-frame mapping is determined by some “inherent” semantic aspect of the verb
 - A strict separation between lexis and syntax makes constructions incompatible with many projectionist models
 - But the converse is not necessarily true: constructionists sometimes tentatively posit relations between constructions
 - e.g., Goldberg (1995) relation of truth-conditional synonymy between the variants of the dative alternation
 - But they are largely under-studied and their exact role (if any) is rarely elaborated on



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My claims

- My claims:
 - A constructionist model is not strictly speaking incompatible with alternation-based representations
 - Alternations might provide a better account of some phenomena
 - (non-exhaustive) review of some empirical evidence



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Niches for alternations

- Language acquisition: statistical preemption
 - Originally suggested to account for the acquisition of irregular morphology, e.g., **goed* → *went*
 - Indirect negative evidence derived from the significant absence of a plausible form in the input; e.g., *explain* in the ditransitive
 - Goldberg (1995, to appear): speakers have contextual expectations; e.g., information structure properties
 - Presupposes that speakers notice the functional equivalence and structural correspondences in a pair of structures
 - Learners have to be aware of horizontal relations between constructions if they are to use this learning strategy
 - cf. Marcotte (2006): model of LA based on alternations, called *analogical paradigm completion*



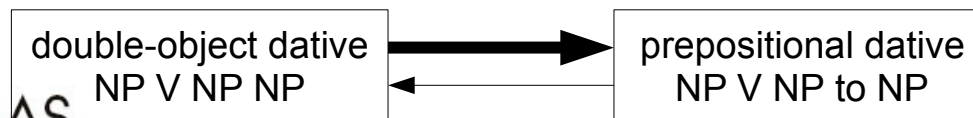
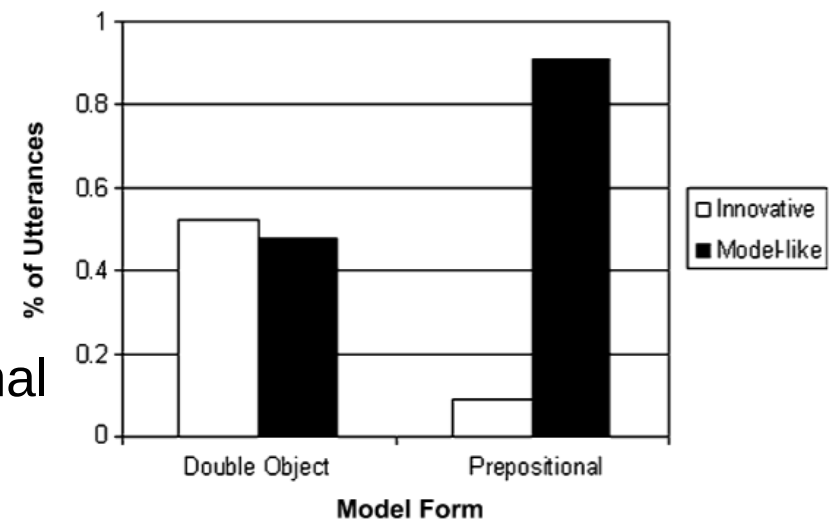
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Niches for alternations

- The directionality effect (cf. Conwell & Demuth 2007)
 - Two novel verbs: one modelled in the double-object form, the other modelled in the prepositional form
 - Goal: elicit the other variant from the 3-years old subjects
 - They did generalize but the two exposure conditions differ
 - => the subjects were more likely to go from double-object to prepositional dative than the other way around
 - The dative alternation is asymmetric: not predicted by a purely constructional account => evidence for alternations?



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Niches for alternations

- Possible explanations:
 - A frequency-based explanation? ...
 - ... must be ruled out: $F(\text{double-object}) > F(\text{prepositional-object})$
 - Discourse context of the experiment?
 - The variables influencing the dative alternation (cf. Bresnan et al. 2007) do not clearly decide
 - Conwell and Demuth:
 - either (1) bias towards a goal interpretation of the recipient phrase
 - or (2) there are many more *to*-dative-only verbs than alternating verbs, leading to a lower alternation likelihood if the verb is presented in the *to*-dative
 - Levin (1993): 115 alternating, 147 *to*-only, 32 double-object-only
 - ICE-GB corpus: 44 alternating, 292 *to*-only, 24 double-object-only
 - Distinctive collexeme analysis (Stefanowitsch and Gries 2004): 15 verbs prefer the double-object, 49 prefer the *to*-dative



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Niches for alternations

- “Language-general” facts: Wonnacott *et al.* (2008)
 - Experiments with an artificial language
 - 12 action verbs, 2 synonymous constructions
 - The “degree of alternation” of verbs between the two constructions was varied among conditions
 - Subjects more likely to use new verbs creatively if the degree of alternation was higher
 - Very few or no overgeneralization in the “lexicalist” language
 - Overgeneralization matching the constructions’ frequency in the “generalist” language
 - Taken as evidence that
 - speakers store not only knowledge about verbs and constructions
 - but also knowledge about the language as a whole



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Niches for alternation relations

- Language change: paradigmatic analogy
 - Diffusional change motivated by semantic analogy: a new construction spreads to semantically similar verbs first
 - De Smet (2008) argues for paradigmatic analogy:
 - More likely for a verb to adopt a new complementation pattern if the existing paradigm of that verb is similar to that of other verbs already occurring in the pattern
 - Example of the *for...to* infinitives in English
 - No semantic motivation for *arrange*
 - But the verb also occurs with a *for*-PP or a *to*-infinitive, and so do many verbs in the distribution of the *for...to* construction
 - De Smet (2008) suggests that the motivation for this change is paradigmatic



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Niches for alternation relations

- Alternations provide a better account of some patterns
 - A case in point: the English conative construction
 - Insertion of *at* before the direct object of a transitive verb: *John kicked at the ball*
 - Various semantic effects: cancels entailments of affectedness of patient or intentionality of agent, “bit-by-bit” reading, etc.
 - The meaning of the construction eludes a general characterization => polysemous construction?
 - Alternative account:
 - Conatives do not seem to have some constant aspect of meaning in common ...
 - ... rather a contrast with their transitive counterpart: they are somehow “less transitive” (cf. Perek 2010, Perek & Lemmens 2010)
 - Better captured by the application of an alternation



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Niches for alternation relations

- The status of alternations
 - Most likely, speakers are aware of alternations and use them
 - Thus, a model “concerned with defining the principles of argument realization which speakers are aware of” should not neglect this dimension
 - Constructionist models have yet to meet this requirement
- A (tentative) model
 - Couched in a symbolic grammar
 - A combination of the two perspectives
 - Constructions contain semantic restrictions
 - But there is an additional layer of abstraction which embodies relations between constructions



Alternations in CxG

- Alternations = systematic form/meaning shifts
 - Dative alternation:
 - Mary gave/sent/promised John the book
Mary gave/sent/promised the book to John
 - near-synonymous: both encode caused change of possession
 - differ in terms of information structure (inter alia)
 - Causative alternation:
 - John broke/opened/emptied the jar
The jar broke/opened/emptied
 - (de)causativization



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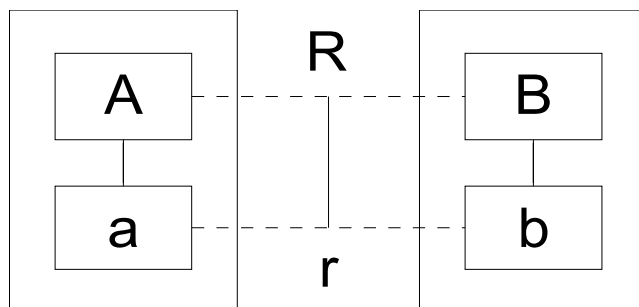
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Alternations in CxG

- Basic reasoning:
 - Formal change correlated to semantic change
 - Formal and semantic changes = relations between formal or semantic structures
- Second-order symbols
 - Symbolic pairings of a formal and semantic relation
 - Semantic relations can concern aspects of event structure or construal



A, B: phonological structures (forms)
a, b: semantic structures (meanings)
R: formal relation
r: semantic relation



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Alternations in CxG

- Productivity by analogy
 - Second-order symbols are patterns of analogy: “Form A is to form B what meaning a is to meaning b”
 - They can trigger productivity through higher-order analogy
 - Combinations derived by second-order symbols can be blocked by semantic restrictions on constructions



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Alternations in CxG

- Example with the dative alternation:
 - *carry, push, drag, lower* all take the *to*-dative only
 - However Bresnan *et al.* (2007) report the following attested ditransitive examples:
 - Karen hand-carried her a form
 - Player A pushed him the chips
 - Sumomo dragged him a can of beer
 - Buddha lowered him the silver thread of a spider
 - The target meanings have a pronominal, animate, highly prominent goal argument
 - mismatch with the entrenched meanings of the *to*-dative form
 - double-object form derived by analogy with other alternating pairs



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Conclusion

- The status of alternations
 - Not incompatible with constructionist models of AS
 - Desirable in some cases
 - Eventually calls for more empirical evidence
 - Are alternations cognitively real?
 - If so, what (other) functions do they perform?



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Thanks for your attention!

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