Constructions: A new theoretical approach to language

Adele E. Goldberg

Summary A new theoretical approach to language has emerged in the past 10-15 years that allows linguistic observations about form-meaning pairings—constructions--to be stated directly. Constructionist approaches aim to account for the full range of facts about language, without assuming that a particular subset of the data is part of a privileged "core". Researchers argue that unusual constructions shed light on more general issues, and serve to illuminate what is required for a complete account of language.
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Constructions--form and meaning pairings--have been the basis of many major advances in the study of grammar since the days of Aristotle. Observations about particular linguistic constructions have shaped our understanding of both particular languages and the nature of Language itself. But only recently has a new theoretical approach emerged that allows observations about constructions to be stated directly, providing long-standing traditions with a framework that allows both broad generalizations and more limited patterns to be analyzed and accounted for fully. Many linguists with varying backgrounds have converged on several key insights that have given rise to a family of approaches, here referred to as *constructionist* approaches [2-23].

Constructionist approaches share certain foundational ideas with the mainstream "generative" approach that held sway for the past several decades[1,36,37]. Both approaches agree that it is essential to consider languag cognitive (mental) system; both approaches acknowledge that there must be a way to combine structures to create utterances, and both approaches recognize that a non-trivial theory of language learning is needed.

In other ways, constructionist approaches contrast sharply with the mainstream generative approach. The lat has held that the nature of language can best be revealed by studying formal structures independently of their semantic or discourse functions. Ever increasing layers of abstractness have characterized the formal representations. Meaning is claimed to derive from the mental dictionary of words, with functional differences between formal patterns being largely ignored. Semi-regular patterns and cross-linguistically unusual patterns viewed as "peripheral," with a narrowing band of data seen as relevant to the "core" of language. Mainstrean generative theory argues further that the complexity of core language cannot be learned inductively by general cognitive mechanisms and therefore learners must be hard-wired with principles that are specific to language ("universal grammar").

Each basic tenet outlined below is shared by most constructionist approaches. Each represents a major divergence from the mainstream generative approach, and a return in many ways to a more traditional view of language.

1) All levels of description are understood to involve pairings of form with semantic or discourse function, including morphemes or words, idioms, partially lexically filled and fully abstract phrasal patterns. (Se 1)
2) An emphasis is placed on subtle aspects of the way we conceive of events and states of affairs.
3) A "what you see is what you get" approach to syntactic form is adopted: no underlying levels of syntax, any phonologically empty elements are posited.
4) Constructions are understood to be learned on the basis of the input and general cognitive mechanisms (th *constructed*), and are expected to vary cross linguistically.
5) Cross-linguistic generalizations are explained by appeal to general cognitive constraints together with t functions of the constructions involved.
6) Language-specific generalizations across constructions are captured via inheritance networks much like th

that have long been posited to capture our non-linguistic knowledge.

7) The totality of our knowledge of language is captured by a network of constructions: a "construct-i-con.

Each of these tenets is explained in a subsequent section below.

Constructions: what they are

Constructions are stored pairings of form and function, including morphemes, words, idioms, partially lexically filled and fully general linguistic patterns. Examples are given in Box 1.

Morpheme	e.g., *anti-, pre-, -ing*	
Word	e.g., *Avocado, anaconda, and*	
Complex word	e.g., *Daredevil, shoo-in*	
Idiom (filled)	e.g., *Going great guns*	
Idiom (partially filled)	e.g., *Jog* <someone's> *memory*	
Covariational Conditional construction [10]	Form: The Xer the Yer (e.g., *The more you think about it, the less you understand*)	Meaning: linked independent and dependent variables; see text.
Ditransitive (double object) construction	Form: Subj [V Obj1 Obj2] (e.g., *He gave her a Coke; He baked her a muffin.*)	Meaning: transfer (intended or actual); see text.
Passive	Form: Subj aux VPpp (PP_{by}) (e.g., *The armadillo was hit by a car*)	Discourse function: to make undergo topical and/or actor non-topical

Box 1. Examples of constructions, varying in size and complexity; form and function are specified if not readi transparent.

Any linguistic pattern is recognized as a construction as long as some aspect of its form or function is strictly predictable from its component parts or from other constructions recognized to exist. In addition, man constructionist approaches argue that patterns are stored even if they are fully predictable as long as they occ with sufficient frequency [24-29].

Unlike mainstream generative grammar, the framework emphasizes the semantics and distribution of particular words, grammatical morphemes, and cross-linguistically unusual phrasal patterns; the hypothesis behind this methodology is that an account of the rich semantic/pragmatic and complex formal constraints on these patterns readily extends to more general, simple or regular patterns.

As an example of an unusual pattern, consider the Covariational Conditional construction in Box 1 (e.g., *The more you think about it, the less you understand*). The construction is interpreted as involving an independent variable (identified by the first phrase) and a dependent variable (identified by the second phrase). The word *the* normally occurs at the beginning of a phrase headed by a noun. But in this construction it requires a comparative phrase. The two major phrases of the construction resist classification as either noun phrases or clauses. The requirement that two phrases of this type be juxtaposed without conjunction is another non-predictable aspect of the pattern. Because the pattern is not strictly predictable, a construction is posited that specifies the particular form and semantic function involved [10].

Other unusual constructions, with example instances to the right, include those in Box 2. While each pattern may be primarily colloquial, it is part of every native speaker's repertoire of English. (The stranded preposition construction is unusual not in that it is prescriptively dispreferred, but that it is only found in a few Germanic languages).

time *away* construction	*Twistin the night away[13]*
What's X doing Y?	*What's that fly doing in my soup?[30]*
Nominal Extraposition construction	*It's amazing the difference![31]*
Mad Magazine construction	*Him, a doctor?![32]*

N P N construction	*house by house; day after day[12]*
Stranded preposition construction	*Who did he give that to?*

Box 2: Productive or semi-productive constructions that are unusual cross-linguistically and must be learned on the basis of the input.

More common patterns such as passive, topicalization and relative clauses are understood to be learned pairings of form and (semantic or discourse) function—*constructions*, as well. Each pairs certain formal properties with a certain communicative function.

Even basic sentence patterns of a language can be understood to involve constructions. That is, the main verb can be understood to combine with an argument structure construction (e.g., transitive, intransitive, ditransitive constructions etc.) [7]. The alternative is to assume that the form and general interpretation of basic sentence patterns of a language are determined by semantic and/or syntactic information specified by the main verb. The sentence patterns given in (1) and (2) indeed appear to be determined by the specifications of *give* and *put* respectively:

1. Chris gave Pat a ball.
2. Pat put the ball on the table.

Give is a three argument verb. An act of giving requires three characters: a giver (or agent), a recipient, and something given (or "theme"). It is therefore expected to appear with three phrases corresponding to these three roles. In (1), for instances, Chris is agent, Pat is recipient, and a ball is theme. *Put*, another three argument verb, requires an agent, a theme (object that undergoes the change of location) and a final location of the theme's motion. It appears with the corresponding three arguments in (2). However, while (1) and (2) represent perhaps the prototypical case, in general the interpretation and form of sentence patterns of a language are not reliably determined by independent specifications of the main verb. For example, it is implausible to claim that *sneeze* has a three argument sense, and yet it can appear in (3). The patterns in (4)-(6) are likewise not naturally attributed to the main verbs:

3. "He sneezed his tooth right across town." (*Andrew's Loose Tooth*, Robert Munsch)
4. "She smiled herself an upgrade." (A. Douglas, *Hitchhiker's guide to the Galaxy* Harmony Books)
5. 'We laughed our conversation to an end.' (J. Hart. 1992, *Sin* NY: Ivy Books)
6. "They could easily co-pay a family to death." (NYT, 1/14/02)

Examples need not be particularly novel to make the point. Verbs typically appear with a wide array of complement configurations. Consider the verb *slice* and the various constructions in which it can appear (labeled in parentheses):

7a. He sliced the bread. (transitive)
b. Pat sliced the carrots into the salad. (caused motion)
c. Pat sliced Chris a piece of pie. (ditransitive)
d. Emeril sliced and diced his way to stardom. (*way* construction)
e. Pat sliced the box open. (resultative)

In all of these expressions *slice* means to cut with a sharp instrument. It is the argument structure constructions that provide the direct link between surface form and general aspects of the interpretation such as something acting on something else (7a), something causing something else to move(7b), someone intending to cause someone to receive something (7c), someone moving somewhere(7d), someone causing something to change state(7e)[7,33].

Thus constructions can be seen to be essential to an effective account of both unusual or especially complex patterns and for the basic, regular patterns of language.

The functions of constructions

Different surface forms are typically associated with slightly different semantic or discourse functions. Take f example, the *ditransitive* construction, which involves the form, Subj V Obj1 Obj2 (e.g., (1), (8b), (9b)). The

ditransitive form evokes the notion of transfer or “giving.” This is in contrast to possible paraphrases. For example, while (8a) can be used to mean that Liza bought a book for a third party because Zach was too busy to b it himself, (8b) can only mean that Liza intended to give Zach the book. Similarly while (9a) can be used to entail caused motion to a location(the book is caused to go to storage), the ditransitive pattern requires that the goal argument be an animate being, capable of receiving the transferred item (cf.9b, 9c). As is clear from considering the paraphrases, the implication of transfer is not an independent fact about the words involved. Rather the implication of transfer comes from the ditransitive construction itself.

(8) a. Liza bought a book for Zach.
b Liza bought Zach a book.

(9) a. Liza sent a book to storage.
b. Liza sent Stan a book.
c. c. ??Liza sent storage a book.

Other interpretations for the ditransitive can also be systematically related to the notion of transfer, in that they may imply that the transfer will occur if certain satisfaction conditions evoked by the main verb occur (10a), that transfer will *not* occur (10b), or that the antonymic relation of giving, that of taking away occurs (10c). Even examples such as *Cry me a river* can be related to the notion of giving via a metaphorical extension[7].

(10) a. Liza guaranteed Zach a book. (If the guarantee is satisfied, Z. will receive a book)
b. Liza refused Zach a book. (Liza caused Zach not to receive a boo
c. Liza cost Zach his job. (Liza causes Zach to los
his job).

In addition to semantic generalizations there also exist generalizations about *information structure* properties of the construction, or the way in which a speaker’s assumptions about the hearer’s state of knowledge and consciousness at the time of speaking is reflected in surface form. In particular, there is a reliable statistically tendency for the recipient argument to have already been mentioned in the discourse (ofte encoded by a pronoun) as compared to prepositional paraphrases [9,34,35]. Facts about the use of entire constructions, including register (e.g. formal or informal), dialect variation, etc. are stated as part of the construction as well. Constructionist approaches provide a direct way of accounting for these facts, since constructions specify a surface form and a corresponding function.

The form of constructions

In order to capture differences in meaning or discourse properties between surface forms, constructionist theori do not derive one construction from another, as is typically done in mainstream generative theory. An actual expression or *construct* typically involves the combination of at least half a dozen different constructions. For example, the construct in (11) involves the list of constructions given in (12a-f):

[color coded]

(11) [What did Liza buy the child?]

(12) a. *Liza, buy, the, child, what, did* constructions (i.e. words)
b. Ditransitive construction
c. Question construction
d. Subject-Auxiliary inversion construction
e. VP construction
f. NP construction

Note that “surface form” need not specify a particular word order, nor even particular grammatical categories, although there are constructions that do specify these features. For example, the ditransitive construction in (11) and discussed above is characterized in terms of a set of argument types. The overt order of arguments in (11) is determined by a combination of a verb phrase construction with the Question construction, the latter of which allows for the “theme” argument (represented by *What*) to appear sentence initially.

Constructions are combined freely to form actual expressions as long as they are not in conf For example, the specification of the ditransitive construction that requires an animate recipient argument conflicts with the meaning of *storage* in (9c) resulting in unacceptability. The observati

that language has an infinitely creative potential [1, 36] is accounted for, then, by the free combination of constructions.

Learning constructions

The fourth tenet states that constructions are understood to be learned on the basis of positive input and to vary cross linguistically. This idea highlights a major difference between most constructional approaches and most mainstream generative approaches, since the latter have argued that learners must be hard-wired with principles specific to a language faculty or "universal grammar" [37, see also 21].

Crucially, all linguists recognize that a wide range of semi-idiosyncratic constructions exi every language, constructions that cannot be accounted for by general, universal or innate princip or constraints (e.g., examples in Box 2). Mainstream generative theory has taken the position tha these constructions exist only on the "periphery" of language—that they need not be the focus c linguistic or learning theorists.[37] Constructionist approaches on the other hand have zeroed in these constructions, arguing that whatever means we use to learn these patterns can easily be exte to account for so-called "core" phenomena. In fact, by definition, the core phenomena are more regular, and tend to occur more frequently within a given language as well. Therefore if anything, are likely to be easier to learn. Since every linguist would presumably agree that the "peripher difficult cases must be learned inductively on the basis of the input, constructionist theories pr that there is no reason to assume that the more general, regular, frequent cases cannot possibly b

In fact, constructionist theories argue that language ***must*** be learnable from positive input together with fairly general cognitive abilities[18,29,38], since the diversity and complexity witnessed does not yield to accounts that assume that cross-linguistic variation can be characteri in terms of a finite set of parameters [37, 57]. Research in this area is quickly gaining momentu number of constructionists have made good on the promise to explain how particular constructions a learned [26,27]. It turns out that the input may not be nearly as impoverished as is sometimes as [39]; analogical processes can be seen to be viable once function as well as form is taken into ac [40,41]; there is good reason to think that children's early grammar is quite conservative, with generalizations emerging only slowly [29,42,43]; and the ability to record transitional probabilit and statistical generalizations in the input has proven a powerful means by which to learn certain types of generalizations [44].

This approach takes a somewhat different view of what is universal about language than mains generative theory. Linguists generally talk of certain constructions as existing in many languages e.g., the passive construction, relative clause construction, question construction, etc. However constructions in different languages can be identified as instances of the same construction if an only if their form and function is ***identical*** once other constructions in the language that may dif are factored out. In point of fact, this rarely occurs except in cases of shared diachronic histor language contact [20,45,46]. What is truly remarkable is the degree to which human languages diff from one another, given that all languages need to express roughly the same types of messages. Constructionist approaches anticipate such fairly wide variability across languages [47,48].

Reference to the "same" construction in unrelated languages can be made sense of by understanding that is intended by such references are actually ***types*** of constructions. Two constructions may be, for example, of t passive type in that they share certain functional and formal characteristics even if they are not identical. is, two constructions in different languages can be identified as instances of the same type of construction if only if they serve a closely related function and form.

Cross-linguistic generalizations

A driving question behind much of linguistic research is, what is the typology of possible constructions and what constrains it? Constructionist approaches often turn to grammar-external explanations such as universal functional pressures, iconic principles, and processing and learnin constraints to explain such empirically observable cross-linguistic generalizations. For example, certain generalizations about how form and meaning tend to be linked cross-linguistically can be explained by appeal to iconic and analogical processes [6,35,49-51,55]. Constraints on long-dista dependency constructions (traditional "island constraints") appear to yield to processing explanations that take into account the function of the constructions involved [19, 52-54]. Proce accounts have also been suggested to account for certain alternative word order options [55,56].

Even among generative linguists there has been a trend toward the view that many constraints language that have traditionally been seen as requiring recourse to innate stipulations that are specific to language can actually be explained by general cognitive mechanisms. For example, the that that all languages seem to have noun and verb (and possibly adjective) categories may be expl by the existence of corresponding basic semantic categories [57]. Hauser, Chomsky and Fitch go so as to suggest that the only language-specific innate ability that may be required is recursion, an they raise the point that even that may turn out not to be specific to language [58].

Intra-language generalizations

Inheritance hierarchies have long been found useful for representing all types of knowledge, e.g., our knowledg concepts. The construction-based framework captures linguistic generalizations within a particular language via same type of inheritance hierarchies [2, 59-60]. Broad generalizations are captured by constructions that are inherited by many other constructions; more limited patterns are captured by positing constructions that are at various midpoints of the hierarchical network. Exceptional patterns are captured by low level constructions. F example, the "What's <X> doing <Y>?" construction, which has a fixed form and connotes some sort of unexpecte captures a pattern in the grammar of English. It inherits properties from several other more general constructio including the Left Isolation, the Subject Auxiliary Inversion, the Subject-Predicate and the Verb-Phrase constru [30].

Constructions all the way down

What makes a theory that allows for constructions a "construction-based" theory is tenet 7: the idea that the network of constructions captures our knowledge of language *in toto* i.e., it's constructions all the way down.

Conclusion

Constructionist theories set out to account for all of our knowledge of language as patterns of form and function. That is, the constructionist approach does not assume that language should be divided up into "core" grammar and the to-be-ignored "periphery." In identifying constructions, an emphasis is placed on subtle aspects of construal and on surface form. Cross-linguistic generalizations are explained by appeal to general cognitive constraints together with the functions of the constructions involved. Language-specific generalizations across constructions are captured via inheritance networks. The inventory of constructions, which includes morphemes or words, idioms, partially lexically filled and fully abstract phrasal patterns, is understood to be learned on the basis of the input together with general cognitive mechanisms.

Major questions

Do there exist generalizations about form that do not have even an abstract, family-resemblance or radial categ type generalization about function associated with them?

How does the full range of phenomena considered by mainstream generative grammarians translate into a constructi approach?

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