L226: Construction Grammar

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Why Do Construction Grammar?

First reason:

It provides uniform tools for analyzing the general patterns of language, the most idiosyncratic exceptions, and everything in between.
One cannot analyze an idiomatic construction without simultaneously discovering and setting aside all the aspects of the data that are NOT licensed by the construction one is studying. To know what is idiomatic about a phrase one has to know what is nongeneral and to identify something as nongeneral one has to be able to identify the general. In grammar, the investigation of the idiomatic and of the general are the same; the study of the periphery is the study of the core—and vice versa. The picture that emerges from the consideration of special constructions ... is of a grammar in which the particular and the general are knit together seamlessly.
Some Aux-Initial Constructions: (Fillmore 1999; Ginzburg & Sag 2000)

<table>
<thead>
<tr>
<th>Exclamatives:</th>
<th>Boy, was I stupid!</th>
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<tbody>
<tr>
<td></td>
<td>Wow, can she sing!</td>
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<td>Conditionals:</td>
<td>Were they here now, we’d…</td>
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<td>Should there be a storm, we’d…</td>
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<td>‘Magic’:</td>
<td>May they live forever!</td>
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<td></td>
<td>May all your teeth fall out!</td>
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<td>Interrogatives:</td>
<td>Were they involved?</td>
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<td>We won’t go, will we?</td>
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<td>Declaratives:</td>
<td>So can I!</td>
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<td></td>
<td>Never would I do such a thing.</td>
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<td>...</td>
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What is Construction Grammar?
Go to a Construction Grammar conference.
Ask Wikipedia!
What is a construction?
What is a construction?

C is a CONSTRUCTION iff $\text{def } C$ is a form-meaning pair $\langle F_i, S_i \rangle$ such that some aspect of $F_i$ or some aspect of $S_i$ is not strictly predictable from C’s component parts or from other previously established constructions. [Goldberg 1995]
Some Questions

- What does ‘previously established’ mean?
- What exactly are the ‘component parts’ of a construction?
- How do constructions define what’s well-formed and what isn’t?
- How do constructions interact with one another?
- Do constructions work like grammar rules?
- ...
What is a construction?

Any linguistic pattern is recognized as a construction as long as some aspect of its form or function is not strictly predictable from its component parts or from other constructions recognized to exist. In addition, patterns are stored as constructions even if they are fully predictable as long as they occur with sufficient frequency (see Chapter 3 for discussion). [Goldberg 2005, 2008]
Different Conceptions of Construction Grammar

- What Wikipedia says
  - ‘Cognitive Grammar’, Radical CxG, Fluid CxG
  - BCG (Fillmore, Kay, Goldberg, Michaelis,...)
  - Constructional HPSG (Ginzburg, Sag,...)
  - Simpler Syntax (Culicover, Jackendoff)
  - Data Oriented Parsing (DOP; Rens Bod,...)
  - SBCG (Sag, Kay, Fillmore, Michaelis,...)
The Fundamental Insight of Generative Grammar

- Language is a recursive system.
- Expressions combine in systematic ways.
- CxG Must recognize patterns of combination

Informally:
Informally

- Combine a subject and a finite VP to form a clause whose meaning is a proposition. (Subject-Predicate Construction)
- Combine a lexical head and all of its complements except its subject to form a phrase whose meaning is a predicate. (Predicational Head-Complement Construction)
- Combine an invertible (hence finite) auxiliary verb with all its valents (subject, then complements) to form an interrogative clause whose meaning is a polar question. (Polar Interrogative Construction)
- Combine a wh-interrogative expression (the filler) with an aux-initial clause missing an expression of the same type as the filler to form an interrogative clause whose meaning is a nonpolar question.
Misconceptions about CxG (Michaelis 2011)

- CxG is nonrigorous.
- CxG does not offer generalizations.
- CxG is obsessed with linguistic marginalia.
- CxG is opposed to compositional semantics.
- CxG is not constrained.
- CxG does not provide a universal framework for syntax.
Misconceptions about CxG

- CxG is nonrigorous.
- Not all work is ‘formal’, nor should it be.
Misconceptions about CxG

- CxG does not offer generalizations.
- [In a Principles-and-Parameters approach] the notion of grammatical construction is eliminated, and with it, the construction-particular rules. Constructions such as verb phrase, relative clause, and passive remain only as taxonomic artifacts, collections of phenomena explained through the interaction of the principles of UG, with the values of the parameters fixed. [Chomsky, 1986]
Available evidence suggests that both generalizations (‘rules’) and item-specific knowledge (‘lists’) are recorded. Instances are represented at some level of abstraction due to selective encoding; that is, since not all features of an item are represented, the representation is necessarily partially abstract. Moreover, generalizations across instances are also made.
[A] similar position has been developed within the field of categorization. Most recently, categorization researchers have argued for an approach that combines exemplar-based knowledge with generalizations over that knowledge (Anderson 1991; Murphy 2002; Ross and Makin 1999).
Misconceptions about CxG

- CxG is obsessed with linguistic marginalia.
  maybe, but...
- Fillmore, Kay, Goldberg and others discuss patterns of complementation, passives, lexical representation, datives, resultatives, ...
- Ginzburg and Sag 2000, Sag 2010 provide (very) detailed accounts of *wh*-constructions
Misconceptions about CxG

- CxG is opposed to compositional semantics.
- ‘Frege’s Principle: the meaning of a complex expression is determined by the meanings of its constituent parts, in accordance with their syntactic combination’
- CxGrammarians take compositionality wherever they can get it.
Misconceptions about CxG

- CxG is not constrained.
- CxG does not provide a universal framework for syntax.
- This is addressed squarely in SBCG
Universals and SBCG 1

- Dryer (1997), Croft (2001), Evans and Levinson (2008), and others argue for theorizing about universals without a universal vocabulary.
- Most universals are probabilistic.
- Formal explanations rule out in principle what can occur with low frequency.
- E.g. SVO languages tend to be prepositional;
- Common patterns across languages have functional or cognitive motivation.
- More uniform constraints on the linearization of heads are easier to learn.
- head-final or head-initial.
But SBCG is perfectly consistent with strong nativist assumptions, including UG.

More general types would be good candidates for principles of UG.

In facts, computational work in HPSG has led to the development of a notion of a ‘grammar matrix’.

Rapid prototyping of fully implemented grammars of new languages.

See the HPSG LinGO Grammar Matrix (Emily Bender and colleagues).

But functional explanations are better explanations!
Misconceptions about CxG

- Abandonment of (CFG-style) Locality (Remko Scha)
- Never a commitment of BCG
- SBCG embraces Locality
Common Themes (Analytic/Formal)

- Constructions are present and primitive in the theory and related to one another
- Variable Grain Generalizations
- No sharp distinction between Syntax and Lexicon
- Grammar is infused with Semantics (rejection of ‘syntactocentrism’; Jackendoff 2002)
Common Themes (Empirical/Methodological)

- Broad Empirical Responsibility (rejection of core vs. periphery)
- Data-Based Learning (rejection of Parameter-Setting models of learning)
- Cautious approach to Universals (rejection of Chomskyan UG as a theoretical starting point)
- Explain as much as possible about language in terms of more general cognitive and/or functional considerations.
- Grammar is the residue that can’t be explained without stipulation.
A dialogue between researchers in Berkeley Construction Grammar (BCG) and Head-Driven Phrase Structure Grammar (HPSG) in the San Francisco Bay area in the late 1980s. led to certain refinements of BCG and to the constructional version of HPSG developed in Sag 1997 and Ginzburg and Sag 2000. Emergence of common framework by early 2000s.
The History of SBCG

BCG and HPSG
Common Assumptions of BCG and HPSG

1. Linguistic objects are modeled in terms of feature structures (representable as attribute-value matrices or directed graphs).
2. Feature values are sometimes complex. (Feature structures can be recursive.)
3. A language consists of a set of signs; sign is an abstract entity that is the locus of constraints on the interface of form and meaning.
4. A grammar is a system of constraints that work together to license and delimit the signs of a given language.
5. Constructions, the constraints on classes of signs and their components, are organized into a regime (a lattice-like array of types and subtypes) that allows generalizations of varying grain to be stated.
6. The distinction between lexical and grammatical entities is blurry, motivating a uniform conception of lexical and constructional constraints.
Construction Interaction: How do constructions interact? Do constructions freely combine when compatible? Are some constructions optional? Are some constructions obligatory? How does a grammar guarantee that the ‘right’ set of constructions apply to a given example?

The Locality of Constructions: Do constructions need to make reference to properties of elements embedded within phrases (or boxes) at arbitrary depth?

The Limits of Underspecification: Can the various argument-structure constructions be analysed in terms of underspecification of valence in a single lexical entry? Can determinerless noun phrases (with plural or mass head nouns) be given a uniform account via feature underspecification?

Various Constructions: How to analyse certain constructions (primarily in English), including passive, subcategorization, filler-gap dependencies, idioms of various kinds, genitive NPs, determiners, conditionals, control, raising, unexpressed arguments, ellipsis, reflexive binding, ...
The goal of \textit{SBCG} is to develop a theory of grammar that is psycholinguistically responsible,

- That goal leads to an architecture where rules and principles are stated statically in terms of constraints that structures must satisfy,

- where the notions of sign and construction are central, and where lexical integrity prevails.

- In addition, explicit model(s) of processing need to be developed in tandem with the development of particular competence grammars and the competence theory.

- The desired result is a theoretically grounded theory of linguistic knowledge that is fits within a broader theory of communication.