A Constructionist Approach to Language

Adele Goldberg

Desiderata

--Psychological reality Usage-based model
- Consistent with language acquisition
- Consistent with language production and comprehension

--Descriptive adequacy: subtle facts about semantics and use of particular constructions need to be accounted for. No distinction between "core" and "residue." Inheritance hierarchy; (partially shared representations)

--Typological validity and explanation
Domain-general aspects of cognition (social cognition, memory, categorization) and the functions of the constructions involved.

Basics of the Constructionist Approach

Constructions: learned form-function pairings at varying levels of complexity and abstraction.

Knowledge of language: an interrelated network of *constructions*.

Creativity stems from:
- Generalizing instances to form more abstract constructions (with open slots)
- Combining constructions

Psychological reality Descriptive adequacy Typological explanation

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Constructions at varying levels of complexity and abstraction

Word	eg., *welcome, and, Paris*
Word (partially filled)	eg., *pre-N*, V-*ing*
Idiom (filled)	eg., *Got milk?, give the Devil his due*
Idiom (partially filled)	eg., *Jog* <someone's> *memory, send* < someone> *to the cleaners*
Unusual constructions (partially or unfilled)	The Xer the Yer (eg., *The more you think about it, the less you understand*) Sarcasm construction (*e.g., What am I, f**king Jiminy Cricket?*)
(unfilled) Ditransitive construction: Subj V Obj_1 Obj_2	eg., *He gave her a fish taco; He baked her a muffin.*
Passive: Subj aux VPpp (PPby)	eg., *The armadillo was hit by a car.*

Assumptions of both generative and constructionist approaches:

- Language is a cognitive phenomenon
- A non-trivial learning theory is needed

Constructionist Approach is intended inclusively:

- Various flavors of CxG (sign-based, fluid, emergent, radical, template, cognitive)
- Various functional and cognitive grammars
- More recent HPSG
- RRG
- Exemplar theory

Null hypotheses of constructionist approaches:

- There are no empty, null, silent syntactic elements of any kind
- There is no movement
- There are no innate domain-specific stipulations

Psychological reality

Usage-based model: we retain an impressive amount of item-specific knowledge including relative frequencies of usage, and we ***also*** categorize (generalize) the input we hear into patterns based on form and function (e.g., Langacker 1988; Barlow and Kemmer 2000; Tomasello 2003; Verhagen 2005; Goldberg 2006).

Tens of thousands of words, idioms and compositional "prefabs" are learned (Pawley and Syder 1983; Jackendoff 2002; Dabrowska 2004)

Language acquisition (eg., Akhtar and Tomasello 1997; Baker 1979; Bates and MacWhinney 1987; Bowerman 1982; Braine 1976; Gropen et al. 1989; Ingram and Thompson 1996; Lieven et al. 1997; Tomasello 2000, 2003; Wannacott, Newport and Tanenhaus 2008)

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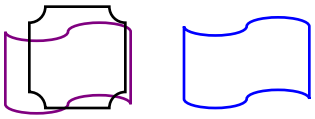
Recall and recognition memory for verbatim language is well above chance (Gurevich, Johnson and Goldberg 2010).

Detailed visual patterns retained, even if they are not attended to nor remembered explicitly (DeSchepper and Treisman 1996)

Negative priming of novel, unattended figures
DeSchepper and Treisman 1996

Task: Does the purple shape match the blue shape?

Prime trial:



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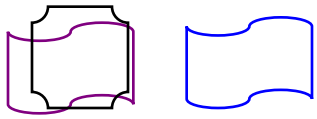
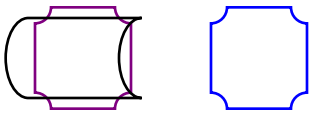


Test trial:



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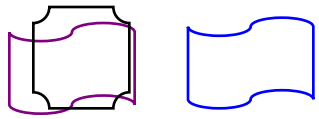

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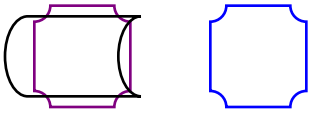

Slowdown in response when previously ignored shape becomes the subsequent target shape.

13

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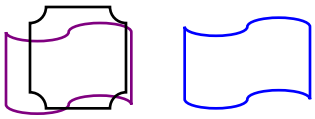

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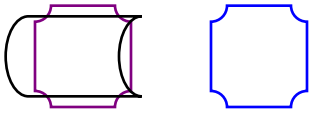

Slowdown occurs over 200 intervening trials and at delays of up to a month!

14

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15

"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 even if they are fully predictable as long as they occur with sufficient frequency*" (Goldberg 2006: 5)

16

Just how detailed is our memory for language?

How could we know that any item had "sufficient frequency" if some memory trace of it were not stored to enable the frequency of it to be recorded?

17

18

Psychological reality Descriptive adequacy Typological explanation

Common wisdom holds that people *don't* remember the exact form of utterances, only the semantic "gist."

- "the original form of the sentence is stored only for the short time necessary for comprehension to occur" (Sachs 1967)
- "One of the most robust findings in psycholinguistics is that people cannot reliably recall sentence structures" (Loebell and Bock 2003)
- "Research on memory for verbal materials has demonstrated that sentences are quickly transformed into an underlying abstract meaning and that the original surface structure is lost" (Holtgraves, 2008:361).

Psychological reality Descriptive adequacy Typological explanation

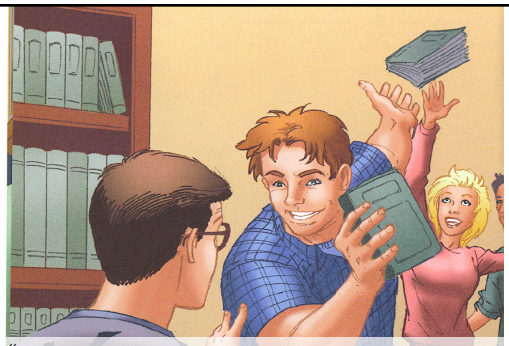
Do people retain explicit verbatim memory in naturalist contexts?

Psychological reality Descriptive adequacy Typological explanation

Verbatim Memory studies

- Undergrads hear one of two versions of a 300 word story. (between subjects).
- They are not warned that their memory will be tested.

(Gurevich, Johnson and Goldberg 2010, *Language and Cognition*)



#1: "I really liked school. But it wasn't always easy for me. I didn't always fit in."

#2: "School was interesting. But I had a hard time. Fitting in was the problem."

#1: "Some of the kids didn't like me."

#2: "At school, I wasn't liked by some of the kids."

Psychological reality Descriptive adequacy Typological explanation

STUDY #1: RECOGNITION MEMORY

<picture>

It wasn't always easy for me.

Old or new?

<picture>

Fitting in was the problem.

Old or new?

(Gurevich, Johnson and Goldberg 2010, *Language and Cognition*)

STUDY #1 RECOGNITION MEMORY
Results

72% correct ("yes" to matching and "no" to non-matching)
Chance rate: 50%

	Matching	Non-Matching
Probability of "yes"	**.86** (hits) ⟷	.41 (false alarms)
Probability of "no"	.14 (misses) ⟷	**.59** (correct rejections)

d'= 1.42 : t(23)=14.08, p< .01

(Gurevich, Johnson and Goldberg 2010, *Language and Cognition*)

verbatim recall results

People spontaneously able to *recall* significant amount verbatim, even in fairly naturalistic context in which:

- They are not warned they will need to remember sentences
- They hear a relatively long story (300 words)
- The context is non- "interactive"
- Even after a week-long delay.

(Gurevich, Johnson and Goldberg 2010, *Language and Cognition*)

What of those older studies?

It turns out that whenever #'s were given, they hinted at the existence of verbatim memory (Sachs 1967; Jarvdla 1973)

Their aim was to compare verbatim with gist memory.

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28

Generalizations are necessarily made

Otherwise languages could be a collection of item-specific factoids:

Pat saw Chris.
Pat Chris kissed.
Hate Pat Chris.

Why are generalizations useful?

29

Usage-based model:
We retain impressive amount of item-specific knowledge.

We ***also*** categorize (generalize) the input we hear into patterns based on form and function….

30

Constructionist approach to argument structure:

Each **argument structure construction** specifies its formal properties and its semantic and information structure properties.

Subtle semantic differences between constructions

a. Joe baked Sam a cake.

b. Joe baked a cake for Sam.

.

An information structure constraint is needed to account for the strong statistical skewing toward topical recipients. (Dryer 1986; Givon 1979; Langacker 1987; Arnold et al. 2000; Bresnan and Nikitina 2008; Wasow 2002; Levin and Rappaport Hovav 2004; Goldberg 2006)

Argument structure CONSTRUCTIONS

Meaning	Form *Example*
X causes Y to receive Z	Subj V Obj Obj2 *She gave him something.* *She dazed him something.*
X moves (to) Y	Subj V PP *She went down the street.* *She whooshed down the street.*
X causes Y to move Z	Subj V Obj PP *She put the ball in the box.* *She sneezed the foam off the cappuccino.*
X causes Y to become Z	Subj V Obj RP *He made her crazy.* *She kissed him unconscious.*

Lexical rules vs. constructions

- Implausible verb senses are avoided
- The possibility of mismatches (or matches) between verb and constructional meaning is allowed for.
- The possibility of morphemes that have semantic scope only over the lexical verb is allowed for.
- Broader generalizations are captured without lexical rules (or derivations).
- Constructionist approach extends to natural treatment of idioms and other constructions.

Capturing items and generalizations

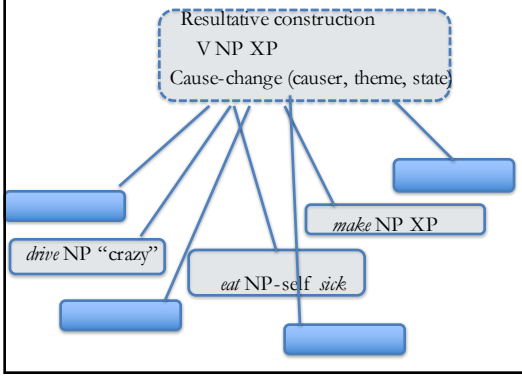
He drive her crazy/bananas/meshugena/bonkers.
?He drove her sick/happy.

He ate himself sick.
?He ate himself ill/nauseous/full.

He cried himself to sleep.
?She cried herself asleep.
?She cried herself calm/wet.

(Goldberg 1995: 192)

Usage-based Default **Inheritance Hierarchy**



38

Issue of partial productivity a focus of research in the lab:

Boyd & Goldberg, 2011, 2015 *Lng*; Goldberg 1993; 1995; 2006; Robenalt & Goldberg, 2015, *CogLing*; Suttle & Goldberg, 2011, *Linguistics*.

To bed, to work, to dinner, from school, in prison; in hospital (Br.)

Form: **[P N]**
*She went to big bed.

Semantics:
She went to prison. ≠ She went to the prison.

to/from/in place where one does what is **typically associated with that place.**

40

Motivation:
Bare nominals: unmarked for definiteness and specificity

She went to bed. ??It was very fluffy.

The inseparability that identifies the [P N] construction is hallmark of phrases that are lexicalized to some extent;

Lexicalization only generally occurs when a word is "name-worthy" (eg., Carlson et al. 2006; cf. also Goldberg 2010).

41

**at bath*
**to kitchen*
**at computer*
**to store*
:there is a large degree of CONVENTIONALIZATION.

42

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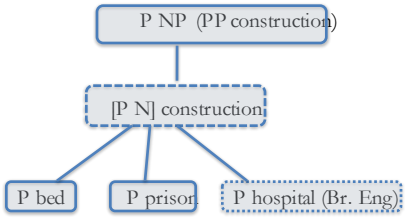

Recent work on individual constructions

The *is to* construction
Goldberg and Van der Auwera 2012, *Folia Linguistica*

Verb particle constructions
Goldberg, to appear, *Tuning in* to the verb-particle construction in English. Léa Nash and Pollet Samvelian (eds.) *Syntax and Semantics: Complex Predicates.*

Gapping and ellipsis
Perek & Goldberg, to appear, *Oxford Handbook of Ellipsis.*

The rely-on construction
Goldberg 2014*Theoretical Linguistics* 2014; 40(1–2): 113 – 135

Typology

Typological generalizations, such as they are, are explicable in terms of domain-general processes and the functions of the constructions involved.

Typology

Some proposed universals:

- # of arguments = # of complements (e.g., θ criterion) (only a tendency; explanation of tendency. 12 slides)
- Linking rules (only modest version holds; explanation for modest version. 9 slides)
- Head-direction parameter (only a tendency; explanation for tendency. 6 slides)
- Pro-drop parameter (no interesting version holds. 4 slides)
- Recursion (Piraha. 12 slides)
- Island constraints (alternative explanation, evidence. 42 slides)
- *Adj N Numeral (doesn't hold. explanation for experimental result. 27 slides)

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