Developing constructions

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Abstract

In commenting on Goldberg's article and book (Goldberg 2006), I concentrate on three points: (1) the importance of general learning mechanisms for language acquisition; (2) the relationship between form and function in learning and in the adult system; and (3) the combination of constructions.

Keywords: *language acquisition; usage-based approaches; psycholinguistics.*

Goldberg's article and book (Goldberg 2006) address questions of major concern to developmental psycholinguists who are working outside the nativist-linguistic framework in their approach to language learning. Some of the issues covered relate directly to children's language development, others are more tangential. I will concentrate on three: (1) the importance of general learning mechanisms for language acquisition; (2) the precise relationship between form and function in learning and in the adult system; and (3) the combination of constructions.

1. General learning mechanisms for language acquisition

Nativist-linguistic accounts of language development often seem concerned to show that children's language does *not* reflect characteristics of

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the input, and argue that this is evidence for, for example, a maturational lag or a wrongly set parameter in the Universal Grammar. Thus there is much more emphasis in these accounts on the autonomous, child- and language-internal development of the grammar and, as a result, scant attention is paid to learning. By contrast, usage-based accounts are interested in the precise characteristics of the input and how these interact with (a) the child's current level of representation and (b) what we know about learning and cognition more generally. This relationship between the type of learning that takes place during language development and learning in other domains, is an important theme in Goldberg's book and I found it one of the most thought-provoking. Functional and usage-based theorists have been chary of invoking general learning processes because of fear of being seen as 'mere associationists'. However it is not at all clear what 'mere associationism' means other than a dismissive insult. It could be making the point that learning the transitional probabilities between one word and the next in a sentence will not, of course, directly give rise to the constituents with which utterances are constructed. While it does not benefit anyone to oversimplify the problem, it is clear—as it was not in 1959, when Chomsky wrote his review of Skinner's *Verbal Behavior*—that distributional probabilities, particularly if calculated across more than one word, can give rise to the learning of quite complex structural aspects of language, for instance, segmentation (Saffran, Newport and Aslin 1996), approximations to categories (Monaghan, Chater and Christiansen 2005) and, as Goldberg argues, the pre-emption of overgeneralization as a result of the statistical registration of multiple cues to constructions (see also MacWhinney 2004 and commentaries).

More broadly, the rejection of learning accounts of language development reflects the belief that language acquisition derives from an encapsulated module separated from other forms of cognition and learning. Of course this is putting it rather starkly and everyone accepts that the specifics of a language must be learned from what the child hears. However there is a difference between recognising this as a non-critical fact that sits 'on top' of an underlying UG module and the attempt that Goldberg makes explicit, to relate central aspects of language learning to more general cognitive processes. One example of this is the connection she makes between the advantage of skewed type frequencies in the learning of a construction and the cognitive anchoring effects shown in numerical and other cognitive tasks. A second example occurs in her discussion of statistical pre-emption and the possibility of counterfactual inferences: if, given the meaning to be expressed, construction A always occurs and construction B never, then construction B is not appropriate. She relates this to

the kind of reasoning that infants appear to make when deciding whether to imitate the explicit action or, alternatively, the inferred intention of an experimenter in a task where these may not be the same.

The most detailed working out of a relationship between language learning and cognition more generally comes where Goldberg deals with the question of the relationship between item-specific knowledge and generalised or schematic knowledge. She argues that both must be present: item-specific knowledge because very specific aspects of usage-based knowledge are retained about constructions and their frequency of occurrence; generalised or schematic knowledge because speakers can produce novel utterances. Goldberg makes some telling points about the ways in which the generalisations that are found in language can have their roots in human categorisation skills. Focussing on exemplar-based models of categorisation, she points to research showing that the accurate classification of a novel instance is a function of its relationship to previously stored instances. She argues that there is naturally partial abstraction in an exemplar-based model, (a) because we do not necessarily record everything about an exemplar and (b) because we forget things. Thus while unconscious generalisation can arise on the basis of stored exemplars, it is also necessary for these generalisations, in turn, to be stored in order to account for patterns of learning. This point relates to the major debate in the child language literature over how lexically-specific children's initial linguistic knowledge is and for how long it remains so. Goldberg points out that children must be making partial generalisations over argument structures from very early on. This contrasts with a 'strong verb island hypothesis' suggesting children are not generalising argument structures until late in the third year but is compatible with the much more likely position that partial generalisations are building up from the beginning but that they are, indeed, partial: thus there might initially only be generalisations around particular subject pronouns (e.g., *I* and *you*) and/or particular groups of verbs (e.g., highly causative). This, of course, means that the precise nature of the experimental stimuli used to test for generalisation as well as the strength of representation required to perform the task need a great deal of analytic attention.

2. Form and function in learning constructions

The attraction of an approach to linguistic representations based on constructions and usage for early child language is pretty obvious: children's early utterances are seen as holistic ways of getting things said and as gradually being broken down to give (a) distributional relationships between the internal parts and (b) categories for words or strings that can

be placed in the newly discovered slots. What gets learned is a function of usage: what is heard and said and the frequencies thereof. Much research has established the basic characteristics of these early stages—at least for English. Children's early utterances are closely related to features of the input: type and token frequencies in what is heard reflected through what the child wants to talk about. There is plenty of evidence that early linguistic representations are more tied to particular forms and less general than those of older children or adults, though as I point out above, just how general they are and from how early is still under debate (Fisher 2002, Tomasello and Abbot-Smith 2002, Gertner, Fisher, and Eisengart 2006, Dittmar, Abbot-Smith, Lieven and Tomasello 2008).

However there are a lot of unanswered questions about the developmental process from here on in. In the particular approach adopted by Goldberg and a number of others (e.g., Croft 2001, Langacker 1987), constructions exist at all levels of grammar from morphemes (*-ing*) through partially filled idioms (to *jog X's memory*) to fully schematic (e.g., the ditransitive: Subj V Obj_1 Obj_2), in all cases as relationships between the particular form (phonetic or/and categorial) of the construction and some function/meaning. Thus the crucial definition of a construction is of a form-meaning mapping. Although the learning of form and meaning are supposed to go hand-in-hand we have, I think, tended to emphasise the direction from meaning to form in constructivist approaches to children's language learning. Children want to communicate and they learn phonetic strings with some child-identified communicative function. This makes good sense when thinking about the learning of utterance level constructions but what about the learning of complex morphological systems? On the one hand, there is plenty of evidence that this is, indeed, part of a developmental process and that agreement, tense and case marking take considerable time to become generally applied, depending on the complexity of the inflectional systems (Rubino and Pine 1998, Dąbrowska 2005, Aguado-Orea 2004). However I think we have to ask whether all learning of form is connected to meaning or function, at least initially (see also Jackendoff, 2002, Ch. 5, for further discussion of this issue). One possibility is that children may rapidly become sensitive to some of the typological characteristics of the language they are learning (for instance, stress patterns identifying segments, Peters 1985) and seek to reproduce them without having any necessary mapping to function. It is also possible that distributional relationships between forms, already identified through the first process (for instance, prefixes or affixes) could build up in a network without any necessarily attached meanings. One could see morphological systems slowly being abstracted from this, with the function of the forms being discovered only slowly—

thus more of a movement from form to function. Maybe form and function are always both involved—at whatever level of vagueness in terms of function, and of non-discreteness in terms of form—however we are a long way from making this more than a truism.

A second, and equally important question is the nature of the abstraction that has taken place once inflectional morphology is generally applied and how this should be represented in a construction-based approach. Is it a full 'reorganisation' as discussed by Karmiloff-Smith (1986) and suggested for the learning of finiteness in Dutch and German by Jordens (2002), in other words an abstracted 'rule', and is this the point at which a full form-meaning mapping takes place—in the sense that the verb phrase must be grounded temporally and aspectually? Or does it remain partial, at least for some speakers (Dąbrowksa and Street 2006), and how then to characterise the form-meaning mapping(s)? Either way the question of how the child develops tense, aspect and modality marking and combines it with utterance-level constructions is a major issue that needs close attention from a usage-based perspective.

3. Interactions between constructions

The emphasis on form and its relationship to function leads Goldberg to attempt a meaning-based account of a number of regularities that have often been thought of as resulting from non-meaning-based autonomous syntactic phenomena. Thus she contrasts two positions on the relationships between sentences: a derivational relationship based on the sharing of truth conditional semantics (e.g., the ditransitive and prepositional dative) and a relationship based on shared surface form (e.g., the ditransitive and benefactive ditransitive). Her discussion of surface generalisations centres on island phenomena and subject-auxiliary inversion and seeks to capture relationships between different constructions in ways that do not require the derivational apparatus of nativist-linguistic approaches. She argues that linguistic phenomena treated as examples of movement in the generativist literature, in fact arise from incompatibilities between the information structures of the constructions that are being combined. In principle, I can see that the relationships between constructions that Goldberg is attempting to capture, could form the basis for children extending the scope of a construction in terms of its meaning and/or abstracting some underlying function for a seemingly meaning-free syntactic form such as subject-auxiliary inversion. However it remains to be seen whether psycholinguistic meat can be put on these bones—the question for those working on the acquisition and adult use of language is, of course, whether these linguistic constructs are

psychologically real. Thus in addition to traditional linguistic argumentation, we must test whether children (and adults) do in fact unite all instances of, for example, subject-auxiliary inversion, into a family of related form-meaning mappings. If Goldberg is right in her analyses, one should be able to find some way of testing this with real-world subjects and real-world utterances. Certainly I and others have argued that children's use of inversion builds up slowly from low-scope constructions based around particular subject auxiliary strings linked to particular meanings (e.g., *What do you X?*, *Are you X-ing?*, *Can I X?*, *Shall we X*?, (Dąbrowska 2004, Theakston, Lieven, Pine, and Rowland 2005, Lieven 2008). Whether these ever, for any speakers other than linguists, become related in some way to constructions such as: ⟨Expletive aux pronoun⟩[1] (e.g., *Boy are you nice!*, *Wow is that scrummy!*) is an empirical issue.

Clearly the question of how constructions combine must be at the centre of any usage-based account of language learning. In her 2006 book, Goldberg says that "Constructions are combined freely to form actual expressions as long as they can be construed as not being in conflict" (Goldberg 2006: 22) and goes on to suggest that her use of "construal" "allows for the processes of accommodation or coercion". There are a number of recent examples in the developmental psycholinguistic literature that more or less explicitly invoke these ideas of construction combination and coercion. An example is Diessel and Tomasello's (2001) suggestion that early complements might derive from the addition of an evidential marker such as *I think* to previously established monoclausal constructions. In principle, this would be relatively straightforward because it does not require changes to either construction.

A more complex example involves the learning of English non-subject questions with correctly inverted syntax. We know from the work of Rowland (2007) that children produce correctly inverted questions when they have heard highly frequent exemplars of the particular sequence in the input i.e., when they have learned semi-formulaic wh-AUX strings, and that they make non-inversion errors on sequences of lower frequency. Rowland suggests that these non-inversion errors arise from 'groping patterns' in which the child is trying to combine partially schematised constructions: for instance, knowledge that the wh-word is initial, and knowledge of the relevant declarative, but without either a full set of wh-AUX constructions or an entrenched and more abstract schema which covers the syntax of wh-questions in general. Dąbrowska and Lieven (2005) discuss a related example of this where one of the children in their

1. This is Goldberg's description of the construction.

study seemed to be trying to fit something that she had said before in a declarative into a wh-question construction. In their analysis, questions about a non-subject argument, involve superimposing a WH frame (e.g., *what GRP THING PROCESS?*[2]) and a verb frame (e.g., *THING do THING*). These are partially incompatible because the child has to know not to say: *What has he done it?* While some children make this precise error, others do not and all recover. The answer within a Langackerian approach comes from the idea of profile determinance (where the wh-construction is the conceptual profile determinant for the utterance and thus "imposes" its structure, Langacker 2003).

Another example of the way in which earlier learned constructions might be combined to give rise to later and more complex constructions comes from Abbot-Smith and Behrens (2006). The authors utilise the form-meaning mappings of prior learned constructions and their relative frequencies in the input and in the child's own speech to explain why the *sein*-passive is learned before the *werden*-passive in German. They employ the idea of a 'construction conspiracy' (Morris, Cottrell, and Elman 2000) that combines to gives rise to the learning of a novel construction. This is not dissimilar to the work of Lewis and Elman (2001) and Reali and Christensen (2005) on how children could learn the correct relation between long distance dependencies in relative clauses despite rarely, or never, hearing the correct structure. The suggestion is that they could be learned from already established knowledge of simple relatives, inverted questions and other monoclausal constructions.

Within usage-based theory, these ideas of "accomodation" and "coercion" together with those of "construction profile" and "profile determinance" seem to me the most relevant for an account of the development of an inventory of constructions and their inter-relationships. They appear central to explaining the largely grammatical nature of speakers' utterances and the kinds of novel utterances produced by children, adults and poets. However, from a psycholinguistic point of view, the processes by which constructions are proposed to combine are very unclear and need a great deal more theoretical and empirical work.

4. Conclusion

The great thing about Goldberg's article and book is that they are attempts to extend the construction grammar approach to some hard questions and to link it to other aspects of cognition. They raise some key

2. GRP = grounding predication

questions that remain unresolved in usage-based approaches to children's language learning. In doing so they help to focus us on how much further there is to go.

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