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REVIEW ARTICLE

Construction Grammar in the twenty-first century

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Adele Goldberg, *Constructions at work: The nature of generalization in language*. Oxford: Oxford University Press, 2006. vii + 280.

1 Introduction

Goldberg's new work 'investigates the nature of our knowledge of language, how that knowledge is acquired by children, and how crosslinguistic and language-internal generalizations can be explained'.[1] It builds on earlier research on Construction Grammar (CxG) by Fillmore (1986), Lakoff (1987), Fillmore, Kay & O'Connor (1988), and Goldberg (1995), among others. Since the mid-1990s constructions have become more and more popular as an alternative to Chomsky's (1995) Minimalist Program, but it was not until the new millennium that CxG reached a new level of interest that resulted in an ever-growing body of research (for an overview, see Fried & Östman 2004). Besides numerous articles and monographs, the increased interest in CxG is evidenced by a book series and an e-journal devoted to constructional research, as well as the bi-annual International Conference on Construction Grammar (ICCG). The publication of Goldberg (1995) inspired much constructional research over the past decade, most notably Croft's (2001) typologically oriented approach to CxG and Tomasello's (2003) constructional account of language acquisition.

Goldberg's new book *Constructions at work: The nature of generalization in language* is certain to have a similar impact on constructional research as it incorporates a wide range of empirical data to arrive at a psychologically plausible model of grammar. Her book contains eleven chapters, which are grouped into three parts. The first part offers an introduction to the theoretical principles of CxG, the second part focuses on how and why constructions are learned, and the third part argues that CxG does not require language-specific stipulations to explain the nature of linguistic generalizations. In what follows, I provide an overview of each part of the book, and then I offer some critical observations about Goldberg's main claims in order to assess how they differ from other constructional research.

[1] See back cover of Goldberg (2006).

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2 Constructions

The first chapter ('Overview') outlines the main ideas underlying current constructional research, such as the concept of what constructions are (a pairing of form and meaning/function), how constructions can be identified (nonpredictability of some aspect of their form or function), and how a construction-based theory is different from other types of linguistic theories ('it's constructions all the way down', p. 18). Many of the examples used to illustrate the nature of argument structure constructions come from Goldberg's (1995) book, such as the transitive, caused-motion, ditransitive, and resultative constructions. While her earlier book focused primarily on English, Goldberg (2006: 7–9) also discusses data from Croatian, French, Russian, Maasai, and German to propose that constructions are learned pairings of form and function. To set the stage for the subsequent chapters, Goldberg points out that constructional approaches 'excel at being descriptively adequate, since both generalizations and idiosyncratic particulars can be captured' (p. 11). This observation, as well as a short discussion of what adherents of different frameworks claim should count as an explanation in linguistics, serves as a springboard for Goldberg's overview of the remainder of the book. The rest of chapter 1 briefly touches upon the importance of usage-based models, the nature of inheritance hierarchies, the role of productivity, and the role of crosslinguistic generalizations.

Goldberg's second chapter ('Surface generalizations') investigates the role of alternations and argues that each surface pattern should be considered 'on its own terms' (p. 19). She first uses the English ditransitive construction (*Bill baked Chris a cake*) as an example to illustrate what is commonly referred to as surface form. On this view, all pairings of 'Agent', 'Recipient', and 'Theme' with the grammatical functions Subject, Primary Object, and Secondary Object are ditransitives, and thus share the same sense of 'causing somebody to receive something'. Next, she compares this constructional account with the derivational analysis proposed by adherents of generative grammar and argues that the latter approach has problems with explaining the similarities between ditransitives as well as the differences in meaning between prepositional paraphrases. A discussion of the distribution of caused-motion constructions and the *load*/*spray* alternation leads Goldberg to 'the role(s) of the verb' (pp. 38–40). Based on a review of the Semantic Coherence Principle and the Correspondence Principle from her 1995 book, Goldberg emphasizes the importance of pragmatic context and frame semantic knowledge (see Fillmore 1985) for determining when a verb's participant roles can fuse with a construction's argument roles. This central status of a verb's meaning finally leads Goldberg to explain the paraphrase relations observed in the *load*/*spray* alternation: 'The shared meaning can be attributed directly to the shared verb involved' (p. 41).

Goldberg's third chapter ('Item-specific knowledge and generalizations') addresses the importance of usage-based models of language (see Barlow & Kemmer 2000) by following Langacker's (1987: 494) proposal about capturing both instances and generalizations simultaneously:

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> Substantial importance is given to the actual use of the linguistic system and a speaker's knowledge of this use; the grammar is held responsible for a speaker's knowledge of the full range of linguistic conventions, regardless of whether these conventions can be subsumed under more general statements. [The usage based model is] a non-reductive approach to linguistic structure that employs fully articulated schematic networks and emphasizes the importance of low-level schemas.

The importance of this statement is not to be underestimated: while most other linguistic theories continue to argue for a strict separation of the syntax and the lexicon, proponents of CxG typically do not assume such a strict division. Instead, the coexistence of item-specific knowledge and generalizations connected through an abstraction cline allows constructional approaches to describe item-specific knowledge alongside the relevant generalizations (see Jurafsky 1996; Boas 2003; Goldberg & Jackendoff 2004; Iwata 2006), combined with frequency information (Gries & Stefanowitsch 2005). Based on evidence from psycholinguistic research (Bybee 1995; Pinker & Jackendoff 1995), Goldberg thus argues that constructions can also be formulated in cases where linguistic structures are predictable from other facts, leading her to claim that 'patterns are stored as constructions even when they are fully compositional under these circumstances' (p. 64).

After a discussion of conventionality and redundancy, Goldberg illustrates these points by showing how verbs that are closely related in meaning exhibit a strong tendency to appear in the same argument structure constructions. Similar regularities can be observed in child language acquisition, where children spontaneously overgeneralize, and in adult speech, where novel instances such as *They haven't found the time to play him a whole lot of minutes* (Pinker 1989: 154) demonstrate the speaker's ability to generalize argument structure patterns. These observations lead Goldberg to claim that verbs are categorized together, ultimately resulting in abstract argument structure constructions. At the end of her third chapter, Goldberg sets the stage for the second part of her book by bringing the reader's attention back to her main point, namely that a usage-based approach 'allows us the chance to bridge naturally to an empirically grounded theory of how language can be learned' (p. 65).

3 Learning generalizations

Goldberg's fourth chapter ('How constructions are learned') begins with a discussion of recent experiments demonstrating the impressive learning capabilities of bees, which, in contrast to earlier assumptions, go well beyond simple associative learning. According to Goldberg, this insight is significant because a range of arguments made in the 1950s and 1960s about the innateness of human language was based on what was known back then about learning mechanisms among nonhumans. This observation, in combination with new data about how children are capable of extracting statistical regularities in the input, leads Goldberg to propose a re-evaluation of Chomsky's concept of universal grammar.

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She tackles this task by looking at how children acquire argument structure generalizations. A large part of her explanation rests on studies showing that children fail to generalize beyond the input until they have been exposed to large amounts of data at age 3.5 or older (see, e.g., Tomasello 1992; Brooks & Tomasello 1999). Goldberg takes these observations as an indication that 'constructions must be learned, since they are acquired so late and in such a piecemeal fashion' (p. 73). Another factor influencing the acquisition of constructions, according to Goldberg, is the skewed input that children receive. Based on previous work by Goldberg, Casenhiser & Sethurman (2004), Goldberg argues that children's input is not arbitrary, but rather geared towards specific general-purpose verbs such as *go*, *put*, *make*, or *give* that occur in particular constructions with high frequency. The frequent use of these verbs in a particular syntactic pattern from very early on suggests that the learning of the particular semantics of those patterns is facilitated, according to Goldberg. On this view, these verbs function as cognitive anchors that ease the acquisition of the particular argument structure constructions that are associated with them. Goldberg takes this evidence, as well as data showing that children and adults can learn new constructions on the basis of only a small set of skewed input within three minutes, to question the 'paucity of the stimulus argument' (p. 92).

The fifth chapter ('How generalizations are constrained') investigates the nature of productivity and how to constrain it. One factor involved in constraining productivity is the degree of entrenchment (i.e. its token frequency), which Goldberg describes in terms of a statistical process of pre-emption that involves the role of semantic or pragmatic contrast. On this view, overgeneralizations are minimized because 'more specific knowledge always pre-empts general knowledge in production, as long as either would satisfy the functional demands of the context equally well' (p. 94). Thus, learners are claimed to be capable of inferring that a particular construction is not appropriate if another construction that fits the same context is constantly heard instead (e.g. **She explained me the story*/*She explained the story to me*). Another factor involved in determining productivity is type frequency in combination with the degree of openness of a pattern. The observation that constructions that have appeared with many different types of verbs have a higher probability of occurring with new verbs than those which have appeared with fewer types of verbs is taken as evidence that learners are likely to extend a pattern when they have witnessed the pattern being extended before. However, Goldberg points out that at the same time learners are often cautious when it comes to producing utterances based on generalizing beyond the input. Thus, Goldberg suggests that a combination of factors ('multiple cues') is at work to constrain productivity, resulting in a strong hypothesis about when the use of a particular construction is fitting.

Chapter 6 addresses the question of 'why generalizations are learned'. Drawing on research in psychology, Goldberg first points out that 'human categorization is generally driven by some functional pressure, typically the need to predict or infer certain properties on the basis of perceived characteristics' (p. 103). Goldberg then extends these insights to language by proposing a functional explanation for the learning of constructions: children need to generalize constructional patterns to some point to produce and understand new utterances. She bases her proposal on data illustrating the

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predictive value of overall sentence meaning, which in turn is based on the predictive meaning of verbs.

While Goldberg follows Tomasello's (1992) verb island hypothesis, which states that children initially generalize at the level of specific verbs and their argument slots, she also argues that the meaning of verbs in speech of older children and adults is not sufficient for predicting sentence meaning. Thus, it is necessary to generalize beyond a particular verb to a more abstract pattern. Goldberg argues this point on the basis of a test investigating the cue validity of verbs and constructions in sentences such as *Pat got the ball over the fence*. The test looks at the probability that a verb (i.e. *get*) is in a specific category – the overall sentence meaning – given that it has a specific cue. Goldberg finds that children generalize beyond individual verbs to arrive at more abstract argument structure constructions such as caused-motion. This is possible, according to Goldberg, because certain patterns such as the VOL (verb, object, location) pattern have roughly the same cue validity as a predictor of overall sentence meaning when compared to the morphological form of the verb (i.e. *get*). Goldberg discusses a second test to determine the category validity, that is, the probability that an item has a feature, given that it belongs to a particular category such as caused-motion. She points out that constructions are at least as reliable as the verb in predicting meaning, and that the construction is additionally much more available. According to Goldberg, this is important because many verbs exhibit relatively low cue validity in isolation, which raises the importance of the construction for determining sentence meaning. Goldberg finishes chapter 6 by pointing out an important motivation underlying her constructional approach: 'Instead of learning a myriad of unrelated constructions, speakers do well to learn a smaller inventory of patterns in order to facilitate online production' (p. 126).

4 Explaining generalizations

Chapter 7 ('Island constraints and scope') addresses the constraints on movement and on relative scope assignment from a constructional perspective. To set the stage, Goldberg stresses the importance of information structure and processing demands and introduces a set of relevant terms, most notably 'primary topic' (*She hit a pole*), 'within the potential focus domain' (*George met her*), and 'backgrounded elements' (*The man who she told him about called*) (see Chafe 1987; Lambrecht 1994). Goldberg then offers a brief review of classic examples of island constraints on complex NPs, subjects, complements of manner of speaking verbs, and presupposed adjuncts to outline how a constructional approach explains them. On her view, so-called movement phenomena are the result of combining a construction with an unbounded dependency construction such as a question, relative clause, or topicalization. When two constructions are combined, their particular information-structure properties need to remain consistent to avoid a pragmatic clash.

To illustrate her point, Goldberg discusses complements of manner of speaking verbs such as *shout* by looking at questions such as *Why was Laura so happy?* An answer such as #*John shouted that he was dating someone new* is not an acceptable reply to the

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question, whereas the use of *said* instead of *shouted* would render it acceptable. The reason for this difference is that direct replies are sensitive to islands, which are assumed to be backgrounded. Since *shout* appears in an unbounded dependency construction it occupies a discourse-prominent slot and functions as an island to suitable answers. Thus, the unacceptability is due to the clash of information-structure properties of the two construction types: elements appearing in unbounded dependency constructions occur in discourse-prominent slots, whereas islands are typically backgrounded. Since backgrounded propositions are not part of what is asserted, they do not provide felicitous answers to questions, according to Goldberg.

The importance of information structure occupies most of the remainder of chapter 7. To explain why ditransitive recipient arguments resist unbounded dependencies, Goldberg points to the fact that they are omitted quite frequently. This suggests that they exhibit a relatively low discourse prominence. Since ditransitive recipients are not the primary topic and they are not within the focus domain, they are backgrounded, again leading to a pragmatic clash. Goldberg's analysis of data from a Google search (supplemented with data from the Linguists' Search Engine (Resnik & Elkiss 2005) searching on Alta Vista) also demonstrates the importance of using various types of empirical data for linguistic analysis. She shows that there is a statistical tendency of the recipient argument to resist being involved in unbounded dependencies unless it has the status of passive subject. Goldberg devotes a substantial section of chapter 7 to the issue of backgrounding in subordinate clauses, reason clauses, nonrestrictive relative clauses, and other types of clauses. An analysis of the lexical semantics and the particular constructions shows that the choice of constructions determines which arguments are topical or backgrounded, leading Goldberg to conclude that 'functional explanations require reference to the function of the constructions involved (including the lexical semantics of the words involved)' (p. 161).

Chapter 8 ('Grammatical categorization: subject–auxiliary inversion') examines the common properties of SAI (Subject–Auxiliary Inversion) constructions such as questions, clauses with initial negative adverbs, wishes, counterfactual conditions, and exclamatives. Contrary to prior analyses that claim that there is no functional generalization associated with the SAI pattern (see, e.g., Green 1985), Goldberg points to the evidence for radial categories in the concepts denoted by words to suggest that the type of category functions exhibited by SAI should be regarded as quite natural. On her view, SAI constructions have more in common than their syntax, i.e. they should be analyzed as deviating semantically from a prototypical sentence that, given the truth of the proposition, is positive, assertive, declarative, independent, and has predicate focus. The different SAI constructions are portrayed as extensions from the prototype motivated by so-called markedness links. The main difference between the prototype and its extensions is that SAI constructions are nonpositive. Each SAI construction additionally exhibits specific properties, e.g. nonassertive (exclamatives), dependent (counterfactual conditionals, negative rejoinders, comparatives, and positive conjunct clauses), and nondeclarative speech-act force (*yes*/*no* questions, wishes, curses), among others.

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Following the detailed analysis of different SAI constructions, Goldberg points to an interesting fact that runs counter to Emonds (1970) and Newmeyer (2000), who claim that SAI is restricted to main clauses. Citing examples such as *Junie B. knew that boy, was she in trouble!* and *They knew that had she left on time, she'd be here by now*, Goldberg proposes a first approximation of a generalization capturing the distribution of SAI in main and subordinate clauses: '(Only) SAIs that are restricted to conveying particular speech acts are restricted to main clauses, or to subordinate clauses that convey speech acts' (p. 181). Commenting on the results of chapter 8, Goldberg finally argues against purely syntactic accounts and proposes that functional motivations should be taken seriously when explaining seemingly idiosyncratic facts of grammar:

> In seeking out functional categories we need to be cognizant of the sort of categories we should expect to find. Categories of language, like most human categories, are much more flexible than those defined rigidly by necessary and sufficient conditions. (p. 182)

Chapter 9 ('Cross-linguistic generalizations in argument realization') investigates whether the types of linking rules proposed by Pinker (1989), Gleitman (1994), and Levin & Rappaport Hovav (1995) are indeed universal and widespread. Goldberg claims that if they were universal and not attributable to general cognitive mechanisms then one could legitimately argue that while they are learnable they are not learned. The chapter begins with a summary of Pinker's (1989) linking rules and a brief review of Dowty's (1991) proposal about how arguments are linked to syntactic positions. This leads Goldberg to a discussion of the saliency of actors and undergoers, which both exhibit a high degree of salience and therefore appear in prominent syntactic slots. In discussing the tendency to have as many arguments as there are complements, Goldberg argues against a universalist mapping between syntax and semantics as proposed by Lidz, Gleitman & Gleitman (2003).

Instead, she invokes the Gricean principles of relevance and economy to arrive at two pragmatic mapping generalizations that are somewhat weaker: '(a) The referents of linguistically expressed NPs are interpreted to be *relevant* to the message being conveyed. (b) Any semantic participants in the event being conveyed that are *relevant* and *non-recoverable* from context must be overtly indicated' (p. 190). One important feature of her constraints is that they allow us to account for crosslinguistic differences. For example, Goldberg points out that (b) does not make any predictions about semantic participants that are recoverable or irrelevant. It thus captures the fact that different constructions and different languages exhibit diverse mapping properties (e.g. some languages allow recoverable participants to be omitted freely), a property that is difficult to account for with hard-wired linking rules that do not allow for exceptions. On her view, arguments that are predictable, recoverable, or highly frequent tend to be reduced to make expressions more economical. One of the most significant outcomes of this chapter is Goldberg's explicit (and repeated) highlighting of the importance of cognitive facts. That is, her generalizations about omission of arguments, analogy, word order, and the principle of iconicity do not represent hard and fast constraints, but should instead

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be seen as tendencies that appeal to independently motivated pragmatic, semantic, and processing facts.

Chapter 10 ('Variations on a constructionist theme') explores the relationship between Goldberg's constructional approach and various other frameworks. She first addresses mainstream generative grammar proposals that she characterizes as Syntactic Argument Structure theories (SAS). One commonality that some SAS accounts such as Hale & Keyser (1997) and Borer (2001) have with CxG is the idea that there are associations between some types of form and some types of meaning. However, some major differences between SAS theories and CxG are that the former (1) are derivational, (2) do not emphasize speaker construals of situations, (3) regard constructions as pairings of underlying form and coarse meaning (instead of surface form and detailed function), (4) view only certain syntactic patterns as constructions, (5) assume constructions to be universal and determined by UG, (6) have not addressed language-internal generalizations across distinct but related constructions, and (7) claim that constructions are compatible with Minimalist architecture (see Chomsky 1995). Another hallmark of SAS accounts is that they aim to reduce the role of the lexicon and do not pay sufficient attention to lexical exceptions, according to Goldberg. In contrast, CxG aims to capture detailed information about distinct verb senses, including their rich frame semantic meanings.

The second part of chapter 10 compares various constructional approaches such as Unification Construction Grammar (Fillmore 1999; Fillmore et al. 1988; Kay & Fillmore 1999), Cognitive Grammar (Langacker 1987, 1990), Radical Construction Grammar (Croft 2001), and Cognitive Construction Grammar (Lakoff 1987; Goldberg 1995). Goldberg splits these constructional approaches into two different groups to highlight their similarities and differences. All approaches share the view that (1) constructions are learned pairings of form and function, (2) the role of constructions is central, (3) CxG is non-derivational, and (4) inheritance takes place by default. In contrast, Unification Construction Grammar differs from the other approaches in that – according to Goldberg – it is not usage-based, places a heavy focus on unification-based formalism (as well as formal explicitness and maximal generalizations), and does not regard the role of 'motivation' as central. To explain why her approach does not employ a rigid formalism that makes use of unification, Goldberg reviews the advantages and disadvantages of feature-based systems and arrives at the conclusion that such a 'formalism becomes unwieldy' (p. 217). The remainder of chapter 10 discusses the roles of motivation, stipulation, and prediction as explanatory forces in different constructional approaches and compares the major differences between Cognitive Grammar, Radical Construction Grammar, and Goldberg's constructional approach.

The beginning of chapter 11 ('Conclusions') echoes the main tenet of Goldberg's book: 'Speakers' knowledge of language consists of systematic collections of form-meaning pairings that are learned on the basis of the language they hear around them' (p. 227). Goldberg provides brief summaries of the main points of each chapter and finally highlights some important theoretical differences between her constructional

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approach and present-day mainstream generative theories. The latter regard constructions as epiphenomenal and without theoretical standing (Chomsky 2000), while at the same time assuming that the complexity and diversity of human language cannot be explained in terms of the input and general cognitive processes. As outlined in great detail throughout her book, Goldberg takes the opposite approach by proposing to account not only for the periphery of language in terms of constructions, but also for the core of grammar. On this view, language is learnable and calls for a detailed explanation of 'how it is learned and why it is the way it is' (p. 230).

5 New directions for Construction Grammar

Goldberg's new book places constructions at the center of an account of language that explores in detail the relationships between semantics, pragmatics, syntax, and much more. Based on a wide range of experimental as well as crosslinguistic data, Goldberg successfully argues for a methodological approach that leaves behind long-standing assumptions about innateness and Universal Grammar. Her usage-based approach argues for a psychologically plausible model of grammar that seeks to explain language-internal generalizations and how they are learned, as well as crosslinguistic generalizations. The clarity underlying her arguments in favor of regarding language learning as a process of statistical generalization in combination with semantic and pragmatic information deserves special mention. As such, the book's intelligibility and depth make it indispensable for students and researchers interested in the latest methods and trends in Construction Grammar.

For linguists unfamiliar with CxG, three points are especially worth mentioning. First, the structure of Goldberg's book makes the fundamental concepts of CxG readily accessible to anyone with a rudimentary background in syntax and semantics. The first part of her book serves as a condensed introduction to the main ideas underlying constructional research, and summarizes most of the major insights gained from this line of inquiry over the past fifteen years. Similarly, chapter 10 offers an excellent comparison of how CxG differs from mainstream generative grammar and shows how various constructional approaches differ from each other. Second, newcomers to CxG may find the range of data used by Goldberg to arrive at her conclusions enlightening. Recall that most work in mainstream generative grammar over the past four decades has primarily relied on introspective data, which gives linguists only a limited picture of the full range of particular phenomena and may thus skew their results (see Fillmore 1992; Sampson 2001; Boas 2003). Goldberg's use of a wide range of empirical data from electronic corpora and psycholinguistic experiments shows how such data is essential for arriving at the appropriate level of linguistic generalization (among many other insights) in constructional research. Third, Goldberg's references are extensive (more than thirty pages!), allowing newcomers to get a detailed overview of the wide scope of constructional research.

As indicated above, Goldberg's work is extraordinarily detailed and well argued, and is a must-read for anyone interested in CxG. However, the overall scope of the book

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has left me a bit disappointed as I had expected significantly more novel results that go beyond Goldberg's well-established results published in various venues since 1995. For example, the first three chapters (pp. 1–65) read like an extensive summary of her first book. They review the most important properties of the caused-motion, ditransitive, resultative, and *way*-constructions, and explain at length some of the fundamental ideas underlying constructional research such as the theoretical status of argument structure constructions, the role of the verb, frame semantic knowledge, usage-based data, conventionality and redundancy, and inheritance hierarchies. Chapter 2 ('Surface generalizations') is a modified version of Goldberg (2002) with some additional data. The only new insights I gained from reading the first three chapters come from child language acquisition data (pp. 58–61) and interesting crosslinguistic data illustrating how argument structure constructions are prevalent in other languages such as Croatian, French, Maasai, German, and Russian (pp. 7–9). In my view, the first part of the book could have been significantly condensed by providing the reader with the necessary pointers to relevant references. Readers familiar with Goldberg's prior work should thus feel free to pass over the first part of the book.

While the second part of Goldberg's book provides a series of significant insights into the mechanisms of how generalizations are learned, many of the results are not entirely new to readers of her prior research. For example, chapter 4 is based almost entirely on Goldberg, Casenhiser & Sethurman (2004, 2005) and Casenhiser & Goldberg (2005). Similarly, a large part of chapter 6 focuses on prior research by Hare and Goldberg (1999), Bencini & Goldberg (2000), Chang, Bock & Goldberg (2003), and Goldberg, Casenhiser & Sethurman (2005). Goldberg's heavy reliance on prior work should not detract from the quality of its results. However, it would have been nice to reduce the length of Goldberg's second part of the book (pp. 69–126) in favor of dramatically extending the truly original part of her contribution, which can be primarily found in the third part (pp. 129–230).

As such, the organization of the book makes it appealing for different audiences, but to varying degrees. For newcomers to CxG it offers an extremely detailed introduction and overview of the framework as well as a range of data analyses illustrating the central role that constructions play in language. The compilation of much prior research thus frees newcomers from reading up on a range of constructional research over the past decade. Linguists already familiar with Goldberg's research are likely to find the third part of her book most appealing as it contains various new insights into the structure and organization of constructions (see section 4 above).

Other issues that I find problematic to varying degrees include the following. First, in her discussion of the role of constructions and verbs in determining overall sentence meaning Goldberg points out that Boas (2000), Thompson & Fox (2004), and Verhagen (2002) 'seem to make the claim that the totality of what is stored are specific usage events'. She then claims that 'there is ample evidence that generalizations are essential to language' and that 'semantically similar verbs show a strong tendency to appear in the same argument structure constructions' (p. 58). While Goldberg is certainly right that there is ample evidence for generalizations about semantically similar verbs appearing

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in the same argument structure constructions, she does not go into great detail about what type of semantic and pragmatic information is necessary to determine whether a verb is compatible with a particular construction. Consider the Correspondence Principle and the Semantic Coherence Principle (pp. 59–60), which help determine whether a verb can be fused with a particular argument structure construction. Iwata (2005) discusses Goldberg's use of lexical entries such as *spray* in (1), which specify the roles of a verb and whether these roles are profiled or not (profiled roles are in bold).

(1) spray <sprayer, **target**, **liquid**>

Following Croft (1998: 43), Iwata (2005: 389) points out that the default profiling properties of verbs do not always make the right predictions about whether a given verb can fuse with a construction. For example, when *spray* occurs in the locative alternation, it may occur transitively with the theme role as the direct object as in (2). However, according to Iwata the licensing of *spray* in (2) should not be possible, given Goldberg's Correspondence Principle that requires profiled roles to be mapped onto a profiled position.

(2) The broken fire hydrant sprayed water all afternoon.

Iwata explains the acceptability of (2) by proposing that *spray* in (2) is construed as a substance emission verb and thus acquires the syntax of a simple transitive construction similar to *emit*. On this view, world knowledge is important for licensing sentences such as (2) because it enables us to construe a spraying event as a substance emission event (Croft 1998: 43; Iwata 2005: 389). Examples such as (2) lead Iwata to propose a more detailed analysis of verb meaning in which different construals of the same event become important. To arrive at a more detailed analysis of verb meaning it is necessary to 'refer to the particulars of a frame semantic scene, rather than by merely matching role labels', according to Iwata.

Similar arguments for the inclusion of more detailed frame semantic knowledge (Fillmore 1985) in Goldberg's constructional framework are made by Nemoto (1998). Observing that one and the same verb (i.e. *save*) may assume the ditransitive syntax with different meanings (e.g. *save him money* vs. *save him the trouble*), Nemoto argues that the polysemy of ditransitive *save* cannot be explained without providing a precise analysis of three different types of background frames, namely the Rescue Frame (*An artificial heart could save his life*), the Storage Frame (*I decided to save the wine for later*), and the Waste-Prevention Frame (*You can save fuel if you drive at a regular speed*). While all three senses can generally be subsumed under a more general sense of 'keeping a valued object in a good condition' (Nemoto 1998: 229), they exhibit different properties when it comes to licensing ditransitive constructions. For example, Waste-Prevention SAVE allows for ditransitive syntax (*The change saved us valuable production hours* (Nemoto 1998: 232)), while Rescue SAVE does not (**The doctor saved the baby cot death* (Nemoto 1998: 234)). Nemoto explains this difference by pointing to the different profiling patterns exhibited by the senses of *save* which evoke

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different frames: Waste-Prevention SAVE inherently involves a participant role which corresponds to a recipient role (a resource-possessor), while Rescue SAVE does not. Thus, Nemoto comes to the conclusion that there is a greater need for including more detailed frame semantic knowledge in order to determine under what exact circumstances a verb can fuse with a construction. Unfortunately, Nemoto's (1998) stimulating proposals on how to include more detailed frame semantic knowledge seem to have escaped Goldberg's attention. The importance of detailed frame semantic knowledge for the licensing of grammatical constructions is also highlighted by Boas (2005, 2006).

In discussing the distribution of resultative constructions and the locative alternation, Boas argues for a detailed analysis and representation of different verb senses, which he represents in terms of mini-constructions that specify detailed syntactic, semantic, and pragmatic selection restrictions (for details, see Boas 2003: 191–259). One of the main differences between Goldberg's approach and the one advocated by Boas is that the latter systematically restricts the occurrence of specific verbs (by including selection restrictions), while at the same time allowing verbs closely related in meaning to occur with resultatives, as the examples in (3) show.

(3) (a) Ulrich {ate/*chewed/*devoured/*swallowed} his plate clean.
(b) The audience {laughed/?smiled/*pouted} the poor guy off the stage.
(c) Ursula {sneezed/?wheezed/*exhaled/*snorted} the napkin off the table.

Another advantage of detailing specific frame semantic knowledge at the level of verb senses is that it allows us to account for collocational restrictions that hold for the postverbal object and resultative phrases. Again, by encoding detailed syntactic, semantic, and pragmatic selection restrictions in terms of mini-constructions representing verb senses, it becomes possible to restrict the range of resultative phrases as in the following examples (see Boas 2003: 215–60 for details of how collocational restrictions are encoded; see Boas 2003: 120 for licensing of postverbal objects).

(4) (a) And it seemed Rosa was intent on driving Gavin {crazy/*to craziness/*happy}.
(b) Natasha laughed herself {to death/*dead}.
(c) Claire wiped her plate {clean/*to cleanliness}.
(d) Lena shattered the vase {to pieces/*to cleanliness}.

While the analyses by Iwata, Nemoto, and Boas share the same goals as Goldberg's approach, they differ from hers in that they pay more attention to frame semantic knowledge associated with individual verbs in order to more efficiently constrain grammatical constructions from licensing unattested sentences. These lexical-constructional accounts not only explicitly spell out the detailed frame semantic information needed for determining the range of a construction's applicability, but they also acknowledge – contrary to what Goldberg appears to claim – the existence of higher-order abstract constructions that are generalizations over these exemplars (see Iwata 2005, 2006; Boas 2005). In contrast, Goldberg focuses on the important role of generalizations, but remains largely silent when it comes to characterizing the precise structure and role of low-level exemplars. Since such information is central for ensuring

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that constructions do not overgenerate, Goldberg's account would have benefited from discussing in more detail the results of Nemoto (1998), Iwata (2005), and Boas (2005). Such a discussion could have recognized the important role of exemplars in prohibiting verbs from fusing with constructions.

The second point which deserves attention is Goldberg's use of data throughout the book. Contrary to much work in syntax and semantics that almost exclusively relies on introspection (see Sampson 2001: 122–40), Goldberg claims to follow a usage-based approach to arrive at linguistic descriptions and analyses on the basis of real language materials (see Barlow & Kemmer 2000). Her use of corpus data and experimental data is exceptionally detailed and goes well beyond what is found in most other present-day work on the subject.

At the same time, however, it would have been nice if Goldberg had discussed in more detail the scope and limitations of her use and interpretation of data. For example, in discussing the ditransitive construction, Goldberg states that 'a Google search was performed to attempt to quantify the dispreference' (p. 137). Her search resulted, among other things, in the insight that prepositional paraphrases outnumbered ditransitives forty to one. While Goldberg's use of corpus material from the World Wide Web reflects a growing trend in linguistics (see, e.g., Kilgarriff & Grefenstette 2003), it is not without problems. For example, for readers to follow Goldberg's arguments and to re-create her data-gathering procedure, it would have been a good idea to include the search parameters used to perform the data collection. More serious, however, is Goldberg's uncritical interpretation of corpus material gathered on the internet. Due to increased globalization, more and more English texts on the internet are composed by non-native speakers of English, a factor that should be controlled for, or at least mentioned (for example, the URL or message ID# could be included in data taken from the internet). But note that even data from internet domains located in English-speaking countries may not be reliable as it is typically not possible to judge whether a native speaker composed the text. More serious in my view is that Goldberg uses the internet data for quantificational purposes rather than for the purpose of simply illustrating her claims. Such a methodology should be regarded with extreme caution since internet data are subject to constant change and thus do not always allow other users to re-create Goldberg's arguments.

In my view, the potential inaccuracies of her web-based data could be partially offset by the use of semantically annotated data from a balanced corpus. For example, since 1997 the FrameNet project (Fillmore et al. 2003; http://framenet.icsi.berkeley.edu) has been annotating data from the British National Corpus with frame semantic information to create an on-line dictionary that gives an exhaustive inventory of the semantic and syntactic combinatorial properties ('valences') of the multiple senses of words. FrameNet is based on Frame Semantics (Fillmore 1985), the semantic counterpart to Construction Grammar, repeatedly mentioned throughout Goldberg's book. Her analysis of generalized argument structure constructions such as the ditransitive could benefit tremendously by incorporating FrameNet data. For example, when analyzing the distribution of ditransitives one can query the FrameNet database to see how agents,

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themes, and recipients are realized syntactically with verbs from different semantic domains. These data can then be taken to formulate more precise generalizations. Another advantage of using corpus data annotated with frame semantic information is that it allows for a more precise characterization of selectional preferences for semantic roles (see Erk 2007).

A final, but no less important, comment on Goldberg's use of data concerns her uncritical claims about the significance of crosslinguistic data. It is usually bothersome to be confronted with statements about the supposed universal nature of a particular linguistic phenomenon. Typically, the argumentation underlying what Croft (2001: 31) calls crosslinguistic methodological opportunism rests on the observation of a particular phenomenon in a select number of typologically unrelated languages. Because the phenomenon under study exhibits striking parallels in these few languages, it is too quickly labeled 'universal'. Goldberg, unfortunately, is no exception to this on-going trend. For example, in explaining how her Pragmatic Mapping Generalizations work, she claims that '[i]n Kannada, as well as perhaps the majority of the world's languages, recoverable arguments are regularly omitted' (p. 190). However, except for a short list of languages that include Japanese, Korean, Thai, Hungarian, Russian, Hindi, and Lao, among others, she does not provide further evidence for her claim about the universal omission of arguments. Similarly, in concluding her discussion of SAI constructions in English, Goldberg proposes that for SAI 'to indicate a non-prototypical sentence is rare cross-linguistically' (p. 181) without providing any references. I find this problematic not only because her argument is not supported by data, but also because we do not have a complete inventory of descriptions of the world's languages. As such, claims regarding crosslinguistic universals or rarity should always be regarded with extreme caution.

Along more nitpicky lines: the editing of the volume could have undergone a more rigorous review. For example, *saw* in the example sentence illustrating complex NPs on p. 134 should read *see*. Webelhuth & Ackerman (1998), cited on p. 214 and listed in the references, does not exist. The correct reference is Ackerman & Webelhuth (1998), which is also listed in the references. Casenhiser and Goldberg (forthcoming), cited on p. 69, is not listed in the references; I suspect that the update of the manuscript took place after the paper was published as Casenhiser & Goldberg (2005), which is listed in the references.

The preceding comments should not be taken as a dismissal of Goldberg's book. On the contrary, I find that her recent contribution to CxG is outstanding, and I am certain that many of the issues raised in it will have to be addressed by future research. Goldberg shows in a convincing way that more consideration must be given to the central role of constructions in a psychologically plausible model of language. The presentation of usage-based data in the book is also exceptionally thorough and well argued. As such, the book is a superb resource for both newcomers to CxG as well as old hands. I have no doubt that *Constructions at work* will have a strong impact on the study of semantics, pragmatics, and syntax in the future.

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