

*Goldberg, Adele E. 2019. Explain Me This. Creativity, Competition, and the Partial Productivity of Constructions. Princeton: Princeton University Press. 195 pp. ISBN-13: 978-0-691-17426-6*

### 1. THE EXPLAIN-ME-THIS PUZZLE

Adele E. Goldberg is one of the leading linguists of our time. Her research on argument structure constructions (Goldberg 1995) has been a cornerstone reference in the development of Construction Grammar as a linguistic theory. Her later work on constructional generalizations (Goldberg 2006) has taken up issues such as the usage-based nature of linguistic knowledge, language learning, and the network-like organization of constructions, and has placed them squarely at the center of current research in Construction Grammar. Adopting a wide range of experimental and corpus-based methods, her studies have addressed pertinent questions in language acquisition (Wonnacott et al. 2012), neurolinguistics (Allen et al. 2012), syntax (Ambridge and Goldberg 2008), and research on metaphor (Citron and Goldberg 2014), amongst other areas. It is thus fair to say that the bar is set high for Goldberg's new monograph, which synthesizes her recent work on constructional productivity, and which proposes a solution to a phenomenon that she labels the *explain-me-this* puzzle.

The central question that the book tries to answer is the following. How is it possible that speakers of a language accept certain utterances that they

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have never heard before as completely idiomatic, while they reject other utterances as simply impossible and ungrammatical? To take a concrete example, an utterance such as *Vernon tweeted to say she doesn't like us* shows the verb *tweet* in the syntactic environment of a following infinitive clause. Native speakers of English will find this usage of the verb fully acceptable, despite its low frequency of occurrence. By contrast, an utterance such as *She considered to say something*, which features the verb *consider* in the same syntactic context, will be judged as decidedly unidiomatic. This example is no isolated case, but reflects a more general phenomenon, which Goldberg calls partial productivity. Even for highly productive constructions, certain combinations of verbs and syntactic contexts simply do not match, and this includes the combination of the verb *explain* and the ditransitive construction that gives the *explain-me-this* puzzle its name.

The answer that Goldberg develops in the book is based on two ideas for which she uses the terms *coverage* and *statistical preemption*. The notion of coverage relates to the mutual similarity that different instantiations of a construction exhibit. Constructions with even coverage have instances that are highly similar to each other. Constructions with a more uneven coverage may consist of several clusters of instances that differ substantially from one cluster to another. Statistical preemption is an idea that relates to the competition between constructions. If a given form-meaning pair is strongly entrenched, it may prevent speakers from producing an alternative form with the same meaning. Coverage and statistical preemption conspire in the *explain-me-this* puzzle. Goldberg's book discusses how the two are related and how their respective effects can explain the partial productivity of grammatical constructions.

## 2. THE CHAPTERS OF THE BOOK

Goldberg develops her overall argument in eight chapters. An introduction lays out the *explain-me-this* puzzle and states the basic theoretical concepts that underlie the discussion. These concepts are labeled as the CENCE ME principles. The acronym stands for the following ideas: C – constructions, E – expressiveness, N – new information and old information, C – competition, E – efficiency, M – memory, and E – error-driven learning. Taken together, the CENCE ME principles add up to a usage-based view of language that adopts Construction Grammar as its theoretical framework and that incorporates psychological insights on the nature of learning and memorization alongside functional linguistic principles. The chapter also presents the reader with an updated definition of constructions. Going beyond her earlier uses of the term, Goldberg characterizes constructions as clusters of

memory traces within a high-dimensional conceptual space, which ranges over formal, functional, and contextual variables.

Chapter 2 takes a step back from the main topic of constructions and instead focuses on words. The reason for this slight detour is that the acquisition of words and their meanings holds a number of implications for the *explain-me-this* puzzle. Specifically, words evoke an array of meanings that is abstracted away from individual contexts of use. They are routinely used for new ideas when no conventionalized alternatives are available. For example, the English word *friend* can be used to refer to acquaintances on social media, even when these are not strictly speaking friends. During the process of language acquisition, the use of words is characterized by initial overgeneralization and subsequent narrowing. Goldberg argues that all of these aspects show up in similar form in the acquisition and use of more abstract pairings of form and meaning.

To readers who are familiar with the main ideas of Construction Grammar, chapter 3 will serve as a basic review. Goldberg summarizes the concepts that form the bedrock of her research program, including the observations that syntactic forms carry meaning, that clashes between constructional and lexical meaning give rise to coercion effects, that constructions are organized in a vast network, and that their usage is constrained by factors that pertain to all levels of linguistic structure, from phonology to information packaging.

Chapters 4 and 5 address the two ideas that are central to the *explain-me-this* puzzle, namely coverage and statistical preemption. Chapter 4 focuses on the issue of coverage. The discussion takes as its starting point the insight that speakers operate with highly detailed memories of language use that are continually updated (Bybee 2010). Following from this general idea is the notion that new instances of language use are related to existing clusters of linguistic memories, so that categories are formed and generalizations emerge. Utterances that are perceived as similar to utterances that were processed before are processed as members of a category. Since no two utterances are exactly identical, the memorized instances of language use form a category that exhibits variability across the dimensions of sound, morpho-syntactic structure, meaning, and situational context. Goldberg describes this variation in terms of a hyper-dimensional space. Any given construction is represented by memory traces of concrete usage events that form a contiguous cloud of points within such a hyper-dimensional space. What Goldberg calls coverage (Suttle and Goldberg 2011, Perek 2016, Barak and Goldberg 2017) relates to the distribution of these points in the hyper-dimensional space. Are the points distributed evenly, so that the distances from one point to the next are relatively similar, or are the points distributed more unevenly, so that some of the points cluster tightly together while others are further away from each other? It is useful to draw an analogy here. Even

coverage would correspond to a landscape that is dotted with small villages. From any point in that landscape, the next village is immediately in reach. Uneven coverage would correspond to a landscape that is completely empty, except for a metropolis and a handful of large cities. Goldberg argues that the productivity of a construction is related to coverage. New instances of a construction are deemed acceptable if they fall into an area that is evenly covered. For the landscape analogy, this means that new settlements are possible anywhere in an area with many small villages, while an empty landscape halfway between two large cities will remain uninhabited.

Chapter 5 turns to the issue of statistical preemption. The basic premise of statistical preemption is that speakers form generalizations over sets of constructions that are comparable with regard to their meanings, as for instance the ditransitive construction (*John gave Mary the book*) and the prepositional dative construction (*John gave the book to Mary*). Since the two constructions express meanings that are broadly similar to one another, it makes sense to view them as competitors. If a speaker wants to express an event of giving, one of the two constructions can be chosen to verbalize that event. It is further assumed that speakers memorize the lexical elements that they hear in these constructions. For the verb *give* and any other verb that occurs in the two constructions, speakers keep track of how often the verb is used in each member of the construction pair. Some verbs show interesting asymmetries. For example, the verb *recommend* regularly occurs in the prepositional dative construction (*I recommended the hotel to all my friends*), whereas its use in the ditransitive construction is rare to non-existent. Speakers thus perceive a statistical imbalance in the frequency of *recommend* across the two constructions, and they interpret that imbalance as meaningful. If a lexical item rarely or never appears where it would be expected with a certain base frequency, then speakers conclude that there is a grammatical constraint. In psychological terms, statistical preemption crucially draws on mismatches between speakers' expectations and the language use that they actually hear. The surprise that speakers experience when they anticipate one construction and end up hearing another gives rise to what Goldberg terms error-driven learning. To give an example, a young child may expect to hear a transitive sentence such as *The magician disappeared the rabbit* as a description of an event it has just witnessed. If the speaker instead produces *The magician made the rabbit disappear*, that expectation is not fulfilled, and the surprisal value of the alternative expression that was actually experienced cognitively strengthens that construction, simultaneously weakening the associative link between the verb *disappear* and the transitive construction.

With the main aspects of the argument in place, chapter 6 rounds out the discussion by addressing a number of central insights from the usage-based literature on language learning. Young children are known to

use argument structure constructions conservatively, which is an idea that Tomasello (2003) has called the verb island hypothesis. Young children also tend to simplify their language output in the face of variability along dimensions that are hard to identify. The chapter further discusses transfer effects in L2 learners, who draw on generalizations that are present in their native languages. Goldberg argues that pre-existing linguistic knowledge will make it harder for L2 learners to draw on statistical preemption. A German-speaking L2 learner of English may not notice the conspicuous absence of utterances such as *Explain me this* because the L1 equivalent *Erklär mir das* is actually part of her active linguistic repertoire.

As the *explain-me-this* puzzle has been the subject of intensive research in different theoretical approaches to language, chapter 7 acknowledges some of the alternative proposals that have been made over the years. Goldberg discusses early work by Pinker (1989), who tried to model the combinatory restrictions of the ditransitive constructions and its verbs in terms of verb classes and rules that apply to those rules. Within the last thirty years, an extensive body of empirical research has provided insights into the probabilistic nature of linguistic knowledge, which is largely incompatible with accounts that draw on crisp, categorical rules. A more recent approach from a generative background is offered by Yang (2016), who proposes two statistical principles that aim to model how children learn to apply and to constrain productive schemas. These two principles are termed the Tolerance Principle, which sets a limit for the number of exceptions that a schema may have, and the Sufficiency Principle, which defines a minimum ratio of cases that must instantiate the schema, given a baseline of possible cases. Goldberg is highly critical of the implementation of these principles, arguing that they are partly ill-defined and that they require an unrealistically large number of cases for any schema formation to occur. Yet another approach that Goldberg reviews comes from within the cognitively oriented literature and draws on mechanisms that are rather similar to the process of error-driven learning that Goldberg sees at work in statistical preemption. Stefanowitsch (2008) and Ambridge (2013), amongst others, have argued that the surprisal of hearing *The magician made the rabbit disappear* instead of *The magician disappeared the rabbit* does not need to depend on competition between functionally similar constructions. What they propose is that this effect can result from a mere frequency asymmetry between a verb in a given construction and that verb in language use in general. Given that *disappear* is a fairly frequent word, its non-use in the transitive construction is conspicuous, so that speakers interpret that non-use in terms of a grammatical constraint. Stefanowitsch uses the term negative entrenchment for this idea, Goldberg calls it conservatism via entrenchment. Direct behavioral comparisons of the two concepts yield mixed results (Ambridge et al. 2012, Ambridge and Blything 2015). Goldberg

ends her discussion by claiming that the traditional idea of a trade-off between productive rules and memorized instances is actually a fallacy. The empirical evidence that has become available suggests that the two are in fact positively correlated. The more instances are memorized, the more likely is the formation of a schema. The more strongly entrenched a schema is, the more likely new instances will be formed and memorized.

Chapter 8 provides a brief summary of the previous chapters and outlines several topics for further research. Goldberg notes the importance of typological studies (Croft 2001), encourages the exploration of conversational data for research in Construction Grammar, and she highlights the potential that computational modeling (van Trijp and Steels 2012) has for new insights.

### 3. CONCLUDING REMARKS

*Explain Me This* is an insightful synthesis of Adele Goldberg's recent work on English argument structure constructions. The book develops its main theme by guiding the reader through a wealth of experimental and corpus-based studies that shed light on the partial productivity of constructions. Goldberg argues her case very carefully, and her discussion of coverage and statistical preemption presents these issues in their mutual contexts, which lets the reader fully appreciate the bigger picture and the important connections between these issues. The book succeeds beautifully in providing a bird's-eye-view of the relevant questions, which makes it especially rewarding for readers who are already familiar with parts of Goldberg's research.

There are, of course, also a few critical points. The first of these relates to the title of the book itself: *Explain Me This. Creativity, Competition, and the Partial Productivity of Constructions*. The two main issues of the book, coverage and statistical preemption, do not feature as such in that title. Instead, they are rendered as creativity (= coverage) and competition (= statistical preemption). While this choice may help to make the book more marketable to a lay audience, it is confusing for readers with a background in linguistics.

There are other aspects that make it difficult to say who the targeted readership is. In the preface, the book is presented as an accessible introduction for students, teachers, and researchers. The first three chapters can in fact be read as a short introduction to Construction Grammar. What follows, however, is a dense survey of empirical research, paired with the development of a theoretical argument. The discussion presupposes a fair amount of knowledge about linguistic theory and methodology, including Bayesian formulas. The chapters thus vary greatly in their accessibility, and students and teachers may find themselves struggling with the text.

With regard to the overall organization of the book, it might have been useful to arrange the sequence of chapters in a slightly different way, in

particular concerning chapters 6 and 7. Chapter 6, which discusses constructional research on first language acquisition, builds on the overview of core concepts in Construction Grammar in chapter 3, which would have provided a useful direct context. In chapter 7, Goldberg surveys alternative accounts of the *explain-me-this* puzzle that struggle with problems that chapters 4 and 5 have already solved. The chapter would have had a more useful function early on in the book, where it could have motivated why a new account is needed. It is simply not clear why chapters 6 and 7 are presented as afterthoughts to the main argument.

Lastly, the book is very selective in its presentation of relevant earlier research. This is acknowledged in the preface, and many readers will of course appreciate that Goldberg's discussion is brief and to the point. Nonetheless, some of the more general background information could have been sacrificed to make room for issues of more direct relevance, as for example the model of constructional knowledge that is presented by Boas (2003), who approaches the *explain-me-this* puzzle from the perspective of frame semantics. In the context of statistical preemption, also the corpus-based work by Stefanowitsch and Gries (2003) would have merited a more detailed review.

It is clear that none of these points take anything away from the outstanding scientific merit of the book. With *Explain Me This*, Goldberg once again leads the field of Construction Grammar into a new and exciting area of research, which is a remarkable achievement.

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