

D.S. Gorfein (ed.), *Resolving Semantic Ambiguity*. Springer-Verlag, New York, 1989.

During the past two decades psycholinguists have become increasingly interested in the problem of ambiguity in natural language understanding.

Their main concern has been how a listener or reader arrives at the intended meaning of a word or sentence that has two or more distinct meanings. *Resolving Semantic Ambiguity*, edited by David S. Gorfein, contains a collection of papers presented at a conference on this problem held at Adelphi University in 1988. The conference was attended by several of the most influential researchers in the area of psychosemantics and the study of processing ambiguous words and sentences. The book summarizes the primary achievements within the field, reflects on them, and presents new data and theoretical proposals.

The book comprises fifteen chapters, arranged in five parts. Part I provides a background to the study of semantic ambiguity. Bubka and Gorfein concisely describe five major views on disambiguation, and Simpson usefully discusses (sometimes overlooked) varieties of ambiguity.

Part II focuses on the role of single-word and sentential context in the access of meaning of an ambiguous word. The issue here is whether meaning access is context independent (modular) or whether context influences the process, and if it does, when and in which way. Tabossi nicely reviews the evidence in the literature for and against the modular position. She concludes that the available data suggest that meaning access can be affected by semantic information provided by prior sentential context. Simpson and Kellas present interesting new data on the effect of context on meaning access. They report that if an ambiguous word is accessed twice within a short period of time, once one meaning is accessed on first occurrence, the other one is harder to retrieve on second occurrence. This effect is observed even if the second presentation is a day later, as Gorfein and Walters demonstrate. The 'activation-suppression' model proposed by Neill and the 'frequency-ordered search' theory posed by Gorfein and Bubka try to explain how context and frequency influence meaning access. According to the first model, a contextually inappropriate meaning is inhibited by selective attention, and an appropriate one is facilitated by spreading activation. A frequent meaning will be activated more than less frequent ones. The second model assumes that in retrieving the intended meaning, word and context constitute a compound retrieval cue. Therefore, both word properties (i.e. meaning frequency) and context properties (i.e. biasing one meaning or not) can affect access. The two models improve upon older ones in the literature, on the cost of introducing further complexity.

Part III addresses the general problem of how meaning is represented in memory. Smith deals with the question of how word meaning is stored in the mental lexicon of a bilingual. She convincingly argues for a single language-independent semantic representation. Forster considers whether the different meanings of an ambiguous word have separate entries in the mental lexicon or not. Assuming separate entries, he advocates a search model of semantic

categorization, intended to account for a complicated pattern of frequency effects. In a long chapter, Barsalou and Billman propose a tentative theory on meaning representation based on a notion of 'systematicity'. They argue that meanings are represented as systems of correlations both between attributes and between their values. Their concept of systematicity is closely related to the well-known ideas of Rosch on the structure of natural categories. The theory of Barsalou and Billman impressively integrates a wide variety of findings on human knowledge. Despite this, it is in need of a direct empirical test of (specific consequences of) its assumptions. Probably, as it stands, the theoretical proposal can best be seen as a framework for more detailed modeling and experimentation – instead of a fullfledged theory. In the final chapter of this section, Hoffman draws attention to some of the ambiguities in the terminology on ambiguity, although he does not resolve them.

In part IV the intention of the editor was to broaden the scope to text ambiguity, although regrettably just one of the two chapters in this section deals with this topic. Whitney and Clark describe how individual differences in working memory span influence the strategies used to disambiguate a text. The other – very interesting – chapter by Swinney and Prather concerns the ontogeny of the mental lexicon. On the basis of the new finding that four- and five-year-old children in context activate both meanings of an ambiguous word, they argue for an early onset of modularity in our language comprehension system.

Finally, part V puts the problem of ambiguity resolution in a wider perspective. Hirst shows how the study of ambiguity processing has affected computational linguistics and vice versa. And Neill and Klein discuss ambiguity resolution from the viewpoint of modular and connectionist models, and reflect on some general properties of these types of theorizing.

Often conference proceedings are just a collection of papers on related topics that happened to be presented at a single occasion. In contrast, except for a few more general chapters, *Resolving Semantic Ambiguity* is a book on different aspects of a single topic. The book is well organized. The reader is much aided with cross-references between the chapters and a short introduction to each section by Gorfein. And not surprisingly, given the reputation of the contributors, the overall quality of the work presented is high.

For me the book had only one major drawback, involving the precision of the models. For the most part, *Resolving Semantic Ambiguity* documents the outcomes of carefully designed experiments, and their theoretical consequences are discussed in depth. But the models accounting for these results remain at a verbal or nonformal level. Given that central issues involve the exact timing of frequency-sensitive retrieval operations and their interactions with context, I think the study of disambiguation can gain much by formalizing (mathematically and/or computationally) the existing models. Presumably

some of the intricate arguments made in explaining characteristics of the disambiguation process will then be strengthened or their flaws detected.

To conclude, *Resolving Semantic Ambiguity* should be read by everyone working on disambiguation. Also, it can serve well as a starting point for the study of this problem. In having articulated interesting issues, noticeable new data, and challenging theoretical proposals, the book will without doubt stimulate new research on meaning in psycholinguistics and related areas of cognitive science.

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