Sémantique pour l'analyse de la linguistique à l'informatique

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Sémantique pour l'analyse de la linguistique à l'informatique is a thoughtful and insightful discussion of difficult issues in the semantic interpretation of natural language texts. The chapters each focus on one aspect of natural language interpretation, such as semantic features, morphemes, lexical entries, syntactic processing using a unification grammar such as tree-adjoining grammar, and semantic relations over larger and larger units, including the text as a whole and its subparts larger than the sentence.

The book is primarily the work of François Rastier, director of research at CNRS, with the collaboration of Marc Cavazza, who wrote the chapter on the content of lexical entries, and Anne Abeillé, who demonstrates a tree-adjoining grammar (as proposed by Aravind Joshi and others) and shows how it can be used to represent syntactic and semantic relations, especially where the syntax–semantics match is not perfect. The overall goal is to propose an interpretation procedure that combines lexical, morpho-syntactic, and contextual information in a text, what the authors call Differential Semantics because the process allows for some variation in the outcome, while remaining basically compositional.

The treatment of syntactically local relations, and some nonlocal relations, on textual information has much in common with the way that Discourse Representation Theory integrates linguistic and contextual information within complex sentences and across sentence boundaries (Kamp and Reyle 1993). Similarly, the goal of integrating formal linguistic information with contextual information that is proposed here has a lot in common with the spirit of DRT, though the constraining assumptions and formalism are, of course, different. For example, the account of aspect in French given in this book notes how the combination of inherent verbal aspect (*Aktionsart*) with morphological aspect (inflectional morphology) may be congruent or not, and if congruent, may produce another aspectual meaning. For example, a telic verb with imperfective inflection has iterative aspect (Smith 1991).

The same interpretative process, relating semantic features across constituents and across sentence boundaries, applies to larger and larger parts of the text. Linguistic form is integrated with various parts of contextual information, using matches of features as well as inferences. Interpretation may be restricted or disambiguated by expectations about different types of discourse and genres of text. The interpretation of even lexical and morpho-syntactic information is therefore relative to the text, a notion borrowed from the hermeneutic tradition of philology and European philosophy. The authors have taken seriously the idea that linguistic form under-determines the interpretation of a sentence or text containing it but nevertheless contributes to its meaning in a regular though not fully predictable way.

Other formal theories, such as theories of linguistic competence and Universal

Grammar and of the syntax–semantics correspondence, abstract away from properties of discourse and text. Theories of comprehension seem to abstract away from linguistic form. Neither approach in itself directly addresses problems of text interpretation. The authors have set out to use both contextual and formal information in their interpretive procedure. They collectively have an impressive knowledge of formal linguistics and experience in application of linguistics to problems of AI. Their account of interpretation applied to larger and larger stretches of text is quite insightful, though their treatment of the problem of texts as a whole seems still quite programmatic, as they are the first to admit. The discussion of current and formerly popular ideas carries a great deal of credibility, and their proposal allows for considerable variation and subtlety in the results, which have implications for the machine–natural language interface, expert systems, and computer modeling of cognitive abilities.

The book is written in a very clear style, but inevitably the abstract nature of the subject matter and the need for technical terms means that one must have a fairly secure grasp of French to read it. There is a useful glossary of the terms that are particular to Rastier's Differential Semantics, such as *isosemie* (the linking of information by the functional system of the language, such as agreement and case–object selection). The references to works listed in the bibliography also help to situate some of the more abstract ideas in specific sources, both in French and English.

Unlike most collections of papers on semantics and lexical knowledge by different authors, this volume has a great degree of cohesion. The development of the central idea of the construction of meaning from various sources and interpretative processes becomes clearer and clearer as more chapters are read (not necessarily in the order in which they are found in the book—I found it easier to start with the subject matter with which I was most familiar, such as unification grammars and issues of lexical representation).

In addition to its intended purpose of defining fruitful approaches to text interpretation, this book gives French-speaking computer scientists and linguists a useful guide to research that is mainly done in Britain and North America. For English-speaking researchers, it is also a valuable resource and guide to research done in France on semantics, syntax, and computer processing of natural language. For example, Rastier et al. refer to Pustejovsky (1993), a collection of papers on lexical knowledge and artificial intelligence that has many of the same preoccupations as Rastier et al.; but none of the authors in Pustejovsky's volume refer to any work not written in English. Both volumes do, however, draw from much the same body of research.

Whether one agrees that Differential Semantics is the direction to pursue, or disagrees, or is merely agnostic, this book represents an informed, critical discussion of issues in the understanding of natural language texts, using the resources of computers.

References

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