Reviews

Graeme Hirst, *Semantic Interpretation and the Resolution of Ambiguity*. Studies in
   Natural Language Processing. Cambridge: Cambridge University Press, 1987
   [1992]. xiv + 263 pp.

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sity, Youngstown, OH 44555, USA.

This is the paperback edition of the 1987 hardbound book derived from the
author's 1983 Ph.D. dissertation. While the bibliography and discussion have been
updated to 1987, the reprint hasn't been brought any more up to date. Yet, the book
has withstood time fairly well. Obviously the field did not stand still, and Hirst him-
self has contributed to its advances. However, the work is still worth reading and not
just for its historical significance.

The title of the book is fairly descriptive of its coverage. The book consists mostly
in the description and theoretical justification of Natural Language Processing (NLP)
systems implemented by the author and his colleagues; Hirst's primary interests are
semantic interpretation and the handling of ambiguity by NLP systems. The primary
audience of the book are linguists, computer scientists, and Artificial Intelligence
(AI) scholars who are interested in NLP, but linguists interested in semantics and
ambiguity will find much food for thought in its pages.

In fact, one of the main qualities of the book is that it steers away from the 'engi-
neering' attitude towards NLP (which can be summarized in the motto 'if it works,
don't ask questions') and instead provides extensive theoretical discussions and jus-
tifications of its approach. Even better, Hirst strives for psychological realism, which
is often brushed aside in theoretical linguistics, let alone in NLP. Another appealing
trait of the book is Hirst's intellectual honesty: instead of focussing on those parts of
NLP that work well, he goes to the heart of the problem of language processing and
works from there. Ambiguity resolution is one of the central problems of semantics,
but comparatively little attention has been paid to it within semantics. The result is
that the author is bound to expose the shortcomings of his theory/system. But pre-
cisely because of this fact the book is interesting and challenging.

The first chapter begins by stating the author's interests and biases, quite openly
and reasonably. For example, he argues for the separation of syntax, semantics and
pragmatics on practical grounds of feasibility within his NLP system. This is accept-
able, especially that the author takes this stance rather than trying to argue for a mod-
ular position on theoretical grounds, which would require a lot more effort, assum-
ing it is ultimately feasible. Chapter 2 is a review of the literature on compositional,
Montague and AI semantics. While not extensive it does a reasonably good job at
setting the background of the discussion for the next chapters.

Chapter 3 describes ABSITY, a semantic interpreter, i.e., a computer program which takes as input a piece of natural language text and translates that into a semantic representation which can then be used by other components of an NLP system (for example a syntactic parser). This is probably the most outdated part of the book, as current research in AI, for example in machine translation, is already several steps ahead of the author's implementation. The most interesting part of this chapter is the section on what ABSITY *cannot* do, which gives a list of interesting and complex issues in semantics that need to be addressed by a mature theory of semantic interpretation.

Chapter 4 focuses on lexical disambiguation in AI and psycholinguistics and provides good introductions to both fields. Chapter 5 introduces 'polaroid words' (PW) to handle semantic ambiguity. The idea is to have semantic objects that can handle partially resolved ambiguity (just as a Polaroid picture develops slowly) and update their ambiguity resolution on the basis of the surrounding words. This allows nicely for an 'on-line' continuous process of semantic disambiguation, while other processes in the NLP system are operating. PW are based on a LISP-like slot and fillers formalism, reminiscent of Katz and Fodor's selection restrictions and markers. The basic difference between the two approaches is that Katz/Fodor markers are features in a 'flat database' whereas PW fillers are nodes in a semantic network. The last section of the chapter establishes the acceptable psychological reality of PW (in other words, the way PWs behave is close to the way speakers behave). One odd detail is that Hirst opens the discussion on ambiguity by noting that Montague had nothing to say about it (p. 96). In this context, the author's fixation on Montague's semantics is totally unjustified, as this kind of approach is totally ineffective in this context.

Chapter 6 reviews structural disambiguation and reaches the safe (if depressing) conclusion that "there are many kinds of structural ambiguity, and there is at present no agreement on any general principles that can be used for disambiguation" (p. 162). The next chapter tackles two types of structural ambiguity: PP attachments and gap finding (another section in the chapter gives some undeveloped hints on how to handle other types as well). Hirst's approach is a blend of the two strategies that have been shown to be most effective in resolving these kinds of ambiguity: plausibility (i.e., our knowledge that certain situations are more likely to occur than others) and the avoidance of unsatisfied presuppositions (a modernized version of Occam's razor, speakers tend to shy away from unnecessary presuppositions).

Chapter 8 compares the author's work to that of others, thus providing the reader with a view of the field (albeit a partisan one, to be sure). The last chapter is an interesting collection of exercises for the readers which however assume a lot more knowledge than the average graduate student is likely to have. The exercises may be used at face value only in computational linguistics courses or by advanced students. Scholars will find a brilliant set of issues and questions waiting to be examined, and not a few good ideas thrown in.

This brings up the issue of the audience of the book. While its first hardbound edition was clearly meant for AI/NLP specialists, the paperback version may end up in the hands of students and general linguists. In this respect my feeling is that although they will find the text demanding, the discussions of background material and the

definitions are extensive and clear enough that non-specialist readers will get a lot out of it.

A very pleasant aspect of the book is the author's humor, which wells up here and there, in the choice of examples, of epigraphs at the beginning of chapters and even sections, and at times in text itself, as for example when a parser is described as "a trifle paranoid" (p. 164) because of the exceptional care with which it avoids mis-parses. This makes the reading of the book all the more interesting.

The book is nicely complemented by name and subject indices, as well as the bib-liography. The book is free of typos, although a couple of typesetting glitches crept in its pages.

R.L. Trask, *A Dictionary of Grammatical Terms in Linguistics*. London and New York: Routledge, 1993. xiii + 335 pp. £10.95 (pb.).
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The term *grammatical* in the title of this book is used in the narrow sense as refer-ring to syntax and morphology. The terminology of other domains of linguistic study such as semantics, pragmatics, phonology etc. is therefore excluded. Intended for students and teachers of linguistics, it includes some 1,500 terms one is likely to come across "*outside* of highly specialised monographs" (p. viii, emphasis mine). These terms are drawn from descriptive/traditional grammar, from theoretical gram-mar (predominantly Government-Binding Theory), and from mathematical and com-putational linguistics.

The book has a number of noteworthy characteristics. First, it borrows from learn-ers' dictionaries the feature that for all head words a phonetic transcription is supplied. This is useful for those cases where the pronunciation is unpredictable or in other ways difficult, but surely not necessary for the majority of entries which are mostly quite common words or phrases of English (*attraction, government, verb*, etc.).

Another feature of the entries is that, as in 'ordinary' dictionaries, alternative grammatical forms of the head words are given, where appropriate. For example, in the entry for *ergative* the abstract noun *ergativity* is provided, again with a phonetic transcription.

Cross-references are printed in bold, though not always consistently. On the whole Trask admirably keeps them to a minimum, but at times entries become cumbersome to read without looking up several other terms at the same time. For example, a **con-text-free grammar** is "[a] **formal grammar** in which all of the **rules** which directly **license local subtrees** are **context free rules** ..." (not all the terms in bold here are in bold in the original, but do occur as separate entries in the book). For the uninitiated this is impossible to follow.To be fair to Trask though, this phenomenon is to a large extent unavoidable in thematic dictionaries of this sort.