More common usage of these symbols is in line with H&T, not Linggard: if you pronounced *bet* with the sound most people transcribe with /e/, it would sound like *bait*. This table is also incomplete, in that several phonetic symbols used elsewhere in the book – such as /o/ and /ɛ/ further down on the same page – are not defined. A table showing common variations in usage of symbols for sounds, as in Ladefoged (1975: 64), would have been a great help for the beginner.

On page 24, describing lip position and nasality, he writes "Fortunately, these two variables do not seem to be used as continuous variables to any great extent." True but misleading. The same thing could be said about every other nonprosodic linguistic variable!

On page 25, he writes "[In English] the /w/ consists of a rapid transition from a /u/ position to a /ə/ position." Not exactly true. The /w/ consists of a rapid transition from a position slightly more extreme than /u/ to whatever vowel follows.

On page 25, he writes "But in some languages and dialects whispered or unvoiced versions of /w/, /j/, /r/, and /l/ are valid articulatory gestures in their own right." True but misleading. Almost any voiced sound can be found as a regular unvoiced variant in some language, even vowels (cf. Japanese, Shoshone (Ruhlen 1976: 267)), and in English these sounds are regularly devoiced when following an unvoiced stop in the same syllable.

On page 26: "The anomalous position of /h/ as a fricative now becomes clear, since it is obvious that it is impossible for it to have a voiced equivalent." In fact, /h/ is often phonetically voiced.

On page 28: "Pitch is the fundamental frequency of vibration of the vocal cords." This is not correct; pitch is a perception typically corresponding to fundamental frequency, but which may be influenced by other variables, such as loudness.

There is something wrong with the spectrogram on page 33: at the location labeled /r/, the third formant actually rises a little instead of falling, as it must if an /r/ is to be heard.

On page 37 he says: "For all stops the place of closure is mainly characterised by the formant transitions into and out of the stop." This is a controversial position and should be labeled as such. Some researchers think that the noise at the instant of release is more important.

On page 15 he writes: "In general terms, two of these [formants] are required to specify vowel quality, a third is required to establish speaker identity, and the fourth/fifth may be added to give natural voice quality." But on page 33: "For a given speaker three formants are usually enough to characterise the vowel." This is confused and confusing. What's probably true is that two formants are required for normal vowels, three for vowels colored with /r/, as in *hurt*, and no one knows how many are required for speaker identity and natural voice quality.

If this review has seemed to concentrate too much on phonetics, it's because that's where the problems lie.

In summary, this book gets a "B": "D" in prehistory, "A" in history, "C" in phonetics, and "A" in engineering. If you want to set up shop in computational phonetics, get this one plus a good book on phonetics, and start collecting papers from the journals.

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READINGS IN KNOWLEDGE REPRESENTATION

Ronald J. Brachman and Hector J. Levesque (Editors)

Los Altos, CA: Morgan Kaufmann Publishers, Inc., 1985, xix+571 pp.
ISBN 0-934613-01-X; $26.95

To anyone working in artificial intelligence, this book provides a comprehensive introduction to knowledge representation (KR). By presenting original source papers that have served to define the problems of KR, the book provides a unique overview of the field. The overall organization of the collection of papers includes discussion of what constitutes a knowledge representation language; it presents problems introduced because of the demand for automatic inferencing to provide implicit information; and it addresses the issues of what constitutes an adequate domain knowledge for a specific application.

The book also includes an extensive partially annotated bibliography of many related works that could not be included in the volume. These annotations include pointers to each mentioned article's applicability to KR in general, in networks, in frames, regarding logic formalisms, whether they are procedural or production system approaches, or whether they are specific to domain knowledge representation.

The book has provided an excellent resource for my Introduction to Natural Language Processing class. It makes available many of the relevant papers that are critical to the current focus of research regarding meaning: What is it? How to represent it? What are the constraints introduced because of KR assumptions and their role during implementation, and the general concerns of what should be included in an implementation. Complementary as well as opposing viewpoints are found in close proximity. Even the role of logic in KR, along with the

non-logical, statistically based inference methods are presented.

Readings in Knowledge Representation is a most worthwhile reference for anyone in any aspect of artificial intelligence, from beginner to expert.

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DISCOURSE SEMANTICS

Pieter A. M. Seuren

Seuren's book can be useful and interesting for two different kinds of readers: firstly, for those specialists who are interested simply in problems suggested by the title itself, and secondly, for students and other people who are novices in the field of theoretical linguistics and want to reach its central points going a very difficult but also very fascinating way. This second "usefulness" seems to be not so obvious as the first one; probably it has not even been intended by the author. However, we should start this review by emphasizing *and lauding* this feature of the book in question.

Pieter Seuren does not try to build his theory without having laid the foundations of it. He places his ideas in a long tradition of linguistic thought and proposes his answers to some essential questions relating to language and linguistics. He considers the main goal of the study of language to be "an insight into the cognitive machinery which enables humans to use it the way they do" and describes and criticizes the current situation in the theory of meaning and grammar with its principal fault being the insufficiency of linguistic facts to support abstract, formal systems. Seuren resumes the ancient controversy between the anomalists and the analogists and places his book in the former tradition.

These, and many other basic theoretical statements make this book partially open *but not easy!* for non-specialists who wish to familiarize themselves with some topics of modern linguistic thought.

However, the main purpose of this book is to represent Seuren's ideas concerning semantics, especially describing the meaning of sentences from the point of view of their role in a discourse. Seuren is of the opinion that the meaning of a sentence cannot be described in isolation. The central notion of the book is thus "discourse domain", which is defined as a finite number of distinct addresses, superaddresses, and instructions. An address is a store to which every new asserted sentence in the discourse contributes new information about the individual referred to by the discourse. A superaddress differs from the address in that it refers not to individuals but to sets of individuals.

In Seuren's estimation, the meaning of a sentence consists in "the systematic modification, or increment, which it brings about whenever it is added to an appropriate given discourse domain".

These basic definitions are contained in the first chapter which is entitled "Discourse and interpretation". They are implemented in other parts of the book, especially in chapters 4 and 5.

In chapter 2, "Grammar and lexicon", Seuren arraigns the idea of surface semantics and represents his version of traditional SA-semantics, which is based on the assumption that surface structures are not directly interpretable and, therefore, a separate level of semantic analysis is needed.

Chapter 3, "The logic and semantics of presupposition", gives us, among other things, the idea of presuppositional three-valued logic which is also developed in the appendix by A. Weijters.

The book in question contains many fragments which are really exciting. It gives a large and original picture of one of the most important topics in modern linguistics.

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PLANNING AND UNDERSTANDING: A COMPUTATIONAL APPROACH TO HUMAN REASONING

Robert Wilensky

IN-DEPTH UNDERSTANDING: A COMPUTER MODEL OF INTEGRATED PROCESSING FOR NARRATIVE COMPREHENSION

Michael George Dyer

The two books under review here have much in common: not only do they both deal with the question of comprehension of narratives in general, but they also share the view that this can be achieved via understanding of the goals of the participants involved. This coincidence perhaps stems from the shared background of the two authors, namely the Yale-based work of Schank, Abelson, and others, to which both authors make reference, in some instances extensively. In case this revelation should lead some readers to prejudge the works immediately, it must be said that the Schankian influence is less evident in Wilensky's book than in Dyer's.