

indexed under "Präferenzsemantik," the other under "preferences."

A work as big as this is sure to contain something to offend everyone. Some of the articles, rather than being well-fitting pieces in structure, are perhaps a little too idiosyncratic; for example, Allen's lengthy complaints about the paucity of computer-assisted stylistic studies of Spanish text. And some authors are more adept than others at making their topic comprehensible to the newcomer; the same article by Allen is particularly reader-friendly. But despite the handbook's size, what I noticed most were the omissions. The short article on computer-assisted language teaching does little justice to current research into the application of sophisticated CL methods to the problem. I could find nothing on dealing with ill-formed input (or did the index let me down?). Transformational grammar is mentioned a number of times, but government-binding theory is not. Research in discourse structure is hardly mentioned, except, unexpectedly, in the article on language generation. No form of the term "anaphora" appears in the index (though there is at least a passing mention of the problem (p. 270) in Lenders's introduction to the sections on processing). But such complaints should not be allowed to obscure the wealth that can be found in this handbook. I just wish that it were a little easier to find what one is looking for.

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BRIEFLY NOTED

ALTERNATIVE CONCEPTIONS OF PHRASE STRUCTURE

Mark R. Baltin and Anthony S. Kroch (eds.)
(New York University and University of Pennsylvania)

Chicago: University of Chicago Press, 1989, xi + 315 pp.
Hardbound, ISBN 0-226-03641-3, \$60.00; Softbound, ISBN
0-226-03642-1, \$19.95

An essential assumption of every syntactic theory is that the sentences of natural language are internally structured. In the early years of generative grammar it was generally believed that the appropriate mechanism for generating syntactic structures was a grammar of rewriting rules that operated free of context. Recently, however, this belief and others concerning the nature of phrase structure have increasingly come into question.

The twelve essays in this volume grew out of a conference convened to discuss the challenge to the classical formulation of phrase structure and the alternative conceptions proposed to replace it. Each of the articles approaches this issue from the perspective of a different linguistic framework, such as categorial grammar, government-binding theory, head-driven phrase structure grammar, and tree-adjoining grammar. Evidence from a number of languages and subdomains of grammar are brought to bear on a variety of questions. What are the primitives out of which structured representations are constructed?

What is the formal device that generates the infinite set of

representations for the infinite set of sentences of each natural language? What is the relationship between lexical selection and structure generation? The contributors also consider the possibility of reassigning the work done by rewriting rules to other formal devices, the nature of selection, the character of unbounded dependencies, and the treatment of word order variation in so-called free word-order languages.—*From the publisher's announcement*

PROCEEDINGS, SPEECH AND NATURAL LANGUAGE WORKSHOP

Defense Advanced Research Projects Agency

San Mateo, CA: Morgan Kaufmann Publishers, February 1989,
vii + 295 pp.
Softbound, ISBN 1-55860-073-6, \$35.00

The workshop reported here brought together 17 DARPA contractors in spoken language recognition and natural language processing research. Included are a summary of the proceedings and technical papers from most of the groups.

NATURAL LANGUAGE PROCESSING TECHNOLOGIES IN ARTIFICIAL INTELLIGENCE: THE SCIENCE AND INDUSTRY PERSPECTIVE

Klaus K. Obermeier
(Battelle Laboratories)

Chichester, England: Ellis Horwood, 1989, 263 pp.
(Ellis Horwood Series in Artificial Intelligence)
Hardbound, ISBN 0-7458-0562-0 and 0-470-21528-3, \$39.95

This book reviews natural language processing technology viewpoints from both the academic and the business perspective. It is not a highly technical or academic book per se, but rather, it reviews the technology as a whole for the nonexpert in natural language. The book presents the state of the art, forecasts of the technology, and the outlook from a commercialization standpoint. The reader who would benefit most is the technical manager or professional contemplating the commercialization of an NLP product. If the book is not mistaken as a "how to" textbook, it may prove useful and satisfying; similar industry reports and forecasts from private sources may cost hundreds of dollars.

A broad range of topics is covered. The book begins with an overview of NLP approaches, formalisms, and methods. This is followed by a detailed coverage of applications from natural language interfaces and machine translation to text processing, generation, writing aids, and speech. For each, the approaches, state of the art, existing products, and prognosis for future products are presented. The book ends with a section on current issues, the business picture, and the "science" of NLP. A major thesis of the book is that there is a marked difference between business people and academics in the field; breakthroughs in the science are needed and they should be driven by practical market needs. For example, the metric of success in NLP should be productivity improvement, not linguistic perfection.

The overall range of topics and information makes the book useful from a practical standpoint. However, there are some problems with the writing style and content in spots. The author occasionally writes paragraphs that are incoherent—that is, they wander into a number of different unrelated topics. Further, some of the information was not carefully researched. Two examples: On page 109, the author implies that the Unix Consultant is a system that translates English commands to Unix, when it is actually an advisory system about Unix. On page 119, a natural

language tool kit called Gopher is cited; yet the company that announced Gopher ceased to exist before the product was ever released.

Despite these problems, I found the book to be informative and a useful adjunct to other NLP literature. As a practitioner, rather than a theoretician, I found it to provide valuable market research insight as well.—*Edwin R. Addison, Synchronetics Inc.*

THE TRANSLATOR'S HANDBOOK (SECOND EDITION)

Catriona Picken (ed.)

London: Aslib, 1989, vi + 382 pp.
Softbound, ISBN 0-85142-259-4; Hardbound, ISBN
0-85142-235-7

Those who would perpetrate machine translation should first understand human translation. *The Translator's Handbook* surveys the field from a highly pragmatic viewpoint. Included are such diverse topics as the different kinds of translation jobs, the 'intellectual tools of the trade,' translation as a career, whether a freelance translator should buy a fax machine and a photocopier, translators' organizations, and, yes, machine translation.

LOGIC AND LINGUISTICS: RESEARCH DIRECTIONS IN COGNITIVE SCIENCE, EUROPEAN PERSPECTIVES, VOLUME 2

Helmut Schnelle and Niels Ole Bernsen (eds.)
(Ruhr-Universität Bochum and Commission of the European Communities)

Hove, England: Lawrence Erlbaum Associates, 1989, xiv + 217 pp.
Hardbound, ISBN 0-86377-112-2, \$29.95

This volume is one of five presenting the findings of a joint European study in cognitive science in 1987–1988. The aim of the activity was "to attempt a prospective mapping of research problems to be addressed in the next five to ten years."

The contents of the volume are:

"A European Perspective on Cognitive Science," by Niels Ole Bernsen; "Linguistic Research in the Context of Cognitive Science and Artificial Intelligence," by Helmut Schnelle; "Cognitive Science and Speech: A Framework for Research," by John Laver; "Grammar Frameworks," by Ewan Klein; "Logical Semantics," by Johan van Benthem; "Discourse: Understanding in Context," by Franz Guenther; "The Challenge of Concrete Linguistic Description: Connectionisms, Massively Parallel Distributed Processing, Net-Linguistics," by Helmut Schnelle; "Natural Language Systems: Some Recent Trends," by Wolfgang Wahlster; "Reasoning and Cognition: Towards a Wider Perspective on Logic," by Johan van Benthem.

SEMANTIC STRUCTURES: ADVANCES IN NATURAL LANGUAGE PROCESSING

David Waltz (ed.)
(Thinking Machines Corp. and Brandeis University)

Hillsdale, NJ: Lawrence Erlbaum Associates, 1989, xxi + 220 pp.
Hardbound, ISBN 0-89859-817-6, \$32.50

This book collects five papers on research that emphasizes the semantic content of text. Four of the papers are consolidations or

summaries of work mostly previously published (though not all widely distributed): Dyer on his BORIS story-understanding system; Alterman on event concept coherence; Lehnert and Loisel on plot units; and Neumann on generating descriptions of time-varying scenes. Berwick's research on learning word meanings from examples has not been previously reported.

SYNTAX AND SEMANTICS, VOLUME 21: THEMATIC RELATIONS

Wendy Wilkins (ed.)
(Arizona State University)

San Diego: Academic Press, 1988, xii + 308 pp.
Hardbound, ISBN 0-12-613521-5, \$65.00; Softbound, ISBN
0-12-606102-5, \$24.95

Frankly, this book disappointed me. I had been thinking that it was about time that someone wrote or edited a book covering the general topic of thematic relations, θ -roles, case relations, semantic functions, or whatever they might be called, bringing together the various approaches to the subject, going back to Fillmore and Gruber, for a second look twenty years on, revisiting Jackendoff, Chafe, Cook, Longacre, as well as more recent approaches as the similarly named, though different, Functional Grammars of Dik, Halliday, and Kay, Starosta's Lexicase, Anderson's Localist Case Grammar, Langacker's Cognitive Grammar, not to mention GB, LFG, GPSG (and derivatives HPSG and JPSG), and Categorical Grammar, inasmuch as these last three actually address these issues. My own overview of Case Grammar (Somers 1987, but essentially completed in 1984) predated and therefore missed many of these developments. Dirven and Radden's (1987) collection is wide-ranging, but there is no comparison and contrast of the approaches.

However, what the book reviewed here gives us is a volume devoted entirely to only one of those approaches, namely Government and Binding. That would not be such a bad thing if it heralded a move by GB-practitioners toward a treatment of thematic relations that acknowledged at least some of the advantages of a representation in terms of (let's call them) semantic functions, notably a 'deeper,' less syntax-oriented, representation that nevertheless permitted generalizations at the syntactic level to be stated. This is what I take to be the underlying motivation for all the above approaches. Regrettably, we hardly even get that much. Rappaport and Levin's opening chapter (after Wilkins's introduction) is promising: entitled "What to do with θ -roles," it at least addresses questions like "What is their nature?" and "Where do they come from?" This broad-visioned approach was not so surprising: Levin had earlier edited a much more catholic collection of papers on a related topic (Levin 1985). Promising too is Culicover's discussion of the relationship between thematic relations ("grounded in the elements that constitute our mental representation of events" (p. 37)) and θ -roles, which are "the corresponding representation of these components in syntax" (p. 38), a distinction that does not seem to be universal. But after that we get only inward-looking discussions of issues that have already been thoroughly aired beyond the confines of GB: θ -marking in "complex predicates" like *give . . . permission*, *make . . . offer* (Jayaseelan), multiple role assignment (Broadwell), θ -grids for nominalizations (Randall, Rozwadowska). Even more inward-looking and typical of the overly syntactic GB approach to θ -roles and thematic relations are the articles on θ -roles and control verbs (Ladusaw and Dowty, and Jones), links with surface case (Schwartz), reflexives (Wilkins), and lexical entries in Warlpiri

(Laughren). The collection is completed by two articles on psycholinguistic aspects (Lebeaux, and Carlson and Tanenhaus).

I am not a devotee of GB. As an outsider, I can only say that its practitioners would do well to look beyond the confines of their own circle to see what other authors in other frameworks have said about the issues addressed in this collection.—*Harold Somers, UMIST*

REFERENCES

- Levin, Beth (ed.) 1985 Lexical semantics in review. *Lexicon Project Working Papers 1*. Center for Cognitive Science, Massachusetts Institute of Technology, Cambridge, MA.
- Dirven, René and Radden, Günter (eds.) 1987 *Concepts of Case* (Studien zur englischen Grammatik 4). Gunter Narr Verlag, Tübingen.
- Somers, H. L. 1987 *Valency and Case in Computational Linguistics* (Edinburgh Information Technology Series 3). Edinburgh University Press, Edinburgh.

THEORETICAL ISSUES IN NATURAL LANGUAGE PROCESSING

Yorick Wilks (ed.)
(New Mexico State University)

Hillsdale, NJ: Lawrence Erlbaum Associates, 1989, xix + 243 pp.
Hardbound, ISBN 0-8058-0183-9, \$36.00; Softbound, ISBN 0-8058-0184-7, \$17.50

This volume makes more widely available proceedings of the third conference on Theoretical Issues in Natural Language Processing (January 1987). This conference followed the unusual format of consisting entirely of panels of invited speakers, each of whom contributed a position paper written in advance. The volume of position papers was distributed by the Association for Computational Linguistics.

The present volume contains a number of these position papers, some of them revised by their authors, along with selected transcripts of the discussion. Subject and name indexes have been added.

The panels were the following:—Words and world representations (Walker, Boguraev, Amsler, Hobbs, Kegli); Unification and the new grammaticism (Gazdar, Pulman, Joshi); Connectionist and other parallel approaches to natural language processing (Waltz, Cottrell, Charniak, McClelland, Lehnert); Discourse theory, goals, and speech acts (Perrault, Wilensky); Why has theoretical NLP made so little progress? (Sondheimer, Birnbaum); Formal versus commonsense semantics (Israel, Wilks, Sparck Jones); Reference: The interaction of language and the world (Appelt, Dahl, Kronfeld, Goodman); Metaphor (Gentner *et al.*, Ortony and Fainsilber, Plantinga); Natural language generation (Joshi, McDonald, Appelt).

BOOKS RECEIVED

Books listed below that are marked with a * will be reviewed in a future issue.

Authors and publishers who wish their books to be considered for review in *Computational Linguistics* should send a copy to the book review editor at the address below. All books received will be listed, but not all can be reviewed.

Readers who wish to review books for the journal should write, outlining their qualifications, to the book review editor, Graeme Hirst, Department of Computer Science, University of Toronto, Toronto, Canada M5S 1A4. Obviously, we cannot promise the availability of books in anyone's exact area of interest.

*A Connectionist Approach to Word Sense Disambiguation

Garrison W. Cottrell (University of California, San Diego)
London: Pitman, and San Mateo, CA: Morgan Kaufmann Publishers, 1989, xi + 220 pp. (Research Notes in Artificial Intelligence) Paperbound, ISBN 0-934613-61-3, \$24.95

*Generating Natural Language under Pragmatic Constraints

Eduard H. Hovy (Information Sciences Institute, University of Southern California)
Hillsdale, NJ: Lawrence Erlbaum Associates, 1988, xiii + 214 pp. Hardbound, ISBN 0-8058-0248-7, \$29.95; Softbound, ISBN 0-8058-0249-5, \$19.95

*Learnability and Linguistic Theory

Robert J. Matthews and William Demopoulos (eds.) (Rutgers University and University of Western Ontario)
Dordrecht: Kluwer, 1989, vii + 217 pp. (Studies in Theoretical Psycholinguistics 9) Hardbound, ISBN 0-7923-0247-8, Dfl 130.-, \$64.00, £42.00

*Metataxis in Practice: Dependency Syntax for Multilingual Machine Translation

Dan Maxwell and Klaus Schubert (eds.) (BSO/Research, Utrecht)
Dordrecht: Foris, 1989, 323 pp. (Distributed Language Translation 6) Hardbound, ISBN 90-6765-422-1, \$55.00, Dfl 110.-; Softbound, ISBN 90-6765-421-3, \$26.00, Dfl 52.-.

A General Explanation-Based Learning Mechanism and Its Application to Narrative Understanding

Raymond J. Mooney (University of Illinois)
London: Pitman, and San Mateo, CA: Morgan Kaufmann Publishers, 1990, x + 166 pp. (Research Notes in Artificial Intelligence) Paperbound, ISBN 1-55860-091-4, \$24.95

An Invitation to Cognitive Science. Volume 1: Language

Daniel N. Osherson and Howard Lasnik (Massachusetts Institute of Technology and University of Connecticut) (eds.)
Cambridge, MA: The MIT Press, 1990, xix + 273 pp. Hardbound, ISBN 0-262-15035-2, \$37.50; Softbound, ISBN 0-262-65033-9, \$18.95

Foundations of Cognitive Science

Michael I. Posner (ed.) (University of Oregon)
Cambridge, MA: The MIT Press, 1990, xiv + 888 pp. Hardbound, ISBN 0-262-16112-5, \$45.00

*Working with Analogical Semantics: Disambiguation Techniques in DLT

Victor Sadler (BSO/Research, Utrecht)
Dordrecht: Foris, 1989, 256 pp. (Distributed Language Translation 5) Hardbound, ISBN 90-6765-429-9, \$60.00, Dfl 120.-; Softbound, ISBN 90-6765-428-0, \$33.00, Dfl 67.-.

An Introduction to Programming in Prolog

Patrick Saint-Dizier (Université Paul Sabatier)
New York: Springer-Verlag, 1989, xi + 184 pp. Softbound, ISBN 0-387-97144-0 and 3-540-97144-0