several potential mechanisms that might be used in these cases, such as focusing (Sidner 1979), or preference semantics (Wilks 1975), but none of them were implemented.

Unfortunately, although early semantic analysis is an intuitively plausible approach, and Mellish explores it thoroughly, there are basic questions about its generality and extensibility that are left unanswered. For example, the system is unable to handle some very central aspects of language, such as negation ("The ends of the string are not fixed") and generic reference ("A string has two ends"). These problems arise from a basic assumption in this system that noun phrases have specific referents, and the system falls short when this assumption is not met. If these problems are inevitable consequences of early semantic analysis, then it is hard to see how early semantic analysis could be used in a realistic system. Mellish owes the reader a discussion of these issues and not just a statement that handling them would require a major revision.

Another disappointment is that there is no attempt to integrate work done in the paradigm of focusing and centering (Grosz 1977, Sidner 1979, Grosz et al. 1983) with this approach. While this work may not have come to the attention of Mellish while he was doing the original work (1978–81), a detailed discussion of the relevance of the focusing work to his work would have been immensely valuable in the present volume. For example, the notion of focusing (or the related concept of centering (Grosz et al. 1983) can provide constraints on referents (as suggested by Rich and Luper-Foy 1987) and may be able to do some of the work that Mellish assigns to domain-specific reasoning. Typically, work in the focusing and centering paradigms has not been concerned to any great extent with the role of domain-specific reasoning. Because of this, an integration of these two approaches would have been very valuable.

It would also have been interesting to see a discussion of the pros and cons of using techniques like focusing versus domain-specific reasoning in cases where either could do the job. The exploration of early semantic analysis would also have been much more valuable if Mellish had spent more time discussing the implications of this work for future work in computational linguistics. Does he believe that the shortcomings in coverage that he points out mean that this work is just an interesting blind alley? Are there parts of the work that provide insights that should be used in future systems? Discussions of these questions would have been very helpful.

Mellish is refreshingly clear and explicit about the limitations of his work. There is also a very useful and detailed discussion of some relatively unexplored types of noun phrases. For example, the program described here has good coverage of some interesting types of plural noun phrases, such as specific plurals with indefinite cardinality. An example of this is "Small blocks, each of mass m, are clamped at the ends and at the

center of a light rod". I am not aware of any other work that addresses the problems of handling these kinds of noun phrases to this extent.

This book contains some detailed information about the program, including algorithms, actual code, and traces of execution, which are very useful for understanding what is going on.

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BRIEFLY NOTED

INTENTION, PLANS, AND PRACTICAL REASON

Michael E. Bratman
(Department of Philosophy and CSLI, Stanford University)

Cambridge, MA: Harvard University Press, 1987, viii + 200 pp.
ISBN 0-674-45818-4 (hb)

> In this book, I take some steps toward providing a systematic framework within which to understand . . . ways of characterizing mind and action in terms of intention. . . . I am guided by a simple, but, I think, powerful idea. Our commonsense conception of intention is inextricably tied to the phenomena of plan and planning.
> —*From the introduction*

Exploring Artificial Intelligence: Survey Talks from the National Conferences on Artificial Intelligence

Howard E. Shrobe, (ed.)
(Symbolics Inc)

Morgan Kaufmann Publishers, 1988, xii + 693 pp.
ISBN 0-934613-69-9, $39.95 (hb); ISBN 0-934613-67-2, $19.95 (sb)

Sixteen of the survey talks given at the 1986 and 1987 AAAI conferences, which were not included in the proceedings of

the conferences, are collected in this book. The areas of AI covered are: intelligent tutors; learning; natural language; planning and search; reasoning; and AI architecture and systems. The two natural language papers are "Knowledge-based natural language understanding" by Wendy Lehnert (University of Massachusetts) and "Natural-language interfaces" by Ray Perrault (SRI International) and Barbara Grosz (Harvard University).

BOOKS RECEIVED

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

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.

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 above. All books received will be listed, but not all can be reviewed.

Readings in Distributed Artificial Intelligence by Alan H. Bond and Les Gasser (eds.)
(California Institute of Technology and University of Southern California, resp.)
San Mateo, CA: Morgan Kaufmann Publishers, 1988, xvii + 649 pp.
ISBN 0-934613-63-X; $29.95 (sb)

†**Interpreting Anaphors in Natural Language Texts** by David M. Carter
(SRI International, Cambridge, England)
Chichester: Ellis Horwood, 1987, 292 pp.
(Ellis Horwood series in artificial intelligence)
ISBN 0-470-21009-5; $74.95 (hb)

Rule-based Programming with OPS5 by Thomas A. Cooper and Nancy Wogrin
(Digital Equipment Corporation)
Morgan Kaufmann Publishers, 1988, xiv + 350 pp.
ISBN 0-934613-51-6; $36.95 (hb)

Reasoning with Incomplete Information by David Etherington
(AT&T Bell Laboratories)
San Mateo, CA: Morgan Kaufmann and London: Pitman, 1988, viii + 240 pp.
(Research notes in artificial intelligence)
ISBN 0-934613-60-5 and 0-273-08785-1; $22.95 (sb)

Cognizers: Neural Networks and Machines That Think by R. Colin Johnson and Chappell Brown
John Wiley and Sons, 1988, xi + 260 pp.
(Wiley Science Editions)
ISBN 0-471-61161-1 (hb)

Proceedings: Case-based Reasoning Workshop by Janet Kolodner (ed.)
(Georgia Institute of Technology)
Morgan Kaufmann Publishers, 1988, xiii + 482 pp.
ISBN 0-934613-93-1 (sb)

Understanding Cognitive Science by Michael F. McTear
(University of Ulster at Jordanstown)
Chichester: Ellis Horwood, 1988, 264 pp.
(Ellis Horwood series in cognitive science)
ISBN 0-7458-0161-7 (hb)

Foundations of Deductive Databases and Logic Programming by Jack Minker (ed.)
(University of Maryland])
San Mateo, CA: Morgan Kaufmann, 1988, 746 pp.
ISBN 0-934613-40-0; $36.95 (sb)

On Being a Machine. Volume I: Formal Aspects of Artificial Intelligence by A. Narayanan
(University of Exeter)
Chichester: Ellis Horwood, 1988, 200 pp.
(Ellis Horwood series in artificial intelligence foundations and concepts)
ISBN 0-85312-957-6 (hb)

Artificial Intelligence III: Methodology, Systems, Applications (Proceedings of the Third International Conference on Artificial Intelligence: Methodology, Systems, Applications (AIMSA '88), Varna, Bulgaria, 20–23 September 1988) by Tim O'Shea and Vasil Sgurev (eds.)
(The Open University and Bulgarian Academy of Sciences, resp.)
Amsterdam: North-Holland, 1988, xii + 444 pp.
ISBN 0-444-70508-2; $94.75 / Dfl 180.00 (hb)

Probabilistic Reasoning in Intelligent Systems: Networks of Plausible Inference by Judea Pearl
(UCLA)
San Mateo: Morgan Kaufmann Publishers, 1988, xix + 552 pp.
(The Morgan Kaufmann series in representation and reasoning)
ISBN 0-934613-73-7; $39.95 (hb)

Semantic Networks: An Evidential Formalization and Its Connectionist Realization by Lokendra Shastri
(University of Pennsylvania)
San Mateo, CA: Morgan Kaufmann and London: Pitman, 1988, x + 222 pp.
(Research notes in artificial intelligence)
ISBN 0-934613-39-7 and 0-273-08779-7; $22.95 (sb)

Language and Representation: A Socio-naturalistic Approach to Human Development by Chris Sinha
(University of Utrecht)
New York: New York University Press, 1988, xix + 255 pp.
(distributed by Columbia University Press)
(Research notes in artificial intelligence)
ISBN 0-8147-7885-2; $35.00 (hb)

†**Prosody and Speech Recognition** by Alex Waibel
(Carnegie Mellon University)
San Mateo: Morgan Kaufmann and London: Pitman, 1988, xii + 212 pp.
(Research notes in artificial intelligence)
ISBN 0-934613-70-2 and 0-273-08787-8; $22.95 (sb)

The Semantics and Pragmatics of Preposing by Gregory L. Ward
(University of Pennsylvania)
NY: Garland Publishing, 1988, xvi + 250 pp.
(Outstanding dissertations in linguistics)
ISBN 0-8240-5197-1; $44.00 (hb)

Practical Planning: Extending the Classical AI Planning Paradigm by David E. Wilkins
(SRI International)
San Mateo: Morgan Kaufmann Publishers, 1988, xiii + 205 pp.
(The Morgan Kaufmann series in representation and reasoning)
ISBN 0-934613-94-X; $34.95 (hb)