

Knowledge Elicitation, by Dan Diaper (Ed.), Ellis Horwood, Chichester, 1989, pp 270, £35.00.

Reviewed by: Professor FH George, Bureau of Information Science, Seer Green, Bucks, UK.

This is a collection of seven papers, with a preface and index. The subject is knowledge based systems (KBS) with a special emphasis on expert systems (ES), for which a vital part of the whole construction process is knowledge elicitation (KE). The contents of the book arose from a one day meeting held in 1988 and organized by the British Computer Society's Human-Computer Interaction Specialist Group.

The editor, Dan Diaper, opens proceedings with a discussion of the designing of expert systems, and earmarks the context of knowledge elicitation. Before an expert system can be constructed even in prototype the process of acquiring the necessary knowledge is essential, and this the author divides into three stages: knowledge elicitation, knowledge representation and knowledge encoding. This sets the scene for a concentrated consideration of knowledge elicitation in the rest of the book.

Chapter 2 deals with the "naturalistic knowledge engineer" (NKE), and this places emphasis on the many human skills required for knowledge engineering, requiring according to the authors, much more attention than they have so far been given. Chapter 3 is an exceptionally long paper by Betsy Cordingley, and she starts with a "working definition" of knowledge elicitation which reads as follows:

"Knowledge elicitation is those activities undertaken by a person, the knowledge elicitor to

- obtain material from any relevant source,
- analyse and interpret that material, and
- put in a pre-coded form which, while useful to those who will encode the knowledge in the KBS language also allows it to be scrutinized by all parties interested in KBS development"

This is a rather daunting article which demands that careful attention be paid to new terminology. One has to read very carefully through the text: to give one rather typical illustration, she writes under the heading "Techniques for getting material from people" that there are twelve such techniques:

- "- Interviewing
 - Focused talk
 - Teach back
 - Construct elicitation which includes a discussion of Kelly's Personal Construct Theory and the Repertory Grid technique
 - Sorting tasks
 - Laddering
 - 20 questions
 - Matrix generation
 - Critiquing
 - Protocol
 - Role Play
 - Simulation".

This list is followed by 40 pages of explanation of the terms, and the present reviewer began to feel a sense of relief that knowledge elicitation was not a primary activity in his own work on, and interest in, expert systems. But in case that sounds critical, let me quote the Editor's introductory comments on Betsy Cordingley's paper: "Betsey Cordingley's chapter is without doubt the central core around which the rest of the book is based." Nancy Johnson follows up the Cordingley article with a clearcut account of "mediating representations in knowledge elicitation". After the 86 page chapter described above it was a relief to find the present chapter only 15 pages long, but very helpful and relevant for all that.

The book contains three further chapters: "Task models for knowledge elicitation" by Michael Wilson, "Knowledge elicitation-some practical issues" by Geoffrey Trimble, and "Knowledge Elicitation for financial dealers" by Jeremy Clare. Thereafter follow 18 pages of references.

This is a well organized book, and refers to a field of increasing importance. This is brought home in the Preface where the Editor starts by saying: "Expert systems and knowledge-based systems (KBS) now form a market worth annually billions of dollars, yen and ECUs (European Currency Units)." This is certainly a fast developing and already vast field of information science, or perhaps "information technology" is a better name for this aspect of it. It is daunting to think what sort of books will be appearing on the subject in the next decade.

Computers and thought, by M Sharples, David Hogg, C Hutchinson, S Torrance and David Young, MIT Press, Cambridge, MA, pp 401 £22.50 (cloth), £13.95 (paperback).

Reviewed by: Professor FH George, Bureau of Information Science, Seer Green, Bucks, UK.

This book has the subtitle "A Practical Introduction to Artificial Intelligence", and the stated aim of the book is "... to introduce people with little or no computing background to artificial intelligence (AI) and cognitive science".

The book itself arose from a 10-week course for first year arts undergraduates at Sussex University which was given the same title as this book. Not surprisingly, the book starts by asking what AI is. The answer is couched in broad terms, and interestingly neither here nor anywhere in the book is the word 'cybernetics' mentioned, although the roots of AI are closely related to cybernetics. AI is seen as having roots in psychology, philosophy and computer science, and having associations with linguistics, mathematics and logic: all of this can be readily agreed. Chapter 1 then picks up the cybernetic issue of "the mind as a machine", and states the assumption that "the human mind acts like a computer". This would seem to be an unhappy way of putting the matter. It would be better to assume that the computer (some "machine") can be made to behave like a human mind. Nonetheless, Chapter 1 gets the reader off to a reasonable start.

The book represents an elementary approach to the subject which is quite appropriate to its use, and the general impression is a good one. Chapter 2 is entitled "Performance without knowledge". Chapter 3 is "Stored Knowledge", Chapter 4 is "Search", and Chapter 5 is on "Natural Language", and this involves a syntactical analysis, as well as an introduction to semantics and pragmatics. Chapter 6 is entitled "Reasoning", and is concerned with logic and semantic networks, and this chapter has an appendix which deals with POP-II and relates inference making with a semantic net. The next chapters follow up the same approach and discuss "Rule-Based Knowledge" (Chapter 7), "Models of Cognition" (Chapter 8), "Computer Vision" (Chapter 9), and then, in the last two chapters, "AI and the Philosophy of Mind" and "Artificial Intelligence"—What Next?".

The book finishes with two appendices and a glossary, the first a POP-II reference guide and the second an automated tourist guide. This provides a listing in POP-II of the answers to a characteristic problem from everyday life, and is well produced. Finally, the glossary of no less than 205 terms which are central to AI is extremely useful. There are times when one wonders whether this introduction to the subject is not a shade too simplistic, but it is not easy for an outsider to decide exactly how the students for which the course was designed were able to digest it; the proof of the pie is in the eating, and we do not know how it "went down". Altogether a well-produced and interesting book that almost certainly meets a particular need.

Perspectives in artificial intelligence—Volume 2: Machine translation by JA Campbell and J Cuenca, Ellis Horwood, Chichester, 1989 pp 211, £34.95.

Reviewed by: Professor FH George, Bureau of Information Science, Seer Green, Bucks, UK.

This is the second volume of articles that, with Volume 1, make up the set of papers given at the Conference of Artificial Intelligence (AI) at the Second World Basque Congress in September 1987. The two volumes deal, as the Basque Congress required that they dealt, with viewpoints on basic issues and current research matters.

This volume divides into four parts. The first part is called "Machine Translation", part two is on "Natural Language Programming", part three is "Databases", and finally part four is on