

within any combinatorial problem space. A need follows from this for equipping Advice Language with inference-based search facilities along lines currently under development (Bratko and Niblett, 1979).

Additional remark

As a vehicle for the transfer of chess knowledge from human to human, advice tables may also serve as a valuable supplement to the tradition of natural language text interspersed with

References

- ARLAZAROV, V. L. and FUTER, A. (1979). Computer analysis of a rook end game, *Machine Intelligence*, Vol. 9 (eds. D. Michie, J. Michie and L. Mikulich), Chichester: Ellis Horwood, New York: Wiley.
- BRATKO, I. (1978). Proving correctness of strategies in the AL1 assertional language, *Information Processing Letters*, Vol. 7 No. 5, pp. 223-230.
- BRATKO, I. (1979). An advice program for the king-knight v. king-rook ending, Research Memorandum MIP-R-123, Edinburgh: Machine Intelligence Research Unit, University of Edinburgh.
- BRATKO, I., KOPEC, D. and MICHIE, D. (1978). Pattern-based representation of chess end-game knowledge, *The Computer Journal*, Vol. 21 No. 2, pp. 149-153.
- BRATKO, I. and MICHIE, D. (1980). A representation for pattern-knowledge in chess end-games, *Advances in Computer Chess*, Vol. 2 (ed. M. R. B. Clarke), Edinburgh: Edinburgh University Press, pp. 31-56.
- BRATKO, I. and NIBLETT, T. (1979). Conjectures and refutations in a framework for chess end-game knowledge, *Expert Systems in the Microelectronic Age* (ed. D. Michie), Edinburgh: Edinburgh University Press, pp. 83-102.
- BURSTALL, R. M., COLLINS, J. S. and POPPLESTONE, R. J. (1971). *Programming in POP2*, Edinburgh: Edinburgh University Press.
- CLARKE, M. R. B. (1977). A quantitative study of King and Pawn against King. *Advances in Computer Chess*, Vol. 1 (ed. M. R. B. Clarke) Edinburgh: Edinburgh University Press, pp. 108-118.
- FINE, R. (1964). *Basic Chess Endings*, New York: McKay (1st edition 1942).
- GAMS, M. (1978). Computer construction of strategies for games, Undergraduate thesis, University of Ljubljana.
- HUBERMAN, B. J. (1968). A program to play chess end games, Technical Report no. CS 106, Stanford: Computer Science Department, Stanford University.
- KERES, P. (1974). *Practical Chess Endings*, London: Batsford.
- KOPEC, D. (1979). King and Rook v. King and Knight, Research Memorandum MIP-R-125, Edinburgh: Machine Intelligence Research Unit, University of Edinburgh.
- KOPEC, D. and NIBLETT, T. (1980). How hard is the play of the King-Rook-King-Knight ending? *Advances in Computer Chess*, Vol. 2 (ed. M. R. B. Clarke), Edinburgh: Edinburgh University Press, pp. 57-81.
- MICHIE, D. (1976). An advice-taking system for computer chess, *Computer Bulletin*, ser. 2, Vol. 10, pp. 12-14.
- MOZETIC, I. (1979). Advice Language and the AL 1.5 program system, Work report, Ljubljana: J. Stefan Institute.
- SLATE, D. J. and ATKIN, L. R. (1977). Chess 4.5: The Northwestern University chess program, *Chess Skill in Man and Machine* (ed. P. J. Frey), New York: Springer Verlag.
- STROHLEIN, T. (1970). Untersuchungen Uber Kombinatorische Spiele, *Dissertation for Dr. Rer. nat.*, Munich: Technische Hochschule.

Book reviews

Minicomputers: Theory and Operation by Donald Eadie, 1979; 276 pages. (Reston, £11.00)

'This book is intended to introduce all fundamentals of data processing' (first sentence, page ix).

The first half of the book deals with hardware, following the well trodden path of history (Napier, Babbage *et al.*), number representations (including hexadecimal arithmetic tables!), logic gates, memories (including core stacks, as heralded by the dust jacket!), processors and peripherals (complete with photographs of printers, discs and tape drives—but lacking operators dressed in 1950's costume).

The software section starts with a brief discussion of assembler (in fact the Honeywell 316 assembler), followed by a twelve page description of FORTRAN. This is presented in a peculiar order, in which FORMAT, READ, WRITE, STOP, END and PAUSE come before expressions, assignments, IF and GOTO. Despite the brevity of this section, nonstandard features (READ DRUM and FREQUENCY?!) are introduced. FORTRAN is followed by four pages on COBOL, which must be a record for a book which claims to introduce data processing. After this the book degenerates into a description of a specific computer—the Honeywell 316. This is presumably extracted from the manufacturer's brochure since it contains a discussion of various hardware options. The book ends with 12 pages on microprocessors, and six pages on applications!

To attempt to integrate related issues in hardware and software is a thoroughly good idea. Unfortunately, the book fails to do so, despite its pretensions. The result is a collection of topics mostly treated far too superficially. Use of language in the book is uni-

formly bad and, in places, comic—'Since the field started in 1971 it has literally mushroomed' (p. 229, discussing microprocessing). Each chapter ends with a set of uninspiring 'problems'—'What are some of the options available to the H 316?'. This book adds nothing to the existing literature on minicomputers and should never have been published in its present form. It should be avoided—especially for teaching purposes.

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Distributed Process Communication Architecture by K. J. Thurber and G. M. Masson, 1980; 252 pages. (Lexington Books, £14.50)

The book concerns methods of communication between computers and is an introductory text. Chapter one is an introduction to the advantages and distinctions of a computer network as opposed to an ordinary or telephone network. Chapter two details the types of networks—rings, stars, etc. Chapter three introduces messages and packets, and distinguishes the use of these from circuit switching. Chapter four gives data about time division and too much detail (for an introductory text) about rearrangeable and unblockable networks. Chapter five gives the standard ways of controlling computer bases. Chapter six concerns communication along a single data link, while chapter seven gives a variety of examples of connected computers—although not distinguishing the theoretical and existing ones.

This is a useful introductory book for this subject notwithstanding its many drawbacks. Jargon and abbreviations are used unnecessarily, while the continued use of taxonomy is overdone. The book contains most of the relevant ideas somewhat incoherently

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