anism and the iterative structure which precedes recursive definitions) is that much can be gained at the cost of a little redundancy. We note that Waterman (1970) provides another example of the potential power of redundant descriptions. Within his automatic learning system in which the heuristics are represented by production rules, he states the importance of maintaining redundant production rules so that they might evolve into non-redundant generalisations.

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Book reviews

System Analysis Techniques, edited by J. D. Couger and R. W. Knapp, 1974; 509 pages. (*John Wiley*, £8·40.)

The distinction between system(s) analysis and system(s) design is conceptually clear enough, but the dividing line becomes blurred in practice. It is however a distinction which is important in the curriculum for degrees in 'Information systems development', devised by the ACM; the curriculum contains separate courses in analysis and design. This book is intended as a text-book for the first of these courses. The editors refer to an instructor's manual which has not been received for review.

The coverage may be suitable for the ACM curriculum, but it is not what a British reader would expect of a student text entitled *System Analysis Techniques*. There is nothing about the techniques which systems analysis inherited from O & M. The assumption throughout is that all the facts necessary for analysis and design have somehow been obtained, The book therefore ignores a large area of the analyst's work, and much of the content appears more relevant to the design activity than to that of analysis.

The editors have collected together a number of previously published papers and extracts from books. Many of them are well-known (for example, CODASYL's Information Algebra, Grindley's Systematics, Langefors) and there are some splendid expository texts which I had not previously read (for example, J. Emery's 'Cost/benefit analysis of information systems'). The book ranges over a number of manufacturers' recommended documentation methods, including papers by IBM, Honeywell and NCR authors, and includes Chapin's introduction to the ANSI flowcharting standard and a somewhat deficient introduction to decision tables by R. M. Fergus. The 'automation' of the systems analysis and design process is well covered, with particular emphasis on the University of Michigan ISDOS project. With a few exceptions, the papers are of a high standard, and it is particularly pleasing to see that six papers out of the twenty-eight deal with the area of cost/effectiveness.

One strange feature is the absence of any paper describing the relational model of data (based on the work of E. F. Codd), which has attracted considerable interest in recent years. It is more approachable and of more immediate practical value in the analysis phase than the models of Langefors and the Information Algebra. Every student of systems analysis should be made aware of it.

This is a beautifully produced book, and is a credit to the publishers. It is a pity therefore that the editors' contribution is so small. Apart from selecting the papers and writing a sentence or two to introduce each paper, they have confined themselves to the dubious exercise of categorising the techniques into 'generations', following Couger's own definitions in his recent *Computing Surveys* paper. Their efforts would have been better expended in the important task of supplementing the older papers. They might, at the very least, have provided the student with up-to-date bibliographies in the relevant areas. They might also have found time to eliminate the misprints which are so faithfully reproduced from the original papers.

J. INGLIS (London)

Computer–Communications Networks and Teletraffic, edited by Jerome Fox, 1972; 644 pages. (*Wiley/Polytechnic Institute of Brooklyn*, £16·70.)

The proceedings of this conference are useful reference material, and cover a fairly wide field. Because of the nature of the conference, these proceedings would introduce the reader to the full spectrum of subjects which are of interest in the field of computer-communication networks. There is one notable exception—there is little mention of PTT supplied data transmission facilities or of the different data networks under development or study throughout the world. Because the contributions to such a conference are almost random, the proceedings do not give a coherent picture of the field. It is a valuable reference book for organisational libraries, many of the papers are not reproduced elsewhere, but it is not a very useful self-standing addition to a personal library. It cannot compete with a book like *Computer Communication Networks* which also covers a wide field, but was commissioned by the editors to give a thorough survey of all the subjects the editors thought relevant.

The book suffers from the lack of organisation in the contents. With 60 papers, it is helpful to divide the papers into some categories or subjects, to ease the reference to the proceedings. Having been rather negative, I must say it is welcome to have a strong international flavour to the papers—which is usually absent from conference proceedings in this subject, and certainly from books with solicited contributions even if covering a wide range.

Amongst the subjects covered are: Computer network traffic flow analysis, multiprocessor system organisation, queuing theory for networks, routing strategies, cable TV, communications interfaces, data sharing, network system design, and specific networks.

PETER T. KIRSTEIN (London)