

Book Selection

Edited by JOHN HOUGH

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Graph Theory in Operations Research

T.B. BOFFEY

Macmillan Press, 1982. 301pp. £25.00 h/b; £12.95 s/b
ISBN 0 333 28213 2 h/b; 0 333 28214 0 s/b

The distinctive feature of this text for students is that the emphasis is placed not on graph theory itself but on its applications in O.R. This approach is exemplified in the chapter titles, which include Location Problems, Shortest Route Problems and the Travelling Salesman Problem, rather than Graph Centres, Paths and Hamiltonian Cycles respectively. There are also chapters on Project Networks, Distribution Problems and Network Flows, in addition to general introductory chapters on graph theory, branch and bound methods and heuristics. Bondy and Murty¹ have written an excellent complementary book, with the emphasis reversed, which surprisingly is absent from the extensive bibliography. Perhaps the most obvious omission from the chosen topics is the application of graph colouring to timetabling problems.

Not surprisingly, the book is strongly algorithmic in approach, with most theorems being included only if they are required to solve one of the applications. According to the preface, the text is appropriate for readers who may have no more than a relatively minimal mathematical background, but for readers meeting graph theory for the first time some of the chapters will surely prove to be decidedly heavy going. A simple introduction to graph theory, such as that by Wilson,² could usefully be read in conjunction with this book.

The size of many real world applications of graph theory necessitates an heuristic approach, and for this reason the excellent chapter categorising and formalising heuristic methods is particularly welcome. Each chapter includes several worked examples plus half a dozen exercises, although no answers to these are provided. The quality of proof reading is generally high, although on p.273 the inhabitants of Buffalo may be surprised to find themselves in Boston! The book can be recommended to O.R. students whose courses have a fairly high graph theory content and to practitioners with some knowledge of graph theory.

C.H. ELPHICK

References

¹J.A. BONDY and U.S.R. MURTY (1976) *Graph Theory with Applications*. Macmillan Press

²R.J. WILSON (1972) *Introduction to Graph Theory*. Longman Group