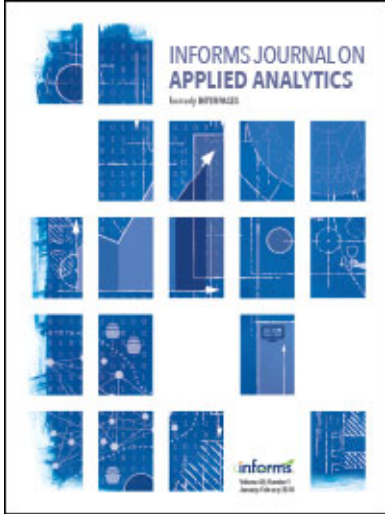




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Book Reviews

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$$\beta \sum \wedge \div \lambda \pi \epsilon \sigma \leq \lambda \approx + \circ \lambda \phi \sigma \alpha \geq \lambda \Gamma \alpha \omega \epsilon \div \& \mu ? \lambda \gamma \epsilon < \mu \Sigma \cap \phi \zeta \pi \wedge \rho$$

The range of books reviewed is wide, covering theory and applications in operations research, statistics, econometrics, mathematics, computers, and information systems. In addition, we include books in other fields that emphasize technical applications. We list the books and proceedings received; not all books received can be reviewed because space and time are limited. Those who would like to review books are urged to send the Editor their names, addresses, and specific areas of expertise. The Editor commissions all reviews and does not accept unsolicited book reviews. Readers are encouraged to suggest books that might be reviewed or to ask publishers to send copies of such books to the Editor.

SCOTT, JOAN E. 1982, *Introduction to Interactive Computer Graphics*, John Wiley and Sons, New York, 255 pp., \$24.95.

After finishing this book, the reader will never again be intimidated by such jargon as "pixels," "refresh cycles," and "stereoscopic views." The book provides a comprehensive overview of computer graphics, starting with such basic definitions as "key" and "button." It describes the kinds of hardware devices available and explains the most common features. In addition, it discusses the theory behind

graphics applications programming and the various graphics software packages available.

Throughout, the book is very readable. Numerous illustrations and diagrams help the flow. The author has avoided getting "bogged down" by any overly technical discussions but, there is enough detail on important issues, as well as references for further reading. Vendor names and addresses are also provided, making this an especially valuable reference for evaluating graphics hardware and software.

The discussion of applications could

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have been more extensive. More detail and case studies could have helped answer the question, "How can we use graphics here?" for those not yet doing so.

As a whole, the book succeeds well in its purpose. If you know little about graphics, and want to know more, read it.

William O. Cain, Jr.

EXECUCOM Systems Corporation, P.O. Box 9758, Austin, Texas 78766

ANGELL, IAN O. 1981, *A Practical Introduction to Computer Graphics*, Halsted Press, New York, 146 pp. (paperback).

A text for undergraduate computer science majors without previous experience in graphics, this book proceeds in a logical fashion from elementary to more complex examples. All are illustrated in Fortran code. After studying the book, one could expect to be able to program complicated monochrome patterns in two and three dimensions.

The book is complete, detailed, and self-contained. Where geometrical explanation is required to understand a technique, it is provided.

However, no solid conceptual framework is offered. Instead, the author proceeds from one problem to the next, explaining how to handle each one in turn. Although the progression is logical, it does not provide the reader with any basis for approaching new problems. There are also some rather vague references to techniques which are defined only by the sample programs.

In general, the book could have been improved by providing a framework and some discussion of how the techniques presented relate to the developments in

the field. In particular, the lack of references makes it difficult for the reader to pursue a particular topic of interest.

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BYRD, JACK, JR., and MOORE, L.

1982, *Decision Models for Management*, McGraw-Hill, New York, 407 pp., \$25.00.

The practice of modern management continues to call for a deeper understanding of how modeling and quantitative analysis can be better used throughout the planning process. This book fills the gap between the standard operations management texts and organizational theory texts by addressing the informational and structural elements of each in a unified framework. It begins by recognizing that a firm is more than the sum of its parts, and that decisions are rarely made in a fully informed or objective manner. Although the emphasis is nominally on models and their application, the authors seek to develop the broader aspects of decision making (such as personality, managerial philosophy, and societal forces) within the context of specific problems. In so doing they give new insight to the role models can and should play in clarifying what is often seen by the planner as a welter of conflicting alternatives.

Organizationally, the book is divided into four parts, chiefly along functional lines. Part I sets the tone by introducing decision-making concepts from both an individual and collective point of view. Various management styles are contrasted and a well conceived set of criteria is proposed for judging models. Part 2 continues with a discussion of planning and

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policy decisions, and presents a number of related analytic techniques including PERT/CPM, forecasting, and linear programming. The thrust here is on the ingredients required for model adaptation rather than on the development or explanation of the underlying mathematical theory. The third part concentrates on operating decisions and discusses problems relating to inventory control, scheduling, distribution, and facilities design. Part 4 reiterates many of the points previously advanced and attempts to bring to light the host of pitfalls and difficulties one is likely to encounter when performing an operations type study.

Each chapter begins with a synopsis, a delineation of major concepts, a list of expectations for the students, and a case. Surprisingly, it is the latter which gives the book its major strength and sets it apart from the rest of the market. Not only do the cases have a sharp flavor of realism, but they are aptly chosen to reflect a full range of strategic and operational issues arising in both the manufacturing and service industries. The actual presentation, though, is somewhat non-traditional in that the narrative is often interrupted to bring in important generalizations or characterizations of the topic being discussed. This approach implicitly extends the scope of the analysis while keeping the problem at a manageable level.

A second strength of the book is its recurrent message that modeling is intended to supplement intuition and judgment rather than replace them, and that the best model in the world will see little use if its architects fail to secure the

trust and support of management. Finally, if there is any criticism to be leveled it would have to center on the authors' failure to adequately address the shortcomings of modeling and the consequences of insufficient data. There is very little discussion on the robustness of the techniques presented or on the appropriateness of using a particular technique for a given problem. Although this is not a serious drawback, I believe that the text will work best for those who have a strong analytic background and are looking for a case or applications oriented course, or for those at the other end of the analytic spectrum who want to further their appreciation of quantitative decision making.

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KWAK, N. K. and SCHNIEDERJANS, M. J. 1982, *Managerial Applications of Operations Research*, University Press of America, Lanham, Maryland, 452 pp., \$17.25/paper, \$29.50/hardcover.

This book is a collection of papers on managerial applications of operations research. It is intended to demonstrate the applicability of operations research and to provide insight into successful implementation and the real benefits of operations research studies. The audience for the book consists of seniors and graduate students in operations research, business, and engineering; operations research practitioners; and operating managers.

The book begins with an introductory section containing two philosophical papers on operations research. These papers discuss the history and future of opera-

tions research with regard to theory, practice, and education. Each of the remaining five sections focuses on a standard operations research technique. These techniques, decision theory, mathematical programming, network and production-inventory models, Markovian and queueing models, and simulation, correspond to the topics most frequently covered in a basic operations research text. Each section begins with a two or three page overview of the technique and the papers contained in the section. This is followed by four to six papers covering the topic. The section ends with discussion questions on each paper.

The overview of each topic is very brief. If readers are already familiar with the technique it will be sufficient to refresh their memories. However, if they are the least bit hazy about the material, they will have to resort to a basic operations research text; the authors implicitly assume that the reader knows these techniques.

The heart of the book is the papers used to illustrate the application of these topics. They are primarily reprints from the operations research literature, with only three of the 25 not previously published. A variety of journals is represented, but approximately half of the papers were originally published in *Interfaces* or *Decision Sciences*. As might be expected, the quality, readability and mathematical rigor of the papers vary. The papers chosen are representative of the topics covered and provide a wide range of applications. I would like to have seen Geoffrion's paper, "The purpose of mathematical programming is insight, not numbers," included in the mathematical program-

ming section and King and Love's "Coordinating decisions for profits" seems a natural for inclusion with the network and production-inventory models. Of course, these choices are a matter of opinion, and I'm sure other readers would have different views.

The discussion questions at the end of each section were disappointing. They either seemed too general (Why is timely production planning important to manufacturing people?) or too specific (What is meant by the terms "backward step" and "forward step"?). These questions do not help to fulfill the purpose of the book, particularly in providing insight into successful implementation and its resulting benefits.

I would not adopt this book as a text. I believe that case studies are a more effective way to illustrate the applicability of the techniques. They also lead to more insightful discussion on implementation and benefits of the operations research study. Of course students can read much of the same material in the operations research journals, particularly *Interfaces*, with the added advantage that browsing exposes them to even more material. Practitioners may find the book more useful because of their tighter time constraints. However, here again, a subscription to *Interfaces* might be a better way to spend their money.

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ELDIN, HAMED K. with BEHESHTI, HOOSHANG M. 1981, *Management Science Applications: Computing and Systems Analysis*, Elsevier North-Holland, New York, 316 pp., \$25.95.

In many organizations it is still common to find the functions of the management scientist being performed by a variety of independent groups without regard to duplication of effort or responsibility. The aim of this text is to clearly define the role of management science within the corporation, and to provide a broad, working knowledge of how the tools and techniques of the profession can be integrated into the planning and decision process. Its approach is from the top down with an inclination towards the traditional functional areas, and an emphasis on problem content and form rather than solution methodology. Marketing, production, research and development, finance, and accounting are treated in detail.

The book is divided into three parts: tools and techniques, applications, and premises and problems, with a number of appendices abstracting some of the more prominent articles in the field, and highlighting computer software for accounting and financial analysis. Each chapter closes with a set of review questions and a list of recommended articles for further reading. Part I begins by staking out the high ground for the management scientist among his peers in operations research and systems analysis, and runs through the various analytic techniques in a conspicuously nonquantitative manner. This

is in keeping with the book's underlying managerial theme, and is well suited for the general discussions on problem solving, modeling, and the systems approach. However, when specific techniques such as linear programming or decision under risk are presented, we are given little more than an outline with hardly an example to reinforce the point. Practically speaking, it doesn't seem possible to describe analytic methods without at least presenting the corresponding models. Omissions of this order, especially after stressing the need for quantitative skills in industry, compromise the book severely. Other authors, such as Wagner [1975], manage to convey the same sense of purpose and general perspective without foregoing the quantitative component. In addition, there appears to be a continuous thread of minor but nagging errors in terminology and treatment throughout the first half of the book. For example, mathematical programming, differential calculus, and gradient methods are all mentioned as different approaches to optimization as though each was a separate discipline. In the section on stochastic processes, the distinction between random variables and model parameters is often confused or omitted.

Part II deals with applications, but not in the case study sense. Specific techniques are singled out and further discussed within the context of each application area. For instance, the section on production includes a description of allocation and personnel issues, plant layout, and the techniques that might be used to solve the underlying problems. No real situations are exemplified though, so un-

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less the reader has some familiarity within the area, obtaining a workable understanding might be difficult. By way of contrast, Turban and Meredith [1981] make their points more convincingly by beginning each chapter with a sample problem and ending with a more elaborate case.

Part III comprises only one chapter and has the flavor of an epilogue rather than a main component. It explores the more qualitative aspects of management science and offers what might be viewed as a pep talk for the profession. While this is not without merit, a bit more discussion on model validation and the organizational problems surrounding the implementation of solutions would have been welcome. Although the book's title contains the word "computing" there is virtually nothing on the integration of management science and information systems. The chapter on computer tools simply summarizes the repertoire of available application- and procedure-oriented languages without touching on the emerging field of decision support systems.

In summary, the book provides a state-of-the-art overview of management science from a nonquantitative point of view. As such, it may be ideally suited for undergraduate business majors, engineers, or MBA students who would like to get a feeling for the systems approach to problem solving without becoming overburdened with specific techniques.

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