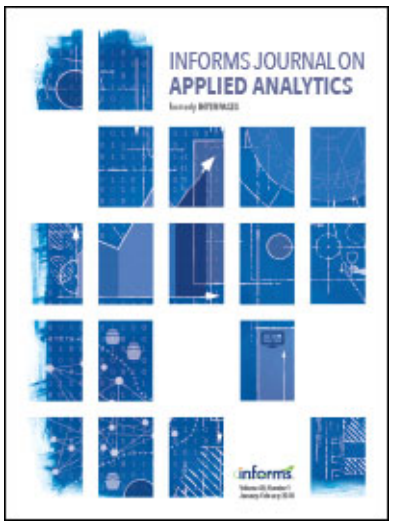

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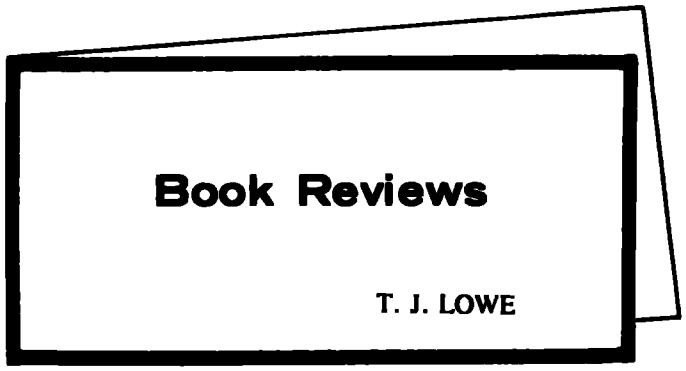

BERTSEKAS, DIMITRI P. and SHREVE, STEVEN E., *Stochastic Optimal Control: The Discrete Time Case*, Academic Press, 1978.

This is a highly technical monograph on a rather specialized subject. It may be viewed as a sequel to Bertsekas' earlier text, *Dynamic Programming and Stochastic Control* [Academic, 1976, reviewed in *Interfaces*, February 1978]. Both books deal with dynamic programming in the context of discrete-time stochastic systems with arbitrary state spaces. In DP&SC, measure-theoretic techniques are avoided by assuming the underlying probability space to be countable. Indeed, the reader is led to believe that, in the absence of this assumption, the results given in the earlier book remain valid, although the proofs become more intricate. The purpose of this book is to provide a mathematically rigorous derivation of these results.

This book is divided into two parts that may be read independently. Part I establishes the validity of the dynamic programming operator in sequential optimization and studies its behavior as the horizon goes to infinity. Part II shows how stochastic control problems may be cast in the form of Part I. A detailed summary of the contents is given in the introductory chapter. The required background has been limited to basic concepts in measure theory and topology, but familiarity with this book should also be considered essential, for motivation. The style is terse, proceeding from definition to lemma to proposition with scarcely a pause. This makes the first reading rather difficult, but facilitates later searches for particular items. It is my opinion that this book is not suitable for use as a course text.

Much of the material in this book appears in a comprehensive text for the first time. The recent work of Bertsekas and Shreve is, of course, included, along with representative samples of Blackwell's now classic formulations, Denardo's contraction properties, Striebel's sufficient statistics, and a thorough development of required properties of probability measures on Borel spaces. Consequently, the book should be welcomed by researchers as a standard unifying reference for this important body of work, and as the potential source of a standard terminology for reporting future results.

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BREWER, GARRY D. and SHUBIK, MARTIN, *The War Game: A Critique of Military Problem Solving*, Harvard University Press, Cambridge, Massachusetts and London, England, 1979, 384 pp.

This book is a comprehensive, scholarly overview of military problem solving via models, games, and simulations (MSG's). The problems addressed are of significant importance in defense planning in the United States and other countries.

The authors obtained by a survey method a great deal of information on MSG's in use in the early 1970's, and have used the data base which they established in obtaining the descriptive and prescriptive contents of the book. Their findings flow logically from examination and analysis of the data.

Many different views of MSG's are explored in the book: general background: historical developments; types of MSG's; production, operation, and use; the institutional setting of analysis; and professional recommendations.

The book can be valuable to a wide range of readers, including basic researchers, model builders, analysts who use models, decision makers who deal with analyses based on models, participants in the political decision process, and scholars interested in any aspect of the topic. I recommend the book as valuable and thought-provoking background material for their professional reading.

One criticism and one qualification should be noted. First, there is an implication throughout the book (see, for example, p. 25) that analysts and decision makers do not sufficiently understand MSG's used in quantitative analyses, such as cost-effectiveness comparisons of weapons, which are inputs to decisions. It is my view that many, if not most, defense analysts and decision makers at all levels understand MSG's and are wary of the results of MSG's in performing and interpreting studies. Second, in the mid-1970's a new generation of large-scale, theater-level, ground-air warfare simulation models, most of which are well documented, became available. These MSG's are not treated in the book (though the book would not be significantly changed by considering them).

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KERZNER, HAROLD, *Project Management – A Systems Approach to Planning, Scheduling and Controlling*, Van Nostrand Reinhold, New York, 1979, 487 pp.

This book gives a very complete coverage of all facets of project management, from its organizational aspects to the detailed planning of a project. Unlike so many comparable books, the author provides a much-needed summary of the "theoretical" bases for project management in the first 3 of the book's 12 chapters. The role which project management plays *vis-a-vis* other alternative organizations, both classical and modern, are amply established in these early three chapters. Chapters 4 and 5 provide detailed "how to" materials on organizing, staffing, and managing projects. The author discusses numerous examples and actual cases that illustrate important points. Chapters 6 and 7 present a series of often-encountered problems, pitfalls, human conflicts, and organizational pathologies that every manager should know about. Ways to avert, solve, and overcome each type of problem are presented. The author's inclusion of conflict resolution and behavior modification methods is especially welcome in a book like this. Chapters 8 through 12 are devoted to the details of work

planning, schedule development, work breakdown, forecasting, charting, time control, and cost control. Collectively, these five chapters comprise a detailed recipe for the project manager.

The outstanding feature of this book is its focus on direct, practical applications. The book is a "How to do it," "Why to do it," and "When to do it" manual for practicing managers. The one weakness in these respects is in the behavioral area: the book does not present any direct, detailed instructions on how to build leadership and teamwork in project environments. On the other hand, the 30 case studies and innumerable real-world examples given throughout the book provide a variety of insights and approaches, which should be easily adaptable to particular problems and situations. New and experienced project managers, project team members, functional managers who must interface with project-level personnel, and top-level executives can all profit from this book.

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MANSFIELD, EDWIN, Editor, ***Statistics for Business and Economics: Readings and Cases***, W. W. Norton & Company, 1980, 370 pp.

There are presently a multitude of students in the fields of business and economics. At the core of each student's curriculum is at least one course in elementary statistics. Many students, however, consider textbooks in this area to be extremely dry and uninteresting. A supplementary book that emphasizes applications in a lively and stimulating way is almost essential for such a course to be successful. ***Statistics for Business and Economics: Readings and Cases*** by E. Mansfield is intended to serve as a supplementary book of this kind. The book contains 26 readings (the word "cases" could easily be dropped from the title) which are designed to deepen understanding of fundamental statistical tools, illustrate applications of these tools, and whet the student's appetite for more advanced techniques. The motivation is commendable but, unfortunately, the book is only moderately successful.

Many of the articles in this book were included in an earlier book of selected readings published by Mansfield in 1970. About 40% of the articles in the present edition were not in the earlier book but, despite this fact, the articles in the 1980 version are still an average of almost 20 years old. In general, we found too many of the articles to be dated. Even more importantly, we found too many of the articles inappropriate for the intended audience.

In our opinion, articles appearing in a readings book of this type should be *accessible* (well-written, brief, and entertaining), *supplemental* (in that the article describes a real-world application or illustrates a fundamental statistical technique in a manner not found in the textbook), and *relevant* (i.e., techniques referred to should be among those that are typically covered in an elementary statistics course). Some of the articles in Mansfield's book meet these three criteria; most do not. The article by Huff which presents examples of how statistical measures can sometimes be misleading is a delightful piece, despite the fact that it was written in the early 1950's. The articles by Deming and Neter which present informative overviews of statistical

quality control and statistical auditing, respectively, are also extremely well suited for such a volume. In addition, the articles by Street and Carroll, and by Howard, Matheson, and North, are noteworthy. The first of these applies regression analysis to evaluate protein content and palatability of a new food product. The article by Howard *et al.* describes a decision-theoretic model for the analysis of the conditions under which the federal government ought to seed hurricanes. Each of these articles is compact and yet insightful.

As we have mentioned, other articles do not measure up as well. For example, articles on the notion of probability by Von Mises and Savage are too philosophical. The article by Obrock on statistical sampling is very readable, but perhaps not sufficiently challenging. The article by Fouraker and Siegel on bilateral monopoly and the one by Mansfield on the growth of firms pay too much attention to economic and not enough attention to statistical issues. The article by Mansfield on acceptance sampling is particularly disappointing. The tables and graphs are presented with little motivation and are quite difficult to follow. We were also surprised that in two articles on forecasting there was no substantial discussion of moving average forecasts or exponential smoothing. Most of the remaining articles are adequate rather than stimulating or provocative.

Despite its flaws, the book contains numerous articles that are quite effective in conveying the importance and wide applicability of well-known statistical techniques in business and economics. An instructor of elementary statistics would be well advised to consult this book. However, for use in the classroom as a supplement to a text, we consider a better choice would be *Statistics: A Guide to Business and Economics*, edited by J. Tanur (Holden-Day).

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MIRKIN, BORIS G., *Group Choice*, V. H. Winston & Sons, Washington, D. C., 1979, 252 pp., $22.50.

Group Choice by Boris G. Mirkin is a fine addition to the literature on social choice and collective preference. This edition was translated by Yelena Oliker from the original Russian and was edited by Peter C. Fishburn. The book is interlaced with many examples that make the exposition easy to understand and which provide useful insights for the readers. It is particularly exciting to see problems in group choice compared with related problems in data analysis, since this approach has not been taken before in the literature. Each chapter concludes with a mixture of both "solved" and "unsolved" problems.

The first chapter of *Group Choice* is a long, and perhaps tedious, description of the terminology and measurement of individual preferences. The author justifies this chapter's length because "little has been written on this subject in the Soviet literature." Some readers may be annoyed by the nonstandard terminology and the typographical errors in this chapter.

The second and third chapters consider the problem of reducing individual preference relations to a single group relation. The author provides a detailed intro-

duction to majority rule in social choice and examines conditions for producing transitive majority relations. The author has an excellent discussion on the computation of distance between relations, the derivation of the median of a set of rankings, and corresponding problems in factor analysis and other fields. In the third chapter, he briefly examines different requirements on the consistency of a group relation and extends Arrow's impossibility theorem.

Although it is encouraging to see expert judgment analysis discussed in a book on social choice, the discussion in Chapter four is fragmentary and outdated for the most part. Related research in multidimensional scaling, consumer marketing, decision theory, and other areas of Management Science supersedes many of the results presented in this chapter. The author, however, does provide a useful discussion of the problem of estimating the competence of experts and proposes a procedure employing factor analysis.

The fifth chapter considers the concepts of economic equilibrium and the problems of optimal resource allocation. Most of this material is perhaps not readily available to Soviet readers of the original edition, but this material appears in several English sources.

Despite an uneven treatment of topics and a limited list of references, *Group Choice* is a highly readable book that should be of interest to many researchers and students. Its emphasis on data analysis provides a refreshingly different perspective on social choice.

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