

a fair amount of literature. The author, John M. Eisenberg, is well situated for writing this volume as he is a general internist with extensive training and research experience in the fields of decision analysis, health economics, and health policy. The book is an outgrowth of a paper he wrote for a conference sponsored by the National Center for Health Services Research in October 1984, "Planning for the Third Decade of Health Services Research."

The book covers three major areas. The first part is entitled "Understanding Variations in Physicians' Practice Patterns." The first chapter reviews the evidence of variation in practice patterns (also known as small area analysis) and explores reasons for this variation, including the hypothesis that supply creates its own demand and that physicians can induce their own demand. The chapter also incorporates some basic principles of decision analysis into describing variations in physicians' practice patterns by reviewing the generic model made popular by Pauker and Kassirer concerning the threshold approach to clinical decision making (i.e., the concepts of test thresholds and test-treatment thresholds when faced with a patient who has particular signs and symptoms). The next three chapters review influences on doctors' decisions, including: the physician as a self-fulfilling practitioner (covering topics of income-seeking, style of practice, individual physicians' characteristics, practice setting, and the role of clinical leadership); the physician as the patient's agent (covering the role of the physician as the patient's economic and clinical agent, patient demand, defensive medicine, patient characteristics, and convenience); and the physician as guarantor of social good (reviewing the dilemma that is faced by clinicians when there are conflicting objectives of being the patient's agent as well as the "protector of the commons").

The second part of the book describes approaches to changing physicians' practice patterns. Various theoretical frameworks including behavior modification, management theory, and adult learning theory are reviewed very briefly. A chapter is devoted to a review of educational and feedback approaches to changing physician behavior, considering both the effectiveness of these approaches and costs. The final chapter in this part considers alternative approaches to changing physician behaviors such as participation (decentralized management), administrative rules (my favorite), and financial incentives and penalties.

The third part of the book concerns directions for research on physician utilization. A variety of approaches are reviewed, including econometric models from aggregated data bases, small area analysis, national utilization surveys, use of clinical and management information systems, and primary data collection at the level of the encounter. The book closes with a brief chapter entitled "Why Should We Care?" The answer seems to be found in the following sentence: "As policy makers and national leaders in medicine seek ways to ensure that the most value can be obtained for the money spent on medical care and as efforts to improve the care that is delivered by individual physicians continue, it becomes critical to understand the underpinnings of physician practice patterns."

In general, this book is very successful at achieving its stated objectives. It is indeed a very nice summary of an

extensive research agenda that has been performed over the previous decade. This review is set in a conceptual framework which is highly interdisciplinary in its approach. For individuals who are mostly unfamiliar with this research, the book will provide a nice introduction and a wonderful annotated bibliography. Unfortunately, much of the material must be covered superficially because of space constraints. Thus, for the advanced reader, some of the summaries may appear simplistic. I had particular difficulty with Chapter 4, Physician as Guarantor of Social Good. The paragraphs that described and linked the concepts of "moral hazard," "prisoner's dilemma," "invisible hand," and "the tragedy of the commons" were, in this reader's opinion, not up to the task of conveying these principles to a general audience. In fact, "the tragedy of the commons" is not a rebuttal to the theory of the invisible hand since the latter requires certain assumptions which are violated in the story about the commons. The tragedy of the commons is really an example of a situation where consumers do not face real or actual costs in consuming goods for services, which creates externalities for others. Since I am an economist who is very familiar with the concepts outlined in this section, it is probably natural that I would find them too simplistic.

Those concerns notwithstanding, I believe that this book does a good job of providing a broad overview to this complex and controversial subject. Its major strengths are the multidisciplinary approach and the review of a large amount of research which is put into a very nice conceptual framework. These strengths are certainly a reflection of the training, perspective, and experience of the author.

Therefore, I recommend this book to the diverse set of readers who will be interested in the subject as outlined in its title. I imagine these would include policy makers, physicians, health administrators, and other health professionals. In particular, I think that this would be a very useful book for journalists who are covering the unfolding policy debate concerning health care costs in the United States and for those who would like to perform research in the area. The value of the information contained in the book certainly exceeds its cost.—ALLAN S. DETSKY, MD, PhD, *Departments of Health Administration and Medicine, University of Toronto, Toronto, Ontario*

Decision Analysis and Behavioral Research. By DETLOF VON WINTERFELDT AND WARD EDWARDS. Cambridge, England, Cambridge University Press, 1986. 604 pages. \$59.50; \$19.95 (paper).

At the outset, the authors state (page 2): "Explicitly, this book is intended to help people be rational in making inferences and decisions." Shortly thereafter, they indicate what they mean by rational decision making (page 19): "This book assumes that the *only* [italics theirs] rational decision rule is that, among the options available, you should choose the one with the largest SEU." Thus, the authors' articulated purpose is to teach the concepts and techniques of decision analysis, where the latter is essentially the application of subjective expected utility (SEU) theory. The book also discusses results from psychophysics, judgment and decision psychology, and more general cognitive psychology, since they bear upon the successful execution of a decision analysis.

The book contains 14 chapters. The technical chapters address such topics as "decision trees" and "multiattribute utility theory." The book examines conceptual underpinnings, too, e.g., in the chapter, "Theoretical Foundations of Value and Utility Measurement." Particularly important discussions are about actual decision analytic practice, e.g., the chapters "Sensitivity Analysis and Flat Maxima" and "Applications and Pitfalls of Decision Analysis." Most, though not all, of the illustrations concern organizational decisions rather than individual, e.g., clinical, decisions. The concluding historical chapter will be especially appealing to those interested in the origins of contemporary thought about decision making.

Sources on decision analysis are scattered and often inaccessible. The authors have provided a valuable service in assembling and interpreting those sources. The basic writing style is clear and engaging. However, it is easy to cite sources for better explanations of several important concepts, e.g., the value of information. The authors sought to avoid formalisms as much as possible, and believe that "even a non-mathematical graduate student" can work through the hardest chapter (page xiv). Nevertheless, a thorough understanding of the book presupposes calculus and distribution theory. If the authors intended the book to be an effective instructional text, they probably will be disappointed.

Decision Analysis and Behavioral Research is more than an exposition of decision analytic procedure. Appropriately, the authors devote considerable attention to the justification of decision analysis. Their remarks on the subject are provocative, and will be contested by many who have thought deeply about decision aiding. For instance, some readers will question the authors' insistence on SEU maximization even when the decision maker rejects the SEU axioms. There may well be a good case for their position, but the authors do not make that case. Some readers might also perceive the book as contradicting itself. In the chapter on sensitivity analysis, the authors submit that "the precision of model forms and numbers is seldom crucial" (page 388). Given this conclusion, why should the reader bother with the formalisms that constitute most of the volume?

Many observers are troubled that there have been few if any clear demonstrations that decision analysis tends to produce decisions with better outcomes. This does not bother the present authors. Indeed, they resist the implied validation concept. At the beginning of the book they argue that "the quality of decisions really means the quality of the processes by which they are made, and that can be evaluated only on the basis of the information available before their

outcomes occur or become certain. Rational decisions are made and must be evaluated with foresight, not hindsight" (page 3). At the end of the book, the authors maintain that it is inappropriate to validate the output of decision analysis against intuitive decisions: "We consider such attempts to compare the two procedures useful only in demonstrating that they do indeed lead to different results—which we already knew" (page 571).

Despite statements like these, the authors consider such data as client testimony to be relevant to the appraisal of decision analysis, e.g., "all participants felt that MAP (a particular decision analytic technique) substantially facilitated these tough decisions" (page 478). Since important biases are known to plague user testimony, it is unclear why testimony data are pertinent, yet comparisons of the quality of outcomes from alternative decision procedures should not be attempted. Although the authors reject such comparisons, most decision makers do not. Until decision analysis "wins" some of these comparisons, current reluctance to apply the technology will persist. Decision makers will say that being "rational" in the specialized sense of some analysts is all well and good. But until there is reason to expect this rationality to benefit them materially, they will stick with their traditional decision approaches.

The authors assert that "the main advantages of decision analysis lie in structuring the problem, finding new options, and sometimes collecting better information rather than in precise measurement" (page 421). Elsewhere, they cite other benefits of decision analysis, e.g., that it encourages "hard thinking" (page 362). To the extent that such benefits exist, they are incidental; the details of decision analytic technique were not designed to achieve those advantages. Again, decision analysis students will wonder why they must endure the pain of learning the formalisms that dominate the book. Other readers will ask a similar but more important question: "Since von Winterfeldt and Edwards have shown that the numbers don't matter very much, wouldn't our time be better spent pointedly trying to do something about what *does* matter, exploiting the literatures on such things as knowledge representations, creativity, and identifying expertise?" In fact, numerous decision researchers have pursued that tack for some time.

Should *Medical Decision Making* subscribers read this book? Almost any serious student of decision making should. The book brings attention to many important issues. But the prescriptions it offers should be viewed with a critical eye.—J. FRANK YATES, PhD, *Department of Psychology, The University of Michigan, Ann Arbor, MI*