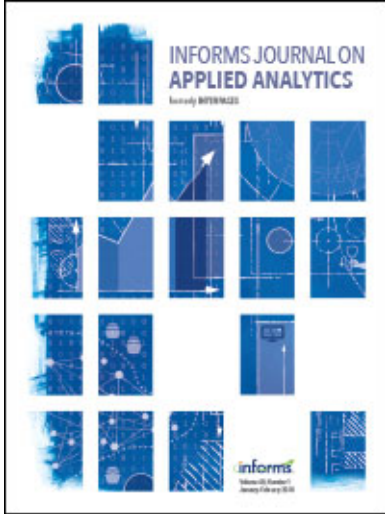




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Book Reviews

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Book Reviews

MARION G. SOBOL

Edwin L. Cox School of Business
Southern Methodist University
Dallas, Texas 75275

$$\frac{1}{\beta} \Gamma^{\alpha} \approx \frac{*}{\div} \beta^{\mu} = \frac{\rho}{\pi} \backslash + \sigma \cdot x \cdot \mu \omega \epsilon \cdot \& \mu ? \lambda \gamma^{\epsilon} < \mu \Sigma \cap \{ \pi^{\rho} \\ \Sigma \wedge \div \lambda \pi^{\epsilon} \} \sigma \leq \lambda \approx + \circ \lambda \phi \sigma \alpha \geq \lambda \Gamma^{\alpha} \omega \epsilon \cdot \& \mu ? \lambda \gamma^{\epsilon} < \mu \Sigma \cap \{ \pi^{\rho} \\ \Sigma \wedge \div \lambda \pi^{\epsilon} \} \sigma \leq \lambda \approx + \circ \lambda \phi \sigma \alpha \geq \lambda \Gamma^{\alpha} \omega \epsilon \cdot \& \mu ? \lambda \gamma^{\epsilon} < \mu \Sigma \cap \{ \pi^{\rho}$$

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.

DE GEOFFROY, J. G. AND WIGNALL, T. K. 1985, *Designing Optimal Strategies for Mineral Exploration*, Plenum Press, New York, 364 pp., \$55.00.

The book is a good reference to a technical and commercial analysis, in a statistical optimization sense, of the potential success of a mineral exploration project. The authors undertake a comprehensive probabilistic assessment of the uncertainty and risk present in mineral exploration.

The first chapter of 12 gives a basic background in applying optimization

technology to evaluate the discovery of mineral resources. Chapters 2 through 5 dwell on the derivation of the variables considered when formulating a detection process. The authors separate the problem of mineral detection into direct and indirect methods. Direct methods use exploration techniques that provide direct physical evidence to the explorer (for example, drilling or trenching). Indirect methods require interpretation to extract information (for example, geophysical or geochemical surveys). The probabilistic discussion includes a clear and complete

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explanation of the statistical variables used. The probability of mineral detection represents the risk factor assigned to a cost function that incorporates the commercial significance of the project. The detection probabilities and cost functions are integrated into a linear optimization model to quantify the potential for success.

Chapters 6 through 12 present examples of the application of the concepts developed in earlier chapters to six genetic types of ore deposits in North America. The last chapter demonstrates an application of the optimization technique to the economic selection of best drilling targets. This last chapter would have fit better in the earlier part of the book because of its general nature.

The authors also cite many relevant publications for readers who want to investigate the theoretical details. In general, the book is well-written and easy to follow for a reader with a fundamental background in statistics. It is best suited for explorationists, geologists, geophysicists, petroleum engineers, and others involved in mineral exploration.

David R. Martinez

ARCO Oil and Gas Company, 2300 W. Plano Parkway, 2039 EPRC, Plano, Texas 75075

SAATY, THOMAS L. AND KEARNS, KEVIN P. 1985, *Analytic Planning: The Organization of Systems*, Pergamon Press, Oxford, England, 208 pp., \$40.00.

This book is a followup to two books by Saaty (*The Analytic Hierarchy Process* and *Decision Making for Leaders*) reviewed in the June 1984 *Interfaces*. The major contribution of this volume is to focus on the

use of Saaty's analytic hierarchy process in major planning efforts.

The book itself is rather uneven, in part because it attempts to treat a very wide range of topics in very little space. The 208 pages are divided into two parts: (1) systems and complexity and (2) strategic planning. Least useful are the chapters that try to tackle broad topics: specifically the chapters on complexity, systems, systems characteristics, and the analytic hierarchy process and current theories of planning. These chapters are written in a compressed, telegraphic style that makes sense only if you already know the material. However, if you do know the material, you find simplifications, oversights, and missing elements. For example, in discussing other planning methods, Helmer is credited with inventing Delphi, yet Delphi was reported in the early '60s by Dalkey and Helmer. More sophisticated futures-research methods that have been around for 15 years, such as cross-impact analysis, are not even mentioned.

The book is much better when it concentrates on the analytic hierarchy process. The general description is well done as are the chapters describing its application to strategic planning and cost-benefit analysis. In planning, both forward planning and backward planning and combinations of the two are presented. Perhaps most useful are the detailed examples of the analytic hierarchy process. They allow the reader to understand what is going on and to get a sense of how good analysis is done.

For those new to the analytic hierarchy process, Saaty's *Decision Making for Leaders* is to be preferred to this volume. Because

SOBOL

of its shortcomings, this book does not seem to me to be a good text. Its main audience is the professional planner who has a systems perspective.

Paul Gray

Claremont Graduate School, Claremont,
California 91711

TILANUS, C. B.; DEGANS, O. B.;
AND LENSTRA, J. K. eds. 1986, *Quantitative Methods in Management: Case Studies of Successes and Failures*, John Wiley and Sons, New York, 279 pp., \$31.95.

The editor of this journal rarely does book reviews (as he normally has too short an attention span). Imagine his surprise when he received this book from his esteemed book review editor. Imagine her surprise when he actually decided to review it.

This is a translation of a book, published in 1983 by Het Spectrum, BV, entitled *Kwantitatieve Methoden in Het Management*. Owners of that 1983 book need read no further. The editors report that they initially contacted 363 members of the Netherlands Society of Operations Research (NSOR) as well as 66 Dutch speaking members of the Belgian Society for the Application of Scientific Methods in Management. Of these 429 invited individuals, 57 responded positively and 36 useable contributions were received and edited.

Each respondent was asked to prepare a chapter that consisted of

- A short description of the firm,
- A short description of the individual, group or department and the role MS/OR plays in that department,
- A report of an MS/OR project that

failed, and

- A report of an MS/OR project that succeeded.

Most of the 36 case-study chapters follow this format pretty closely. The applications are drawn from a wide range of organizations in the private sector, representing agriculture, food, publishing, chemical, steel, oil, banking, and so forth, and in the public sector, dealing with regional planning, energy planning, traffic safety, and the like. The book presents a wide diversity of applications and, the editors argue persuasively that these cases adequately represent the MS/OR activities of NSOR members in late 1981.

Thus we have before us a pretty good sample of the type of articles that *Interfaces* has been publishing under the editorship of Alan Kitchener (in his column, "What MS/OR Groups Do"). It appears that the Dutch have accumulated this knowledge on a large scale, although few of us monolingual philistines were aware of it.

How well does this book work? Few of the chapters are truly outstanding, perhaps because of page limitations (they average six pages — a meager allocation for company and group background, two applications stories and a summary). However, the total impact is impressive. In one place, at one point in time, a large number of practitioners have pooled their experiences in successes and failures in the practice of MS/OR. They provided two bits of data each and the editors performed a synthesis. Indeed, many readers will rush to the last chapter to see the compilation of the reasons for success and failure. The main reasons for failure

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are (with number of mentions in parentheses), mismatch of model and problem (15), model complexity (7), insufficient user involvement (7), data deficiency (7), and organizational changes (7). The reasons for success were good relationship with user (14), savings or profit (13), improved decision making (11), simple, clear model (9), and good communication of model and results (9).

Is there anything truly new here? Probably not. The editors stress that there is probably over-attribution of success to activities of the MS/OR respondent and of failure to things outside the control of the respondent. In spite of that, we get the usual, general guidelines for implementation success — involve the user, bring the right tool to the right job, communicate benefits and results well, KISS, and so forth. But the strength of this book is that the cases bring life to these abstract statements.

It sounds like this book is sort of an "In Search of Excellence in MS/OR," and it is, in a way. It lacks the style of the Peters and Waterman book (indeed, much of the translated writing is stilted and overly formal) but makes up for that lack with substance. The cases are concise but they provide much interesting material, both organizational and technical, in a short space. There is little mathematics here, generally less than in the typical *Interfaces* article, but the idea of the use of MS/OR comes through.

This book is a success. It accomplishes what it sets out to do. It should be in the library of *Interfaces* readers. Academics will find a rich new source for short illustrations and case studies to use in class.

Practitioners will find out what their Dutch-speaking colleagues have been up to. And we should all internalize and share in this rich set of experiences about what works and what doesn't work in the practice of MS/OR.

Gary L. Lilien

Editor-in-Chief

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