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Book Reviews

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BOOK REVIEWS

MOTHES, J. *Previsions et decisions statistiques dans l'entreprise.* Paris: Dunod, 1962, 86 NF, 574 pp.

French scientists have always excelled in probability theory though less so in mathematical statistics, whereas the English and American schools approached probability theory via statistical inference. This book on statistics in "enterprize" derives rather from the American tradition in evolving the probability theory developed. By the same token the need for and the use of statistical inference is introduced in terms of illustrative examples drawn from business enterprize, and ranging from simple problems in production management to questions of governmental planning. An interesting and valuable aspect of this book is found in the "presentation" of each section where the statistical techniques to be developed are motivated by an intuitive introduction of questions requiring these techniques for their resolution.

Of the eight sections comprising this work, the first three form a unit dealing with "Stochastic Phenomena and Probability Models" and the remaining five are devoted to "Analytical Techniques and Statistical Action Rules." There is a very useful forty-page appendix of tables and graphs.

In the first section the importance of observations and how they are taken is emphasized, and illustrated by discussion of many sets of practical data. The second section then follows this introduction to some of the realities of statistical inquiry with a development of "probability models", namely various distributions, their fundamental properties and rules of combination. The notions are first discussed intuitively in the presentation and then formally developed. The linkage between elements of statistical method and distribution theory is developed in the third section. It is interesting that although this is a relatively elementary text (designed to provide modern business analysts with sharp tools of inference) the author is able to touch on such notions as the characteristic function and convergence in probability. This first part of the book is a very valuable introduction to the use and usefulness of probability and statistical inference in examining practical problems. It also provides a very good foundation for the more exact subject matter of the second part.

In part two there is first classical estimation of proportions, means and variances and sampling techniques. In the long fifth chapter entitled, "Problems of Comparison," there is a considerable discussion of tests of hypotheses, including some fifteen pages on non-parametric tests and touching on experimental design. Before introducing some of the conventional analysis of variance the author devotes some thirty pages to industrial quality control. An interesting aspect of the author's treatment of statistical hypothesis testing is his emphasis on rejection of hypotheses as one of the functions—an important function too often overlooked. Section VI deals with classical correlation, regression, rank correlation, and covariance. The distinctions between statistical correlation and causal linkage are rightly stressed.

The remaining two sections are developed in a definitely applied direction. The seventh section deals with problems now usually associated with operations research and the management sciences. Among the topics developed are notions of the Poisson and related processes, Markovian processes, and some notions on inventory and waiting lines. There is included an example of sequential testing as an application of the Poisson distribution.

The book closes with a section on classical econometrics, including marginal costs, input-output analysis, budgets, time series, auto-correlation, and national planning.

The author has provided a well thought out, well-written book on statistical method wherein the techniques developed are elegantly motivated by realistic illustrative examples. This book should serve very well for either a one-term course (Part I) or a two-term course (Part I and selected parts of Part II) in statistics for students majoring in business or economics. The treatment of mathematical statistics is sound and does not compromise with rigor, although the author's intent is not directed at mathematical statisticians primarily.

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Programmed Instruction in PERT/CPM, Newburyport, Massachusetts: Entelek Inc., 1962, $27.50, 159 pp.

This book utilizes _____ _____ to teach the basic principles of PERT/CPM. If you filled in the words "programmed instruction" in the above blanks, read the rest of this review; if not, then go back, cross out whatever you filled in, and try again.

This book at $27.50 is probably a better buy than attending a three-day management seminar for a fee of $175. However, when the comparison is made to assorted literature that can be obtained free from the computer firms or at nominal charge from the government, then the comparative advantage of this opus _____. If you filled in the word "rises," go back, and try the first two blanks above; if not, read the rest of this review.

The basic concepts of PERT/CPM are not exceedingly difficult, and programmed instruction is probably as good a way to familiarize the student with this material as any other. Obviously, it affords the opportunity to pinpoint many items of knowledge via its exercises. The book is thorough, and has organized the subject matter well. However, I do not believe that a student would be ready to be an operating PERTist after having gone through this course. Being cast into a cage with live, undiagrammed, large projects presents quite a different problem than doing exercises. I believe that if detailed case studies of the magnitude of 300 activities with all their attendant problems of development and revisions were included in this work, then the student might better appreciate what he is in for when he gets to the real world. Much of the "real meat" of PERT/CPM is eliminated when you discuss small scale examples as the present volume does. In the same vein, much is lost by compressing six months of work into a few hours of discussion at a three-day seminar. In summary,

I doubt that the making of a PERTist can be fully accomplished via PI (which is professional jargon for _____ _____). If you didn't fill in the words "programmed instruction," then enroll at a three-day seminar.

It has become accepted Pottermanship when writing a book review to take issue with at least one minor technical point in the book under review, and I shall adhere to this basic tenet for reviewers. The Preface of this work indicates the dividing line for machine and manual computations as 30 "tasks." Experience with the "matrix method" has shown that the figure of 50 activities (or even more) would be a far more reasonable number to use (assuming no CPM cost calculations).

This work consists of two separate parts: a Program Section and a Reference Section. They are bound in a very elegant "vinyl" covering with a big "*E*" on it. The latter refers to "Entelek," but could just as well stand for "Expensive," considering the price of $27.50.

RAOUL J. FREEMAN
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GREGORY, R. H. and VAN HORN, R. L. *Automatic data-processing systems: principles and procedures*, second edition. Belmont, California: Wadsworth Publishing Company, Inc., 1963, $9.95, 816 pp.

The use of computers by business firms has developed rapidly over the past ten years. Unfortunately, the literature has not kept pace with this development, and generally, practice has preceded the enunciation of principles and procedures. In recognition of this deficiency, Gregory and Van Horn wrote the first edition of the book in 1960. Drawing on this experience, they wrote the second edition just three years later and it represents a substantial improvement over the earlier work. The emphasis is placed on procedures rather than principles but this is understandable in view of the rapidly changing character of business data-processing.

The most significant improvement over the first edition is the introduction of two chapters on COBOL programming. In order to understand the ramifications of business data processing it is necessary to have some knowledge of the means by which communication is established between the systems designer and the computer. The chapters on COBOL are clear and concise. Specific examples and problems help to clarify the basic issues faced by programmers without tedious descriptions of rules which are irrelevant to the layman or student seeking to obtain a basic grasp of automatic data-processing principles and procedures. In addition, the authors included two chapters on WORDCOM and FIELDCOM, machine-oriented languages for two hypothetical processors, a fixed word-length machine and a variable word-length machine. The specific study of machine-oriented languages should be left to the professional programmer and appears to serve no useful purpose in this book.

Another change which has substantially improved this edition is the organization of the material into a more logical framework. Sections I and II are concerned with basic descriptions of computer hardware supplemented by com-

prehensive tables covering the characteristics of the various computers which are on the market today. Section III involves system design. Section IV covers programming and processing procedures. Section V is concerned with principles of processing systems and Section VI reviews the problems of system implementation. It is suggested, however, that Section V on the Principles of Processing Systems be read in conjunction with Section III on Systems Design before proceeding to Section IV on Programming and Processing Procedures. Further improvements could have been made by the elimination of repetitive discussions which exist, for example, in Chapters 5 and 17 with respect to equipment selection and Chapters 8 and 12 with respect to machine-oriented and problem-oriented languages.

It is inevitable in any revision that certain portions of the original text will be omitted. Certain of these deletions have detracted from the overall presentation. The more serious omissions are: The more rigorous approach to the problem of cost and value of information which should have received considerably more study; the chapter on scientific decision processes which should form an integral part of sophisticated business information systems; and the historical overview of the development of the computer which is a necessary concomitant to an understanding of present-day computer technology.

It should also be mentioned that Gregory and Van Horn have written a shorter version of this book entitled, *Business Data Processing & Programming* comprising 403 pages. Essentially, this shorter version includes the material in Sections I through IV of the larger version and in the words of the authors is designed as a text for a one-semester course in business data-processing. The retention of the chapter on WORDCOM and FIELDCOM seems to be unnecessary. The chapter on the value and cost of information should have been retained in the shorter version.

There are a number of minor inconsistencies and inaccuracies which need not be belabored in this brief comment on the book, and as we are all too painfully aware, seem to slip through even after the most careful editing. However, the failure to properly document unfamiliar references made in the text is rather frustrating to the reader. For example, a minimal description or reference on DETAB-X and a short footnote on AUTOSATE should have been included. In addition, the discussion on sorting techniques could have been made more meaningful by adequate referencing to source material.

This book is essentially descriptive in nature and does not include a normative approach to systems design. But, since it is written for the student or layman without prior experience, Gregory and Van Horn do achieve their purpose of providing a comprehensive view of business data-processing as it exists today. On balance, the authors have done a commendable job with a very broad and difficult subject and this second edition represents a significant contribution to the literature on business data-processing.

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