

Techniques of Value Analysis and Engineering, 2nd Edition

LAWRENCE D. MILES

McGraw-Hill Book Company
330 West 42nd Street
New York, New York 10036
(366 pp., \$12.75), 1972.

When one begins reading the 2nd edition of a book, he expects it to be like leftovers — not so good the second time. In this case, nothing could be further from the truth. Mr. Miles has taken one of the basic tools of management and added new insights, new examples and new applications to bring the value practitioner up-to-date.

The first chapter lays the ground work for the chapters which follow by describing value analysis or engineering and the value analysis problem-solving system. Chapters 2 and 3 define function and its evaluation. Chapter 4 discusses the problem setting system and how to state problems in solvable forms. Chapter 5 points up the four different types of thinking in problem solving: information, analysis, creativity and judgment steps, followed by development and refinement leading toward implementation. Chapters 6 and 7 discuss setting and solving management decision and services problems.

Chapter 8 enumerates a series of results accelerators used by the value practitioner in developing value alternatives of merit, illustrated by successful real world examples. Chapter 9 ties together the type of work necessary to accomplish progressive results and the job plan steps necessary.

Chapter 10 discusses the special knowledge needed in value analysis and emphasizes costs as the absolutely essential ingredient. In Chapter 11 the understanding of the decision environment is explained. As an extension of this theme, Chapter 12 measures the effects of the value analysis system on other work in the business.

Chapters 13 and 14 define the effective organization for value work and the essential qualifications and training for value analysts and engineers. Chapters 15 and 16 continue with descriptions of work content for the value practitioner and with motivation, measurements and tests of the effectiveness of value organizations, individuals, and results generated.

Chapter 17 discusses advanced value techniques, specifically the Function Analysis System Technique (FAST). Chapter 18 describes the specific use of value analysis in the construction industry; particular examples of successful applications are given.

Finally, Chapter 19 leaves the reader with problems for assignment or a "do-it-yourself" exercise. These may be used by instructors and seminar leaders, since successful solutions are spelled out in the appendix which follows. Also in the appendix is an article by Prof. Robert L. Dixon, University of Michigan, from *The Journal of Accountancy*, entitled *Creep*, truths essential to earnings producing decisions in the make or buy area.

Recommended for all involved in today's cost-conscious world, the book teaches first how to master the techniques so that skills are developed progressively in each step while new ones are learned.

A. I. P. E. NEWSLETTER
CINCINNATI, OHIO
MONTHLY - CIRC. 24 AVAIL.

T H
OCT 1972

By Miles

BOOK REVIEW

"Techniques of Value Analysis and Engineering" (Second Edition)

By Lawrence D. Miles

366 pp. New York 1972

McGraw-Hill Book Company

\$12.75

Reviewed by: Peter A. Schkeeper,
II, Member

AIPE Mgt. Dev. Com.

"Value engineering is a system, but, instead of parts, it consists of approaches, understandings, and techniques — for one sole purpose, *the efficient identification of unnecessary cost.*"

This is an outstanding text super-saturated with specific examples of actual case studies. One must use clearly directed thinking and real creativity, while totally avoiding generalities, stresses Lawrence D. Miles as he demonstrates their use in his text. This work reflects the penetrating insight and experience of the author who founded the Value Analysis and Engineering techniques in 1947.

Specific techniques for value engineering products and services are presented in a step-by-step format. The treatment of problem identification and problem solving is thorough. Understanding the decision environment is stressed because "Fear of embarrassment is more forceful in decision making than profit on the job."

Because of its examples and references to materials and processes, it is particularly readable to the engineer, and with its detailed table of contents, it serves as a useful reference tool.

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CIVIL ENGINEERING
NEW YORK, N. Y.
MONTHLY 50,600

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Teaching text in value analysis and engineering

This second edition of *Techniques of Value Analysis and Engineering* shows how to identify unnecessary costs to increase the value of a product—either by retaining quality while reducing costs, or by holding costs while increasing quality. Many case studies are included. (By Lawrence D. Miles. McGraw Hill Book Co., Inc., 330 West 42nd Street, New York, N.Y. 10036. Bound. 366 pages. \$12.75.)

BOOKS IN BRIEF

HANDBOOK OF ENVIRONMENTAL MANAGEMENT—VOLUME ONE

Carlos J. Hilado; 115 pages; \$25;
Technomic Publishing Co., Inc., 265
W. State Street, Westport, Conn.
06880.

Volume One Fundamentals, presents a wealth of information on the basics of the environment in compact, easy-to-use form. It provides a foundation of knowledge on population, food, water, materials, and energy. Hundreds of recent information sources have been utilized to make this presentation truly comprehensive in scope. Each section is supplemented with data tables and a bibliography of the most important sources of information on each subject. It is recommended as background reading for pollution control engineers and administrators, government personnel, public health officials, educators, anti-pollution

activists, and executives concerned with pollution problems. This book pleads no special cause or interest but is rather a basic information source.

PAVEMENT REHABILITATION— MATERIALS AND TECHNIQUES

National Cooperative Highway Research Program Synthesis of Highway Practice 9; 41 pages; \$2.80; Highway Research Board, Publications Department 805, 2101 Constitution Ave., N.W., Washington, D.C. 20418.

Maintenance of damaged pavements would be greatly helped by the development of patching materials for portland cement concrete that would allow rapid application with a minimum of equipment in areas of heavy and high-speed traffic. There is also a need for materials for use in overlays on portland cement concrete pavements that will minimize reflection cracking over joints and cracks. These recommendations are contained in this latest of a series of publications designed to search out and synthesize useful knowledge on various subjects. Pavement rehabilitation is a topic of immediate concern and will probably remain so for many years. Be-

cause traffic volumes have far exceeded projections, many miles of the Interstate and other major elements of the national highway network currently require, or will soon require, pavement rehabilitation sooner than originally anticipated.

TECHNIQUES OF VALUE ANALYSIS AND ENGINEERING

Lawrence D. Miles; 366 pages; \$12.75; McGraw-Hill Book Company, 330 West 42nd Street, New York, N.Y. 10036.

This new second edition speaks to management and professional people, offering specific steps to disciplined thinking that will give them from 25 to 50 percent more efficiency in the quality and quantity of their mental work. Working from the premise that improved problem solving, creativity, and decision making can increase the value of products or services, the author illustrates how to maintain quality while reducing costs and/or hold costs while increasing quality. Filled with dozens of case studies and examples where better results were secured through this step-by-step, disciplined technique, the book lends itself to either self-study or group education.

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Book Focuses On Disciplined Thinking

Techniques of Value Analysis and Engineering, Second Edition, by Lawrence D. Miles, contains 116 illustrations.

This new edition, at 366 pages, speaks to management and professional people, offering specific steps to disciplined thinking that will give them from 25 to 50 percent more efficiency in the quality and quantity of their mental work.

Available from McGraw-Hill Book Co.,
330 W. 42nd, N.Y., N.Y. 10036 at \$12.75.

Industrial Bookshelf

Reviews and annotations of technical and business books

Volume 1, No. 13
May 17, 1972

Featured Reviews

TECHNIQUES OF VALUE ANALYSIS AND ENGINEERING
2nd Edition Lawrence D. Miles

McGraw-Hill. New York. March 1972.
Drawings, tables. 366 Pages.
\$12.75. LC 74-157484. Miles orig-

inated the Value Analysis System at General Electric in 1947 and managed the program for nearly two decades. He was the recipient of the Dept. of the Navy's Distinguished Public Service Award in recognition of the benefits of his system to the U.S. Miles says, "Created for one specific purpose--the identification of unnecessary costs--value analysis is a system, a complete set of techniques, properly arranged, for the sole purpose of efficiently identifying unnecessary cost before, during, or after the fact...In its disciplined thinking, value analysis is comprised of specific mind-setting, problem-setting, and problem-solving systems." Topics discussed include: concepts and approaches of value analysis and engineering; problem-setting and problem-solving systems; setting and solving management-decision-type and services problems; case histories and results accelerators; understanding the decision environment; effect on other work in the business; qualifications and training for value analysts and engineers; and using the system to reduce construction costs. The book concludes with 25 problems from actual practice; the answers are provided in an appendix. The first edition was published in 1961.

COMMENT: By W. B. Ashby, President, American Meter Co.: "The book clearly and logically explains the basics concerning improvement of the Value of a product or service, with some coverage of advanced techniques. Most discussion concerns manufactured products and would be of direct interest to managers and personnel in the fields of engineering, manufacturing and purchasing; however, three chapters discuss the application of the principles beyond products, to management decision making, service institutions (hospitals, government groups and schools) and the construction industry. Numerous case studies effectively illustrate Value improvement techniques. The book is an excellent reference for seminar instructors."

THEORY OF OPTIMAL EXPERIMENTS
V. V. Fedorov

Academic Press. New York. April 1972. Equations.
292 Pages. \$16.00. LC 76-182610. Fedorov is with
the Interfaculty Laboratory of Statistical Methods,

Moscow State University (U.S.S.R.). W. J. Studden and E. M. Kilmko, of the Dept. of Statistics, Purdue University (Indiana), translated and edited this volume. Fedorov says, "Experimental design (to be more accurate, regression experimental design) is a comparatively new and rapidly developing branch of mathematical statistics. In this book, an attempt was made to present the mathematical apparatus of regression experimental design so that it would be accessible to comparatively broad circles of researchers and technologists." According to the translators, the text "incorporates a considerable amount of new material, which up to now, was scattered throughout the literature. Much of this research has been done by the author." Chapters are: Regression Analysis and Optimality Criteria for Regression Experiments; Continuous Optimal Designs (Statistical Methods); Properties and Methods of Construction for Optimal Discrete Designs; Sequential Methods of Designing Experiments for Refining and Determining Estimates of the Parameters; Design of Experiments in the Case of Simultaneous Observation of Several Random Quantities; Discriminating Experiments; and Generalized Criteria of Optimality.

POWER ENGINEERING
BARRINGTON, ILL.
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Techniques of Value Analysis and Engineering, Second Edition, by Lawrence D. Miles. 366 pages, 6 x 9 in. Published by McGraw-Hill Book Co., 330 W. 42nd St., New York, N. Y. 10036. Price \$12.75.

The Marketing of Nuclear Products, Materials, and Services in Germany. 150 pages. Available from Interdevelopment, Inc., 176 Second Ave., Waltham, Mass. 02154. Price \$62, prepaid; \$70, for invoicing.

McGraw-Hill's 1972 Catalog of Scientific, Engineering and Business Reports. Available from Information Services, McGraw-Hill Publications Co., Box 812, Times Square Station, New York, N.Y. 10036. Free.

CRC Critical Reviews in Bioengineering, Volume 1, edited by David G. Fleming. 7½ x 10½ in. This new quarterly journal is one of a group of journals designed to keep scientists abreast of significant developments in the field. Published by CRC Scientific Publications and Apparatus, 1890 Cranwood Pkwy., Cleveland, Ohio 44128. Price \$56 for one year (four issues).

Available from the Research Dept., The American Society of Mechanical Engineers, 345 E. 47th St., New York, N.Y. 10017. Price \$10.

BOOK REVIEW

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American Institute of Mining, Metallurgical and Petroleum Engineers

April 1972

TECHNIQUES OF VALUE ANALYSIS AND ENGINEERING. 2nd Edition.

By Lawrence D. Miles. 1972, McGraw-Hill Book Company Inc., 330 West 42nd Street, New York, N.Y. 10036. 366 pages, bound. \$12.75.

Arranged as a step-by-step teaching text, this book shows how to identify unnecessary costs in order to increase the value of a product -- either by retaining quality while reducing costs or by holding costs while increasing quality. Many case studies illustrate how this technique has been successfully applied to a variety of manufacturing processes and construction projects.

WE WOULD BE PLEASED TO RECEIVE COPIES OF ANY OTHER NEW PUBLICATIONS WHICH MIGHT BE OF INTEREST TO ENGINEERS

central source of property information. From that position of strength, the guidance and counsel of professional property managers can be exerted in behalf of the company and management objectives. The computer, again, offers the opportunity to make this happen.

The more far-sighted (or lucky) companies, who are leaders in the property management field today, escaped the intermediate steps of *stand alones* and *PMO* and moved directly from *decentralized* to a strong *centralized* property management organization. In some instances the transition was arduous because it was made using manual systems. Even under these circumstances, however, advantage accrued because when the further transition to the computer was made, an adequate data base existed.

The *centralized* concept of property management embraces certain tenets which should obviate most of the problems mentioned in connection with other concepts. These tenets include (but are not limited to):

1. Establishment of a single organization whose primary and sole purpose or objective is the intelligent and effective management of property.
2. Location of that organization at a relatively high level in the company structure — subservient to none of the property using organizations.
3. Delegation of authority and responsibility to accomplish stated objectives.
4. Establishment of a formalized system to provide for flow, recording, audit, and promulgation of property information and instructions.
5. Use of the computer, when justified due to volume or cost effectiveness.

These systems, developed and implemented in the late 1960s and 1970s, are alive and well. Several people who participated in their evolution have now formed the first cult of property management consultants.

(Part II on Industrial Property Management will appear in the next issue of PERFORMANCE.) [P]

Book Review

“Techniques Of Value Analysis And Engineering,” Second Edition

Mc Graw-Hill Book Co., Inc.
366 pages, illus., \$12.75

Lawrence D. Miles

This book is the best and most comprehensive book ever written on the subject of Value Engineering and should be required reading for every Value Analyst, Engineer and Manager. It clearly illustrates how management and professional personnel can use Value Analysis and Engineering to identify and remove unnecessary cost, i.e., cost that provides neither quality nor use, nor life, nor appearance, nor customer features.

It is evident that the author has had practical experience in VA/E and, as a result of this experience, he was able to portray the situation as it really is and provide a lucid and highly readable treatment of the subject. This book can be used as a guide to disciplined thinking for management and professional personnel. The author demonstrates how a logical, step-by-step approach can be used to improve problem solving, creativity, and decision making, which are the keys to increased value in products and services. This is the first book that clearly states the relationship of value to function in such a manner that management personnel can understand “Functional Analysis” and readily see the benefits from this fundamental concept. This concept provides the groundwork that is later developed, and is fundamental for an understanding of those portions of the book devoted to problem-setting and

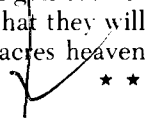
solving, organizing and using the system effectively, and understanding the decision-making environment.

The thoroughness of the author is demonstrated by the number of rather specialized uses of VA/E which are covered. A chapter is devoted to the setting and solving of services problems, specifically with reference to city government, while another discusses the construction industry and its related VA/E applications. The effects of VA/E on other work in a given business is the subject of another chapter covering accounting, cost reduction programs and purchasing functions, among others.

One part discusses the subject of research and development, with emphasis on Military contracts and organizing research and development problems for value analysis/engineering application. For the more experienced value analyst, some advanced techniques are included, notably the Function Analysis System Technique (FAST) developed by Charles W. Bytheway, Value Engineering Seminar Director of UNIVAC, Salt Lake City, Defense Systems Division, Sperry Rand Corporation.

In summary, this is a very valuable book for managers, engineers, analysts, architects, builders, contractors, homeowners and seminar instructors, and is highly recommended as a valuable reference and text. — Jack C. Strickland [P]

would make you drool. What they will do with the other 27,000 acres heaven only knows!



Techniques of Value Analysis and Engineering

Lawrence D. Miles, the originator of Value Analysis, has written an updated and revised edition of his highly successful *Techniques of Value Analysis and Engineering*. This new *Second Edition* speaks to management and professional people, offering specific steps to disciplined thinking that will give them from 25 to 50 per cent more efficiency in the quality and quantity of their mental work.

Working from the premise that improved problem solving, creativity, and decision making can increase the value of products while reducing costs and/or hold costs while increasing quality. Filled with dozens of case studies and examples where better results were secured through this step-by-step, disciplined technique, the book lends itself to either self-study or group education.

Lawrence D. Miles, an engineer, educator, and professional man, originated the Value Analysis System at General Electric, where he further improved the company's systematic methodology, and where he was awarded its highest honor for extra achievement. Recipient of the Depart-

ment of the Navy's Public Service Award, Miles is past President of the Society of American Value Engineers and an honorary member of the Purchasing Management Association-Los Angeles.



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(SEE PAGES 29 & 30)