Literature and Bibliometrics. DAVID NICHOLAS and MAUREEN RITCHIE. Clive Bingley Ltd., London 1978. 183 pp. (Published in the United States by Linnet Books, Hamden, Connecticut.)

One of the practical applications for bibliometric analyses is that they provide the type of data required to intelligently manage library collections. In the introduction, the authors state that "it is the intention of this book to provide a comprehensive, straightforward and practical guide to bibliometrics, with the emphasis placed throughout on the relevance of bibliometric analysis to practical library and information problems". One would expect, therefore, that this work should serve as a practitioner's guide to the conduct of bibliometric studies. Unfortunately, these expectations are not fully realized. The majority of the text is devoted to a repetitive discussion of the role played by various bibliographic parameters in the selection of a sample from all available literature. There is minimal discussion of how to conduct the study once the data is in hand. Of the nine chapters, chapter six which is devoted to citation analysis is the strongest. The chapter on sampling, however is quite superficial; the importance of sample size is stressed, but methods for determining sample size are not presented.

While one can appreciate the desire of the authors to create a non-technical work for a mass audience, bibliometrics by definition implies the application of mathematical and statistical techniques. The main shortcoming of the book is that the majority of bibliometric theory is not discussed nor is it cited in the text. For example, Bradford is neither mentioned nor cited, and while Kessler's work is included in the bibliography, it is not cited as part of the discussion on bibliographic coupling. An appendix summarizing the rudiments of bibliometric theory would significantly strengthen this work, as would the inclusion of a selected bibliography at the end of each chapter. This book will not serve the needs of the practitioner who is unfamiliar with bibliometric techniques and is seeking a comprehensive tutorial. NARIN[1] provides a better starting point. This book might well be included, however, as a supplementary reading for a course on collection management.

REFERENCES

[1] FRANCIS NARIN and JOY K. MOLL, Bibliometrics In *Annual Review of Information Science and Technology* (Ed. by MARTHA E. WILLIAMS), Vol. 12, pp. 35–38. American Society for Information Science (1977).

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An Introduction to General Systems Thinking. WEINBERG, GERALD M. Wiley-Interscience, New York 1975. xxi, 279 pp. $19.00

Virtually every textbook on systems analysis, at least at the advanced undergraduate or beginning graduate level, starts with remarks on general systems theory. Few, of course, can afford to develop the topic so extensively as the present work.

But to characterize this work as a mere extension of the front end of a systems analysis course would cause us to miss some of its unique and intriguing features. First, the author's intended readership includes far more than system analysts, and indeed has much to offer to any thinker. Secondly, the approach is breezy and enjoyable as a result of which the author will never be accused of pedantry.

Two major features of this book stand out. One is the way the author emphasizes certain "laws about laws" as being core to the general systems program. A favorite: "any general law must have at least two specific applications" and "two exceptions as well". Another: the "eye-brain" law: "to a certain extent, mental power can compensate for observational weakness", and vice versa. A moment's reflection of these examples serves to instruct the potential reader to the basic nature of the approach. The work is replete with italicized comments of this type, and the reader can focus on them and their attending discussions, in almost direct-access mode.

The second major feature is related in large measure to the author's place in the overall spectrum of systems analysis. In another article [1], we argued that there are "... at least two major schools of thought on how best to derive benefits from abstractions and generalizations about systems". Briefly, one of these is derived from engineering sciences, operations research and industrial engineering. Some of the advocates of this point of view find that the success of their methods depends on avoidance of "diversions" such as "industrial psychology" and "motivational psychology". Presumably, the intent is get beyond what people say they do, to what they really do.

The opposing school of thought views humans and their idiosyncracies as an essential part of the system. Weinberg, author of several books, including one on the "Psychology of Computer Programming"[2] is clearly of this school. It should not be surprising that some of the (general systems) thinkers in this school are more expansive in view and more willing to be unorthodox. For example, whereas the more conventional types feel most comfortable with "black box" models, in closed form mathematics, the more daring look to the "white box" of simulation, wherein intricate internal workings of the system are considered fundamental to understanding. In this view, it is salutary to look at a system the way it really is, as a platform for improving it (or accepting it), as opposed to idealizing its internal workings.

The dependence of simulation on computer programming is by no means a mere coincidence. As he indicates in earlier remarks in the book, the author takes the general view of recommending putting any procedural task into a (computer) program; such an exercise acts as a great "fog-clearing" device, he assures the reader.

Were we not attentive enough to find at least some defects in the discourse we would be remiss. Perhaps, the greatest weakness of the book comes at these points where the mathematical concerns of general systems thinking are covered. In these contexts, the argument seems to lack the crispness seen in other portions. We bring this to the reader's attention because the intellectual world sorely needs people like Weinberg to cull the important lessons in these mathematical ideas. There is a reason the author takes his stance: his desire to avoid "hypermathematics" which often unprofitably creeps into general systems thinking.

In summary, this book is very enjoyable, and very informative, especially for those who are seeking an informal treatment of the central ideas that have emerged from the "general systems" movement.

REFERENCES

[1] K. D. REILLY, Selected topics in system analysis. *J. Educ. Data Proc.*, 1976, 13(4), 41–48.
[2] G. M. WEINBERG, *The Psychology of Computer Programming.* Van Nostrand-Reinhold, New York (1971).

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Managing the Paperwork Pipeline: Achieving Cost-Effective Paperwork and Information Processing. MONROE S. KUTTNER, Ronald Press–Wiley, New York, 1978. xvi, 244 pp. $20.95.

The premise of this book is that an organization's paperwork is its information processing. Even when the computer seems central, we are reminded here, success (or failure) often depends on the advantages (or burdens) put on the people who provide the input and accept the output, often on paper. An assertion that paperwork can make or break an organization is backed up by citing the failure in 1969 of a number of stock brokerages, attributed to paperwork backlogs.

The author's main solution to the paperwork pipeline problem is a formalized "approach", PACE, Program for Advancement of Clerical Effectiveness. PACE is framework for organizing improvements either by changes to and/or application of controls to a system.

A PACE project evolves over four phases: I. Planning for PACE; II. PACE Research and Development; III. Implementing the Program for Change; IV. Implementing the Program for Control. Each of these phases is broken down into four to six activities, which in turn are described in terms of a few questions to be asked or sub-activities to be performed. In toto, the systems flowchart is a three-level tree that, with some experience, could be asimilated or nearly enough so that the framework would become a spontaneous item in the PACE user's arsenal.

As is clear from the above, PACE is not a novel technical departure so much as it is a tool for practical work. The author demonstrates this, throughout many of the pages after introducing PACE, by showing how many of the more widely known exhortations to good management practices and techniques of management science can be fitted into the framework. The latter are covered without detailed treatment, in keeping with the author's intended readers: would-be PACE directors, to be drawn primarily from the ranks of executives and managers. (The preface also asserts that the book should be useful for analysts, CPAs, managements consultants, and others; there is nothing really objectional to this claim.)

The principal focus of application of PACE is toward effecting changes in systems, which then normally necessitate some changes in control procedures. The goal that exists is one to supply a "required level of service at lowest cost". Control concerns center on "timeliness", "quality of service", and reduced costs. Each of these three control issues, together with some special discourse, e.g. on the human element in systems improvement, and details on the PACE approach itself round out the rest of the book.