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Book Reviews

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Scientific Method: Optimizing Applied Research Decisions

Krieger, Malabar, Florida, USA, 1984, xii + 464 pages

Several years ago I had a first occasion to review a book by Russel L. Ackoff, namely *Creating the Corporate Future*, for this Journal (Vol. 9, No. 2). Apart from a few reservations, I expressed my esteem for the author and warmly recommended his book.

This time I must say that my expectation was not met thoroughly. My first disappointment came from ascertaining that it was not a recently written book, but a reprint by Krieger (Malabar, Florida), in 1984, of a book first published by Wiley (New York) in 1962. "With corrections", says the publisher; all right, but obviously no specific effort has been made to put the book up-to-date. For example, the text includes more than 300 references (conveniently recapitulated at the end of each chapter), but none of them refers to anything published after 1961: practically all the references refer to books or papers published between 1945 and 1961. Such a range of 17 years, while more than 20 years have passed since, may leave the impression that the whole thing has become out of fashion.

This is of course not the case. The book remains of utmost interest because of the variety and the importance of the subjects it treats. The sub-title "Optimizing applied research decisions" seems to restrict somewhat the gigantic domain covered by the main title "Scientific Method". One of the central ideas of the beginning of the book can be summarized by the sentence in which Ackoff contends that "research must be designed to inform and instruct us on how to improve the conduct of research itself"; a little further he supports the idea (which is now more and more widely accepted) that the difference between pure and applied research is one of degree, not of nature; which leads the reader to expect mainly a high-level scientific and philosophical discussion.

Such a discussion is not absent from the book, but it is more or less diluted in the subsequent chapters, most of which are listed according to particular techniques. Even the first four chapters ("Nature of Science and Methodology", "The Meaning of Optimal Solutions", "Formulating the Problem", "Models"), which bear very general titles, are already full of technicalities; not to speak of the next nine chapters: "Defining", Measurement", "Sampling", "Estimation", "Testing Hypotheses", "Experimentation and Correlation", "Deriving Solutions from Models", "Experimental Optimization", "Testing and Controlling the Model and Solution", which represent more than half of the total volume and which are almost exclusively didactic, sometimes at a very elementary level. The last two chapters come back to a more personal approach, since the first of them is about "Implementation and Organization of Research", mainly on the basis of Ackoff's experience in the field, and the second summarizes his views about "The Ideals of Science and Society".

One of the most puzzling chapters concerns "Defining" (pages 141 to 176). Clearly enough a high priority should be assigned to removing any possible misunderstanding coming from the use of the fundamental words. With this respect, Ackoff gives excellent advice, which unfortunately he himself sometimes fails to follow. In particular his expository chapter seems to take for granted such refined concepts as "probabilistic causality"! To be fair, he promises to come back to it in Chapter 10; but in Chapter 10, through a (repeated) oversight he begins by speaking of "variables *and constants* (the emphasis is mine) affecting an outcome", before diving again into a purely technical

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