

## BOOK REVIEWS/COMPTE RENDUS

Gerd Gigerenzer and David J. Murray  
*Cognition as Intuitive Statistics*  
Lawrence Erlbaum Associates, Inc., 1987, 227pp.

*Reviewed by Kurt Danziger*

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Psychologists tend to think of their statistical methods simply as neutral tools. The use of a particular statistical technique is not supposed to influence one's psychological theorizing. Methods and theories are entirely different things, just like facts and theories are quite different. These sharp distinctions are generally accepted as articles of faith. They are not empirically based but are part of the philosophical legacy of positivism which continues to have a strong hold on our discipline. According to this philosophy methods and facts are both supposed to be theory-neutral, so that they can be used to test the claims of rival theories.

Now, the post-positivist phase in the philosophy of science has been going on for long enough to have had some effect on the rhetoric, if not on the practice, of psychological investigation. In particular, the distinction between theories and facts is not likely to be insisted upon as dogmatically as it was in the heyday of logical positivism. But the parallel distinction between theories and methods has seldom been explicitly questioned in psychology. Gigerenzer and Murray's book goes a long way towards filling this gap.

The mutual interdependence of theories and methods might be approached from two directions. Perhaps the more obvious approach would be to show how certain psychological theories and a particular methodology are based on a convergent set of, ultimately metaphysical, assumptions about the world. However, that is not the approach taken in this volume. Rather, the authors attempt to show how the institutionalization of a particular statistical methodology has been reflected in certain changes in psychological theorizing. Quite bluntly, the authors' thesis is that after psychologists came to take a specific statistical methodology for granted in their research they began to base their theoretical models of human cognition on the psychologists' own statistical practice. This is what Gigerenzer and Murray call their tools-to-theory hypothesis. Because psychologists equate their own statistical practice with scientific rationality, some of them generalize from their own practice to theories about how everyone's cognitive processes function.

The result is that the human mind is regarded as an "intuitive statistician".

Gigerenzer and Murray illustrate their general thesis by drawing on examples from four areas of psychological research: signal detection theory, perception, memory and thinking. In each case they combine a broad historical account with a detailed critical assessment of some contemporary work. The value of such an approach is that it opens up a refreshing new perspective on the research literature in these fields, making visible fundamental assumptions which normally remain hidden.

Inevitably, this kind of analysis will work better for some fields than for others. In the case of signal detection, for example, the historical development from classical threshold determination to probabilistic models, and then to decision theory, certainly becomes much more intelligible when interpreted in the authors' framework. Here as elsewhere, they point out, it was not a case of new facts leading to new theories, but a case of new theoretical metaphors leading to the discovery of new facts.

Similarly, the history of research on thinking provides a convincing illustration of the authors' point of view. Some of the fundamental differences between the classical work of Selz, Duncker and Wertheimer and much contemporary work certainly derive from the fact that it never occurred to the former that the human mind might function as an intuitive statistician, just as it never occurred to them to use statistical inference in their own research. But the other side of this coin is that for many modern investigators particular models of statistical inference have a normative status. They are held to define rational thinking as such. Although this is an unproven assumption it is one that must be accepted if the results of much contemporary work are to have the meaning that is attributed to them in the literature. Without this assumption, as the authors show, the phenomena reported in the literature become highly ambiguous.

Although the use of statistical models of cognitive processes has been fruitful in opening up new lines of research, there are some fundamental problems with

this approach. The crucial point, according to Gigerenzer and Murray, is that statistical inference is far from being the automatic algorithm that text books often portray it as. There are at least three major models of statistical inference, the Bayesian, Fisherian and Neyman-Pearson models, and they are mutually incompatible. When one of these models is unquestioningly accepted as the self-evident framework in terms of which all human cognitive performance must be interpreted, it functions as yet another source of arbitrary psychological dogma. In turning to statistical inference as a guarantee of rational procedure, either on the level of their own research practice or on the level of theories of human cognition, psychologists are worshipping idols that have feet of

clay. The sense of security derived from this source is illusory.

In spite of the critical message that lies at the heart of this book, its goal is clearly constructive. It will contribute to clearer thinking about fundamentals in the psychology of cognition. But its appeal is not only to the specialist in cognition. Because questions about the logic of statistical inference and about the inter-relationships between methods and theories affect nearly everyone engaged in psychological research, this is a book that deserves a wider audience than it will probably get.

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A. R. Gilgen and C. K. Gilgen (Eds.)

*International Handbook of Psychology*

New York: Greenwood Press, 1987, 629 pp., US \$75.00

*Reviewed by John G. Adair*

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The *International Handbook of Psychology* presents the nature and scope of contemporary psychology in each of 29 nations and the region of Black Africa. Most of the industrialized nations are represented, as well as a sampling of Third World and Socialist countries. The stated objective of the book is to identify factors that bear on the characteristics of the discipline in each country. Following a brief introduction to the international character of psychology and a review of the factors that have influenced discipline development since World War II, the contributions are presented in alphabetical order. Each generally follows a set outline: beginning with a brief historical overview, descriptions of the organizational structure of the profession and the nature of undergraduate and graduate training in psychology are provided. The latter may include specific courses or examinations, the types of programs offered at each university, or a summary of these data. The use of imported and indigenous textbooks is frequently addressed. Publication outlets, nature of financial support for psychological research, applications of psychological knowledge, and the major research activities and contributions within each country are described, sometimes in great detail. Each paper concludes with a review of major trends and influences on the discipline within that country, references, and a set of suggested readings.

In spite of this model the chapters show considerable variability that enriches rather than detracts from the merits of the book. Some contributions resemble in-depth treatments of national psychologies from *Annual Review* editions. Others focus on the organizational structure of the discipline within the country, although even these presentations may be quite detailed. In the case of Australia, for example, new data on the sources of degrees held by university professors, the distribution of publications by research area, and the employment pattern of graduates are provided. In Norway, graduate training is limited to a few universities that are described in detail, especially the type of current research emphasis and noteworthy scholars.

Although some of the chapters are superficial, the *Handbook* (much like a travel guide book) should prove to be a useful resource for those who wish to get a perspective on a given country or intellectually travel through discipline developments around the world. To whet your appetite for this discipline tour, there is mention of some Aztec precursors to clinical psychology in the chapter on Mexican psychology and reference to Sir Cyril Burt's revised place in UK psychology. The emergence in 1982 of a psychological association in South Africa open to all population groups is described, although in a discussion of contemporary South African research, blacks are singled