

ATTACKING THE THEORY OF KNOWLEDGE FROM SEVERAL DIRECTIONS

Search for a Naturalistic World View. Vol. 1: Scientific Method and Epistemology; Vol. 2: Science and Metaphysics

Abner Shimony
Cambridge U. P., New York,
1993. Vol. 1: 332 pp. \$59.95 hc
ISBN 0-521-37352-2;
Vol. 2: 340 pp. \$59.95 hc
ISBN 0-521-37353-0

Reviewed by John Ziman

Physics and philosophy have always felt akin, but they have been kept apart by the fearsome difficulties of reaching a proper understanding between them. Abner Shimony is unusually bilingual in the technical languages of both disciplines; he is not only a professional philosopher of science, but he also makes original contributions to theoretical physics. Inevitably the philosophy of physics centers on the interpretation of quantum mechanics. That it does, for Shimony, is the missing keystone of a naturalistic world view.

The enigmas of microphysics are the principal theme of several chapters of Volume 1 and almost all of Volume 2 of *Search for a Naturalistic World View*. And although these chapters are very thorough and lucid, within the presentational constraints of this extremely subtle and difficult subject, in the end they are a bit repetitive and not very conclusive. This is not for lack of determined

effort: For more than 30 years, Shimony has remained hopeful of a "realistic" solution to such familiar paradoxes as Bell's theorem—through, for example, a nonlinear theory—but he stoically accepts that Bell's theorem is a harsh master whose rules have not yet been transgressed empirically. Whether or not one thinks this still to be a meaningful goal of either physics or philosophy, this two-volume book presents it fairly as the grail of much worthwhile endeavor.

Most physicists would probably be put off by the "philosophical" style of much of the rest of Volume 2. Nevertheless, they should be interested in chapter 9 of Volume 1, which first appeared in 1970 and is still one of the best elementary expositions of the probabilistic rationale of induction and other forms of scientific inference. In effect, it formalizes our notion that it is "very likely" that the Sun will rise today just as it did for all our yesterdays, and that the truth of the standard model would be made "more certain" by the observation of Higgs bosons. Like many familiar, commonsense concepts, subjective probability slips out of the firm grasp of strict definition or quantification. It does conform, however, with the axioms of the probability calculus and confirms qualitatively many of the intuitive principles used by scientists in designing experiments, assessing the significance of data, judging the credibility of theories and undertaking other typical scientific practices.

Chapter 9 and other chapters of Volume 1 suggest that the book was actually intended to answer a broader question: What sort of world view would be natural even without reference to the difficulties with quantum mechanics? Shimony hankers after a modestly realistic answer, but he is frustrated by the problem of "closing the circle" between "oneself" as a conscious being and "other people," defined as entities in a domain where consciousness can

only be inferred. This has long been a central issue for the theory of knowledge, and he makes a systematic attack on it from several directions. As with most genuine philosophical questions, individual readers must decide for themselves whether he presents a satisfactory answer on every contestable point.

Shimony's brand of modest realism is certainly a tenable epistemological position, but it needs to be established in a much broader scientific and philosophical context. At various points, Shimony falls too easily into the attitude, natural in the physical sciences, that tends to dismiss the types of arguments used by biologists, for example, to account for evolution by natural selection or for the emergent properties of whole organisms. Biological and social "laws" are much less universal, and their "facts" are much more "theory-laden" than those of physics and chemistry. The natural world has many mansions that cannot be sketched logically, let alone surveyed systematically in the language of mathematics.

Shimony draws on recent attempts to represent science with a broader brush on a wider canvas. Scientific knowledge is a social institution, generated as much by the interactions between people as by their personal thoughts and actions. The circle to be closed is a seamless web; solitary individuals cannot conceive of a reality independent of the communities from which they derive language and consciousness. And scientific inference is a mutually supportive bootstrap operation; together, people construct out of their shared experience what seems to them a natural world and in the process endow it with the properties that physicists and philosophers explore and or define. It is a great pity that Abner Shimony has not had the courage to extend his search away from the traditional lamppost, under whose light there never was lost that golden key.

John Ziman is an emeritus professor of theoretical physics of Bristol University in England. He has written extensively on the nature of science and its place in society.