

**Review of Alex Rosenberg's Philosophy of Science: A Contemporary Introduction.**  
**Routledge, London, 2000. pp. 191. For Philosophy Today, 2001.**

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*Philosophy of Science* is a mid-level text for students with some grounding in philosophy. It introduces the questions that drive enquiry in the philosophy of science, and aims to educate readers in the main positions, problems and arguments in the field today. Alex Rosenberg is certainly well qualified to write such an introduction. His works cover a large area of the philosophy of natural and social sciences. In addition, the author of the argument that the 'queen of the social sciences', economics, is not a science at all, can be counted on to show how the philosophy of science can be relevant to the understanding of the status of scientific knowledge and can provide a critical assessment of practitioners' view of their field.<sup>1</sup>

The first chapter discusses the importance of understanding the nature of scientific knowledge. Among others, Rosenberg mentions science's influence on the answers to philosophical questions such as the manifestation of purposive design in the universe. The issue that emerges as most important is science's disputed status as purveyor of objective knowledge.

Chapters 2 and 3, on scientific explanation, introduce the D-N model and discuss its problems: first, the difficulty of understanding what nomological necessity, required for laws to be explanatory, might consist in; second, problems in treating statistical explanations; third, troubles in accounting for the asymmetries of explanation (such as Bromberger's flagpole shadow example); and fourth, the discrepancy between the uniform theoretical account of explanation and the diversity of explanations that are accepted in practice. These chapters also cover the main views that followed the demise of the D-N model: the characterisation of explanation in terms of causation or in terms of unification of the phenomena, and pragmatic views of explanation. Rosenberg also discusses the view that explanations must be 'satisfying and intelligible' as some have thought only teleological or 'necessarily true' explanations can be.

Chapter 4 discusses the structure and metaphysics of scientific theories. It describes the failure of the hypothetical-deductive approach to deal with the question of the status of unobservable entities posited in scientific theories, and sketches the contemporary debate between realists and instrumentalists. The semantic account of theories is introduced in a discussion of the role of models in science. Chapter 5 documents the relation between theory-selection and observational

data, explaining the complexities of falsification and confirmation, and introducing the riddles of induction, old and new. It contains an extensive discussion of Bayesianism as a proposed solution to some of these problems, and ends with the topic of underdetermination. Chapter 6 discusses Kuhn's account of theory-choice and Quine's meaning holism and naturalism. Chapter 7 then returns to the question raised in the first chapter: what do we make of science's claim to objective knowledge?

The book's style is inspired by belief in the maxim "tell them what you're going to say, tell them, and then tell them what you've said", with an addition appropriate for philosophers: "and then ask them to argue you were wrong". Each chapter contains an overview and summary, and ends with a series of study questions. This works well to highlight core issues, and many of the questions are excellent guides to get students thinking about the topics discussed in each chapter. The glossary of technical terms, all introduced in bold type in the text, is also helpful.

However, some important issues are not clearly explained. An example is the discussion of the pragmatics of explanation. After mentioning that questions with the same wording can contain different explanatory requests, e.g. **a.** "Why did *the butler* kill the countess?" and **b.** "Why did the butler *kill* the countess?", Rosenberg (p. 40) introduces Van Fraassen's concept of a 'contrast class' thus: "call all these different questions expressible by the same sentence the 'contrast class'." But the contrast class is not the set of different questions (like **a.** and **b.**) expressible by the syntactically and semantically identical sentence. Rather, the contrast class is the set of alternative propositions of which a given questioner is asking, in effect, why they did not occur, in contrast to what did. Thus, in case **a.** above, the contrast class might be <"the gardener killed the countess", "the count killed the countess", etc.>, and in case **b.** <"the butler hit the countess", "the butler ignored the countess", etc.>. This mistaken definition makes the subsequent discussion hard to follow.

Still, up to the final chapter, the discussion is on the whole informative and well-balanced, and the coverage of topics is good. These virtues disappear, however, when we return to the question of science's claim to objective knowledge. Rosenberg frames the debate as one between those who take Kuhn's and Quine's writings as leading to epistemic relativism, and the defenders of scientific objectivity. Though there is some discussion of the work of scholars like Bloor and Feyerabend, for the purposes of the chapter "epistemic relativists" include everyone from sociologists of science to "anti-scientific" humanists and sympathisers of astrology. As such a

grouping makes obvious, opponents of scientific objectivity are not taken seriously. Rosenberg describes relativism as leading inevitably to the conclusion that changes in scientific theories are as irrational as changes in fashion, and to the view that science is “just another religion” (p. 165). Relativism is also characterised as “deeply incoherent” (p. 168), for the familiar reason that when one denies universal standards of objective truth, one is oneself making a claim to universal truth. However, Rosenberg writes, this “*reductio ad absurdum* argument is a matter of indifference to opponents of objectivity in science interested not in convincing others, but in defending their own view as invincible” (pp. 168-169). This portrays the relativist as both advancing an incoherent position and not interested in serious discussion.

However, epistemic relativism comes in many forms, and not all of them face this charge of incoherence.<sup>2</sup> One can deny that we have good reason to believe that there are universal standards of objective knowledge, and still privilege certain ways of gathering knowledge because they serve important human interests, like prediction and control of the natural world, particularly well. This claim can be coherently asserted as true relative to certain standards, which the relativist may claim there are good reasons to adhere to. Post-Kuhnian philosophers and sociologists of science like Rorty, Latour, Shapin, Bloor and Smith argue that standards arise in society as a whole and within scientific communities to serve various purposes. Far from claiming that ‘anything goes’ as far as knowledge is concerned, they explain norms as emerging from and enabling valuable communal processes, from trade and medicine to language. Perhaps this is all the ‘objectivity’ we can reasonably ask science to have. Rosenberg’s book, however, will leave students with the impression that this relativisation of standards of knowledge to human interests means opening the door to the charge that modern science is nothing but a “blinkerered, narrow-minded, patriarchal, capitalist and probably racist paradigm” (p. 173). In sum, Rosenberg does students a disservice by portraying the choice as one between according equal epistemic status to science and charlatanism, and worshipping science as the purveyor of objective truth. By doing so, he fails to achieve the book’s stated purpose: to provide an overview of the best arguments current in the field and to enable students to intelligently assess the status of scientific knowledge.

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<sup>1</sup> See his *Economics - Mathematical Politics or Science of Diminishing Returns?*, Chicago, IL: University of Chicago Press, 1992.

<sup>2</sup> On the charge of self-refutation, see chapter 5 of Smith, Barbara Herrnstein. *Belief and Resistance: Dynamics of Contemporary Intellectual Controversy*. Cambridge: Harvard University Press, 1997.