

Theory and Truth: Philosophical Critique within Foundational Science. Lawrence Sklar. Oxford University Press. 019823495. Price £19.99. Publication date January 2000.

Critical Scientific Realism. Ilka Niiniluoto. Oxford University Press. 0198238339. Price £40.00. Publication date December 1999.

Many of the undergraduates I teach are attracted by the heady idea that truth is "relative to us" and reality is "dependent on our minds". This idea is not just confined to philosophy undergraduates. A veritable army of philosophers, historians, and sociologists of science has been working over the last forty years to persuade us that science itself does not deliver objective truths, but is rather an elaborate social construction that creates the reality it purports to study. It is a dismal reflection on academic fadism that this form of scepticism has become the prevailing orthodoxy in science studies.

The two books under review seek in quite different ways to counter this prevailing scepticism with a defence of a realist view of scientific theories. Both books argue that scientific theories aim at the truth and, when successful, represent the world as it really is. Many science sceptics will view the project of these books as naïve or misguided. However, both authors have impressive credentials as scholars of science. Sklar has written a number of prize-winning books about the structure of the physical sciences. The present book is a revised version of his John Locke lectures delivered at Oxford in 1998. Niiniluoto is a respected philosopher of science who has long advocated the importance of the notion of truthlikeness or closeness-to-truth to the methodology of science. His book deploys the results of his technical studies of truthlikeness in an informal defence of what he calls "critical scientific realism".

Many of the elements of this "critical scientific realism" are parts of a familiar realist package of doctrines: physical reality is mind-independent; truth is a non-epistemic property of sentences or thoughts consisting in their correspondence to features of reality; even if currently accepted scientific theories will prove to be false, they may still be truthlike or close-to-the-truth; and scientific progress consists in the development of theories that are more and more truthlike. There are, however, a few surprise

elements in Niiniluoto's package of commitments. For example, he argues that truth is relative to conceptualisations of reality, with different languages or conceptual frameworks carving up the world into different sets of objects and properties. I wonder whether endorsement of this kind of conceptual relativity is consistent with Niiniluoto's other realist commitments, in particular the privileged role he assigns to scientific conceptual frameworks.

Nonetheless, the scope of Niiniluoto's discussion is impressively broad. It ranges from a discussion of traditional realist issues to do with truth and truthlikeness to a critique of Kantian forms of anti-realism and of social constructivism to a defence of the social value of science. The discussion has many of the virtues of a good textbook: it is comprehensive in scope, clear in its exposition, even-handed in its discussion of opposing views, and full of useful references to the literature. Though written as a research monograph, it would be a handy text for a graduate level course on scientific realism.

Sklar's book is very different in aim and style. Sklar eschews discussion of very general, abstract methodological issues in favour of a detailed study of the way in which issues concerning the realist interpretation of theories arise in specific foundational theories in physics. He considers three forms of scepticism about theories entertained by working physicists in their ongoing work of reformulating and refining theories. He considers scepticism about the in principle unobservable entities and properties posited by physical theories. He considers scepticism about the idealisations claimed to be an ineliminable part of formulating theories about complex reality. Finally, he considers scepticism about the status of currently accepted theories that are likely to be replaced in the future by radically different theories. Sklar argues that a whole range of hitherto overlooked methodological issues come into view when one sees how these sceptical questions arise in the context of specific theories. Indeed, Sklar's exploration of the real explanatory problems raised by these forms of scepticism in the context of actual theories makes for a refreshing and enlightening read, in comparison to the usual very dry, rarefied discussions of methodology.

Though differing considerably in style and approach, Niiniluoto's book complements Sklar's in an interesting way. Sklar is well attuned to the attitudes of working scientists, downplaying

the significance of the semantic questions that have been the focus of so much philosophy of science. For example, he dismisses the view of the philosophers of science, Nancy Cartwright and Ronald Giere, that the idealised laws of physical theories are only true of abstract models, which themselves bear on reality only indirectly by way of a hard-to-describe similarity relation. Sklar expresses the attitude of the working scientists: the idealising assumption that a physical system is isolated from external interference is legitimate and unproblematic when these interferences are controllable. For Sklar, the significant issues concern the particular explanatory problems raised in actual theories by treating a system as fully isolated: for example, in theories dealing with the origin of inertial forces, theories dealing with the origin of the temporal asymmetry of thermal processes, and theories dealing with the special role of measurement in quantum mechanics. Sklar's discussion of these matters is exemplary, always anchoring it in the concrete details of real scientific theorising.

Nonetheless, the semantic issues about the relation of theory to reality cannot be ignored completely. They come to the fore in Sklar's own discussion of the cognitive attitudes of working scientists towards the theories they currently accept but know will almost certainly be superseded in the future. After exploring several possible ways of characterising this cognitive attitude, Sklar settles on describing it as one of believing that the theories are "heading towards the truth". One cannot help but think that the abstract methodological work of Niiniluoto and others on truthlikeness would pay dividends in clarifying the content of this cognitive attitude that is so crucial to scientific fallibilism.

Both these books demonstrate the virtues of a sober and careful appraisal of the issues concerning realism about scientific theories. I shall be urging those of my students intoxicated by the excesses of social constructivism to study them closely.

Peter Menzies
Department of Philosophy
Macquarie University
Sydney, Australia