

HOWARD SANKEY, *Scientific Realism and the Rationality of Science*. Aldershot: Ashgate, 2008.

In this edited collection of essays written between 1995 and 2006, Howard Sankey articulates his defence of a scientific realist approach to the philosophy of science. The book sums up Sankey's long-standing contribution to the field and shows the relevance of realist themes to a number of open problems in the philosophy of science.

According to scientific realism, the way the world is does not depend on our beliefs about it. The existence of a mind-independent world is a core-tenet of the scientific realist, who faces the task of explaining how genuine and reliable knowledge of a mind-independent reality is possible at all. Thus framed, scientific realism appears to be "a decidedly unpopular and poorly understood position, all too easily dismissed as a naïve doctrine subject to decisive objections" (1). For one thing, naïve realism seems to endorse a separation between epistemology and ontology. Yet, philosophers embracing a realist stance also defend a position of epistemic optimism toward the possibility of gaining knowledge of a mind-independent reality, at both observable and unobservable levels. In rejoining epistemology and ontology, Sankey's philosophical project shows that a thorough elaboration of realism discloses novel paths of inquiry into the nature of scientific knowledge and the very aim of science.

The first two chapters survey and evaluate the family of doctrines at the core of scientific realism and offer a realist response to a range of anti-realist critiques. In chapter 1, Sankey assesses the theoretical and methodological implications of the claim that realism offers the best explanation for the success of science. On a theoretical level, he maintains that the predictive power of science is explained by the truth or approximate truth of scientific theories. This is a common argument among scientific realists and it appeals to a concept of truth as correspondence between scientists' claims about the world and the way the world is. At a methodological level, Sankey proposes *abductive realism* as an account of how rules of method, considered as truth-conducive cognitive instruments, provide scientists with epistemic warrant for choosing among theories: "According to abductive realism, the best explanation for the success of science is that the rules of method are regulative norms which 'screen for truth'. They are genuinely truth-conducive instruments of inquiry, which rigorously select only those theories which are either true, or on the track of truth" (29).

In chapter 2, Sankey refutes the criticism that scientific realism requires an externalist "God's Eye" perspective. He does so in a naturalist fashion, by presenting realism as a hypothesis on the empirical success of science that should be evaluated analogously to scientific hypotheses. Such a naturalistic position does away with a God's Eye viewpoint to justify the relation between science and reality. Yet, Sankey claims that an externalist perspective is not necessarily detrimental to realism, as shown by the case of animal cognition. Drawing on Hilary Kornblith's *Knowledge and its Place in Nature*, (2002), he argues that scientists investigating the epistemic relations that animals establish with their environment ultimately adopt an externalist viewpoint that is not that of a god-like being. In a similar fashion, it is possible to adopt an ex-

ternalist perspective to study human epistemic states without implying a God's Eye view.

In chapter 3, Sankey distances himself from entity realism, which downplays truth in favour of an ontological commitment to the status of theoretical entities. By focusing on the mind-independent existence of theoretical entities rather than the truth of theoretical claims, entity realism is a non-semantic version of realism. Yet, according to Sankey, the question arises whether this constitutes a valid alternative to truth-oriented formulations of scientific realism. In his defence of semantic realism, Sankey seems to overlook the experimentalist character of entity realism. Rather than evading semantic questions, entity realism re-frames the issue by shifting the focus from scientific theories to scientific practice. In doing so, it departs from the philosopher's concern about the truth of theories and adopts the experimenter's viewpoint, whereby unobservable entities are real because their manipulation produces new phenomena and novel knowledge about the world.

In chapter 4, Sankey addresses the problem of semantic incommensurability. This aspect of incommensurability entails that translation failure due to meaning variance across subsequent scientific theories limits their comparison for evaluative purposes. Meaning variance raises questions about the continuity of reference and thus poses some fundamental difficulties to the scientific realist. Sankey proposes a modified account of the causal theory of reference to preserve the possibility of referential comparison despite translation failure. By incorporating descriptivism into a causal account of reference — a move that Saul Kripke himself explicitly endorsed in *Naming and Necessity* — he accounts for reference to unobservable theoretical entities, which must incorporate descriptions of the causal mechanisms whereby unobservable referents produce observable phenomena. While resolving the problem of reference failure in the case of theoretical entities, causal descriptivism still does not seem to offer a satisfactory answer to the problem of reference change. Sankey suggests to supplement it with a realist account of post-baptismal uses, which supports the rationality of theory choice while retaining the philosophical insights deriving from the concept of incommensurability. Despite the fact that reference is not inalterably fixed through the original (ostensive and/or descriptive) act of dubbing, it never shifts in a wholesale fashion. Instead, according to Sankey, “reference changes in a piecemeal manner, dependent on the facts relating to the use of a given term” (69). This grants its stability in spite of the alterations of the descriptive content of terms.

In the second part of the book, Sankey departs from semantic concerns to focus on epistemological and methodological questions. In chapter 5, he draws on a combination of scientific realism, essentialism about natural kinds and epistemic naturalism to approach the problem of induction. Sankey suggests that a realist epistemology offers an anti-sceptical answer to the traditional rejection of the principle of uniformity of nature. He reformulates the principle by grounding it in the essential properties of natural kinds — essential properties being “fundamental causal capacities of members of natural kinds” (83). His response to the Humean sceptic is therefore that induction can be rationally justified by appealing to the uniformity of nature, and specifically to the common sets of properties shared by the members of natural kinds.

A methodological question faced by the realist is how to combine the aim of truth with a pluralistic conception of scientific methodology. Sankey approaches the problem in chapter 6. Contrary to the view that realism and pluralism are antithetical positions, he argues that methodological pluralism does indeed advance the aim of truth. Sankey draws on Larry Laudan's normative naturalism, which counters relativism by regarding rules of method instrumentally, as hypothetical imperatives relating cognitive means and ends. Yet, where Laudan sees truth as epistemically utopian, Sankey characterizes it as a "regulative ideal" (103) which advances the fallible and yet truth-conducive character of science.

The relation between method and truth is further explored by Sankey in chapters 7 and 8. In chapter 7, he revisits abductive realism and argues that what best explains the success of science is that its truth-conducive methods are reliable means to attain convergence on truth. His argument revolves around the assumption that the relation between truth and method is an empirical and contingent one, which rests on abductive grounds. More importantly, Sankey emphasizes the truth-conduciveness of rules of method rather than the approximate truth of theories: it is an increasing level of satisfaction of rules of method that makes theories approximately true, and this is because rules of method, rather than theories, "screen for truth" (119).

In the final chapter, Sankey stresses the need of supporting the epistemology of realism with ontology, as epistemological arguments for the success of science require an ontological explanation of what makes the world accessible to its truth-conducive methods. In doing this, he appeals to Nicholas Rescher's methodological pragmatism, which identifies the truth-indicative character of rules of method with their successful practical applications. Incidentally, this lends further support to his claims on the truth-conducive nature of rules of method: indeed, the idea of pragmatically successful but systematically erroneous methods of inquiry would be a quite implausible one — and it is in this sense that scientific rules "screen for truth". These methodological considerations require a metaphysical grounding. Following Rescher's methodological pragmatism and Kornblith's naturalistic account of induction and natural kinds, Sankey firmly grounds his metaphysical considerations in the principles of uniformity of nature and the existence of real kinds in nature. Both approaches frame methodological success within a broader metaphysical context involving a commitment to an objective, mind-independent reality which is highly consonant with realism.

Scientific Realism and the Rationality of Science rewards the epistemic optimist with a compelling and thought-provoking account of scientific realism. Sankey places realism at the centre of contemporary philosophical debate, and does so with incisive and balanced arguments. One concern about the book is perhaps the lack of a tight connection with the history of science — a fault that is common to much contemporary philosophy of science. Despite this, *Scientific Realism and the Rationality of Science* will provide academics and students with a challenging defence of scientific realism that will set the agenda for future debate.

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