Abstracts

Invited Session: Historical Aspects in the Philosophy of Science

On theories
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This presentation is drawn from a longer study of the nature of modern physical theories. The discussion of that study is dialectically situated in the logical empiricist tradition of the partial interpretation reconstruction of theories. But it is not restricted to that tradition. I argue that the logical empiricist account of theoretical knowledge exhibits a fundamental misconception about the character of the claims theories express. This is the idea that the application of the notion of truth to theoretical claims is fundamentally different from its application to empirical statements about observable entities. This idea was completely explicit in the case of logical empiricism’s conventionalist account of theoretical claims about the geometry of space and time, but it emerges as an unintended consequence of the doctrine of partial interpretation and the account of theories about entities which transcend observation.

Despite the many differences between conventionalism about geometry and the general conception of theories as partially interpreted systems, the misconception about theoretical claims that these two doctrines exhibit has a common source. It stems in each case from an incorrect assessment of the epistemic warrant theoretical claims enjoy: an incorrect assessment of the nature of the justification of existence claims involving unobservables in the case of partial interpretation, and, in the case of geometry, an incorrect assessment of the epistemological basis for proposals regarding the structure of space and time. This assessment is not peculiar to logical empiricism, and it can be shown to undermine proposals which define themselves by their opposition to the logical empiricist conception of theories.

The view I advocate allows that the value of a physical theory is often instrumental and independent of whether the theory is even “approximately” true. However I argue that this concession to instrumentalism is compatible with the idea that a theory’s instrumental value can consist in facilitating the discovery of salient truths about reality, even a part of reality that is entirely hidden from observation. The argument to this conclusion rests on an analysis of the methodology of “theory-mediated measurement” and the role this methodology plays in securing fundamental existence claims of the kind we associate with Jean Perrin in the case of molecular reality and J. J. Thomson in connection with the constitution of cathode rays.
At the Roots of Probabilistic Epistemology
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There is a broad consensus among philosophers of science that probability is an essential ingredient of science and human knowledge at large, and that induction is an essential ingredient of the scientific method. Such a probabilistic approach is usually associated with the impact of the work of authors like Richard Jeffrey and Patrick Suppes in the 1960s, soon followed by many others. While from that time on probabilistic epistemology has progressively flourished to the point of becoming predominant, awareness of its origins has been somewhat neglected. This paper argues that in the first decades of the Twentieth century a probabilistic view of knowledge was embraced by a number of authors working on the foundations of probability and statistics from the perspective of different disciplines, irrespective of their interpretation of the notion of probability. The conviction that “the ideal of an absolute truth is an unrealizable phantom” and that it is probability, not truth, that allows scientific knowledge to be reconstructed in tune with scientific practice, as claimed by Hans Reichenbach in his lecture delivered at the “Neuvième congrès international de philosophie” (1937), was shared among others by British philosopher and mathematician Frank Ramsey and geophysicist Harold Jeffreys, Italian statistician Bruno de Finetti, Polish logician Janina Hosiasson, French mathematicians Émile Borel, Paul Lévy and Maurice Fréchet, and German philosophers and scientists Hans Reichenbach and Richard von Mises. The work of these and other authors operating at the four corners of Europe bears witness to the existence of a European tradition in probabilistic epistemology that in many respects heralds subsequent literature from the 1960s onwards. A distinctive aspect of this tradition lies in the pragmatist flavour imbuing the writings of many of its representatives, suggesting that pragmatist ideas had a much stronger impact on European scientific philosophy than is usually thought.