

Reviews

Gregor Schiemann, *Hermann von Helmholtz's Mechanism: The Loss of Certainty. A Study on the Transition from Classical to Modern Philosophy of Nature*. Translated by Cynthia Klohr. Archimedes. New Studies in the History and Philosophy of Science and Technology, Vol. 17 (Milton Keynes: Springer Science + Business Media B.V. 2009), Pp. x + 282.

Writ large, Gregor Schiemann's book is a study of 'the process of abandoning the modern claim to absolute, valid knowledge, formerly known as the truth', and its replacement by 'the hypothetical character of theoretical knowledge'. (p. 2) To help support this claim, Schiemann has made an admirably close study of Hermann von Helmholtz's philosophy of science and nature from the start of his career in the 1840s through the emerging changes that they underwent in the 1860s and, especially, 1870s. By retracing Helmholtz's intellectual development (his 'loss of certainty') in regards to his changing notion of mechanism, Schiemann seeks to indicate how and why Helmholtz played an exemplary role in the transition 'from classical to a modern philosophy of nature', to use his words. He argues that Helmholtz's mechanistic understanding of nature gradually became relativized from an understanding aimed at truth to one aimed more modestly at hypothetization (and a description of the conditions of validity). Schiemann thus wants to show, by using the case of Helmholtz, how mechanism 'oses the entitlement to exclusive agency that it enjoyed from the onset of early modern times and becomes just one world-view among others'. (p. 5)

Schiemann devotes Part I of his two-part book to the conceptual background, that is, to analyzing the notion of mechanism in 'classical' and 'modern' science. After exploring the concept philosophically and in classical mechanics (Chapters 1 and 2), he examines three

traditions in mechanism (Chapter 3): the materialist, which understands mechanism as matter in motion and does not include a concept of force (e.g. as in Descartes and Huyghens); the 'dual', as with Newton, which effectively equated matter and force; and the dynamic, which, as with Leibniz and Kant, emphasized the role of force. Part I closes with a chapter giving an overview of the 'modern' conception of science, that is, of the role of 'hypothetization'.

In Part II, Schiemann turns to Helmholtz's own notion of mechanism. He first briefly and generally presents Helmholtz as a scientist, research strategist and cultural figure (Chapter 5). He then gets to the heart of his argument (and book): Helmholtz's 'classical' mechanist thought, including his well-known 1847 program, his mechanics and his 'classical' conception of science and nature (Chapter 6); and 'The Hypothetization of Helmholtz's Mechanism', including his conception of science from the early 1870s on and his 'Model-Theoretic Mechanism: Mechanistic Analogies and Mathematical Unification' (Chapter 7). These excellent chapters provide a penetrating analysis of Helmholtz's thought on a variety of scientific and philosophical (mostly epistemological) issues: for example, force conservation, geometry, objectivity, perception, induction, causality, atomism, law, hypotheses and models. The final chapter (Chapter 8) seeks to account for Helmholtz's changing views of science and nature by briefly looking at some possible historical conditions and causes that might have brought that change about.

Schiemann is certainly right in his particular contention that Helmholtz's view of science and of nature changed. Yet that general understanding of Helmholtz's intellectual changes, as Schiemann himself concedes (p. 9, n. 24), has been noted to one degree or another by numerous scholars, as well as by Helmholtz himself. (On the other hand, there was also much continuity in Helmholtz's thought on these topics.)

Still, Schiemann pursues the important theme of Helmholtz's changing views in a philosophical, systematic manner. Indeed, his book is largely a philosophical one. Though he shows sensitivity to Helmholtz's biographical and general intellectual situations, he only briefly discusses Helmholtz's life and general circumstances. Moreover, as Schiemann himself acknowledges, he says little about Neo-Kantianism (towards which Helmholtz's thought became an important contribution) and about the possible influence of Fichte on Helmholtz, which Schiemann, unlike Michael Heidelberger, for example, downplays. On the other hand, Schiemann, in my opinion, rightly downplays the influence of Kant on Helmholtz and the latter's supposed attempts to come to terms with him, which were more occasional than systematic. Finally, Schiemann's bold attempt to account for Helmholtz's changing views in terms of possible historical causes and context does not, in my view, provide the level of historical specifics about personal, social, cultural, political and other matters that the topic requires.

This book is an English-language translation of Schiemann's original (and penetrating) German-language doctoral dissertation, published as *Wahrheitsgewissheitsverlust: Hermann von Helmholtz' Mechanismus im Anbruch der Moderne. Eine Studie zum Übergang von klassischer zu moderner Naturphilosophie* (Darmstadt: Wissenschaftliche Buchgesellschaft, 1997). The translation, an abridged version of the German original, wherein Schiemann discussed the early modern notion of mechanism much more extensively than he does here, unfortunately leaves a great deal to be desired. At all too many points it reads awkwardly, and it certainly does not provide the clarity and precision that Schiemann's sharp, demanding philosophical analysis of Helmholtz's conceptions of science and nature merits. For Gregor Schiemann's original text greatly enriched our understanding of Helmholtz's philosophy of science and nature.

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