

Book Review

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Sean Winkler. *Boris Hessen and Philosophy: The Socioeconomic Roots of Classical and Modern Physics*. Lanham, Maryland, Rowman & Littlefield, 2023. Hardcover \$105. Pp. 192.

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Boris Hessen's 1931 paper, *The Socio-Economic Roots of Newton's Principia*, has often been pointed out as a precursor to externalist approaches to history of science, yet a more systematic approach to Hessen and his overall *oeuvre* has been missing. Sean Winkler seeks to provide a systematic introduction to the work of Hessen, emphasizing his contributions to Marxist history and philosophy of science. The book is composed of four chapters and an appendix of translations of Hessen's entries on physics in the *Great Soviet Encyclopedia*. In the first chapter, we get a reconstruction of some of the basic concepts that Hessen deployed, namely, the concepts of ideology and practice. Winkler situates Hessen's work in the context of debates in Soviet philosophy in the 1920s between the mechanists and the Deborinites over how to interpret the relationship between dialectical materialism and the natural sciences. Both parties to the debate accepted that Marxist philosophy must base itself on science. The debate was over what it means to say that philosophy must base itself on science. The mechanists thought that to base philosophy on science was to liquidate philosophy. The Deborinites, by contrast, thought that philosophy was inescapable and that it cannot be liquidated in the name of science without burdening science with inadequate and unexamined philosophical assumptions. Hessen sided with the Deborinites.

In the second chapter, Winkler aims to resolve an interpretive puzzle, namely, how to make sense of the fact that Hessen seems to speak with two voices. On the one hand, in his 1931 paper, he emphasizes the socio-economic context which made Newton's *Principia* possible in the first place. On the other hand, in his 1927 paper on Newton, he offers what seems to be a conventional internalist account, one that shows the manner in which key philosophical debates, about how best to overcome scholasticism, that is, by means of rationalism or empiricism, informed Newton's approach to explaining the motion of bodies.

Winkler refers to this as the “Hessen paradox” (36). According to Winkler, the externalist 1931 paper seeks to show the role of practice in the formation of scientific concepts and theories, namely, the emergence of theoretical problems from practical problems. The internalist 1927 paper, by contrast, demonstrates the role of ideology, inflected through philosophical disputes, in the formation and development of scientific theories.

Chapter 3 illustrates how Hessen attempted to reconcile modern physics with dialectical materialism. For example, with respect to quantum mechanics, Hessen thought that the postulate that electrons behave both as waves and as particles is in accord with the dialectical materialist postulate that matter is both continuous and discontinuous (59). In the fourth and final chapter, Winkler turns to an examination of Hessen’s recently published *Manuscripts and Documents on the History of Physics*. Winkler takes the *Manuscripts* as supporting his own interpretation that the “Hessen paradox” can be resolved by emphasizing that Hessen believed that a Marxist approach to the history of science should consider both ideological factors and material practices (95).

There seems to be some tension in Hessen’s conception of dialectical materialism, and it is not clear that Winkler has resolved this tension. Hessen sometimes speaks of dialectical materialism as involving a very minimal commitment in terms of its concept of matter. For example, he distinguishes between the “philosophical concept of matter” and the “physical concept of matter” (43). On Winkler’s interpretation, the “philosophical concept of matter” refers simply to the “mere notion that mind-independent reality exists” (43), while the “physical concept of matter,” which presumably is supposed to provide a much thicker description of that mind-independent reality, cannot be specified a priori from a philosophical standpoint. This thicker description will change as our best physical theories are overthrown and replaced by others. Hessen is committed to the view that “with each epoch-making discovery, materialism has to change its form” (43). It would seem that to endorse dialectical materialism is simply to try to make philosophical sense of the discoveries made by the natural sciences in a way that accords with the belief in a mind-independent reality. On this view, one would not have to subscribe to thicker descriptions of reality, for example, that reality is characterized by the unity of opposites such as continuity and discontinuity, to be a dialectical materialist. On the other hand, as we have seen, Hessen thinks that he has to defend much thicker descriptions of this mind-independent reality and show that they are not contradicted by the new physics. So, it appears that Hessen vacillates between a deflationary and an inflationary conception of dialectical materialism. Winkler does not tackle this problem head on, but it is interesting to note that in the second chapter of the book, Hessen’s dialectical materialism is explicitly introduced not as a fundamental ontology, that is, a theory concerning the basic furnishings of the world, but rather as “a method for negotiating the complexity of how new scientific theories emerge” (23). On this view, dialectical materialism is simply historical materialism applied to the history of science, and it is not clear that historical materialism, or any other theory of historical explanation, requires grounding in a fundamental ontology.

It seems plausible that a commitment to historical materialism is compatible with a commitment to different and perhaps mutually contradictory theories of fundamental ontology. People can disagree on the properties of the basic furnishings of the world such as the question of whether matter is continuous or discontinuous while at the same time adhering to historical materialism. One could accept that Hessen’s attempt to show that material practices determine concept formation in such a manner that certain theoretical formulations are not possible before the coming into being of certain material practices is successful, while

maintaining a position of indifference on the question of whether internal contradictions drive the motion of matter or whether matter is somehow both continuous and discontinuous.

There appears to be another ambiguity in Hessen's philosophy, namely, how he conceives of the relationship between philosophy and the sciences. On the one hand, it seems that he thinks that some developments in the sciences provide confirmation for dialectical materialism. This is apparent in his entry on "Energy" in the *Great Soviet Encyclopedia* where he states that wave-particle duality "confirms the point of view of dialectical materialism," and more specifically that it confirms the postulate that matter is both continuous and discontinuous (129). On the other hand, he sometimes seems to want to establish a weaker claim, namely, that there is no contradiction between some of the developments in modern physics and dialectical materialism. However, these are two very different claims, for the simple reason that non-contradiction between two sets of propositions does not, by itself, get you confirmation of the one set of propositions by the other set of propositions. Despite these ambiguities, Winkler, in carefully reconstructing a systematic account of Hessen's philosophy, helps us begin to answer the question of what is dead and what is living in Hessen. Winkler has thus provided a tremendously valuable service to anyone who is interested in Marxist history and philosophy of science.