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Reconstructing Scientific Revolutions:

Thomas S. Kuhn's Philosophy of Science.

Trans. Alexander T. Levine. Foreword by Thomas S. Kuhn.

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One might have some doubts about the contribution a new book-length study could make to the vast literature on Thomas Kuhn's work in the history and philosophy of science. Hoyningen's book, however, has several features that distinguish it, as far as I can see, from any other work in the genre: (1) His interpretation covers all of Kuhn's career, not only the debates centered around *The Structure of Scientific Revolutions*; (2) he benefited from extended discussions with Kuhn about how to understand Kuhn's philosophical position; (3) these dialogues achieved, as Kuhn testifies in the Foreword (xi), the ideal end of all hermeneutic work — the interpreter understands the author better than the author understands himself. For all these reasons, and some more, the book is important.

The picture of Kuhn that emerges from Hoyningen's richly documented study will not come as a surprise to those philosophers who thought they knew it all the time and now Kuhn, or his interpreter, is confessing: He is an idealist (268). But this is, of course, much too coarse a characterization, and Hoyningen devotes chapters 2 and 3 to a more careful and adequate formulation of Kuhn's views on the relation of world and subject. What results is, roughly speaking, a Kantian epistemology with some ingredients borrowed from Husserl. The members of a scientific community live in a 'phenomenal world', the sum of all experiences possible within the conceptual system that characterizes the community; this world is 'constituted' through the cognitive practices of the epistemic subjects. But it is not constructed arbitrarily: the 'world-in-itself' imposes constraints in the form of a 'resistance' which the subjects, however, cannot conceptualize, a resistance 'whose nature is indeterminable by us' (239). Chapter 3 provides more detailed support for this position by reconstructing Kuhn's theory of concept acquisition which is based on processes of learning and mastering sets of similarity and dissimilarity relations. These relations influence perceptions and the formation of empirical concepts which, in turn, embody empirical knowledge as well as the ontological commitments that are characteristic of the respective phenomenal world. Much of this theory has been developed after 1962 and it is one of the merits of the book to bring these more recent ideas together in a systematic way.

With the distinction of appearances and things-in-themselves, or 'subject-sided' and 'object-sided moments' in the constitution of phenomenal worlds, it becomes possible to clarify, for instance, Kuhn's notoriously difficult claim that the existence of multiple phenomenal worlds doesn't commit him to a relativist or social constructivist view of scientific knowledge. I say 'clarify' rather than 'support' because, although Hoyningen's quasi-Kantian framework allows for a systematic presentation of Kuhn's views, it is obvious that the presentation itself does not solve the basic problems philosophers have had with such frameworks. How 'objective' knowledge is possible after the Kantian position has been deprived of a unique transcendental subject, or a universal set of categorizations underlying the different phenomenal worlds, remains an open question, just as problematic as the status of the 'world-in-itself'.

More conclusive perhaps are the clarifications of long-standing problems with (or misunderstandings of) Kuhn's ideas on incommensurability, theory comparison, and scientific progress across paradigm shifts in chapters 4 to 6. Hoyningen points out that Kuhn never thought that scientific revolutions

involve a change of meaning of *all* concepts or a complete change of methodological standards. Such changes are typically 'local', they don't affect the whole edifice of knowledge at once, thus making comparisons between successive theories possible (236ff.). These chapters outline a picture of revolutions as processes much more continuous than the secondary literature usually conceived of them; a much more plausible picture, I should add.

Such clarifications are not only valuable for historical and philosophical studies of science but will also provide a sounder basis for locating Kuhn's work in relation to the views he originally responded to, in particular Logical Positivism. Recent research on the development of the Vienna Circle has emphasized that Kuhn shared more insights with Carnap and especially Neurath than the debates of the 1960s and 70s recognized. Neurath's 'encyclopedias', for instance, look, at least *prima facie*, quite similar to Kuhnian paradigms, and when Carnap read the manuscript of *Structure* he felt deep affinities to his own ideas on theory change. In this respect Hoyningen's book will be an indispensable source for future work on reconstructing the Kuhnian revolution in the philosophy of science.

It is regrettable that the book's index is often not reliable and in many cases I found it not detailed enough to be helpful.

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