

# Essays in Philosophy

A Biannual Journal

Vol. 5 No. 2, June 2004

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## Book Review

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*The Road since Structure*, Thomas S. Kuhn. Edited by James Conant and John Haugeland. University of Chicago Press, 2000. 335 pages. Hardcover \$25.00 ISBN 0-226-45798-2. Paperback \$18.00 ISBN 0-226-45799-0.

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This book consists of eleven of Kuhn's essays, originally published between 1970-1993, and the transcript of an interview with Kuhn in 1995. Five of these essays are packaged under the rubric of "Reconceiving Scientific Revolutions" and the remaining six are "Comments and Replies." Editors Conant and Haugeland, wanting not simply to replicate an earlier collection of Kuhn's essays *The Essential Tension* (University of Chicago Press, 1977), used four guidelines in the construction of this volume: include only essays that are expressly philosophical in their concerns, include only essays written in Kuhn's last two decades (though "Reflections on my Critics" from 1970 predates the two-decade limit), include only substantial essays, rather than brief reviews or addresses, and include essays that Kuhn himself saw as preparatory toward a book he had been working on prior to his death.

In his paper "Commensurability, Comparability, Communicability" (original, 1982), Kuhn remarks: "If I were now rewriting *The Structure of Scientific Revolutions*, I would emphasize language change more and the normal/revolutionary [science] distinction less" (p. 57). Is Kuhn still relevant to philosophy of science, now more than forty years after the publication of *Structure*? Yes, but only derivatively, since – as the quote above notes – his real concerns were metaphysical and linguistic. In particular, he noted three themes that emerged for him in his study of the history of science: revolutionary changes are holistic, revolutionary changes are changes in the meaning of terms and how their referents are determined, and revolutionary changes are changes in "metaphor," that is, in what constitute appropriate comparison sets ("a change in one's sense of what is similar to what, and of what is different" (p. 30)). These themes are facets of his emphasis and struggle with the notion of incommensurability, the issue he explicitly identified in 1990 as primary for him: "No other aspect of *Structure* has concerned me so deeply in the thirty years since the book was written, and I emerge from those years feeling more strongly than ever that incommensurability has to be an essential component of any historical, developmental, or evolutionary view of scientific knowledge" (p. 91). Indeed, incommensurability is by far the most recurrent concern throughout the essays in this volume.

What about incommensurability did Kuhn find so significant? It pointed to and reflected what he took as fact, that scientific practice always involves the production and explanation of generalizations about nature and that those generalizations are never passively "given." Underlying scientific practice are implicit commitments to comparison sets and to similarity criteria, but comparison sets and similarity criteria vary relative to (at least) interests and goals. A brown ball is similar to a red ball in terms of

shape but not of color, whereas a brown ball and a brown box are similar in terms of color but not of shape. For Kuhn, what characterized scientific revolutions was change in interest-significant taxonomic categories prerequisite to scientific descriptions and generalizations. What Aristotle took a planet to be, i.e., what comparison set was relevant to it, was different than what Newton took one to be. The term “planet” must be understood within the context of its comparison set. But, for Kuhn, this changed across revolutions and so follows meaning variance and incommensurability. Because Kuhn was criticized (repeatedly!) about this, there are various attempts in the essays of this volume to clarify this central notion of incommensurability. Kuhn adopted the notion of incommensurability from its mathematical home, in which it identifies the failure of a one-to-one correspondence between two sets of objects. For example, there is a one-to-one correspondence (“common measure”) between natural numbers and their squares, but there is no one-to-one correspondence between real numbers and natural numbers. So, for Kuhn, across scientific revolutions, where terms alter meaning and reference (i.e., the comparison sets and similarity criteria change), there is no common measure of the use of such terms before and after the revolution. But Kuhn emphasizes in various essays that no “common measure” does not entail no measure at all; no one-to-one correspondence does not entail no relation. Incommensurability does not entail incomparability. He insisted: “Most of the terms common to the two theories function the same way in both; their meanings, whatever those may be, are preserved; their translation is simply homophonic. Only for a small subgroup of (usually interdefined) terms and for sentences containing them do problems of translatability arise. The claim that two theories are incommensurable is more modest than many of its critics have supposed” (p. 36).

The notorious claims of incommensurability and meaning variance, then, were meant to capture what Kuhn took to be the historical fact that the categories and epistemic partitions (“generalizations of nature”) across different scientific perspectives are not amenable to one-to-one correspondences. To the extent that such categories and partitions are a filter through which we produce and explain generalizations of nature, to that extent Kuhn claimed that across revolutions we live in different worlds. He, of course, regretted what many took to be the philosophical idealism in such a remark and attempted to clarify this, as well. In several of the essays, especially “The Trouble with the Historical Philosophy of Science,” he explicitly distanced himself from the Strong sociology of science Program associated with Barry Barnes and others: “I am among those who have found the claims of the strong program absurd: an example of deconstruction gone mad. And the more qualified sociological and historical formulations that currently strive to replace it are, in my view, scarcely more satisfactory” (p. 110). Insisting that, of course, the world is not invented or constructed by us, he nevertheless claimed that “Conceptually, the world is *our* representation of *our* niche... It is groups and group practices that constitute worlds (and are constituted by them)” (p. 103). How are these claims reconciled or reconcilable? Kuhn’s Kantian-like answer is: “Experience and description are possible only with the described and describer separated, and the lexical structure which marks that separation can do so in different ways, each resulting in a different, though never wholly different, form of life” (p. 104). For Kuhn, then, the appropriate question is not: “Are similarity and comparisons discovered or created?”, but: “To what extent and in what ways are they discovered or created?” Avoiding the labels “realist” and “relativist,” Kuhn identifies himself as a “reluctant pluralist” (p. 249).

Above I asked whether Kuhn was still relevant to philosophy of science and I answered, yes, but only derivatively, since his real concerns were metaphysical and linguistic. The emphasis in the essays collected here is not on, say, the nature of explanation, or on particular issues in, say, philosophy of biology or philosophy of chemistry; likewise, there really is nothing enlightening on social issues related

to science, e.g., the nature/source of epistemic values. The essays of the first part of the volume focus heavily on incommensurability and its related metaphysical/linguistic aspects. While the essays help to clarify Kuhn's position, there is less clarification than one might hope, especially given the enormous level of discussion about these issues that have come from metaphysicians and philosophers of language. As for many of the essays in the second part of the book, some certainly seem not particularly important now, e.g., ones on Sneed and Stegmüller. Those that are replies to criticisms by others (e.g., Popper, Laudan) are rendered somewhat less useful than they might be, given that the original critical remarks are not included. Nonetheless, Conant and Haugeland have done a service by collecting these papers into a volume that helps to clarify Kuhn if not the issues he wrestled with

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