

Robert J. Richards and Lorraine Daston (eds.). Kuhn's *Structure of Scientific Revolutions* at Fifty. Reflections on a Science Classic. 202 pp., Index. Chicago: University of Chicago Press, 2016. \$25.00 (paperback).

This volume collects contributions from a 2012 conference in Chicago. Chicago University Press asked editors to organize the event and prepare a volume to celebrate the 50th anniversary of Kuhn's *Structure*. Nine contributions are divided into five categories and cover different topics (authors and sections are in brackets): *Structure* as influenced by cold war rhetoric (George Reisch [I]), *Structure* as a book on psychology, not the sociology of research (M. Norton Wise [II], Peter Galison [III], David Kaiser [IV]); examples vs. rules (Ian Hacking [V], Lorraine Daston [VI]); case studies from the history of science that look into some aspects of *Structure* (Daniel Garber [VII], Angela N. Creager [VIII]); and citation analyses (Andrew Abbott [IX]).

In 1947, Kuhn read Aristotle's writings about physics, and realized that Aristotle must have been misunderstood if seen through the eyes of a modern physicist. Kuhn considered this experience to be the essence of his later theory on incommensurable paradigms. In his contribution to the present volume, George Reisch [I] reconsiders Kuhn's treatment of the "Aristotle experience" at different stages of his life. He compares the narrative of the Aristotelian experience to the cold war rhetoric of the 1950s, and argues that the idea of researchers being "captured" by incommensurable paradigms is similar to the cold war conception of an innocent American being "brain washed," "captured," or "converted" by red propaganda. Kuhn stresses the political side of paradigm change in several places, and although he never mentions brain washing and the cold war in this context, Reisch provides strong evidence that these phenomena were crucial to the development of Kuhn's understanding of the political side of the history of science. Kuhn *was*

infected to some degree, by the anti-communist ideas of Harvard president James Bryant Conant, and ‘converted’ communists such as Sidney Hook and Arthur Koestler. However, Kuhn was not interested in communism and anti-communism, but in the psychological conversion of scientific and political ideas. He turned the anti-communist views of Conant, Hook, and Koestler on their heads and used them as a tool for the historiography of science.

Was Kuhn’s work about *psychology* or about the *sociology* of science? The contributions of Wise [II], Galison [III], and Kaiser [IV] affirm the former. Galison and Kaiser point to a number of sources from the Kuhn *Nachlass*, in particular several correspondences (Kaiser) and early notebooks (Galison). In this light, Galison starts with a reassessment of Kuhn’s education as a physicist in the 1940s: As a physicist, Kuhn never took part in large working groups, but carried out projects that could be calculated by a single person from an arm chair. Kuhn’s work became more interesting when he began to study non-science literature in 1949. As Galison emphasizes, the picture that Kuhn draws in *Structure* about the historical development of science was transformed from Jean Piaget’s work on the intellectual development of children. Kaiser points to the influence of Heinz Werner, another developmental psychologist and provides a brief survey of correspondences Kuhn had with various scientists, after *Structure* was published. We learn that the majority of Kuhn’s correspondence partners were psychologists, who shared his ideas before philosophers, historians, or physicists took broader notice.

Hacking [V] and Daston [VI] provide a correction to a misreading of Kuhn, enforced by the alleged influence of Wittgenstein’s rule-following conception of language. A paradigm in Kuhn’s sense, as Hacking illustrates by an Aristotle exegesis, is not a set of rules (or axioms) – but a set of examples that teach us about how to use them. This has parallels in recent discussions on the philosophy of science (highlighted by Hacking). However, the exemplars standpoint also involves a surprising topicality of Kuhn’s in the recent history of science, here highlighted by Daston.

According to Daston, the development of this field occurs in three stages: “whiggish” history, as initially criticized and overcame by Kuhn himself; science and technology studies of Edinburgh school fashion; and the history of science properly understood. The latter is devoted to case studies devoid of “structure” of a philosophical or sociological nature. Kuhn’s book, according to Daston, can be divided into two parts, with an uncovering of the hidden *structure* of science and an illustration of the development of science (a *descriptive* treatment of *case studies*). While the first aspect might be removed from Kuhn’s agenda, the second aspect makes him a pioneer of the recent descriptive history of science: “history of science without *structure*.” Daston also shares quotations and photographs from the publication of Theodor Erisman’s experiments with inverting glasses. While Kuhn used these experiments as “exemplars” for the gestalt- or paradigm-shift that takes place in scientific revolutions, Daston reuses them as “exemplars” to illustrate the shift from science with structure towards science without structure.

Two historical case studies by Garber [VII] and Creager [VIII] illustrate the new historiographical paradigm, highlighted by Daston. Garber describes the so-called Scientific Revolution of early modern times as a process of piecemeal development, rather than a revolution. Creager highlights the importance of model exemplars in the field of biomedicine, with a case study of the phage group. In the last article of this volume, Abbott [IX] analyzes some citation indices that illustrate the number of references, which Kuhn’s book had received since the early 1970s. Abbott then concludes with a report on his own reading of Kuhn’s book on November 10, 2012.

This volume is an important contribution to the historical reconstruction of Kuhn’s groundbreaking work, although the quality of the contributions is mixed. Reisch’s paper stands out for its argumentative consistency and the amount of material packed into a 15-page article. The contributions of Galison and Kaiser stand out for new sources being analyzed, including the way

in which they highlight developmental psychologists, such as Piaget and Werner, regarding the development of Kuhn's account. The other contributions fall behind. Wise and Abbott do not carry enough conceptual or archival weight. Hacking's contribution loses itself in the details of Aristotle's exegesis, whose relevance to Kuhn is doubtful. The case studies of Garber and Creager are relevant on their own. However, it is not clear how they might create a better understanding of Kuhn's work. Daston's contribution is highly suggestive, but if only a de-structuralized version of *Structure* is relevant, this might imply the overall irrelevance of *philosophical* reflection in both science and the history of science. Do we really want to go so far? Wise, Galison, and Kaiser point out that Kuhn's approach is psychological vs. sociological, and find this to be a problem. Is the psychology of science unnecessary when its sociological side is investigated? The writers suggest this as the case, but do not argue why. Those shortcomings, however, are outweighed by the historical strength of some of the contributions, including the accessibility and literary quality of the whole volume. One is eager to learn more about Kuhn's Aristotle experience and how it relates to cold war rhetoric; about Piaget and Werner and the role they envisioned for Kuhn; and about several notebooks, manuscripts, and correspondence from Kuhn's estate, which are partly investigated here.

Christian Damböck, Institute Vienna Circle
University of Vienna
christian.damboeck@univie.ac.at