



Book Review: The Philosophy of Science – A Companion. Edited by Anouk Baberousse, Denis Bonnay and Mikael Cozic. Oxford University Press, 2018. Pp. 768. Price GBP 64.00. ISBN-13 9780190690649

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1. Overview

This book is the English revised and augmented version of the book entitled *Précis de philosophie des sciences* (Barberousse *et al.*, 2011). Its purpose is to present the main questions and answers addressed in today's philosophy of science. Its target audience should be both students and researchers in this field. All contributors are recognized academics and any reader would probably learn a lot by reading this book.

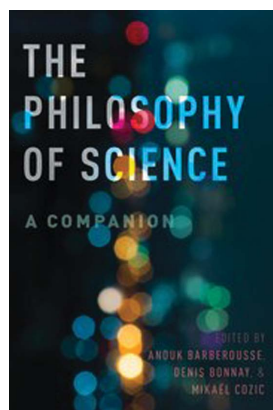
The preface points out that 'the two parts of *The philosophy of science* mirror the traditional distinction between *general philosophy of science* and *philosophy of the special sciences*'. Let us give a quick overview of each contribution in these two parts.

The first three articles, entitled *Scientific explanation*, *Confirmation and induction*, and *Causality*, written, respectively, by D. Bonnay, M. Cozic and M. Kistler, deal with much the same subject from different angles, that is the opposition between deductive–nomological explanations and inductive–statistical explanations. To see the wealth and complexity of epistemological questions related to understanding the nature of scientific theories, the reading of these papers is recommended. The five articles that follow these first three do not seem to have the same thematic unity. The fourth, *Metaphysics of science as naturalized metaphysics* (by M. Esfeld) 'investigates how metaphysics of science qua naturalized metaphysics can work when taking fundamental physics and more precisely, quantum mechanics as a guideline'. Chapter 5, entitled *Theory and models* and written by M. Vorms, provides insights into contemporary philosophical perspectives on the nature and structure of scientific theories. In chapter 6 (*Scientific change*), A. Barberousse and M. Vorms stress the dynamic nature of science and develop different philosophical options to explain it. This first part of this companion ends on two contemporary topics. In chapter 7, Barberousse describes the new opposition between *Philosophy of science* and *science studies*, the latter focusing on sociological factors of scientific development. Last, it seems at first sight difficult to understand why P. Ludwig's paper on *Reduction and emergence*, which mainly concerns the conceptual difficulties of physicalist reductionism to solve the famous mind–body problem, is the eighth and concluding paper of this first part. But probably Ludwig answers this question in pointing out at the end of his paper that there are explanatory limits of scientific theories at any given moment of history. Indeed, the mind–body problem is the example *par excellence* of these limits.

The second part is dedicated to the philosophy of special sciences and it could be itself divided into two parts. First, the expected topics: *Philosophy of logic* (by P. de Rouilhan), *Philosophy of mathematics* (by D. Bonnay and J. Dubucs), *Philosophy of physics* (by A. Barberousse) and *Philosophy of biology* (by T. Pradeu). Second, matters more rarely discussed in philosophy of science: *Philosophy of medicine* (by É. Giroux and M. Lemoine), *Philosophy of social sciences* (by J. Elster and H. Landermore), *Philosophy of economics* (by M. Cozic), *Philosophy of cognitive science* (by D. Andler) and *Philosophy of linguistics* (by P. Égré).

2. Some critical remarks

I am going to begin this critical section with a fear: despite the excellent academic quality of each chapter, I cannot help imagining the difficulties of some readers (especially



students in philosophy) because of a certain perplexity caused by some unclear statements throughout the first part of this book, like, for example, the statement more or less shared by chapters 1 and 3 regarding ‘the abandonment of the deductive–nomological model’. Reading these two chapters, it was difficult for me to understand how the deductive–nomological model is actually abandoned and the reasons why it should be, except maybe because of the impossibility of unifying the sciences on a model specific to physics: hence a return to the use of the category of causality, more consensual but also vaguer. That scientific knowledge and methods can in principle be unified is a claim that appears here as one of the implicit dogmas of the metaphysics and philosophy of contemporary science.

The treatment of the theory of probability to understand the role of induction in sciences also was for me a cause of philosophical frustration. It is indisputable that Cozic’s paper, *i.e.* chapter 2 (*Confirmation and induction*), is a masterful overview that is necessary, for example, to understand clearly the distinction between deductive–nomological explanation and inductive–statistical explanation. But given the importance given to probability theory in chapters 4, 5 and 6, it is a pity that the foundational problem of the interpretation of probabilities, instead of being developed, is only much too quickly mentioned by Cozic. In the second part, Barberousse deals with the interpretation of probability in physics (in statistical mechanics and in quantum theory), and again, the opposition between the objective interpretation and the subjective one is mentioned in only one sentence (p. 417): ‘[the] minimal interpretation [of probabilistic functions] is that they represent our inability to predict the result of certain

measurements’. The fact that such a crucial philosophical question is only briefly mentioned reveals a lack of connection between philosophy of science and philosophy of knowledge.

Sometimes this book gave me the feeling that philosophical problems are met randomly in such or such a scientific theory, without it being really possible to understand why these problems are specifically philosophical. According to Barberousse (p. 281), ‘Philosophy of science maintains a rich dialog with metaphysics (see chapter 4) and epistemology, but it has few links with philosophy of history, philosophy of law, or political philosophy.’ Note that while it is difficult to understand the nature of the philosophy of science apart from epistemology and the ontological debates of metaphysics, it would also be necessary to understand the meaning of the word ‘philosophy’ in these different occurrences. A first answer to this question would be to recall with Vuillemin (1986) that, contrary to science, philosophy is essentially polemical and that its own controversies have always been recurrent in its history. It is true that philosophical polemics appear clearly in chapter 10, where Bonnay and Dubucs deal with the systematic oppositions between realism, nominalism and intuitionism in philosophy of mathematics, but it is unfortunate that this picture of the philosophy of mathematics has not served as a guide to other chapters of this book.

References

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 Vuillemin, J. (1986). *What Are Philosophical Systems?* 1st ed. Cambridge University Press.