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Geoffrey Gorham, *Philosophy of Science: A Beginner's Guide* (Bloomsbury: Oneworld Publications, 2009), 224 pp.

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Book Review
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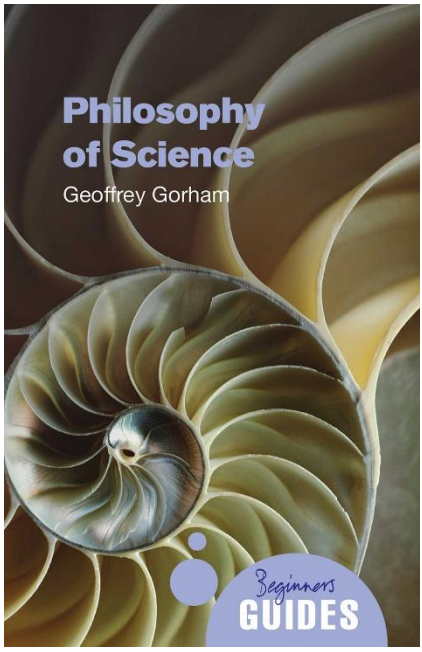
Although the emergence of the philosophy of science as a specialized field dates back to the nineteenth century, fundamental questions concerning nature and science were already part of the intellectual concerns of early philosophers.[1] In such a deeply rooted branch of philosophy, a rich body of literature has inevitably developed over time. This richness is reflected in the diversity of introductory works on the philosophy of science. As in English literature, there are numerous works in Turkish that approach this field from different perspectives.



Introductory books on the philosophy of science vary in the methods they employ. Some of these works take a conceptual approach, focusing on the clarification of the most fundamental notions in the field. Alan F. Chalmers's *What*

[1] James Robert Brown, *Bilim Felsefesi*, trans. Dilek Kadıoğlu et al. (FOL, 2020), 20–21.

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Is This Thing Called Science?[2] can be cited among such works. A classic example of this genre in Turkish literature is Cemal Yıldırım's *Bilim Felsefesi*.[3]

On the other hand, texts that attempt to explain the fundamental issues in the philosophy of science by drawing on mainstream theories or the thinkers who propounded them are also quite common. James Robert Brown's *Philosophy of Science*[4] and John Losee's *A Historical Introduction to the Philosophy of Science*[5] exemplify this approach. In Turkish literature, introductory works on the philosophy of science by Demir[6], Çüçen[7], and Özkan[8] have largely followed this approach.

Another style of writing focuses on the fundamental problems of the philosophy of science, constructing its body of knowledge through the discussion of these issues rather than through the exposition of individual thinkers or theories. Alex Rosenberg's *Philosophy of Science: A Contemporary Introduction*[9] and Peter Godfrey-Smith's *Theory and Reality*[10] can be included in this category. Geoffrey Gorham's *Philosophy of Science* may also be regarded as belonging to this type.

In Gorham's book, which consists of an introduction and six chapters, the first two chapters are devoted to a discussion of the whatness of science, and in the opening chapter, the discussion takes place through a reference to historical background. The third and fourth chapters deal with the method of science. The fourth chapter examines the problem of method in light of its epistemological consequences, thereby offering a deeper inquiry. The fifth chapter addresses the social foundations of science and the relationship between science

2 Alan Chalmers, *What Is This Thing Called Science?* (University of Queensland Press, 2013).
3 Cemal Yıldırım, *Bilim Felsefesi* (Remzi Kitabevi, 1991).
4 Brown, *Bilim Felsefesi*.
5 John Losee, *A Historical Introduction to the Philosophy of Science* (Oxford University Press, 2001).
6 Ömer Demir, *Bilim Felsefesi* (Sentez, 2021).
7 A. Kadir Çüçen, *Bilim Felsefesine Giriş* (Sentez, 2013).
8 Cengiz İskender Özkan, *Bilim Felsefesi* (Say Yayınları, 2020).
9 Alex Rosenberg, *Philosophy of Science: A Contemporary Introduction* (Routledge, 2005).
10 Peter Godfrey-Smith, *Theory and Reality* (The University of Chicago Press, 2003).

and values. The sixth chapter considers some prominent debates concerning the future of science and humanity.

Many introductory books on the philosophy of science point out the historical foundations of the scientific approach. Indeed, this appears to be one of the most effective ways to understand the current state of philosophy of science and clarify its present structure.[11] The first chapter of Gorham's book addresses this issue with the title "The Origins of Science". However, this investigation of origin, as the author himself points out, is only a step toward arriving at the definition of science. In this chapter, Gorham presents the history of Ancient Greek and Medieval traditions of thought, along with the scientific conceptions that were reshaped by the Renaissance. The author proceeds with a specific purpose, laying the groundwork for the inquiry that he is to elaborate in the following chapter.

The second chapter, entitled "Defining Science", attempts to offer a more refined definition of science. At this point, the author aims to achieve a conclusion through the Socratic method rather than providing one directly. One of the key conclusions about the nature of scientific knowledge that the author reached is testability. Popper's falsifiability criterion, criticisms of this, and alternative approaches are handled within this context. In the rest of the chapter, Gorham attempts to clarify the definition of science by examining "fringe" sciences and illustrates this with two examples: intelligent design and string theory. After an extensive discussion, Gorham reveals the other attributes of a scientific theory: although the theory has not yet been tested, it proposes certain methods for testing; it is expected eventually to achieve a conclusion; and it is grounded in other theories that have already been empirically verified.

In the chapter titled "The Scientific Method", the author addresses the problem of method. In the first section, he refers to the explanation of the concepts of deduction and induction. Accordingly, he discusses the views of modern philosophers such as Descartes, Bacon, and Newton. The author indicates the controversial aspects of the

[11] Godfrey-Smith, *Theory and Reality*, 1.

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method problem through the following statement: "... it is likely that in practice science will involve a mix of deductive and inductive reasoning, there remains a real and important difference in the two approaches."[12] Furthermore, he addresses the Mill-Whewell conflict, Hume's criticism of induction, and the considerations of other philosophers as Hempel. However, this chapter paves the way for a more fundamental debate beyond the question of method. The second part of this chapter leads to the theme of the following chapter by addressing science's ontological and epistemological foundations. Under the subheading of "Beyond Inductivism and Deductivism," the notions of Kuhn, Feyerabend, and Quine are discussed.

The fourth chapter, entitled "The Aims of Science", discusses the epistemological significance of scientific theories and the realist and antirealist approaches. The author firstly talks about scientific realism and addresses "inference to the best explanation" and "no-miracles" arguments, which have been shaped by the empirical and technical achievements of science. The author, who also mentions drastic criticism of anti-realism against these strong arguments of realism, examines the issues of underdetermination and pessimistic induction. He then focuses on more moderate realist theories that rise up against these criticisms, such as progress-realism and structural realism. Examining the radical tendencies of instrumentalism and semantic reductionism among the varieties of anti-realism, Gorham also touches upon Bas van Fraassen's constructive empiricism and conceptual relativism. In this section, the author finally evaluates the reduction and unification ideals of science and deals with the tendencies towards determinism and pluralism in this direction.

Defining scientific knowledge as the product of a highly complex social network[13], the author structures the fifth chapter around the ongoing debates surrounding this phenomenon. The first tendency discussed in this chapter is social constructionism. Gorham distinguishes between earlier and later periods of sociological approaches.

[12] Geoffrey Gorham, *Philosophy of Science* (Oneworld Publications, 2009), 58.
[13] Gorham, *Philosophy of Science*, 116.

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He claims that this form of thought, which he calls the Strong Program, and which belongs to later periods, is philosophically relativist and anti-rationalist.[14] The author argues that the social constructionist tendency was shaped under the influence of Kuhn but emerged because of reading Kuhn too literally.[15] Examining feminist theories as well as social constructivist theories, the author finally addresses the relationship between science and value in this section. Gorham concludes that values influence science in terms of the prioritization, selection, content, application, and practice of a topic in scientific research. He then discusses whether the inclusion of values in science is always detrimental.

Motivated by the interconnectedness of science and the human destiny, the author, in the final chapter of the book, examines several contemporary theories that shed light on the future. These issues are discussed under the headings of doomsday scenarios, the possibility of other worlds, and transhumanism. In this chapter, the author approaches these issues through an essayistic style, attempting to provide the reader with a new perspective by examining these contemporary debates through the lens of the philosophy of science perspective.

This work approaches the main issues of the philosophy of science in a problem-oriented manner, presenting the thinkers and theories that represent them without letting these figures or doctrines overshadow the problems themselves. In this respect, Gorham's Philosophy of Science distinguishes itself from many introductory works, particularly in Turkish literature.

Furthermore, the author's essayistic style makes the work appealing to a broad audience. In addition, this style facilitates the easier retrieval of the preferred problem-based approach. Within this framework, Gorham meticulously outlines the problem areas, presents possible answers based on theories from the history of philosophy of science, and strengthens his work with existing and potential criticisms. The success of Gorham's book lies in this methodology. With this method, the author prepares the reader for the philosophy of science

[14] Gorham, *Philosophy of Science*, 119–20.
[15] Gorham, *Philosophy of Science*, 125.

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and adequately presents the fundamental issues of discipline to the beginning reader.

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