

INTRODUCTION TO THE SPECIAL ISSUE ON HUSSERL, THE PHILOSOPHY OF SCIENCE AND THE FUTURE OF PHILOSOPHY

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Abstract. Philosophy and (physical) science have been linked since antiquity and very strongly since modern philosophy; but even more since the three revolutions in physics at the beginning of the XXth century. The demise of logical empiricism and Popperianism should have put an end to further empiricist attempts of founding science. Only recently has one sought Husserl's advice on the foundations of our physical knowledge.

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Ever since their origins in ancient Greece, philosophy and science have been closely intertwined. Even after mathematics and physics became fully independent of philosophy in the modern period, the relationship between these disciplines remained strong, as some of history's greatest mathematicians, such as Descartes and Leibniz, were also among its greatest philosophers. Kant's philosophy, which attempted to occupy a middle point between the English empiricist school of the radical empiricist John Locke and the more moderate empiricists George Berkeley and David Hume, and the continental rationalist school of Descartes, Spinoza and Leibniz, seemed to take for granted the truth of Euclidean geometry, of Newtonian classical mechanics, and even of Aristotelian logic, while the development of electrodynamics and thermodynamics in the nineteenth century anticipated a revision of the philosophy of science based solely on classical mechanics. But it was the appearance of three revolutionary physical theories developed during the first three decades of the twentieth century that revitalized the philosopher's interest in the philosophy of science: special relativity (1905), general relativity (1915) and in particular quantum mechanics, whose first step occurred in 1900 with Max Planck, but which needed more



than two decades to begin the process of maturation with the work of Niels Bohr, Erwin Schrödinger, Hermann Weyl, Max Born and his two students, Werner Heisenberg and Wolfgang Pauli, Paul Dirac and many others.

These revolutions in physics served as point of departure of a new school of empiricist philosophy of science, namely, the moderate empiricism of the so-called logical empiricists, especially in Vienna (Moritz Schlick, Rudolf Carnap, Otto Neurath et alia) and Berlin (Hans Reichenbach, Carl G. Hempel et alia), which tried to give a philosophical foundation to the new physics. As is well known, this attempt to do so within the framework of a moderate neo-Humean empiricism ultimately proved unsuccessful, as did Popper's attempt to overcome the difficulties faced by logical empiricism by replacing the criterion of verification with that of falsification. The clearest conclusion to be drawn from the limitations of both logical empiricism and Popperian falsificationism is that empiricism, even in its most liberal forms, appears unable to do full justice to the theoretical complexities of contemporary physics.

Leaving aside the theoretical responses developed by Kuhn, Lakatos, and other neo-historicist philosophers of science—which, in our estimation, do not resolve the fundamental difficulties confronting the highly liberal form of empiricism commonly known as “logical empiricism” or “logical positivism”—it should already have been evident by 1930 that empiricism, in any of its principal forms, was inadequate to account for the true nature of contemporary physics. Nevertheless, following the decline of logical empiricism, a radical form of empiricism advanced by the North American philosopher Willard Van Orman Quine and his followers came to occupy a prominent position during the remainder of the twentieth century. This development was due, at least in part, not to strictly scientific or philosophical considerations, but to the intellectual and geopolitical prominence of the English-speaking world, within which empiricism and pragmatism have exercised a disproportionate influence. In our judgment, Quine's account of how human beings acquire knowledge is excessively reductive and fails to correspond to the actual manner in which human knowledge is attained. For this reason, one of the editors has elsewhere characterized Quine's position as a “bugs' epistemology.”

The appropriate response to the demise of the moderate empiricism of the Vienna Circle and the Berlin group should have been the development of a more rationalist philosophy of the physical sciences. More specifically, after the decline of logical empiricism, philosophers might reasonably have turned to Husserl's philosophical views—his distinctive form of transcendental rationalism. Husserl was arguably the greatest philosopher since Kant and the author of what may well be one of the three greatest works in the history of philosophy, alongside Aristotle's *Metaphysics* and Kant's *Kritik der reinen Vernunft*, namely, the monumental *Logische Untersuchungen* of 1900–1901. It should be mentioned here that Husserl was a mathematician turned philosopher: a student and assistant of Weierstrass, a student of Kronecker,

and a colleague and friend of Cantor in Halle, and later also of David Hilbert, Felix Klein, and Ernst Zermelo in Göttingen. He remained a close friend of Hilbert for the rest of their lives. Moreover, two of the above-mentioned early contributors to quantum mechanics, Hermann Weyl and Max Born, were students of Husserl (as was Weyl's wife) and the Weyls remained close friends of Husserl for the rest of his life.

In fact, it has taken almost a century since the demise of logical positivism—and certainly more than a century since the revolutions in physics of the early twentieth century—for some philosophers of science finally to turn to Husserl's philosophical views in order to better understand the foundations of the new physics. On this point, we need only mention the titles of two recent books: Steven French's *A Phenomenological Approach to Quantum Mechanics*, and Harald A. Wiltsche and Philip Berghofer's edited volume, *Phenomenological Approaches to Physics*.

The present collection of eight papers includes five papers on different aspects of Husserl's philosophy by some renowned Husserlian scholars, namely Claire Hill, Carlos Lobo, Carlo Ierna, Stathis Livadas and Carlos Vargas writing on different Husserlian themes, and in the case of Livadas relating it with issues in current philosophy of science. The paper by the distinguished Brazilian philosopher of science Décio Krause and his collaborator Juan Pablo Jorge deals with fundamental issues in the philosophy of physics, while the paper by the Kripke specialist Antonio Ramos Díaz deals with some difficulties for the empiricist dream of naturalizing logico-mathematical knowledge. (It is worth noting that original North American philosophers like Saul Kripke and Stephen Yablo have received relatively little attention in their own country in comparison to the extreme empiricist Quine, the nominalist Hartry Field and other theoretically weaker philosophers.) Finally, the paper by the senior editor, Guillermo E. Rosado Haddock, is a very critical assessment of the empiricist ideology prevalent in English speaking countries, a criticism certainly inspired by Husserlian views. Interestingly, the empiricist establishment makes an unusual exception in its attitude towards rationalism, displaying a particular affinity for the philosophical perspectives of Gottlob Frege, remarkable as a logician but less so as a philosopher. Contrasting quotations of Frege and Husserl in the footnotes of the final section of the paper may shed light on the extra-philosophical "reasons" for the empiricist establishment's unusual sympathy for Frege's rationalist views and its relative, unwarranted disregard for Husserl's views.

Postscript to the Introduction

During the long process of preparing for publication the present collection of papers, one of its contributors, Claire Hill, passed away the 4th of December of 2025. Claire Hill, one of the most important women philosophers of the last decades, was a

renowned Husserl specialist, very well acquainted with analytic philosophy and very critical of the latter's genuine empiricist dogmas.

The remaining contributors to this special number of *Principia* want to dedicate it to Claire Hill's memory.