

## 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.

**Keywords:** logical empiricism • radical Quinean empiricism • Husserl

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Already since their origins in Greek antiquity, philosophy and science were intertwined. and even after mathematics and physics completely emancipated from philosophy in modern times, their relationship remained solid, given that some of the greatest mathematicians ever, like Descartes and Leibniz, were also among the 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, such an attempt by a moderate neo-Humean empiricism failed, as also failed Popper's attempt to solve the difficulties faced by logical empiricism by replacing the criterium of verification of theories by that of its falsification. The clearest consequence that could be derived from the failed attempts of logical empiricism and Popper's falsificationism is that empiricism, even in its most liberal versions, is incapable to do justice to the theoretical complexities of contemporary physics.

Leaving aside completely misguided reactions, such as those of Kuhn, Lakatos and other neo-historians of science, that do not answer the fundamental difficulties encountered by the very liberal version of empiricism usually called "logical empiricism" or "logical positivism", it should have been clear already by 1900 that any form of empiricism was completely inadequate to assess the true nature of contemporary physics. Nonetheless, due especially to non-scientific and non-philosophical reasons, but to the importance of English-speaking countries, imbued in empiricism and pragmatism, in world affairs, after the demise of logical empiricism a radical — almost grotesque — form of empiricism propounded by the North American philosopher Willard van Orman Quine and his followers took center stage in the remaining twentieth century. Quine's description of how humans obtain knowledge is overly simplistic, and better suited to describe how lesser complex organisms, for example, rabbits or even bugs obtain knowledge. We will not delve further into Quine's fundamentally flawed approach, on such a dead born child of Quine, which could very well be called —as one of the editors has done in some of his writings— as "bugs' epistemology".

The correct reaction 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. After the fall of logical empiricism it should have been more reasonable to turn to Husserl's philosophical views, a sort of transcendental rationalism, being Husserl most surely the greatest philosopher since Kant and the author of most probably one of the three greatest books in the history of philosophy, together with 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, and he remained befriended with Hilbert for the rest of their lives. Moreover, two of the above-mentioned early contributors to quantum mechanics, Hermann Weyl and Max Born were Husserl's students — as was also Hermann Weyl's wife —, and the Weyls remained Husserl's near friends for the rest of Husserl's 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 — until some philosophers of science finally turned to Husserl's philosophical views, to better understand the foundations of current physics. On this point we just mention here the titles of two recent books, namely, Steven French's *A Phenomenological Approach to Quantum Mechanics*, and Harald A. Wiltsche and Philip Berghofer (eds.), *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.