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DOCTORAL DISSERTATION ABSTRACT

Scientific discipline: **philosophy**

Title of the doctoral dissertation:

Henri Bergson and the Theory of Relativity: A Philosophical Critique of the Concept of Time in Twentieth-Century Physics

Doctoral dissertation abstract:

This thesis offers a comprehensive re-examination of Henri Bergson's engagement with the concept of time within early twentieth-century physics, with particular emphasis on his critical dialogue with Einstein's theory of relativity in *Duration and Simultaneity* (1922). Rather than viewing Bergson's intervention as a straightforward refutation of relativity, the study presents it as an engaged philosophy of science that seeks to extend and refine his conception of time. Employing an interdisciplinary methodology that draws on philosophy, intellectual history, and the history of science, the thesis situates Bergson's contribution within the broader scientific and cultural redefinitions of temporality prompted by the advent of special and general relativity.

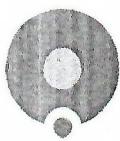


The early twentieth century witnessed a dramatic transformation in conceptions of space and time, driven by Einstein's theories of relativity. These theories redefined scientific understandings of temporality and provoked substantial philosophical debate concerning the nature of time, simultaneity, and temporal experience. Bergson's intervention in this debate, often misunderstood or dismissed—particularly following his public disagreement with Einstein in Paris in 1922—is here reappraised as a significant and original attempt to reconcile lived temporal experience with the conceptual innovations of modern physics.

Through a close reading of *Duration and Simultaneity* alongside Bergson's earlier writings and subsequent commentary, this thesis clarifies his critique of the scientific conception of time and develops a more nuanced understanding of his metaphysical position. Drawing on both primary sources and contemporary scholarship, it situates Bergson's arguments within the philosophical and scientific discourses of his era. The central claim is twofold: first, that Bergson's critique exemplifies an engaged philosophy of science; and second, that this engagement fostered a significant evolution in his philosophy of time, culminating in the notion of "real time" as a synthesis of scientific and lived temporality.

The dissertation is structured into four parts comprising ten chapters. Part I examines Bergson's concept of duration, exploring his early critique of spatialised time in classical mechanics and situating it within the transition to relativistic physics. Part II addresses Bergson's confrontation with Einstein, focusing on the 1922 debate and the publication of *Duration and Simultaneity*, while contextualizing this exchange within the broader French intellectual milieu. Part III provides a detailed analysis of Bergson's interpretation of the key physical concepts in relativity concerning time—such as time dilation, reciprocity, and space-time—revealing both the philosophical stakes and scientific rigour of his critique. Finally, Part IV examines Bergson's hypothesis of universal time, formulated against the backdrop of relativity, and articulates his later conception of real time through the interrelated notions of duration, simultaneity, and coexistence. Together, these parts offer a comprehensive account of Bergson's philosophical intervention into the scientific discourse on time.

The study yields several key findings that deepen our understanding of Bergson's engagement with modern physics. It demonstrates that, while his critique of relativity contains technical inaccuracies—particularly concerning acceleration and the twin paradox—



his arguments remain philosophically coherent and conceptually ambitious. Bergson's treatment of simultaneity anticipates later concerns about the observer-dependence of temporal measurement, thereby exposing the limitations of strictly quantitative conceptions of time. The thesis further clarifies the conceptual relationship between duration and real time, demonstrating how these notions underpin Bergson's metaphysical hypothesis of universal time. Finally, it advances the interpretation that Bergson's critique should not be seen as anti-scientific but rather as an effort to enrich the relativistic framework with a deeper account of temporal experience, coexistence, and lived continuity.

By challenging reductive interpretations of Bergson's critique and incorporating underrepresented Polish sources, this study contributes to a renewed understandings of Bergson as a philosopher of science. It argues that his reflections remain highly relevant—not only to contemporary debates in the philosophy of time, but also as a model for rethinking the relationship between science and philosophy. This thesis aligns with, and advances, recent scholarship that seeks to rehabilitate Bergson's temporal metaphysics within the context of modern physics.

Offering a sustained re-reading of *Duration and Simultaneity*, the study demonstrates the text's enduring significance for debates in metaphysics, the philosophy of science, and the interpretation of relativity. By reconstructing Bergson's critique of simultaneity and elaborating his hypothesis of universal time, the thesis illustrates how philosophical inquiry can engage productively with the conceptual foundations of scientific theory. Furthermore, it addresses the limitations in Bergson's treatment of acceleration and proposes conceptual refinements aimed at strengthening his position.

Ultimately, the dissertation contends that, despite certain gaps in Bergson's framework, it offers a compelling account of time as dynamical, continuous, and experientially grounded. This opens new avenues for dialogue between philosophical reflection and scientific discourse, reaffirming the significance of Bergson's contribution to the study of time.

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doctoral student's signature