

Jimena Canales*The Physicist and the Philosopher: Einstein, Bergson and the Debate that Changed our Understanding of Time*

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Einstein's relativity and its reception is definitely a prominent option for a case-study aiming to highlight the impact of the socio-cultural environment to the formulation of the scientific image of the world and other aspects of the worldview of a given era. Indeed, Einstein's relativity clearly marked the course of 20th-century science, changed our view and shaped our experience of time.

The Physicist and the Philosopher, Jimena Canales' recent book, focuses on a landmark conversation on the nature of time that took place on April 6, 1922 at the Societe Francaise de Philosophie in Paris, between Albert Einstein and Henri Bergson and its consequences for both the reception of Einstein's theory of relativity and the formulation of the cultural relevance of science for the following decades. From this point of view, Canales' vivid critical retrospection is a pivotal work in the cultural introspection of the multifarious relationship between philosophy and science – and especially physics.

Canales, a professor of the history of science at the University of Illinois, offers a stimulating and intriguing book, meeting the highest standards of a very divergent audience, interested in, among others, philosophy, history and philosophy of science and technology, cultural studies of science and intellectual history.

According to Bergson, who notoriously pleaded for intuition over the intellect, vital energy is at the heart of the creative impulse and drives everything forward. Hence, there is no point in talking about time in terms of objective existence, as if it was something separate from us who perceive it, a plain abstract concept expressing something external to our experience. In Bergson's view, time involves us at every level. Therefore, Bergson maintained that Einstein's definition of time and simultaneity was aberrant, since it was diminishing the philosophical dimension of time, which is apparent in any aspect of experience, since it pervades and penetrates our experience of its flow. Einstein's conception of time, in Bergson's line of reasoning violated the most essential intuitive sense that time is a progression. Time should be something more than the fourth dimension of space-time; mathematics could not account for the experienced richness of lived time.

On these grounds, Bergson called for a more basic definition of simultaneity and advanced a theory of time that comprehensibly explained issues such as presentiment or memory,

which could not be dealt with in terms of clocks and mechanics.

Bergson's lived time is primarily subjective in its nature, it focuses on what the temporal experience means to us as living beings. On the contrary, Einstein insisted on the objective existence of the physical time and firmly distinguished physical time from our subjective understanding of psychological time-relevant issues. Time is merely what clocks measure, he could have said.

This apparent and unconsolidated clash of views is concisely expressed in Einstein's fierce answer to Bergson's remarks during the debate which inspired Canales: the time of the philosophers did not exist. Such an answer is obviously not a "politically correct" one, since Einstein was invited in a philosophical forum and yet proved himself lavishly rude against his hosts, which were obviously outraged by his behavior. How could a physicist be that discourteous and dare to provoke them in such an impolite way in their venue?

However, all that fuss caused by Einstein was not about rudeness at all. Einstein's relativity aimed to contribute to an objective description of the universe and to explain its laws in a simple as well as rational way. On the contrary, Bergson insisted that relativity was merely a "metaphysics grafted upon science". Their debate about the nature of time was actually one between subjective experience versus objective reality. From Einstein's point of view, Bergson's opposition to his theory of relativity espoused a mysticism and anti-rationalist stance, which he, as a rational scientist, could not tolerate.

As Canales writes: "Bergson was associated with metaphysics, antirationalism, and vitalism, the idea that life permeates everything. Einstein with their opposites: with physics, rationality, and the idea that the universe (and our knowledge of it) could stand just as well without us. Each man represented one side of salient, irreconcilable dichotomies that characterized modernity. This period consolidated a world largely split into *science* and *the rest*".

Indeed, the dispute between Einstein and Bergson is deeply rooted and expresses the clash between two different attitudes. In this debate, Einstein expresses the merits of human's efforts, mainly via science, to explain and control the objective natural world. On the other hand, Bergson expresses the attitude of those who dispute science's priority claims, or even the feasibility of the aforementioned endeavour, since its main tenets (objectivity of both the world and of the knowledge about it) are questioned.

Oftentimes, an interpretation of the main tension of the so-called modernity is coined as based on this clash. However, this is arguably an over-simplifying view. This short review is probably not the proper venue to host a thorough critical discussion on this issue, although Canales's contribution could be contextualized at best once one understands that the aforementioned bipolar juxtaposition is perpendicular to the disputable contradiction between science and the humanities. For, there is nothing in science *per se* that

opposes the importance and significance of other social endeavours or is incompatible with their potential contribution to the advancement of human society. It is only a certain understanding of science and a certain understanding of the humanities, jointly precluding the possibility of gaining any true and objective knowledge of the actual, natural and social world that brings these two fields of cognitive inquiry to clash.

Therefore, Canales' book is actually not about a dispute between physics and philosophy in general but between two certain attitudes. This point would be even more evident if one compares Einstein's philosophical views, an issue on which important scholarly work has been done, with Bergson's ones. From another point of view, it could also become evident should one studies intellectual contingencies of Bergson's views with aspects of the interpretation of quantum mechanics to which Einstein notoriously opposed. Obviously, though, such an attempt exceeds by far the scope of this review; thankfully, Canales deals with this issue.

In fact, one of the several virtues of the book is that Canales does not confine herself in discussing only the content of the debate between Einstein and Bergson, but also traces several links and connections of both views to those of other philosophers and scientists whose work had an impact on the intellectual history.

There is no need to stress further on the content of the debate between these two Nobel Prize winners (Bergson was awarded the Nobel Prize in Literature 1927 and Einstein was awarded the Nobel Prize in Physics 1921). However, the background of Einstein's Nobel Prize is relevant to our discussion. It is well-known that the Nobel committee awarded Einstein the prize not for his theory of relativity, but for his –undisputedly extremely important for the advancement of scientific knowledge in physics– explanation of the photoelectric effect. As it was argued, despite its profound significance, relativity was still a matter of debate. Canales writes on this incident: "The reasons behind the decision to focus on work *other* than relativity were directly traced to what Bergson said that day in Paris" and offers an underpinning of this view. However, this interpretation, despite being well-argued, is not the only available and arguably not the most sufficient one. From a physicist's point of view, Einstein's relativity confronted a deep rooted tradition in physics, with significant implications not only for the resulting scientific image of the world, but also for the dominant worldview. This was far from easy acceptable to the global scientific community, as it is also proved by the anxiety of a great portion of physicists the following decades to challenge the epistemological implications of Einstein's theory, as well as the resulting worldview. Therefore, one could also argue for an eminent political background, given several other similar cases of Nobel Prizes too.

Once the aforementioned context is taken into consideration, one might be able to conclude to a more profound understanding of the implications that the changing world in the first decades of the 20th century conferred to the worldview. In this line of reasoning, the reflection of the advancements in scientific cognition is grounded on the need to reform

the world outlook in order to meet the challenges of the socioeconomic changes which are taking place in any given era. As techno-scientific progress led the development of the productive forces of the society in the following decades, Einstein's views, since they were scientifically verified and produced practical outcomes, were finally proven victorious.

I maintain that adopting such a line of reasoning may be more fruitful for any attempt to explain why this happened than the one adopted by Canales. According to Canales a decisive factor was sexual politics, since at that time physics was "masculine" while Bergson and philosophy were "feminized", with respect to the sex of those mostly concerned about them. Admittedly, though, Canales' claim that the rise of the expert and the decline of the lay opinion, portrayed in the outcome of the clash between Einstein and Bergson, is an issue one could study through the lens of sexual politics is a very interesting one. However, I refrain from concluding that in any other context than the "technologically driven modernity", things might be different, as Canales seems to imply.

The Physicist and the Philosopher is far more than a detailed and well-informed explication of the difference between Einstein's "time" and Bergson's "duration". By this, I do not mean to undermine the fact that Canales offers a lively and anything but unduly, well-argued presentation of the several relevant views. But the virtues of this book go far beyond meeting the standards of scholarly work of the highest quality.

What is even more important than that, is that the reader will certainly be convinced of the relevance of philosophy and science to each other and, most of all, of the importance of raising this kind of philosophical questions in any attempt to understand the cultural context of any intellectual advancement, as well as the of the scope of philosophy itself. Moreover, the reader would be convinced that the clash between the humanities and the sciences is harmful for the intellectual advancement of our society. Mainly for this reason, next to its many other virtues, Canales' book is without any doubt a must-read for anyone concerned about these issues.