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The Eternal Quarrel on Time

Abstract

In this paper we consider the dispute over the nature of time that divided Einstein and Bergson one century ago. In particular, we will focus on the role to assign to consciousness with respect to a physical quantity, time. We shall claim that there is a position that both Einstein and Bergson were not opposed to but rather were compatible with, and this is a form of eternalism. However, when interpreted by Bergson's perspective on consciousness, such a view comes with a very high price, that of panpsychism.

1 Introduction

Bergson, the philosopher, and Einstein, the physicist, clashed on the nature of time. On April 6th 1922, at the Société Française de Philosophie (French Philosophical Society) the most important philosopher of the time and the physicist that set a revolutionary theory that changed our most rooted conception of time and space, met in a public debate.[1] The story goes that the two thinkers ended up by leaving on the terrain an irreconcilable fracture between time as considered by science and time as considered by philosophy, or at least by a number of philosophers of phenomenological faith and continental methodology. It seems natural then, almost one century after, to take stock on whether that disagreement was really irreconcilable. Bergson held an articulated view of time, one in which a personal, or psychological conception of time, was the most important one and it was to be, at most, flanked with the purely physical view of it.

The personal view was dominating over the purely physical one, deemed to be insufficient to characterize the deep, and essentially human nature of time. Einstein, famously, argued that there was no "time of philosophy", advocating a view of time as what is measured by clocks, thus dismissing the idea that there is a time beyond the physical nature of time, the one that could be measured. In this paper, we try to show that there is a common metaphysical terrain for Bergson and Einstein, so as to reduce the import of their disagreement. Such common terrain can be found in a version of eternalism, one to which we will get

1 See Canales (2015).

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by considering two other options, that seems to fit more naturally to Bergson's view: the Growing Block and the so-called Moving Spotlight.

In this brief paper we shall proceed as follows. We will first consider Bergson's view of time. We will then summarize Einstein's view. The third task will be to provide an outline of the main metaphysical views on time considered in this paper. We will finally argue that there is a specific position that both Einstein and Bergson were not opposed to but rather were compatible with, but this comes with a very high price, that of a form of panpsychism. In the next pages, however, we do not aim to be philological, that is, we are not ascribing the hypothesis we are going to advance directly to the two authors. Rather, what we want to do is to argue that, given the positions they held, it is possible to devise a metaphysical common ground that can be traced back to their positions.

2 Bergson and Einstein on Time

To begin with, let us consider in brief Bergson's view on time. Bergson's conception of time is inextricably intertwined with his concept of duration, which he considers to be pivotal to understand our conscious experience. Bergson thinks that in our conscious experience we are continuously facing novelties, unforeseeable experiences that characterize our mental life. "The more we study the nature of time, the more we shall comprehend that duration means invention, the creation of forms, the continual elaboration of the absolutely new" (Bergson 1911, 11).

So, time is approached through our conscious experience. Such experience is a matter of change, and change entails time. Ultimately, then, our conscious experience is, in its most fundamental nature, the experience of time, because it is the experience of change. This crucial feature of time as duration is clearly expressed in some other passages as when Bergson asks to dive into our own internal conscious life to discover that we find ourselves in "a duration in which the past, always moving on, is swelling unceasingly with a present that is absolutely new" (Bergson 1911, 199 – 200).

Bergson held such a view wholeheartedly in *Time and Free Will* and then slightly moved broadening it up, in particular in *Matter and Memory*, by taking duration to be a feature of the universe. Finally, in *Creative Evolution*, he took consciousness, as we call it now, to be into the picture as well. In the passages quoted above, two different theses are converging: the first is the thesis that change entails time; the second is the thesis that change entails that one cannot foresee how the elements of the present will group in the future. That is, the future is intrinsically unpredictable because of the novelty it brings in. The first

thesis is a vexed and challenging point, on which philosophers have always been thinking about. The second thesis needs some discussion.

On the one hand, it can be dismissed right away, for the following reason. Any regularly cyclic phenomenon can be conceived as one in which change occurs and in need of time to unfold. If an idealized pendulum goes from A to B and then back to A, there is a change in the position of the pendulum and so time is needed for such a change to occur. At the same time, the pendulum's next position is foreseeable with a good degree of approximation. Surely, there can be many ways to interfere with the pendulum going back and forth, but there can also be subatomic regular oscillations, as those present in zapphire atoms, that are extremely reliable, and are a sort of change in need of time to unfold.

Actually, atomic clocks are built on such regularities, showing that more than measuring time, these phenomena are time itself. So, it is not the case that change entails unpredictability, and we cannot hold the entailment from change to unpredictability. On the other hand, this thesis goes right at the heart of Bergson's view on time: things are not given until they are completely given: their being is their becoming. So, predictability is a false issue, because it amounts to the unfolding of things in the universe, and for Bergson such unfolding was the core of duration. After all, if something can be predicted, there is a sense in which it is not new; if it is truly new, then it cannot be predicted. So, even if this second thread cannot be dismissed right away, it is questionable, because it amounts to a very strong form of emergence, an issue we will not consider in this paper.

Why was Bergson holding true the unpredictability? The fact is that Bergson was connecting to this second thesis a more wide-ranging view on the concepts of duration and human experience. That was the view that duration was intrinsically heterogeneous, an idea set in order to contrast the rising of a deterministic view of science that was thought to be dismissive of human autonomy and freedom, a problem that was pretty clear already at the time of Bergson. This was a common interpretation of Bergson at that time. Consider the following passage:

> Doubtless, my present state is explained by what is in me and by what was acting on me a moment ago. In analysing it I should find no other elements. But even a superhuman intelligence would not have been able to foresee the simple indivisible form which gives to these purely abstract elements their concrete organization. For to foresee consists of projecting into the future what has been perceived in the past, or of imagining for a later time a new grouping, in a new order, of elements already perceived. But that which has never been perceived, and which is at the same time simple, is necessarily unforeseeable (Cunningham 1914, 527).

Novelty was the crucial element to block any deterministic view, here personified by a Laplacean demon. At the same time, Bergson was underlying the relation between duration and consciousness, as it has been recently stressed,[2] rather than providing an ontological framework for time. So, duration, the way in which Bergson understood time, is a continuous opening of possibilities and options, the unfolding of contingency, and time was requested for it and, in a way, was resolved in it. Such unfolding of contingencies is the unfolding of novelties, which cannot be foreseen. Consequently, there was no specific reason to think that clocks and clocks only could measure time, or simultaneous events, because time is intimately related to the conscious life and not to the ordering of synchronous events.

According to Einstein, time was given a spatial interpretation, one according to which space and time are a unitary entity permeating the universe. As such, spacetime could be measured, and is dependent on the speed of the reference frame, that is, on the speed at which the clocks measuring the interval between any two events travel. And, as we already said, time is the regular going on of the clocks, which are necessarily to be considered as frame references. Time, then, has no more a special or privileged status, it is on a par with space, and it is the speed of light that becomes the constant from which spacetime depends. Our experience of time and change, in this theory, is definitely put aside.

Since Bergson's reflections on time, many things have changed. Nowadays, a number of metaphysical positions have established themselves in the literature, and it is interesting to consider whether and to what extent we may consider Bergson to belong to one or more of these views. It seems to us that among the current views on time, the one that best fits into Bergson's own view is a particular version of eternalism: a mixture of the Growing Block and the Moving Spotlight theories which were, by the way, already present at Bergson's time. On the one side, inasmuch duration allows for the opening up of new possibilities, the future has to be considered as open and not predetermined by past events and laws of nature, as for the Growing Block. On the other side, since it is only through consciousness that we experience time itself, the Moving Spotlight seems the more adequate. Let's explore this point.

2 See, e. g., Guerlac (2020).

3 A Look at the Analytic Philosophy of Time

Within the philosophy of time one of the main differences among the theories mentioned above is given by a different conception about what is to be past, present or future. Here we will focus on three theories that are different for one crucial aspect: two hold that an "objective present" does not exist, the other defends the idea that an "objective present" exists and it is an ontologically privileged moment in time. The theories we are interested in are the Growing Block view, the Moving Spotlight view and Eternalism. Let's have a look at each in turn.

The Growing Block Theory (henceforth GBT) is the view that only past and present entities exist, while future entities do not, and the present is the slice of time at the edge of a fourdimensional block that grows bigger and bigger as new slices come into existence. This view, originally devised by Charles Broad (1923), is the one that better fits with the idea of an open future, one that is still to be settled as the reality unfolds by piling up slices of new moments, moving from the past to the present. In Broad's own words: "The passage of time, then, should be conceived as one in which fresh slices of existence have been added to the total history of the world [...] the sum total of existence is always increasing" (Broad 1923, 66 – 67).

The idea that time is intrinsically linked to human experience can be tied to the Moving Spotlight view. According to such a view, imagined by Broad himself, time is a moving epistemic grasp of events already unfolded. Broad expressed this view in terms of a policeman with a spotlight (his "bullseye") pointing to the houses while he is cruising with his car down a road: things are there but not for us unless we enlighten them. The houses that have already been illuminated are the past events; those that have not been illuminated yet are the future ones, those that are illuminated are the present, and they have a privileged ontological status. On this account, then, it is the present that moves: it moves across the array of events.

Since things are already there, though, the future seems to be closed, in opposition to the GBT; because in the Moving Spotlight view things appear only when enlightened, so at the present moment. Hence, we should conceive of the present moment as the one in which things appear to our conscious experience. Is there a sense in which these two views can be merged or made somehow compatible? Our answer is positive: Bergson seems to hold a particular view that is a merging of the two views, but we need to elaborate and justify this sentence in some details.

The most reasonable way to interpret the merging could be the following: the Moving Spotlight and the piling up of the slices of the Growing Block coin-

cide. The spotlight enlightens the piling up of the slices of the present. However, the Moving Spotlight view posited that future events are always there, beyond our grasp. If the future has to be considered as open, this tenet should be dropped by the Moving Spotlight view, and this can be done by stressing that the ontology and the epistemology of the events coincide: to be is to be presently known (enlighted). There are no future events just set but not enlightened. So, to sum up, the Moving Spotlight view defends the intuitive idea according to which the present is ontologically privileged, that all the entities in the four-dimensional manifold exist in it, and that the present is illuminated by a light that moves forward.

So, according to the Moving Spotlight, what is past, present or future is not relative to the entities that occupy a given spatiotemporal location, rather it is an ontological matter. We think the combination of these two views (the epistemology of the Moving Spotlight and part of the ontology of the GBT) capture well what Bergson had in mind when he characterized, as we saw above, a duration in which the past is always moving and is continuously producing and setting forth a present that is new and unforeseeable. It should be acknowledged, though, that in Bergson the spotlight view assumes a different twist because he thinks that duration is consciousness, and so there is no question of ontological disappearance once consciousness turns away from a given object or state of affairs.

Both these views, however, are at odds with Einstein's conception of time, which is much closer to another theory: Eternalism. Eternalism is the view that all entities, past, present and future are equally real and ontologically on a par. What exists is located at different spatiotemporal points within a four-dimensional manifold, but the fact that different entities are located at different points does not mean that one is more real than another. For example, as well as Rome is closer to us than London does not make Rome more real than London, Napoleon's horse is not less real than my dog only because it is located in the XIX century. According to eternalists, the present is not an ontologically privileged moment in time, what is present, past and future is relative to the entities that occupy a certain location within the manifold. This view clearly fits into Einstein's Relativity theory and, in a sense, can be considered as a natural consequence of Einstein's Relativity theory. Let's have a look at an argument that shows why eternalism is the only theory of time implied by Relativity.[3]

3 See Ney (2014).

1. If either Presentism[4], the Moving Spotlight and the Growing Block theories are true, then which entities are real depends on which are present, past or future.
2. Which entities are present, past or future depends on facts about which entities are simultaneous with the here and now.
3. If Relativity is true, then which entities are simultaneous with the here and now is a matter of one's perspective (as a consequence of Relativity).
4. Relativity is true.
5. Which entities are simultaneous with the here and now is a matter of one's perspective (3, 4 and MP)
6. So which entities are present, past or future is a matter of one's perspective (2, 5).
7. So if Presentism, the Moving Spotlight, the Growing Block theories are true, then which entities are present, past or future is a matter of one's perspective (1, 6).
8. But what is real is not a matter of perspective (assumption: what is real is an objective matter).
9. Therefore, neither Presentism nor the Moving Spotlight nor the Growing Block theories are true.

As Ney claims:

> Eternalism is the only ontology of time that avoids making existence subjective, since it makes no distinction in reality between past, present and future events and objects. And so eternalism is the ontology thought to be implied by the special relativity theory (Ney 2014, 144).

4 A Quarrel

In Einstein's view there is no ontologically privileged present. What is present as such is relative to a reference frame and since there could be a frame reference for each spatiotemporal point, every spatiotemporal point is on a par with every other else. Because everything could be present from a reference frame, since there can be an endless number of frames, each determining a present, there can be endless presents from any moment. Therefore, everything is eternally there.

4 Presentism is the view that only what is present exists.

On Bergson's view, since duration is the fundamental element of time, you cannot have a reference frame, needed to measure time events, without consciousness. Each reference frame, then, presupposes consciousness, and each reference frame has a spatiotemporal location. Thus, all these consciousnesses, each corresponding to a reference frame, determine "the present" which is clearly not ontologically privileged. In this sense, Bergson is not a Moving Spotlight defender but, in our view, a "conditional eternalist": if consciousness is present and is sufficiently distributed over the universe, then eternalism is guaranteed. If there is no consciousness, then there is no time. This is because, at least in our interpretation, Bergson's present is crucially relative to a conscious being, the one that determines and has a grasp on it at the same time.

Since conscious beings may occupy different spatiotemporal locations, they can determine different time flows, that is, series of temporal events. Under this interpretation, though, it is not possible to say that the future is not foreseeable, as Bergson did, because of the multiple locations of these conscious beings which determine that it is possible for one to be in the relative future of another one. The thesis that the future is not foreseeable must be dropped. Now this point may be considered from two perspectives: on the epistemological side, it says that we simply do not know what will happen next, but it is in line of principle possible that the future is determined nevertheless. So, being unforeseeable simply means not known yet.

From a metaphysical point of view, it could disclose a deeper thesis: the idea of a closed future presupposes a deep dispositional realism[5]. This would be the view that even if not all the frames of reference are actually occupied by a conscious being, and so there would be some regions of the space-time that are not under the light cone of a knower, the universe still has a closed future because if there were a conscious being in every reference frame–so, if potentially every reference frame hosts a conscious being —then that being would know what can be known from that point of view.

This view should be interpreted in this way: the future being closed means that every time- interval is the truth maker of a sentence that fixes a time order between two events, such as "a happens earlier than b" and such a sentence has a tenseless truth-value. Sentences such as "a happens earlier than b" are possible only if they fall within the light cone of a system of reference. So, for each point in the space time, there has to be a system of reference. Hence, there are infinitely many frame references. Now, in Bergson's terms, each frame refer-

5 Dispositional realism is the view according to which dispositions (or causal powers) are real properties.

ence must have a conscious being for, without consciousness, there would be no time. However, since it is unreasonable to hold that a conscious being is present at each single space-time point, it follows that each point has a form of consciousness, infimum but present.

Basically, the dilemma is as follows: either there are infinite conscious beings, one for each frame reference, or everything has a degree of consciousness, as for panpsychism, the view that mental properties are massively and uniformly distributed across the universe. Since the first option is difficult to accept, the second one holds. This doctrine is panpsychism, the idea that matter and mind are not categorically nor qualitatively distinct, and there is now some convergence on the idea that Bergson was actually defending a form of panpsychism. It should be stressed that this dilemma arises independently on assuming determinism or the Laplacean demon: it is the very nature of panpsychism that makes the dilemma. This is not the proper paper to say which form of panpsychism but, as Hirai (forthcoming) has made clear, Bergson was holding a form of panpsychism in which the present retains memory of the past. An interesting quote is the following:

> Only one hypothesis, then, remains possible; namely, that concrete movement, capable, like consciousness, of prolonging its past into its present, capable by repeating, itself, of engendering sensible qualities, already possesses something of consciousness, something of sensation (Bergson 1991, 246–247).

In this case, Bergson could be seen as the conditional eternalist we were imagining. Could be such a view maintained *per se?* What is the price to be paid? For instance, we now know that the value of certain quantum phenomena can be determined by an observer measuring the phenomena. But natural interactions determine the collapse of the wave function as well. Therefore, if a quantum phenomenon is left in a state of superposition, we would have an aspect of reality not closed yet, because it has not been measured yet. This could be irrelevant from a general point of view, of course. What is relevant, though, is that in order to affirm that the future is closed form a general point of view we must assume that every possible frame of reference is conscious, and panpsychism is true. That would be a converging position for both Bergson and Einstein.

Clearly, it seems that having the closeness of the universe depending from a conscious observer is at least unmotivated from an Einstenian perspective, if not outright false. The philosopher of Einstenian faith can well abandon the idea that consciousness is necessary to give an empirical content to the thesis that the future is closed. The future is closed in line of principle, she may suggest. As per Ney above, if one adheres to eternalism, the idea of having the order of

events depending on a conscious being is making existence subjective again, thus losing the advantage eternalism gives. In this case, the physicist and the philosopher will part company again.

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