



# The Flow of time: Rationalism vs. empiricism

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## ABSTRACT

I distinguish between empiricist and rationalist approaches to the idea of the flow of time. The former trace back the idea of the flow of time to the deliverances of our sensory or introspective capacities. According to the latter, the idea of the flow of time is integral to what it is to have a conscious point of view in the first place. I discuss some aspects of what I take to be Ismael's version of a rationalist approach, which focuses on the point of view of an agent. In particular, I raise some questions as to whether Ismael's account does succeed in reconstructing the common-sense idea of the flow of time in the sense of Becoming, and where her account leaves us with respect to the 'two times' problem regarding the relationship between everyday thought about time and the scientific view of time.

**ARTICLE HISTORY** Received 15 November 2022; Accepted 24 November 2022

## 1. Introduction

What is the source of the idea that time 'flows' or 'passes'? In a famous passage, Hermann Weyl (1949, p. 116) characterizes the new understanding of time ushered in by early 20<sup>th</sup> century physics as follows:

The objective world simply *is*, it does not *happen*. Only to the gaze of my consciousness, crawling upward along the life line of my body, does a section of this world come to life as a fleeting image in space which continuously changes in time.

Weyl's words have resonated with readers, I believe, in part because of the way they connect the idea of a conscious point of view with that of the flow or passage of time.<sup>1</sup> Modern physics may, as Weyl's first sentence suggests, confront us with a picture of reality as a four-dimensional manifold, devoid of what common sense might describe as the flow or passage of time. Yet, the impression of time flowing or passing seems integral to the very nature of what it is to have a conscious point of view on the world. As Brian O'Shaughnessy (2000, p. 42) puts it, "even when experience is not changing in type or content, it still changes in another respect: [...] a new sector of itself is there and then *taking place*".

A number of recent approaches in the philosophy of time have sought to spell out this latter idea further by arguing that specific deliverances of our experiential faculties

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<sup>1</sup> Already in 1895, H. G. Wells has his Time Traveller saying that "[t]here is no difference between Time and any of the three dimensions of Space except that our consciousness moves along it" (Wells, 1895, p. 8). For the moment, I shall rely on the intuitive sense of what it would be for time to flow or pass, as supplied by Weyl's first sentence. I shall shortly turn to the question as to how exactly these notions, which I will use more or less interchangeably, should be understood.

give rise to the idea of time as passing or flowing. Some such attempts locate the origin of the idea of the flow of time in features of experience narrowly understood as sensory-perceptual experience (for different proposals, see, e.g., Dainton, 2011; Paul, 2010; Prosser, 2012; Torrenco, 2017); others appeal to the nature of experience understood more broadly, where this also encompasses reflection on our own mental operations such as memory (see, e.g., Deng, 2013; Hoerl, 2014b; Velleman, 2006).

As a shorthand, I will call these *empiricist* approaches to the idea of the flow of time. They assume that conscious experience presents us with (apparent) empirical evidence of the flow of time. I think they might well be able to illuminate some aspects of people's everyday thinking about time and things in time,<sup>2</sup> but, as I will discuss briefly below, they also face some serious challenges. My main focus in this paper, however, will be on another, quite different approach to linking the idea of the flow of time to that of a conscious point of view. I believe we can find elements of such an approach in Jenann Ismael's 'The Open Universe: Totality, Self-reference and Time' (Ismael, 2023). I will label the relevant approach, again as a shorthand, a *rationalist* approach to the idea of the flow of time.

## 2. Troubles with empiricist approaches to the flow of time

As already mentioned, there are a number of challenges that what I am calling empiricists about the flow of time face. The following brief sketch of what I take to be three of the main such challenges has to gloss over many of the details and ignore important differences between at least some of the different variants of an empiricist view. I sketch them primarily in the service of getting a better understanding of the dialectic between empiricist and rationalist approaches to the flow of time.

Perhaps the key challenge to empiricist approaches to the flow of time is that the flow of time, if there is some such, does not seem to be the kind of thing of which our senses or introspective faculties could deliver empirical evidence (on this see, e.g., Prosser, 2007; Skow, 2011). Thus, even if we hold that the putative experience of the flow of time postulated by empiricists is illusory (as many of the authors I have cited as exponents of an empiricist approach do), there is still a question as to what exactly the supposed phenomenology of that experience is meant to be, and how and why subjects misconstrue it as an experience as of time flowing or passing (on this, see Hoerl, 2014a).

A second worry is that the empiricist view, in at least some of its guises – in particular ones that focus on perceptual experience as the putative source of the idea of the flow of time – actually fails to do proper justice to the intuition of a close connection between time and consciousness. By treating the flow of time as just one amongst other (apparent) objects of conscious experience, it fails to capture the sense in which time, again in O'Shaughnessy's (2000, p. 66) words, seems to be the "very *stuff*" of experience. It seems impossible to conceive of a conscious point of view on the world in the first place that does not involve an awareness of the passing of time, whereas the same does not apply to any other putative object of conscious awareness.

Empiricist theories that seek to locate the origin of the idea of the flow of time in the awareness of our own mental operations might perhaps have less of a problem

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<sup>2</sup> That English speakers find it quite natural to talk about themselves as 'seeing' or 'feeling' time passing is also suggested by recent empirical research (Shardlow et al., 2021).

addressing this issue. However they, in turn, face an issue of their own. Take, for instance, Weyl's characterization of humans' experience of time as being of "a section of this world com[ing] to life as a fleeting image in space which continuously changes in time". At least on the face of it, the latter is to characterize the experienced flow of time simply as a matter of more and more of four-dimensional reality coming into view as time goes on. Yet, as Ismael points out, "[m]ost of us don't think of the future in that way. We think of the future as *coming into being* as it is experienced" (Ismael, 2023, p. 7). This is what she calls 'Becoming', also citing Penrose (1979, p. 591), who speaks of a "feeling of relentless forward progression, according to which potentialities seem to be transformed into actualities".

I don't take these considerations to provide knock-down arguments against empiricist approaches to the flow of time, but they provide at least some motivation for asking whether there is an alternative way of conceiving of the cognitive origin of the idea of the passage or flow of time from that proposed by the empiricist. I will now turn to such an alternative, which I call a rationalist approach to the flow of time.

### 3. Rationalism about the flow of time

According to the rationalist, the belief that time passes or flows is not one that is being held on the basis of (apparent) empirical evidence coming from sense perception or our awareness of our own mental operations. Rather, it is integral to what it is to have a conscious point of view on the world in the first place. Ismael can be read to describe her view in those terms, for instance when she summarizes it as follows, focusing in particular on the point of view of an *agent*:<sup>3</sup>

Notions of past and future, fixity and openness all have to be understood from an embedded perspective. From the perspective of a decision-making agent inside the Universe, the Universe is rightly seen as coming into being as it is experienced and the future can't be any more stable than her own decisions about what to do next (Ismael, 2023, pp. 14f.).

I cannot go into all the nuances of Ismael's account, but I hope the following crude sketch, based on two notions that are central to that account, will suffice for present purposes. These are the notion of *interference*, on the one hand, and the notion of a *record* or *trace*, on the other.<sup>4</sup> Interference refers to the fact that when agents locate themselves in their own representation of the world, they become unable to 'stabilize' (as Ismael puts it) certain aspects of that representation, because those very aspects depend on their own decisions. There are probably a number of factors relevant to this line of thought, but to take just one: it appears that deciding on a course of action, from the agent's point of view, constitutively carries with it the "perpetual possibility of changing one's mind" (Soteriou, 2020, p. 243) until the decided-upon deed is actually carried out.<sup>5</sup>

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<sup>3</sup> For related suggestions, which I do not have space to discuss in this paper, see Crowther and Soteriou (2017) and Soteriou (2020). As will hopefully become clearer as we go along, the view at issue here is different from the claim that the belief in the passage or flow of time has its origin in "feeling oneself act" (Young, 2022). The latter would in fact be a version of an empiricist theory.

<sup>4</sup> Ismael herself characterises her account as being based on just two ingredients, but she characterizes them as "self-representation + the thermodynamic gradient" (2023, p. 14). This is, as it were, to go back one step in the explanatory order: facts about self-representation explain the phenomenon of interference, and facts about the thermodynamic gradient explain the existence and temporal asymmetry of traces or records.

<sup>5</sup> On this, see also Ismael, 2023, p. 11. For some other considerations that are relevant here, see Fernandes (2020).

Strictly speaking, the notion of interference, by itself, does not say anything about a difference between the past and the future (unless we already presuppose that agents' decisions can only affect the future, but not the past). To explain why interference asymmetrically affects agents' representation of the future vs. their representation of the past – making the future 'open' and the past 'fixed' – Ismael brings in the idea of the world already containing sources of information about the past in the form of records or traces, for which there is no future-directed equivalent. They allow agents to build up a stable representation of the past as it is independent of any intentions of theirs, whereas any representation of the future can at best be arrived at through inference. Yet, as above, no such inference is ever complete if the future depends on the agent's own decisions.

One question one can ask here is whether Ismael does manage to reconstruct the intuitive picture of the flow of time, and in particular the idea of Becoming, that she wants to explain. When she emphasises at two points that her account should not be read in a “*too thinly* epistemic way” (2023, p. 15, 16). I think the qualification ‘too thinly’ is revealing. What the potential for interference she writes about means from the agent's perspective is that there is a principled reason why agents cannot predict the future. This may amount to more than saying that the agent simply happens to be ignorant of the future. But the point here is still primarily framed in epistemic terms.

By contrast, at least on the face of it, the idea of Becoming that Ismael herself contrasts with the view of the flow of time as simply more and more of the world coming into view is not framed in terms of the idea of prediction at all. Relatedly, on an alternative view to hers, Becoming is central to the agent's self-conception, not (so much) because of any limitations to the agent's predictive abilities, but more simply because agency requires there to be things that the agent herself can bring into existence. This, the thought would go, requires there to be times when something is yet to be brought into existence by the agent, and also times when the same thing is in existence in virtue of actions of the agent. In other words, the idea of the open future and the fixed past has its origins in the thought that there are things that are open to us (when they are still in the future), but that, by the same token, these are things that we can *make* fixed (once we act), and which then stay so.

I think a similar point applies to the role the notion of a record or trace plays in Ismael's account. The notion of a record or trace can be seen to straddle considerations about epistemology and metaphysics, and this might be thought to hold the key to developing a ‘not too thinly epistemic’ account of Becoming. Made possible by the thermodynamic gradient, traces are sources of information about the past, but they are also real entities in the world that propagate their influence into the future. The combination of these two features allows records or traces to play a dual role in Ismael's account.

Firstly, and probably more centrally, records or traces play the role of being able to inform an agent's decision making. They are a repository of information that gives the agent something to base their decision on. However, Ismael also seems to want to frame the *ends* of decision making in terms of the notion of a trace, saying things like “your actions will leave future records, and you are choosing them with an eye to the records they will leave” (2023, p. 12). This is carefully worded, as of course apart from people who want to leave their mark on the world there might also be ones who want to commit the perfect crime. However, I think there is still a question

as to whether this goes to the heart of the role of the idea of Becoming in agent's self-conception.

Consider, for instance, Dryden's (2015) adaption of Horace's words:

Happy the man, and happy he alone,  
 He who can call today his own:  
 He who, secure within, can say,  
 Tomorrow do thy worst, for I have lived today.  
 Be fair or foul or rain or shine  
 The joys I have possessed, in spite of fate, are mine.  
 Not Heaven itself upon the past has power,  
 But what has been, has been, and I have had my hour.

We do, of course, often relish memories and covet records of our past deeds,<sup>6</sup> but a crucial part of our doing so is the thought that “[n]ot heaven itself upon the past has power” – that, never mind the traces it has left, the thing itself happened, and that nothing can take this away. This is why the idea of Becoming is key to our self-conception as agents.

#### 4. The ‘two times’ problem

I want to conclude these considerations by linking them to a broader metaphysical question about how Ismael's argument relates to what Callender (2017) calls the ‘two times’ problem. The ‘two times’ problem is the problem of how to relate our everyday thought about time – in connection with Ismael's paper we might think in particular about the idea of Becoming – to time as described by modern physics, which seems to be devoid of any such feature (at least on the face of it).

Ismael does not directly frame her paper in terms of the ‘two times’ problem (although there are some remarks bearing on it that I will come back to). Rather, perhaps the best way of describing her approach is that she is trying to give something like a *genealogy* of the idea of the flow of time. That is, her aim is to tell a story, based, as she stresses, on only a very small number of ingredients, that explains why creatures like us have the belief that time flows or passes, where the latter is more specifically to be spelled out in terms of the idea of Becoming.

Genealogies can be put forward with a number of different purposes in mind. One of them is the aim of highlighting the contingency of certain ways of thinking and advocate a new understanding. There are some passages where Ismael might be read in this way (perhaps against her own intentions). For instance, in a footnote she writes:

There is a metaphysical picture of the world that frames much of common sense. We imagine that we live in a universe that is unfolding in time, that causal relations run from past to future and that is why we regard the past as fixed and the future as open. This metaphysical picture has not found a hospitable home in physics. The actual metaphysics of post-relativistic classical physics portrays the universe as a four-dimensional manifold of events with no global conception of time. There is no unfolding and the laws don't incorporate any intrinsic direction of determination. That means that we need a new way of understanding it, and that new way of understanding it is bound to seem alien and unintuitive. (Ismael, 2023, pp. 11f.)

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<sup>6</sup> Some related historical debates are discussed in Warren (2014). There is, of course, also the flip-side of having to live with the consequences of one's failings. See also Lee et al. (2022) for related issues.

This suggests that – admittedly with a certain amount of effort – common sense could come to embrace a new understanding of time that accords with the four-dimensionalist picture. Now, one way of taking the point here might be that we should regard the apparent flow of time as an illusion. This is indeed the position taken by a number of proponents of what I have called an empiricist approach to the flow of time. However, it is not straightforwardly available to a proponent of a rationalist approach of the type I think Ismael wants to put forward. Rather, the crucial idea she works with, at least in some of her other work, is that our common sense view of time is a matter of *perspective* (Ismael, 2016), although perhaps in a way that we do not usually realise.

To some extent, this chimes with Ismael’s emphasis on the connection between the belief that time flows and the agent’s conscious point of view. However, if, as Ismael argues, thinking about the flow of time in terms of the idea of Becoming is really part of what it is to think of oneself as an agent in the first place, then I think this runs counter to the idea that our common sense understanding of time can simply be unmasked as a matter of perspective. For if it was just a matter of perspective, there would have to be a way of transforming that perspectival view of time into what Bernard Williams (1978) has called an absolute conception of reality, resolving differences between particular points of view. Yet, the idea of Becoming – if it does indeed involve the thought of future things coming into being – precisely runs counter to the idea of such an absolute conception being available (Dummett, 1960; Fine, 2005; Moore, 2001), as it implies that there is something about things in time that itself changes over time.

I think that, instead, Ismael’s account – understood as a species of what I have called rationalism about the flow of time – seems to leave us in a predicament in which any attempt to unmask the flow of time as a merely perspectival phenomenon undermines itself. If, according to the rationalist, a belief in Becoming is constitutive of our very self-understanding of ourselves as agents, this must ultimately include the agency involved in the very act of making judgements about the nature of time. Thus, what we get here might be seen as another instance of what Ismael calls interference: We cannot coherently deny our own status as agents, but, as agents, we cannot but conceive of our life as involving a process of Becoming. Giving up that belief is not an option for us. Does this mean that Becoming is real? Here it looks like our ability to provide a proof one way or the other just runs out. Our status as ‘embedded’ agents which Ismael is so keen to emphasise makes it impossible for us to adopt the kind of detached point of view this would require, from which we could compare our representations of the world with reality itself.<sup>7</sup> As Ismael herself says, “it is customary in cosmology to maintain the imaginative fiction that we are sitting outside the universe looking down” (2023, p. 1). It is exactly that, a fiction.

## 5. Concluding remarks

According to Wilfrid Sellars, “the ‘problem of time’ is rivaled only by the ‘mind-body problem’ in the extent to which it inexorably brings into play all the major concerns of philosophy. Here, if anywhere, analysis without synopsis must be blind” (Sellars, 1962, p. 527). There could be no better illustration of Sellars’ dictum than Ismael’s work on

<sup>7</sup> For somewhat analogous considerations regarding the project of unmasking colours as not real, see Stroud (2000, ch. 7).

time, which brings together considerations about topics as diverse as spacetime physics, thermodynamics, agency, knowledge, the nature of representation, and the very concept of reality. Most fundamentally, it raises important questions about the very project of doing metaphysics, and about how we should conceive of the relationship between metaphysics and epistemology. I may have voiced some concerns about whether Ismael always successfully negotiates the boundary between the two, but I wholeheartedly agree that is it at that boundary that the most interesting and fundamental questions in the philosophy of time are located.

## Disclosure Statement

No potential conflict of interest was reported by the author.

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