

Carlos Montemayor, *Minding Time: A Philosophical and Theoretical Approach to the Psychology of Time*, Brill, Leiden, 2013, xiv + 154 pp.

In *Minding Time: A Philosophical and Theoretical Approach to the Psychology of Time*, Carlos Montemayor puts forward a novel model of temporal perception. The book is divided into four chapters and a conclusion. The core of the discussion begins in the second chapter, where we are offered a characterization and comparison of periodic and interval clocks (the first chapter outlines the main proposals of the book). Montemayor goes on to offer an interesting discussion of a number of psychological experiments that support the idea that biological organisms use both types of clocks. The circadian clock and the stopwatch are, respectively, the periodic and the interval clocks found across a wide variety of biological organisms. The literature review offered in this chapter is enjoyable, illuminating, and worthwhile. In the next chapter, Montemayor argues that the outputs of these biological clocks have metric structure and meet the criteria required to be analog representations of time. By appealing to empirical studies on simultaneity windows, the final chapter presents a two-phase model of temporal representation. The model purports to explain how the outputs of the clocks could be exploited by an organism in order to successfully navigate its environment and experience temporal phenomena. This ambitious model is the main philosophical contribution of the book and will be the focus of the following discussion.

The proposed model is “two-phased” because it postulates two presents, *the sensorial present* and *the phenomenal present*. As we will see below, Montemayor argues that each of these notions captures important features of our consciousness of the present moment. In doing so, Montemayor also takes these notions to recover crucial aspects of William James’s famous *specious present*.

The main idea behind the sensorial present is as follows. There are all kinds of reasons why signals coming from the same source can take longer or shorter to be sensed by an organism. A light signal, for instance, will arrive much faster than a sound signal leaving a common source at the same time. Moreover, stimuli from different sensory modalities may exhibit different processing times. The sensorial present allows the organism to respond appropriately to its environment by integrating stimuli—coming from different sensory modalities and typically arriving at different times—into a

single representation that takes them all as being simultaneous. This integration mechanism itself involves two further levels: an intra-modal level and a cross-modal level.

At the intra-modal level, there are integration systems that serve to determine whether or not stimuli are simultaneous. Each sensory modality has its own integration system and is characterized by a *simultaneity window*: stimuli from the same sensory modality that arrive within this window are considered to be simultaneous. For instance, while auditory stimuli arriving less than 3 to 5 milliseconds apart are represented as simultaneous, visual stimuli arriving within a window ten times larger than this are still considered to be simultaneous. Importantly, only the organism's cognitive *subsystems*, and not the organism *as a whole*, use the outputs of these intra-modal integration mechanisms.

At the cross-modal level, there is a further integration system that serves to represent stimuli coming from different sensory modalities as being simultaneous. This system takes as inputs the outputs delivered by the intra-modal systems. This cross-modal system also exhibits a characteristic integration window. In this case, the window is much larger than the intra-modal windows: stimuli as far apart as 250 milliseconds are still taken as simultaneous. The sensorial present is the output of this system: it is a representation of various cross-modal stimuli as being simultaneous. Unlike the outputs of the intra-modal integration mechanisms, the sensorial present is available to the organism as a whole.

Once it has been determined which cross-modal stimuli are simultaneous, these are ordered and anchored to the outputs of the clocks to determine their timings (recall that Montemayor takes the outputs of the clocks to be *bona fide* representations of time). In this way, regardless of the time at which the outside inputs stimulate the organism's senses, these temporal representations allow it to interact successfully with its environment. To use one of Montemayor's examples, these representations allow a batter to hit the baseball at the right time, throw the bat away, and run in a timely manner to the next base.

The cross-modal integration window involved in producing the sensorial present is not durationless: as we have seen, it takes stimuli that arrive within a quarter of a second as simultaneous. In this sense, Montemayor takes the sensorial present to capture the "speciousness" of James's specious present: "it provides a representation of simultaneity at the organism level (a representation of cross-modal stimuli

that are *not* simultaneous *as* simultaneous). Since this window is not a durationless instant, but always a brief interval, it is a specious kind of present in the sense James intended” (p. 106).

Let’s turn to consider the second phase of the model, the phenomenal present. Like the sensorial present, the phenomenal present serves to integrate inputs. Unlike the sensorial present, however, the phenomenal present integrates *conscious experiences*; it is “the *window of integration for conscious experiences*” (p. 125). The integration window characteristic of the phenomenal present goes from a lower bound of 300–500 milliseconds to an upper bound of three seconds.¹ The phenomenal present is the brief conscious experience within which we seem to experience temporal contents such as successions, motions, and the persistence of objects. A hand-waving, for instance, could be part of what is experienced within a phenomenal present, while a longer-lived event such as a two-hour long movie would be too long to be experienced within one phenomenal present: seeing the movie would rather involve experiencing many of its three-second long bits. In this way, the phenomenal present also captures James’s idea that the experienced present is non-durational.

While both the sensorial and the phenomenal present serve to integrate stimuli that are not simultaneous, only the sensorial present represents these stimuli *as simultaneous*. In contrast, the phenomenal present represents its stimuli as spreading over time (though Montemayor notes that the phenomenal present, unlike the sensorial present, lacks strict metric constraints). Since according to James the specious present not only presents temporally extended stimuli but also presents them *as being temporally extended*, one can see the phenomenal present as capturing more of James’s original characterization of the specious present than the sensorial present captures.

Besides being empirically informed, the proposed model aims to be philosophically interesting. As Montemayor himself suggests, his model allows us to better understand what is going on in the philosophical dispute over the right way of modeling the specious present. Following Barry Dainton, Montemayor takes the main contenders in this dispute to either embrace or reject what Dainton calls the *principle of simultaneous awareness*, according to which “to be experienced as unified, contents must be presented simultaneously to

¹ To support this, Montemayor appeals to Libet’s studies suggesting that the production of a conscious experience takes around 300–500 milliseconds as well as to Pöppel’s studies suggesting that the persistence of the contents of consciousness is about three seconds.

a single momentary awareness” (Dainton 2010). Cinematic and retentional models embrace this principle, while extensional models reject it. The cinematic model takes the specious present to lack “any (or any significant) temporal extension, and the same applies to the contents of which we are directly aware—they are akin to static, motion-free ‘snapshots’ or ‘stills’” (Dainton 2010). Like the cinematic model, the retentional model takes the specious present to be durationless but it allows its contents to be temporally extended. Under this model, the specious present has “a complex structure, comprising momentary phases of immediate experience, along with representations (or *retentions*) of the recent past” (Dainton 2010). The third and last contender is the extensional model. Unlike the previous models, the extensional model takes the specious present itself to be temporally extended. Like the retentional model, it also takes its contents as being temporally extended (Dainton 2010).²

We are now in a position to appreciate one of the main philosophical imports of Montemayor’s two-phase model. According to him, we need not choose between models that embrace and models that reject the principle of simultaneous awareness: his proposal allows us to see each of these positions as latching onto an important feature of time perception that the other one misses. More precisely, the idea is that models that embrace the principle of simultaneous awareness can be seen as characterizing the first phase of Montemayor’s model—the sensorial present, which presents stimuli as being simultaneous—whereas models that reject this principle can be seen as characterizing the second phase of his model—the phenomenal present, which presents stimuli as spreading over a brief interval of time.

Montemayor’s interesting suggestion does not end here. For if it did, his proposal could be rejected by means of the following argument. Models that endorse and models that reject the principle of simultaneous awareness are both concerned with characterizing our *consciousness* of the present.³ While Montemayor’s notion of the sensorial present is a representation available at the organism level, this representation is not *conscious*. But then, it is not fair to take cinematic and retentional models—those endorsing the principle under dispute—as characterizing the sensorial present, as Montemayor suggests.

² Cf. Dainton 2010.

³ Ultimately, they also aim to account for the conscious stream that the specious present compose.

Though I think that a close version of this objection ultimately succeeds, Montemayor makes a clever move in response to it. He argues that his proposal allows him to take all models of the specious present as concerned with time-*consciousness*. The important thing to see, he continues, is that they are not all concerned with the same *type* of consciousness. By appealing to Ned Block's distinction between access-consciousness and phenomenal-consciousness, Montemayor proposes to take the sensorial present as capturing our *access-consciousness* of the present while the phenomenal present would be seen as capturing our *phenomenal-consciousness* of the present. Since the sensorial present fits well with the principle of simultaneous awareness while the phenomenal present fits well with its rejection, Montemayor interprets models that side with this principle as concerned with characterizing our access-consciousness of the present, and those that reject this principle as characterizing our phenomenal-consciousness of the present. Each side of the dispute could thus be seen as latching on to a different —though equally important— type of time *consciousness*. In this sense, Montemayor's suggestion is conciliatory: if one adopts it, one can find truth in both sides of this long-held dispute around the structure of the specious present.

I find Montemayor's proposal ingenious: it offers an attractive way of thinking of various apparently disparate timing mechanisms, as well as of opposing philosophical positions on time consciousness, as fitting nicely into one coherent picture. Let me now turn to suggest a few ways in which the proposal can be reasonably resisted.

As we have seen, according to Montemayor the sensorial present concerns access-consciousness (what cinematic and retentional models would be most charitably taken to be about) whereas the phenomenal present concerns phenomenal consciousness (what the extensional model would be taken to be about). Montemayor claims: "extensional models are concerned with what I will call the *phenomenal present*, while cinematic and retentional models are concerned with the sensorial present and its relation to *access consciousness*" (p. 110, my emphasis). A crucial component in the notion of access-consciousness, however, is that whatever one is access-conscious of should be available as a premise in reasoning. For instance, when Block defends the distinction between access-consciousness and phenomenal consciousness, he considers the case of a blindsighted subject who "guesses" that he sees, say, an "X" instead of a "O" within his blind field. One of the reasons why, according to Block, the subject is not access-conscious of "X" is because even if the information is affecting his

“guess”, “it is not available as a premise in reasoning” (Block 1995, p. 233). Furthermore, Block argues that access-consciousness requires not merely being available for use, but also being broadcast for use in rational control of action and speech. For related reasons, Block is sympathetic to the claim that zombies, who can effectively interact *at the organism level* with their environment, are not conscious in any sense—not even access-conscious. But then, they wouldn’t be access-conscious of the temporal representations they would be exploiting in reacting effectively, at the organism level, to the various stimuli in their environment. But if this is right—given that the outputs of the sensorial present are temporal representations that are not accessible as premises in reasoning—then not only are they not phenomenally conscious, but they are also not access-conscious. Despite this, Montemayor seems to suggest that because these temporal representations are used by the organism as a whole—as opposed to only by one of its subsystems—they are access-conscious. An adequate defense of Montemayor’s conciliatory strategy thus seems to require, at a minimum, a defense of the claim that availability at the organism level suffices for access-consciousness.

As explained, Montemayor takes his model as offering a way to rescue both sides of the debate around the principle of simultaneous awareness: “I propose that we interpret these models for the specious present *not as rival characterizations* of the same phenomenon, but rather, as *answers to different questions*” (p. 109, first emphasis mine). I suspect, however, that the advocates of the cinematic and retentional models would take Montemayor’s reconciliatory attempt as a pyrrhic victory—one so devastating that it is, rather, to be regarded as a defeat. For, if I understand them correctly, they take themselves to be concerned solely with *phenomenal* consciousness. So even granting that Montemayor is right in claiming that models that endorse the principle of instantaneous consciousness capture our access-consciousness of the present, this will not be a result they would want to welcome. The proposal would rather be seen as siding with the extensionalist and, thus, as less conciliatory than suggested, losing in this way one of its philosophical advantages.

Let me end by noting two more of Montemayor’s interesting philosophical proposals that I would have liked to see further developed. Towards the end of the book, he makes the intriguing suggestion that the cognitive interaction between the clocks and the phenomenal present gives rise to the experience of the flow of time. In particular, he claims that Laurie Paul’s account of the experience of passage (Paul 2010) is unsuccessful, and that his model can succeed

where Paul's fails. It wasn't clear to me, however, which particular aspects of Paul's proposal Montemayor is taking issue with and how exactly he takes his model to do better. It would be helpful to elaborate on this in order to defend his claim.

Finally, throughout the book, Montemayor notes that a main advantage of his model is that it offers an account of temporal representation that does not appeal to the notion of a self, to conceptual content, or to causality. He writes: "An important feature of my analysis of temporal representation in chapters 2 and 3 is that it demonstrates that the representations are legitimate mental representations with content, *without assuming controversial views about the self, conceptual content or causality*" (p. xiii, my emphasis). It was not clear, however, why achieving this was challenging. To better appreciate the importance of this feature of his account, as well as the difficulties involved in offering a model that avoids these notions, it would be helpful to say why appealing to these notions is either a natural or an attractive route towards characterizing our temporal representations.⁴

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CARLA MERINO-RAJME

University of North Carolina at Chapel Hill
cmerino@unc.edu

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