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Construction, causation, continuity: A simulationist response to Hirai's simulationist interpretation of Bergson's theory of memory

Kourken Michaelian

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Introduction

- 1 This paper responds to Hirai's (2025) attempt to provide a simulationist interpretation of Bergson's theory of memory (BTM) (Bergson 2023). Hirai argues that BTM and the simulation theory of memory (STM) (Michaelian 2016) give converging answers to two key questions—regarding the constructive character of remembering and the continuity of memory and imagination—and that, while they do not agree with respect to a third question—regarding the necessity of a certain sort of causation for remembering—they also do not disagree with respect to it. The aim of this paper is to assess the viability of Hirai's simulationist interpretation. Sections 2 and 3 set the stage by describing the sense in which Hirai takes BTM to be simulationist and by reviewing the basics of BTM

from the perspective of analytic philosophy of memory, focusing on the concept of pure memory. Section 4 critically examines Hirai's simulationist interpretation, and section 5 argues that, while Hirai is right to suggest that BTM and STM agree with respect to construction, he is wrong to suggest that they do not disagree with respect to causation, and he is likewise wrong to suggest that they agree with respect to continuity. Section 6 therefore concludes that a properly simulationist interpretation of BTM is unlikely to be viable.

Bergson and the simulation theory of memory

- 2 The attempt to provide a simulationist interpretation of BTM might well strike a reader familiar with both BTM and STM as puzzling, for—as Hirai himself admits—Bergson does not touch in any obvious way on the issue of the necessity or non-necessity of *appropriate causation* that drives the debate between STM and the *causal theory of memory* (CTM) (Martin & Deutscher 1966) in opposition to which simulationism initially emerged: that issue arises only in connection with certain unusual cases of apparent remembering (see section 5), and Bergson is simply not interested in cases of the relevant sort. There is thus a question about how Hirai's simulationist interpretation is to be understood.
- 3 When answering this question, it should be borne in mind that STM makes both a negative claim and a positive claim.¹ The negative claim is that appropriate causation—defined as causation continuously sustained by a *memory trace*—is, contra CTM, not necessary for the occurrence of genuine remembering. The positive claim is that remembering is not just highly constructive—it is a form of *imagining*.² It is unclear whether STM's negative claim entails its positive claim, but it is clear that its positive claim does not entail its negative claim: if remembering is imagining, it does not follow that appropriate causation is not necessary for remembering, simply because remembering might turn out to be a form of imagining that necessarily involves appropriate causation (Langland-Hassan 2023). The consequence is that BTM might be simulationist insofar as it endorses one of these claims but not the other. In particular, it might be simulationist insofar as it endorses the positive claim but not the negative claim. In other words, given that Bergson does not touch on the issue of the necessity of appropriate causation, BTM might be simulationist insofar as it endorses the claim that remembering is a form of imagining while being neither simulationist nor causalist insofar as it endorses neither STM's negative claim nor its negation, the causalist claim that appropriate causation is necessary for remembering.
- 4 It will turn out that something like this is what Hirai is mind. Rather than turning directly to Hirai's interpretation of BTM, however, it will be helpful, given that BTM employs a conceptual vocabulary very different from that employed by STM (which is simply the standard vocabulary of analytic philosophy of memory), to review the basics of BTM from an analytic perspective. The following section does so, focussing on the concept of pure memory.

Bergson and analytic philosophy of memory

- 5 *Pure memory* is distinguished by Bergson from *image memory*. If the concept of image memory, which refers to the output of the memory process and thus corresponds roughly to what analytic philosophers call “retrieved memory,” is relatively easy to grasp, that of pure memory is more difficult. On the one hand, it plays, as we will see, a role similar to that played by the concept of a memory trace in analytic theories of memory. On the other hand, Bergson does not take traces to do much explanatory work, and the explanatory work that he assigns to pure memory makes evident that the role of the concept of pure memory is far from exactly analogous to that of the concept of a trace. Bergson holds, in particular, that everything that the subject experiences is preserved in pure memory—as Hirai (2025) puts it, BTM “asserts the preservation of all events.” A subject’s pure memory at a given time, then, includes his entire past up to that time; as the subject experiences additional events, his pure memory acquires additional components.
- 6 It will matter in what follows that pure memory is not made up of present representations of past events but is, instead, composed of components that are themselves past—that is, of components that are themselves located in the past. In virtue of the fact that it is composed of components that are past, pure memory is supposed to be able to explain the *pastness* involved in remembering: as Sinclair puts it, “[w]e have to posit [pure memory] because the quality of pastness in a recollection [i.e., in an image memory] cannot be accounted for by means of anything that is simply present” (Sinclair 2019, 101). The “quality of pastness” in question here presumably refers to phenomenal pastness. But, while the claim that the phenomenology of remembering involves a “feeling of pastness” is standard both in analytic philosophy (Sant’Anna, Michaelian, & Andonovski 2024) and in psychology (Klein 2015), it is, for two reasons, not obvious why it should be necessary to invoke pure memory to explain phenomenal pastness. First, the fact that something feels past need not, in principle, be explained by something that is itself past. Indeed, explanations of phenomenal pastness that appeal exclusively to features of the retrieval process or of the retrieved representation—and thus exclusively to factors that are present—are available (Perrin & Sant’Anna 2022). Second, we would not be inclined to infer the existence of a “pure future thought” analogous to pure memory but composed of everything that the subject will or might experience rather than everything that he has experienced simply from the fact that episodic future thinking (the future-oriented counterpart of episodic remembering) involves a “feeling of futurity” (Michaelian 2016).
- 7 This point about future thought will eventually turn out to pose a problem for Hirai’s attempt to provide a simulationist interpretation of BTM. For the moment, however, the goal is simply to provide some background on BTM and in particular on the concept of pure memory. From an analytic perspective, that concept raises a cluster of obvious questions. What, exactly, is preserved: our experience of the past or the experienced past itself? Where is what is preserved preserved? What, exactly, does “preservation” mean here? And what is the relationship between pure memory and image memory? Let us consider these questions in turn.

What pure memory preserves

- 8 The first question arises in part because Bergsonians themselves sometimes slip back and forth between talk of *past experience* and talk of *the past*. Indeed, they appear to disagree among themselves about this question, with Hirai taking pure memory to be made up of past experiences, while Ansell-Pearson (2010), for example, takes it to be made up of past events. This is not the place to attempt to resolve this intra-Bergsonian disagreement; given the aim of the paper, Hirai's understanding can simply be taken for granted.
- 9 We saw above that Bergson claims that everything that the subject experiences is preserved. If what pure memory preserves is past experience, this amounts to the claim that each and every experience had by a subject is added to the subject's pure memory. BTM thus describes a sort of immediate transition from experience to pure memory, with no possibility of loss.³ This will matter for our purposes here only to a limited degree. What will matter more is the fact that the claim that the subject's pure memory includes every experience that the subject has had does not imply the claim that subject can (at least in principle) remember everything that he has experienced: in Hirai's terms, pure memory provides the rememberer with a "target", but the target may in some cases be one that he is unable to attain.

Where pure memory preserves

- 10 The second question was where what is preserved is preserved. Bergsonians often seem to want to reject this question. Sinclair, for example, suggests (quoting Bergson) that "[p]ure memory does not exist anywhere, but this is not to say that it does not exist at all. To think that because the past is no longer actual or present it no longer exists is to 'define arbitrarily the present as what is, whereas the present is simply what is being done'" (Sinclair 2019, 103). The suggestion is that the question illegitimately privileges the present: just as we would not ask where the present exists, we should not ask where the past—including the past experiences that make up pure memory—exists.
- 11 This line of reasoning raises a concern: even if the components of pure memory exist just as much as present items, they are nevertheless past, and it is mysterious how something that is past, regardless of whether it exists, might be available to serve as a target in the present, as pure memory is meant to serve as a target for image memory. Of course, Bergson does not say that the past exists in precisely the same sense as the present—the past, for him, is merely *virtual*. The notion of virtuality, to which we return below, is somewhat obscure, but—however exactly we understand virtuality—the fact that Bergson sees the past as virtual does not make a difference with respect to the concern: it is mysterious how something that is past might be available to serve as a target in the present, regardless of whether it exists actually or only virtually.

The sense in which pure memory preserves

- 12 The third question was what "preservation" means in the context of BTM. At first glance, there might appear to be an overlap between BTM and certain positions that have figured in the *generationism-preservationism* debate that has unfolded over the last several years in analytic philosophy of memory (Miyazono & Tooming 2023). Sinclair,

for instance, argues that “Bergson ... is a virtual preservationist and an actual generationist” (Sinclair 2019, 103), by which he means that Bergson holds, first, that past experience is preserved (that is, conserved) in a virtual state in pure memory and, second, that an image memory is generated (that is, produced) at the time of retrieval. On closer inspection, this appearance turns out to be misleading, for the generationism-preservationism debate does not concern preservation in the sense of conservation or generation in the sense of production but instead concerns the relationship between the content of a retrieved memory and that of the corresponding experience, with generationists maintaining that the content of the retrieved memory can exceed that of the experience—and so that the subject can remember more than he experienced—and preservationists maintaining that it cannot. Though it would be natural, as far as this debate is concerned, to assume that BTM takes preservationism for granted, we will see that, if Hirai is right, it need not do so.

- 13 There is a distinct debate—a debate that does concern preservation in the sense of conservation—between what philosophers of memory have come to call *transmissionism* and *anti-transmissionism* (Michaelian & Robins 2018). According to *weak transmissionism*, the production (retrieval) of a memory draws on content stored in traces—that is, on content transmitted from the past to the present. According to *strong transmissionism*, the production of a memory of a given event must draw specifically on content stored in a trace originating in experience of that event. BTM endorses a view analogous to weak transmissionism. Bergson does not take traces to do much explanatory work, but he nevertheless thinks that experience is in a sense transmitted from the past to the present: the subject has an experience, the experience is added to his pure memory, and it is then available to serve as a target for remembering. BTM might or might not endorse a view analogous to strong transmissionism. We will come back to this question below, when we consider the viability of Hirai’s simulationist reading of BTM, for a theory that endorses strong transmissionism holds that a form of appropriate causation is necessary for remembering, and a version of BTM that endorses a Bergsonian analogue of strong transmissionism will to that extent inevitably align with causalism rather than simulationism.⁴

The relationship between pure memory and image memory

- 14 This brings us to the final question, which asks for an account of the relationship between pure memory and image memory. Bergson understands this relationship in terms of a passage from virtuality to actuality. The nature of this passage is not immediately apparent, but Hirai, fortunately, has a great deal to say about it, so we turn now to his simulationist interpretation of BTM.

Hirai’s simulationist interpretation of Bergson’s theory of memory

- 15 Hirai’s interpretation takes three key features of STM into account.⁵ First, STM rejects a *causal* understanding of the memory process. Second, it treats that process as having a *constructive* character. Third, it sees memory as being *continuous* with imagination. Let us consider these features in turn.

Causation

- 16 BTM provides a noncausal account of remembering, and STM is defined in part by its opposition to the causal theory of memory. Superficially, then, the two theories might seem to have much in common. The question is whether they have anything in common at a deeper level—that is, whether they are noncausal in analogous senses.
- 17 BTM, on the one hand, is noncausal in the sense that it does not see pure memories as playing a causal role in the production of image memories: as we will see below, Bergson describes the passage from virtuality to actuality in noncausal terms. STM is *not* noncausal in the analogous sense: it does not deny that traces play a causal role in the production of retrieved memories. On the contrary: though it denies that the production of a memory of a given event must draw specifically on content stored in a trace originating in experience of that event, it explicitly acknowledges a causal role for traces in general in the production of memories (Michaelian 2024).
- 18 STM, on the other hand, is noncausal in the sense that it denies that the production of a memory of a given event must draw specifically on content stored in a trace originating in experience of that event—in other words, it is noncausal in the sense that it rejects strong transmissionism. BTM is *not* noncausal in the analogous sense. We saw above that, inasmuch as he holds that experience is transmitted from the past to the present, Bergson endorses a view analogous to weak transmissionism. We left open the question whether he endorses a view analogous to strong transmissionism. A Bergsonian analogue of strong transmissionism would claim that the production of an image memory of a given event must draw on a component of pure memory originating specifically in experience of that event.⁶ Because Bergson does not deal with the question whether, “[f]or an episodic remembering to occur, individual preservation of the target event is necessary” (Hirai 2025), Hirai interprets BTM as remaining neutral with respect to this claim. We will see below that this may understate the disagreement between BTM and STM.

Construction

- 19 STM, again, is defined by a negative claim and a positive claim. The negative claim is that appropriate causation is not necessary for the occurrence of genuine remembering. Bergson, we have seen, does not take an explicit stand with respect to the negative claim. The positive claim is that remembering is not just highly constructive—it is a form of imagining. Bergson, as Hirai interprets him, likewise understands remembering as a constructive process and indeed as continuous with imagining.
- 20 Let us look first at BTM’s understanding of remembering as a constructive process. We noted above that the transition from pure memory to image memory is a matter of a passage from virtuality to actuality. Hirai considers three ways of interpreting Bergson’s understanding of the nature of this passage: the *metamorphosis view*, on which the pure memory becomes the image memory, the *causal view*, on which the pure memory causes the image memory, and the *imitation view*, on which “pure memory itself remains ‘immobile’, merely indicating the target to be aimed at. The remembering image, on the other hand, materializes it” (Hirai 2025). He rejects the metamorphosis view and the causal view in favour of the imitation view, the basic idea

of which is that pure memory provides a target at which remembering aims by producing an appropriate image memory, in a process of “imitative construction” that requires “*generic images* used to reconstruct this target event” (Hirai 2025; emphasis added). The passage from virtuality to actuality is thus a matter of taking a (virtual) pure memory as a target and constructing an (actual) image memory on the basis of generic images.

- 21 Two points about the imitation view should be noted. First, it takes the construction process to be compatible with the generation of new content: remembering does not aim at “a faithful reproduction of past facts” but is referenced “to solve problems currently faced. Unless the identical situation recurs, it is advantageous to edit and adapt the memory to suit the new contexts in which it is employed” (Hirai 2025). Hirai thus reads Bergson as a generationist in the sense at issue in the generationism-preservationism debate: BTM allows that the subject can in principle remember more than he experienced. Second, the generic images that constitute the raw materials out of which image memories are constructed are themselves formed “through the ‘interference’ of numerous personal episodic memories”: “[i]nterfering memories are assumed to reinforce similar features and neutralize dissimilar ones. Thus, a wide variety of generic images are drawn from the different interferences of various memories” (Hirai 2025). There is, however, no requirement that the generic images that provide the basis for the construction of an image memory of a given event originate (in part) in the subject’s experience of that event. The role assigned to generic images in the account therefore does not tacitly commit BTM to a view analogous to strong transmissionism.

Continuity

- 22 Let us look next at BTM’s understanding of remembering as continuous with imagining. As Hirai recognizes, merely endorsing an understanding of remembering as constructive does not suffice to make one a simulationist, for, though *classical causal theories* (Martin and Deutscher 1966) downplay the constructive character of retrieval, more recent *constructive causal theories* (Michaelian 2011) are explicitly designed to accommodate constructive retrieval. Like STM, such theories acknowledge that traces (like generic images) may reflect the influence of multiple events and that multiple traces may be involved in the production of a given memory; unlike STM, they continue to require causation by a trace originating (in part) in the rememberer’s experience of the remembered event. Hirai’s claim is that BTM aligns not with constructive CTM but rather with STM in that BTM, like STM, holds that remembering is continuous with imagining:

Both faculties [memory and imagination] utilize the same material (images) and share the capacity for constructive editing [...]. Consequently, remembering and imagination are not independent capabilities but are intrinsically interconnected. Imagination draws upon the material from memory, and remembering employs the same mechanisms in its construction. From this, imagination and remembering are in a continuous relationship (Hirai 2025).

- 23 In other words, Hirai suggests that both BTM and STM are continuist theories in the sense that they both treat memory and imagination as being continuous in virtue of holding that memory and imagination rely on the same mechanism and the same raw

materials. We will see below that this may overstate the agreement between BTM and STM.

Assessing Hirai's simulationist interpretation

24 We are now in a position to determine whether Hirai's simulationist interpretation of BTM is viable. In one respect, we have already seen, BTM converges with STM: both theories see remembering as constructive in the sense that it draws on raw materials (generic images, in the case of BTM, and constructive traces, in the case of STM) originating in multiple experiences. In another respect, however, BTM diverges from STM: BTM remains neutral with respect to (the Bergsonian analogue of) strong transmissionism, whereas STM rejects strong transmissionism. We will see, in section 5.1, that BTM in fact diverges from STM even more sharply than this regarding the question of the necessity of appropriate causation. We will also see, in section 5.2, that—Hirai's suggestion to the contrary notwithstanding—there is another respect in which BTM diverges sharply from STM: the two theories do not in fact agree regarding the question of the continuity of memory and imagination.

Simulationism's negative claim

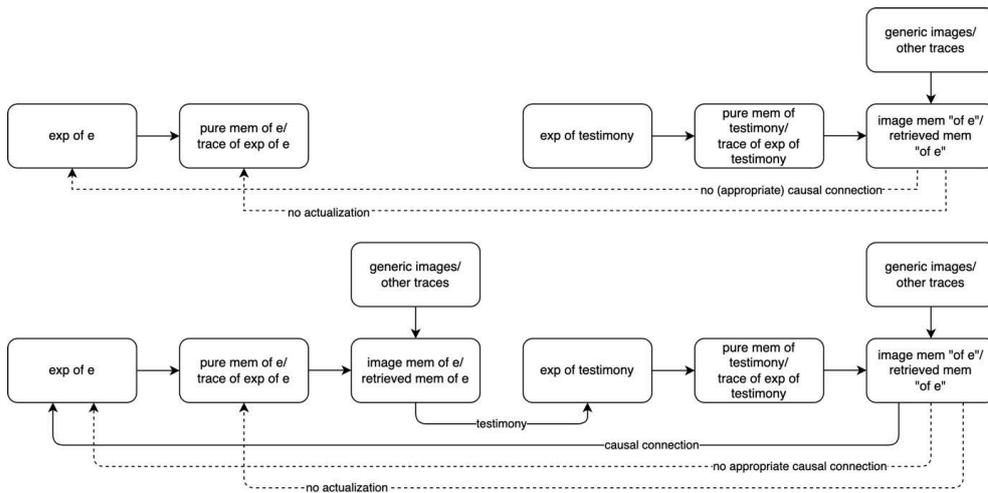
25 Though Bergson himself is admittedly not interested in cases of the sort that drive the debate between simulationists and causalists over the necessity of appropriate causation, this neutrality is arguably not a tenable stance for partisans of BTM. In order to see this, consider the following cases, which are simply stripped-down versions of those originally employed by Martin and Deutscher (1966) to motivate CTM (see figure 1).

Case 1 (no causation): S1 experiences an event, e. S1 forgets e. S1's friend, S2, a joker who has no idea that S1 experienced e, tells S1 about an event that, coincidentally, perfectly matches e. S1 forgets having received S2's testimony but remembers the content of the testimony. On the basis of the remembered content, S1 has an apparent memory of e.

Case 2 (deviant causation): S1 experiences an event, e. S1 tells his friend, S2, a reliable testifier, about e. S1 forgets e. S2, on the basis of S1's testimony, tells S1 about e. S1 forgets having received S2's testimony but remembers the content of the testimony. On the basis of the remembered content, S1 has an apparent memory of e.

26 Concerning case 1, causalists argue that, because there is no causal connection between S1's apparent memory of e and S1's experience of e, S1 does not remember e. Concerning case 2, they argue that, while there is a causal connection between S1's apparent memory of e and S1's experience of e, S1 does not remember e because that causal connection is deviant. The conclusion to which they come, on the basis of our intuitions about these cases, is that appropriate (nondeviant) causation is necessary for remembering. Simulationists, appealing not to intuition but rather to empirical evidence for the existence of a tight connection between episodic memory and episodic future thought (on which more below), then argue in response that appropriate causation is not in fact necessary for remembering.

Figure 1



Top: the “no causation” case and its Bergsonian analogue. There is no causal connection (and a fortiori no appropriate causal connection) between the retrieved memory and the original experience. The image memory is not the actualization of the original pure memory. Bottom: the “deviant causation” case and its Bergsonian analogue. There is a causal connection between the retrieved memory and the original experience, but that causal connection is deviant. The image memory is not the actualization of the original pure memory.

- 27 For two reasons, partisans of BTM are arguably not entitled to remain neutral with respect to these cases. First, Bergsonian analogues of the cases can be constructed without any difficulty. Indeed, because the cases are entirely psychologically realistic—all that is required in order for apparent memories of the relevant sort to occur is, first, that the subject be able to forget a conversation that he had and, second, that the subject be able to forget the source of remembered information (and in particular that he be able to forget whether remembered information originates in testimony or in his own experience)—it must be possible to construct such analogues if BTM is to have any hope of being empirically adequate. One might object here that, because Bergson holds that pure memory preserves everything that the subject experiences, BTM is not bound to acknowledge the possibility of the relevant kinds of forgetting. The response to this objection is straightforward: as we have already noted, the claim that the subject’s pure memory includes every experience that the subject has had does not imply the claim that the subject can remember everything that he has experienced. Second, if partisans of BTM insist on remaining neutral, it becomes unclear whether BTM is a theory of memory in the same sense as STM and CTM. Partisans of BTM thus face a choice between transmissionist and anti-transmissionist versions of BTM. *Transmissionist BTM* affirms that the Bergsonian analogue of strong transmission (or appropriate causation) is required for remembering and therefore denies that these might be cases of genuine remembering. *Anti-transmissionist BTM* denies that the Bergsonian analogue of strong transmission is required for remembering and therefore affirms that these might be cases of genuine remembering.
- 28 If partisans of BTM are not entitled to remain neutral between transmissionist and anti-transmissionist BTM, the obvious question is which of the two versions of the theory is preferable. There is an important sense in which transmissionist BTM is more coherent than anti-transmissionist BTM. Moreover, there is an interesting asymmetry here between the situation of the Bergsonian and that of the analytic philosopher of memory. Consider, first, the situation of the analytic philosopher. In the “no causation”

case, S1's apparent memory of *e* is not caused by S1's experience of *e*. In the "deviant causation" case, the causal connection in question is deviant in virtue of not being continuously sustained by a memory trace, but S1's apparent memory of *e* is nevertheless caused by S1's experience of *e*. The analytic philosopher thus has three options. First, they might go with our intuitions and adopt CTM. Second, they might go with the empirical evidence and adopt STM. But third, they might—perhaps motivated by a desire to reconcile causalism with the kind of role for external factors (including testimony) in remembering that is emphasized by distributed and extended approaches to cognition (Heersmink 2022) — adopt a *radical causal theory* according to which appropriate causation is not required for genuine remembering (Sutton & O'Brien 2023).

- 29 Consider, next, the situation of the Bergsonian. In the Bergsonian analogue of the "no causation" case, S1's apparent image memory of *e* is not the actualization of S1's pure memory of *e*. In the Bergsonian analogue of the deviant causation case, S1's apparent image memory of *e* is, again, not the actualization of S1's pure memory of *e*. There is no sense in which a sort of "deviant actualization" occurs here, simply because the notion of deviant actualization makes no sense (see figure 1). Testimony can play a role in the transmission of content (even if it cannot underwrite a non-deviant causal chain), but it cannot play a role in the actualization of a pure memory. The Bergsonian thus has only the two options outlined above: transmissionist BTM and anti-transmissionist BTM. Given that BTM understands remembering in terms of a passage from virtuality to actuality, and given that no such passage occurs in either the Bergsonian analogue of the "no causation" case or the Bergsonian analogue of the "deviant causation" case, the view that genuine remembering might occur in either case coheres poorly with BTM's commitments.
- 30 In short, Hirai's interpretation, insofar as it concerns the necessity of (the Bergsonian analogue of) appropriate causation, appears not to be viable: BTM is best read as being (at least implicitly) a strong transmissionist theory.

Simulationism's positive claim

- 31 We have seen that BTM diverges from STM regarding the question of the necessity of appropriate causation. Let us now consider whether it might not also diverge from STM regarding the question of the continuity of memory and imagination. Just as causalists can (as we noted at the outset) be continuists, partisans of transmissionist BTM might, in principle, be continuists. The failure of Hirai's attempt to read BTM as remaining neutral with respect to STM's negative claim (that appropriate causation is not necessary for remembering) thus need not, in principle, condemn his attempt to read BTM as endorsing STM's positive claim (that remembering is a form of imagining) to failure. This section will, however, show that the latter attempt does indeed fail.
- 32 In order to see why it fails, we need to take into account two points about the *continuism-discontinuism* debate in analytic philosophy of memory (Michaelian et al., 2023). First, the debate concerns the relationship between episodic remembering and a particular form of imagining, namely, *episodic future thinking*. Second, appealing to empirical evidence for the existence of a tight connection between episodic memory and episodic future thought, continuists argue for the nonexistence of any fundamental difference between episodic memory and episodic future thought beyond their distinct

temporal orientations, while discontinuists offer a variety of empirical and intuitive reasons for supposing that there is some such difference. We have seen that Hirai suggests that both BTM and STM treat memory and imagination—by which he means, let us suppose, future thought—as being continuous in virtue of holding that they rely on the same mechanism and the same raw materials. The question is whether this is sufficient to entitle him to conclude that both theories maintain that memory and imagination are continuous.

- 33 Much depends here on which sorts of differences count as fundamental, but it is, regardless of how we understand fundamentality in this context, difficult to maintain that BTM does not imply that there is no fundamental difference between memory and imagination. When Hirai says that BTM takes memory and imagination to rely on the same mechanism and the same raw materials, he means that both memory and imagination rely, first, on a construction process that produces images (an image of the past, in the case of memory, and an image of the future, in the case of future thought) and, second, on generic images as the raw materials out of which it constructs these images. His claim about the raw materials on which memory and imagination rely is unproblematic. His claim about the mechanism on which they rely is unproblematic but overlooks a crucial difference between remembering and imagining. As far as remembering is concerned, BTM takes the construction process to aim at a target provided by pure memory. As far as future thinking is concerned, it is not entirely clear at what BTM takes the construction process to aim, but the target of future thinking, whatever exactly it might be, cannot be provided by pure memory, simply because it lies in the future rather than the past. To ensure the kind of symmetry between memory and future thought that continuism posits, it would thus need to be the case that the target of future thinking is provided by some sort of “pure future thought.” As noted above, however, the idea that there is a pure future thought that plays a role in future thinking analogous to the role played by pure memory in remembering is a non-starter. The idea that every experience that the subject has had in the past remains available to them now is surprising. The idea that every experience that the subject will (or might) have in the future is already available to them now appears to be outright absurd. Given the central role played by pure memory in BTM, this would seem to amount to a fundamental difference between it and STM, no matter exactly how we understand fundamentality.⁷
- 34 In short, Hirai’s interpretation, insofar as it concerns the continuity of memory and imagination, appears not to be viable: BTM is best read as being a discontinuist theory.

Conclusion

Figure 2

| | <i>Continuism</i> | <i>Strong transmissionism</i> |
|--------------------|-------------------|-------------------------------|
| <i>STM</i> | endorse | reject |
| <i>BTM (Hirai)</i> | endorse | neutral |
| <i>BTM</i> | reject | endorse |

Hirai reads BTM as agreeing with STM with respect to continuism and neither agreeing nor disagreeing with it with respect to strong transmissionism, but BTM disagrees with STM with respect to both questions.

- 35 In principle, BTM might be simulationist insofar as it endorses STM's positive claim while being neither simulationist nor causalist insofar as it endorses neither STM's negative claim nor its negation. In practice, we have seen, BTM is best interpreted as rejecting STM's positive claim, and endorsing the negation of its negative claim (see figure 2): whereas STM is anti-transmissionist and continuist, BTM is transmissionist and discontinuist. We may, therefore, conclude that a properly simulationist interpretation of BTM is unlikely to be viable.
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NOTES

1. This is true of the form of simulationism developed by Michaelian (2016). The form defended by De Brigard (2014), in contrast, endorses the positive claim but, as Michaelian, Álvarez, and Openshaw (under review) emphasize, does not explicitly endorse or reject the negative claim.
2. More precisely, the positive claim is that remembering is *reliable* imagining. The notion of reliability has played an important role in the simulationist-causalist debate but will remain offstage here.
3. This presumably means that the theory will have difficulty making room for the phenomena of encoding and consolidation that play prominent roles in current psychology of memory.
4. Strong transmissionism implies the claim that appropriate causation is necessary for remembering, but, since views according to which traces causally connect retrieved memories to experiences without being contentful are available (e.g., Werning 2020; Perrin 2021), the claim that appropriate causation is necessary for remembering does not imply strong transmissionism. Because STM rejects the necessity of appropriate causation regardless of whether appropriate causation is understood in transmissionist or nontransmissionist terms, the availability of nontransmissionist forms of causalism makes no difference in the present context. It will therefore be disregarded, allowing us to treat the claim that appropriate causation is necessary for remembering as equivalent to strong transmissionism—roughly speaking, to treat causalism and transmissionism as being interchangeable.
5. Hirai also discusses a fourth feature: STM treats remembering as distinguished from imagining not by the memory that it produces but rather by the remembering process itself. He takes this feature to be shared by BTM, but, as he has less to say about it, and as it is of secondary importance to the goal of this paper, we will set it aside here.
6. Since the components of pure memory just are experiences, this is equivalent to saying that the production of an image memory of a given event must draw on an experience of that specific event.
7. Note that STM does not face an analogous difficulty here, since there is nothing in STM that plays a role quite like that of a target in BTM. STM treats memories as being produced in

response to cues, and cues, unlike pure memories, can come from a variety of internal and external sources. There is thus nothing to prevent them from playing the same role in remembering and in future thinking.

ABSTRACTS

This paper responds to Hirai's attempt to provide a simulationist interpretation of Bergson's theory of memory (BTM). Hirai argues that BTM and the simulation theory of memory (STM) give converging answers to two key questions—regarding the constructive character of remembering and the continuity of memory and imagination—and that, while they do not agree with respect to a third question—regarding the necessity of a certain sort of causation for remembering—they also do not disagree with respect to it. The paper argues that, while Hirai is right to suggest that BTM and STM agree with respect to construction, he is wrong to suggest that they do not disagree with respect to causation, and he is likewise wrong to suggest that they agree with respect to continuity. It therefore concludes that a properly simulationist interpretation of BTM is unlikely to be viable.

Cet article répond à la tentative de Hirai de fournir une interprétation simulationniste de la théorie bergsonienne de la mémoire (BTM). Hirai soutient que BTM et la théorie simulationniste de la mémoire (STM) donnent des réponses convergentes à deux questions clés — concernant le caractère constructif du souvenir et concernant la continuité de la mémoire et de l'imagination — et que, bien qu'elles ne soient pas d'accord à propos d'une troisième question — concernant la nécessité d'un certain type de causalité pour le souvenir —, elles ne sont pas non plus en désaccord à ce sujet. L'article soutient que, si Hirai a raison de suggérer que BTM et STM sont d'accord en ce qui concerne la construction, il a tort de suggérer qu'elles ne sont pas en désaccord en ce qui concerne la causalité, et il a également tort de suggérer qu'elles sont d'accord en ce qui concerne la continuité. Il conclut donc qu'il est peu probable qu'une interprétation proprement simulationniste de BTM soit viable.

INDEX

Keywords: simulation theory of memory, Bergson's theory of memory, causal theory of memory, memory traces, pure memory

Mots-clés: théorie simulationniste de la mémoire, théorie bergsonienne de la mémoire, théorie causale de la mémoire, traces mnésiques, mémoire pure

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