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Prospects for epistemic generationism about memory

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Abstract
A source of epistemic justification can be either preservative or generative, in that it can either just preserve justification that was provided by some other source or generate justification on its own. This paper asks what is required for generationism about memory to be true and argues that there are rather demanding conditions that a case of memory justification needs to satisfy in order to count as epistemically generative in a substantive sense. By considering a parallel argument for epistemically generative cases of imagination and drawing from empirical data on event completion, we argue that there are such cases of memory justification because the way in which memory processes fill in the content of event memories suggests that memory is fit to provide justification about past events that is not due to a source other than memory.

Keywords
Epistemic generativity · Epistemic justification · Imagination · Memory

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1 Introduction

The idea that our memories can justify our beliefs about the past seems to be a necessary assumption that needs to hold for our commonsense knowledge of the world to be possible. We need to assume that memories can justify our beliefs because much of our belief system is concerned with the past and many of our beliefs are based on our beliefs about the past. In that regard, memory seems to be epistemically almost or even just as important as other sources of justification like

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perception and inference. At the same time, how it exactly justifies is much more controversial with memory than with other sources of justification. It is quite natural to think that unlike perception, for instance, memory does not really generate justification by itself. Rather, insofar as memory justifies our beliefs, it transmits or preserves justification that was generated by some other source. The epistemic power of memory has therefore often been taken to be preservative rather than generative (Audi, 1997, p. 410; Dummett, 1994, p. 262).

For quite some time now, however, the view that memory is a preservative source of justification has been subjected to criticism from different angles. There are various ways in which memory processes seem to do something more than just transmit the content of the original experience and some of these ways have also been argued to be epistemically significant (see Boyle, 2019; Michaelian, 2011). In this paper, we present our take on the issue. We will not be considering all the ways in which memory has been deemed to be epistemically generative (although we will acknowledge many of them in what follows). Our focus is on the question of whether recent psychological discoveries about how memory produces novel content support the idea that there are epistemically generative cases of memory. We argue that there are rather demanding conditions that a case of memory justification needs to meet in order to count as epistemically generative in a substantive sense. Memory processes producing novel content for the resulting memories is not sufficient to generate justification. These processes also have to produce novel content in an epistemically significant way that is not accessible to other processes. That being said, we think that there is some empirical support for the existence of such cases. In particular, the way in which memory processes fill in the content of event memories suggests that mnemonic processes can do a certain kind of work that non-mnemonic processes can not.

The plan is as follows. In Section 2, we define what we mean by epistemic preservativity and generativity, distinguishing them from psychological preservativity and generativity. In Section 3, we consider a tempting argument for generationism about memory, show how that argument faces a dilemma and, on the basis of analysing the dilemma, specify the conditions that a case of memory justification has to satisfy to count as epistemically generative. In Section 4, we prepare the ground for an argument for generationism about memory by considering the parallel case of imagination and using that to demonstrate the potential of what we call the "argument from inaccessibility". Finally, Section 5 argues for generative cases of memory justification by applying the argument from inaccessibility to memory and drawing from the empirical literature on event completion.

Some remarks are in order before we move on. First, our focus is on episodic memory, not semantic memory. Episodic memory is the type of memory whose content consists of temporally indexed past events that the subject represents as having experienced herself; semantic memory is the type of memory whose content consists of putative facts. The epistemology of semantic memory is an inter-

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esting topic in its own right and what we say in this paper might not be applicable to it.

Second, in articulating the conditions for a case of memory to count as epistemically generative, we draw from a parallel argument for epistemically generative cases of imagination. Although our focus in this paper is on the epistemology of memory, we believe that certain insights from the epistemology of imagination can be employed to inform the analysis of the former. The parallels between memory and imagination will be discussed further in Section 5.

Third, we set aside some views about memory justification. More specifically, we set aside a kind of internalist foundationalism about memory justification according to which seeming to remember that p is sufficient to provide the agent with prima facie justification for believing that p, independently of whether the agent had justification for believing that p before seeming to remember (Schroer, 2008, p. 79). Foundationalism entails generationism about memory because it allows for cases in which an agent is justified in believing that p by memory and where that justification is due to the apparent remembering and nothing else. We set foundationalism aside because embracing it would entail rejecting one of the basic assumptions of this paper—namely, that whether memory is epistemically generative or not depends on psychological facts about mnemonic processes. If mere seeming to remember that p would suffice for the agent to be justified in believing that p on the basis of memory, then the way in which our mnemonic processes work would not be relevant to evaluating their epistemic powers. Seeming to remember would do all that is epistemically relevant.

2 The distinction between generation and preservation

To get clear on the exact issue discussed in this paper, it is important to distinguish between psychological and epistemic generativity/preservativity (see Miyazono & Tooming, 2022, for further discussion of the distinction). Take psychological generativity and preservativity first. A psychological process is psychologically generative if it generates new representations over and above the representations that it takes as inputs. For instance, imaginative processes are psychologically generative in that they can generate new representations and do not just preserve prior representations that one has formed before using imagination. If an agent imagines that she is living on the Moon, her imagining does not consist in just transmitting some prior representation about the Moon. Instead, it is a result of a psychologically generative process that forms a novel representation that is over and above such prior representations.[1]

[1] This is *not* to say that imaginative processes *always* generate novel representations. It is possible, at least in principle, that a token imagining just rehearses a previously formed representation.

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A psychological process is psychologically preservative if it does not generate any new representations over and above the representations that it takes as inputs. According to the classic conception of memory, memory is an example of a psychologically preservative process in that it just preserves the content that was acquired from some source other than memory, such as perception or reasoning.[2] The view that memory is psychologically preservative fits well with the view that remembering requires the transmission of content via memory traces, representations of the originally experienced episode. For instance, if I remember that I had asparagus for dinner two days ago, on this view my memory just uses a memory trace to transmit the content of me eating asparagus.[3]

However, the psychologically preservationist conception of memory has been heavily disputed and it is unclear if any contemporary author in philosophy or psychology would endorse the claim that memory is purely psychologically preservative. The conception has been disputed mostly for empirical reasons: psychological research on mnemonic processes offers strong support to the idea that memory doesn't just preserve the acquired representations but also transforms them and generates new representations. In other words, mnemonic processes are *constructive*:[4] for instance, they incorporate information that is extraneous to the original experience into the memory representation (Loftus, 2005), they schematize the memory representation by removing perceptual details from it (Cowan et al., 2021), they shift the perspective of the original experience (Rice & Rubin, 2011), and perform many other operations that transform the contents of representations that were formed earlier (for overviews, see Andonovski, 2021; Schacter & Addis, 2007). It is therefore more reasonable to think that memory is a psychologically generative process in that it generates new representations over and above the representations that it takes as inputs.[5]

An example of memory incorporating information that is extraneous to the original experience is boundary extension (for a review, see Hubbard et al., 2010). In the case of boundary extension, people remember a scene from a wider angle than they actually experienced it. For instance, when people are presented with photographs and later are asked to draw what they saw in them, the drawn pictures tend to have wider spatial boundaries than the photos that were seen. Boundary

The claim about psychological generativity/preservativity is a claim about the type of process, not about the token instances of that type.

[2] See Plato's *Theaetetus* for the wax tablet metaphor of memory which is also in line with the preservative conception.

[3] Different versions of the view that memory is preservative can be found in Reid (2011, p. 305), Malcolm (1963, p. 208), Martin & Deutscher (1966, p. 163).

[4] For an early statement of the constructivist view of memory, see Bartlett (1995). For a contemporary statement of the constructivist view in philosophy, see Michaelian (2016).

[5] It is common to distinguish between *constructive* mnemonic processes that generate and transform memory content at the encoding phase and *reconstructive* mnemonic process that generate and transform memory content at the retrieval phase (Koriat et al., 2000). For the present purposes this distinction is not crucial, which is why we just talk about constructive processes.

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extension is arguably an example of psychological generativity of memory because memory processes supplement memory representations with content that is over and above the content of original experience.[6]

For another example of psychological generativity, consider memory conjunction errors that occur when mnemonic processes combine features from different episodes that the subject has experienced into a novel representation which has content that the subject has not experienced, resulting in a false memory (see Devitt et al., 2016). For instance, if the subject has experienced A in combinations where B has not occurred and has experienced B in combinations where A has not occurred, her mnemonic processes may combine representations of A and B into a representation whose content includes both A and B, resulting in a memory conjunction error. This is another example of psychological generativity because the representation of A and B combined is over and above any representations that her mnemonic processes have taken as inputs.

In what follows, we take for granted that memory is psychologically generative.

Psychological preservativity and generativity should be distinguished from from epistemic preservativity and generativity. The question of whether a psychological process is epistemically preservative or generative is about whether a psychological process generates new justification over and above the justification that it transmits from some other source. A process is epistemically preservative when the justification that it provides for believing that p is due to some other source. Memory is often seen as a candidate for an epistemically preservative process in that its epistemic role is to transmit justification that originates in some other source, such as perception or inference. For instance, if I remember that there was a beer in my fridge yesterday, then plausibly I have justification for believing that there was a beer in my fridge yesterday on the basis of memory. However, it is also plausible that I am justified in virtue of the fact that I *saw* yesterday that I had beer in my fridge. The justification provided by memory is not over and above justification that was provided by my original perceptual state; it just preserves it. The purported preservativity of memory can be contrasted with the epistemic generativity of perception, for instance, since perceiving that p provides a justification for believing that p that is not grounded in any other source.

Here is our proposal for how to define epistemic preservationism and epistemic generationism about memory, respectively:[7]

> Preservationism about Memory: For all subjects S and propositions p, if S has justification for believing that p from memory at a time t2, then it is because S already had at an earlier time t1 prima facie propositional justification for believing that p from another source of justification.

[6] For an alternative interpretation of boundary extension cases, see Nanay (2022).

[7] We draw here from Fernández's definition of "epistemic preservation" (Fernández, 2016, p. 642).

> Generationism about Memory: It is not the case that, for all subjects S and propositions p, if S has justification for believing that p from memory at a time t2, then it is because S already had at an earlier time t1 prima facie propositional justification for believing that p from another source of justification.

These definitions reflect the idea that for memory to be epistemically generative, it should not be the case that memory justification is explained in terms of justification that was already provided earlier by some other source. Our definitions of epistemic preservativity and generativity concern propositional, not doxastic, justification[8] because if they were defined in terms of doxastic justification, it would be too easy for memory justification to count as generative. It would be too easy because, given the psychological generativity of memory, mnemonic processes contribute to the formation of beliefs that the agent did not have before going through the remembering, and it is likely that such beliefs can be doxastically justified. However, as we will see more closely in the next section, even if such new beliefs are doxastically justified, this does not yet exclude the possibility that the source of propositional justification for those beliefs is not mnemonic. If memory was to be a generative source in a substantial sense, it should not just contribute to the formation of a (doxastically) justified belief that p, but also ground (propositional) justification for believing that p. For further discussion of this issue, see (Miyazono & Tooming, 2022).[9]

To get a better grip on our epistemic preservation/generation distinction and its demanding nature, it is useful to consider what our definition of generationism about memory predicts about Boyle's (2019, pp. 244–245) two candidates for epistemically generative cases:

> A) In the first type of case, memory records information that was not attended to at t1 but is attended to at t2: S can form a belief that p on the basis of memory at t2 while not having formed that belief at t1 due to the lack of attention.[10]
>
> B) In the second type of case, memory records such information that S does not understand its meaning at t1 but does understand its meaning at t2: S can form a belief that p at t2 while not having been able to form that belief at t1 due to the lack of conceptual competence.

[8] We take it that in order to have doxastic justification for believing that p, one's belief that p has to be reasonably held, while to have propositional justification for believing that p, one has to be in a position to reasonably believe that p, regardless of whether one actually has that belief (see Carter & Littlejohn, 2021, p. 24).

[9] We should also note that even if one prefers to articulate epistemic preservativity and generativity in terms of doxastic justification, our conclusion that there are epistemically generative cases of memory would still follow because we set a higher standard for generationism.

[10] This type of case was already presented in Lackey (2005).

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It is unclear if (A) or (B) count as generative cases in a substantial sense. Given our definition of generationism about memory and generative cases, we are doubtful that (A) counts as such. In (A), S was presumably already prima facie propositionally justified in believing that p at t1 by some source other than memory. It was only due to her lack of attention that S was not able to convert the prima facie propositional justification that she already possessed at t1 into doxastic justification.[11] Thus, memory does not generate any new prima facie propositional justification at t2 in (A).

What about (B)? At first glance, it does look like a case that indeed satisfies our conditions for an epistemically generative case in that, intuitively, S did not have prima facie propositional justification for believing that p at t1 but does have it at t2. However, it does not seem to be a case in which memory plays any substantial role in generating justification. Having the relevant conceptual competence to represent p is arguably only an enabling condition for having prima facie propositional justification for believing that p, but it does not ground justification.[12] Justification is presumably grounded in reasons that an agent has, not in concepts that enable her to articulate those reasons. A case like (B), in which at some point between t1 and t2 there has been a change in the satisfaction of an enabling condition for justification, leaves it entirely open whether memory itself is the original source of justification for believing that p. Instead, it can be seen as a case in which S had already at t1 prima facie propositional justification for believing that p from some non-mnemonic source, and could have justifiably believed that p if she had had the relevant concepts.

We can now move on to ask if generationism about memory is true.

3 An unsuccessful argument for generationism about memory

In this section, we will consider and reject an argument for epistemic generationism about memory.[13] Explaining why this argument should be rejected enables us to show what is needed for generationism to be true (for a more in-depth explanation, see Miyazono & Tooming, 2022).

The argument we have in mind proceeds by trying to infer the epistemic generativity of memory from the psychological generativity of memory and appeals to

[11] We acknowledge that whether or not S had propositional justification for believing that p at t1 without exercising attention depends on how attention figures in perceptual justification. The present discussion of (A) is only meant to show that it is not obvious that the case is epistemically generative in our sense.

[12] We take enabling condition to be a condition that needs to be met for some fact or proposition to count as a reason for or in favor of an attitude (e.g., for R to to count as a reason for believing that p) but which itself does not constitute that reason (cf. Dancy, 2009, pp. 38–44).

[13] For other ways to reject preservationism, see Fernández (2016, 2019), and Bernecker (2009). We won't discuss their arguments in this paper.

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the idea that psychological generativity explains epistemic generativity. In short, the argument goes as follows:

> **Argument from Psychological Generativity (APG)**: Memory is epistemically generative because it is psychologically generative.

For instance, Michaelian (2011), who presents a reliabilist version of APG,[14] has argued that if reliabilism about justification is true, then the fact that mnemonic processes give rise to new representations and that those processes are reliable lets us infer that the memory representations that result from such processes can justify beliefs that are formed on their basis. Since this justification is not provided by some other, non-mnemonic process, this suggests that memory can provide justification that is over and above justification provided by other sources.[15]

However, there is a good reason to think that APG is false. In any psychologically generative case, it is an open question whether the memory that results from a psychologically generative process can justify beliefs formed on its basis. In trying to answer that question, a proponent of APG faces a dilemma: depending on the details of the case, either the memory does not provide justification for beliefs formed on its basis or it does provide justification but it is plausible that the justification in question was provided earlier by some other, non-mnemonic source. Either way, psychologically generative memory does not satisfy the conditions of being an epistemically generative source of justification.

To put the dilemma in sharper focus, assume that S remembers that p at t2, and that her memory is a result of a psychologically generative memory process. Is she justified in believing that p at t2? A) If she is not, then memory is not epistemically generative because there is no justification to be generated by memory in the first place. B) If she is, then it is plausible that she is justified only because she had prima facie propositional justification for believing that p already at t1 from some source other than memory. In neither case does her memory count as epistemically generative.

For instance, suppose that Naomi's memory that she ate a McChicken sandwich in McDonalds is due to a memory conjunction error of mistakenly recombining elements of two different past experiences (eating a chicken sandwich at Popeyes and eating a cheeseburger in McDonalds) into a novel representation. In such a situation, her memory is a result of a psychologically generative memory process—but does it justify her belief that she ate a McChicken in McDonalds? On the one hand, if she is not justified in believing that she ate a McChicken in McDonalds, then she does not satisfy generationism about memory because her memory does not justify her respective belief in the first place. On the other hand, if she is justified in believing that, it is plausible that she had justification for believing

[14] We should stress that our target in this section is not the reliabilist version of APG as such. Instead, we are going to focus on a version of APG that does not assume a particular account of epistemic justification.

[15] For a similar argument, see Senor (2017), although Senor himself does not fully endorse it.

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it already before, in virtue of some source other than memory, such as inductive reasoning (i.e., she had justification for believing that she had McChicken at McDonalds in virtue of being in a position to draw a competent, although mistaken, inductive inference from her past dining experiences in different fast food restaurants). If that is the case, her memory satisfies preservationism, not generationism. Either way, it is not true that her memory is epistemically generative due to being psychologically generative.

Alternatively, suppose that due to boundary extension, Naomi remembers having seen more trees by the side of the road than she actually experienced. Although she actually saw three trees, she remembers having seen five. In such a situation, her memory is a result of psychologically generative memory processes, but does it justify her belief that she saw five trees by the side of the road? On the one hand, if she is not justified in believing that she saw five trees by the side of the road, then she does not satisfy generationism about memory because her memory does not justify her respective belief in the first place. On the other hand, if she is justified in believing that she saw five trees by the side of the road, then it is plausible that this is so due to her having had justification for believing it already before from some source other than memory, such as inductive inference. If that is the case, she satisfies preservationism about memory, not generationism. Either way, it is not true that her memory is epistemically generative due to being psychologically generative.[16]

We take it to be intuitively plausible that while in the memory recombination case, Naomi's memory does not justify the belief that she ate a McChicken in McDonalds, in the boundary extension case, Naomi's memory does justify the belief that she saw five trees on the side of the road. However, since these examples are simply meant to illustrate the dilemma for APG, it does not matter on which horn memory recombination and boundary extension cases exactly fall. What these cases show is that we cannot easily infer from some memory being psychologically generative that it is also epistemically generative. It should also be shown that the justification that the memory provides is not due to some earlier source. Thus, even though the psychological generativity of memory might make it seem that generationism about memory as an epistemic thesis is easy to defend, this impression is mistaken.

The lesson from the dilemma for APG is that generationism about memory is actually a rather demanding thesis because it requires the existence of epistemically generative cases which have to meet the following two conditions.

[16] We are not saying that cases of boundary extension do not count as epistemically generative cases. Our claim here is merely that it is not the case that just because they are psychologically generative cases, they are also epistemically generative cases. It is possible that the cases of boundary extension are not only psychologically generative, but also satisfy certain further conditions, which we call "JUSTIFICATION" and "NOPRIOR" below, in which case they are epistemically generative cases, in line with our argument. Indeed, boundary extension cases are similar to event completion cases, which we discuss in Section 5 as epistemically generative cases.

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> JUSTIFICATION: S has justification for believing that p from memory at a time t2.
>
> NOPRIOR: There is no earlier time t1 at which S already had prima facie propositional justification for believing that p from some other source of justification.

An epistemically generative case of memory has to satisfy JUSTIFICATION because otherwise there would not be any justification that could turn out to be generated by memory in the first place. An epistemically generative case also has to satisfy NOPRIOR because otherwise the subject would have justification for believing that p in virtue of some other source, not memory. If NOPRIOR is false and there is an earlier time at which S already had prima facie propositional justification for believing that p from some source other than memory, then memory would just be preserving the justification that the other source provided. Epistemically generative cases are the ones in which JUSTIFICATION and NOPRIOR are true at the same time, i.e., in which the dilemma that was discussed does not arise.

4 An argument from inaccessibility

We will argue that there are plausible candidates for generative cases of memory in which JUSTIFICATION and NOPRIOR are both true. To see how our argument works, it is useful to start with a parallel issue in the epistemology of imagination. By "generative cases of imagination", we refer to cases in which JUSTIFICATION (imagination) and NOPRIOR are true at the same time.

> JUSTIFICATION (imagination): S has justification for believing that p by imagination at a time t2.

Are there any generative cases of imagination? How about the case in which a hunter, whose way is blocked by a mountain stream, uses his imagination to reach the conclusion that he can successfully jump over the stream (Williamson, 2016), or the case in which a person, thinking about rearranging the furniture in his living room, uses his imagination to reach the conclusion that the piano fits where the couch currently is (Kind, 2013). Do these cases satisfy both JUSTIFICATION (imagination) and NOPRIOR?

We have argued elsewhere (Miyazono & Tooming, 2023) that there are indeed generative cases of imagination (which implies that imagination is a generative source of justification), and the crucial premise of our argument is the following thesis:

> INACCESSIBILITY (imagination): In some cases of imagination, imagination is properly constrained by certain imaginative constrainers that are "cognitively inaccessible" in the sense that only imaginative

> processes can tap into the imaginative constrainers for the purpose of belief formation and that other belief-forming processes, such as inference, do not have access to them.

By "imaginative constrainers", we refer to prior representations[17] that constrain the formation of an imagination. It has been suggested in the imagination literature that imagination provides justification and knowledge in virtue of the fact that it is properly constrained (in the sense that it is sensitive to real features of the world) by imaginative constrainers (Kind, 2016, 2018; Kind & Kung, 2016).[18]

INACCESSIBILITY (imagination) states that, at least in some cases, imagination is properly constrained by imaginative constrainers that are cognitively inaccessible in the sense that only imaginative processes can tap into them for the purpose of belief formation. INACCESSIBILITY (imagination) supports the possibility of generative cases of imagination. Assuming that INACCESSIBILITY (imagination) is true, there are some cases of epistemic use of imagination (where S uses imagination and comes to the conclusion that p) in which, on the one hand, S's imagination is properly constrained by some imaginative constrainers and, on the other hand, there is no prior time when S could have justifiably judged that p on the basis of a non-imaginative belief-forming process, since only imaginative processes can access imaginative constrainers for the purpose of belief-formation.

Let us think again about Kind's (Kind, 2013) case (let us call it "Piano Case") in which a person, Sam, uses his imagination to reach the conclusion that the piano fits where the couch currently is. If INACCESSIBILITY is true in the Piano Case, then, on the one hand, Sam's imagination of the piano is properly constrained by some imaginative constrainers and, on the other hand, there is no prior time at which he could have justifiably judged that the piano fits where the couch currently is on the basis of a non-imaginative belief-forming process (e.g., he couldn't have inferred that the piano fits where the couch currently is) because imaginative constrainers are only available to imaginative processes for the purpose of belief formation (e.g., inferential processes do not have access to imaginative constrainers). The first conjunct makes JUSTIFICATION (imagination) true (if proper constraint is sufficient for justification) or at least likely to be true (if proper constraint is necessary, but not sufficient, for justification). The second conjunct makes NOPRIOR true.[19] Thus, if INACCESSIBILITY (imagination) is true, then there are generative cases of imagination in which JUSTIFICATION (imagination) and NOPRIOR are true at the same time.

[17] Strictly speaking, imaginative constrainers do not have to be representational; for instance, they can be architectural instead (Kind & Kung, 2016; Salis, 2020).

[18] See Langland-Hassan (2016) and Williams (2021) on the nature of imaginative constrainers.

[19] There are, however, some theoretical issues on the nature of propositional justification that are relevant to whether the second conjunct entails NOPRIOR or not. See Miyazono & Tooming (2023) for more discussions.

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The crucial question, then, is whether INACCESSIBILITY (imagination) is true or not.[20] INACCESSIBILITY (imagination) is an empirically plausible hypothesis. In a review article on mental simulation, Hegarty notes that mental simulation taps into some form of implicit knowledge and adds that "this tacit, implicit or 'deep' knowledge is accessed or 'reveals itself' only during mental simulation" (Hegarty, 2004, p. 283), which is consistent with INACCESSIBILITY (imagination). In a typical study in the mental simulation literature (e.g., Schwartz & Black, 1999), participants use their imagination and correctly answer a question about the behavior of certain physical entities (which suggests that their imagination is properly constrained by relevant imaginative constrainers), while failing to give a correct answer to verbal or descriptive versions of the same question (which suggests that the imaginative constrainers are cognitively inaccessible). INACCESSIBILITY (imagination) is also supported by the empirical research on core cognition (Spelke, 2000; Spelke & Kinzler, 2007). It is likely that, in the context of mentally simulating the behavior of physical entities, relevant imaginative constrainers include the principles of core object system; e.g., the principles of cohesion (objects move as connected and bounded wholes), continuity (objects move on connected, unobstructed paths) and contact (objects do not interact at a distance) (Spelke & Kinzler, 2007, p. 83). These principles of core object system can properly constrain the imaginative simulation of physical entities, while the principles themselves are unlikely to be cognitively accessible.[21]

Defending INACCESSIBILITY (imagination) requires a more careful examination (Miyazono & Tooming, 2023), which is beyond the scope of this paper. It is not our aim here to defend INACCESSIBILITY (imagination), or any substantial views about imagination for that matter. Instead, what matters here is that a similar argument is applicable to memory, which is the topic of the next section.

[20] INACCESSIBILITY (imagination), or similar ideas, have been endorsed by Gendler (1998), Lombrozo (2020), Aronowitz & Lombrozo (2020) and Cushman (2020). INACCESSIBILITY can be true for different reasons. It can be true because of the format of the imaginative constrainers (e.g., Gendler, 1998). For instance, imaginative constrainers do not have a propositional format, which is why cognitive processes do not have access to them. Alternatively, it can be true because of an architectural reason (e.g., Aronowitz & Lombrozo, 2020). For instance, imaginative constrainers are informationally encapsulated, which is why cognitive processes do not have access to them.

[21] Note, however, that the principles of core object system are available to perceptual processes as well (Spelke, 2000; Spelke & Kinzler, 2007). But this is not a problem for our argument for two reasons. First, depending on how mental processes are individuated, one can argue that perceptual processes and imaginative processes are not distinct; they belong to psychological processes of the same kind. Second, even if they are distinct processes, NOPRIOR can still be true. This is because perceptual processes, even if they have access to the principles of core object system, are not able to provide prior justification in the kinds of cases we are interested in. For instance, in the Piano Case, it is not the case that, before Sam's imaginative exercise, he already had (prima facie propositional) justification from perceptual processes for believing that the piano fits where the couch currently is. Perceptual processes do not justify beliefs of this kind, i.e. beliefs about future or counterfactual events. We will discuss a related issue about memory and imagination in Section 5.

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5 The argument from inaccessibility applied to memory

As we saw in Section 3, the fact that memory is psychologically generative does not let us yet infer that it is epistemically generative. What we need to show is that there are epistemically generative cases of memory that satisfy both JUSTIFICATION and NOPRIOR. In this section, we will argue that there are good reasons to think that there are such cases.

Let us start by rehearsing the argument for epistemically generative cases of imagination, considered in the previous section, and see if a similar argument can also be applied to memory. Here is the idea of inaccessibility that we articulated in the previous section with respect to imagination, but now applied to memory:

> INACCESSIBILITY (memory): In some cases of remembering, memory is properly constrained by some mnemonic constrainers that are cognitively inaccessible in the sense that only memory processes can tap into the mnemonic constrainers for the purpose of belief formation and that other belief-forming processes, such as inference, do not have access to them.

It might seem peculiar that we talk about constrainers in the case of memory, given that this kind of talk is much more commonplace in the literature about imagination (see the previous section). The epistemology of memory is conceptualized in terms of constrainers much less frequently, if at all. That being said, since by proper constrainers we just mean whatever prior representations (but see also footnote 17) in virtue of which psychological processes are sensitive to real features of the world, it is natural to think that memory processes also need to be properly constrained in order to deliver any justification in the first place. Without constrainers, psychologically generative mnemonic processes may produce representations that fail to be sensitive to what actually happened in the agent's past. Without such sensitivity, there is little reason to think that the memories that result from such processes can provide any justification for forming beliefs on their basis.

Like in the case of imagination, if INACCESSIBILITY (memory) is true, there can be epistemically generative cases of memory that satisfy both JUSTIFICATION and NOPRIOR. Suppose that S has justification for believing that p from a memory at t2, i.e., JUSTIFICATION is true, and that the memory is the result of a memory process that has access to mnemonic constrainers to which other belief-forming processes do not have access, i.e., INACCESSIBILITY (memory) is true. In such a case, the justificatory force of memory with respect to p is not owed to any source other than memory. Therefore, there is no earlier time t1 at which S already had prima facie propositional justification for believing that p, i.e., NOPRIOR is true.

In what follows, we will consider some empirical studies that give prima facie support to INACCESSIBILITY (memory) in that they suggest that mnemonic pro-

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cesses make use of constrainers to which other belief-forming processes do not have access.

The most significant studies for our purposes concern event completion: the process of filling in the details of event memories. Across two experiments, Strickland & Keil (2011) tested whether people fill in their memories of events with causal information that they in fact did not perceive if that causal information was implied by the perceived events. In their experiments, they showed the subjects videos that depicted a causal launching effect of kicking a ball. The videos fell under three types: those with causal implication (i.e., showing the flight of the ball as a result), those without causal implication (i.e., showing something from the scene that was irrelevant for the action, like a person walking) and those that were scrambled and lacked any causal cohesion. Each type of video that was shown was either complete or incomplete (i.e., they either included or did not include the moment of contact with the ball). After seeing the video, the subjects were shown a picture of the man hitting the ball and asked to report if they saw it in the original event. The subjects who actually did not see the moment of contact in the original video were inclined to (mis)attribute it to the original event significantly more frequently when they had to remember incomplete events with causal implication (74% in the first experiment and 55% in the second experiment) than when they had to remember incomplete events without causal implication (51% in the first experiment and 28% in the second) or scrambled events (47% in the first experiment and 27% in the second). Falsely remembering seeing the moment of contact therefore occurred significantly more frequently when the moment of contact was strongly implied than when the implication was missing. Strickland and Keil take these data to imply that the structural constraints on event memory formation are such that under certain conditions, it incorporates information that was not actually experienced into the event representation.

These data indicate that event completion in memory is an example of a psychologically generative process in that it produces new content that was not in the original experience. What is interesting about that phenomenon for our purposes is that there are reasons to think that the mnemonic processes that are responsible for event completion prima facie satisfy INACCESSIBILITY (memory). In a follow-up study to Strickland and Keil, Kominsky et al. (2021) investigated the underpinnings of the process of event completion in memory. They tested which of three factors—event familiarity (understood in terms of perceptual schemas), object identity, or spatiotemporal continuity—drove the filling-in effect. Event familiarity did not seem to matter much: unfamiliar events were also likely to trigger the filling-in effect. Object identity was also not relevant: when the causal consequence of an event was just implied without there being continuity between events, the false memory was not triggered. What mattered was spatiotemporal continuity between the events perceived. Even if the category of the object implicated in

the event changed during the event, the filling-in effect was likely to occur, as long as there was continuity in trajectory.[22]

Why does this study give a reason to think that event completion processes satisfy INACCESSIBILITY? They seem to satisfy INACCESSIBILITY because if a memory is formed through filling in a part of the event that was not originally experienced, then the memory process responsible for its formation taps into information that is not accessible to higher-level cognitive processes. The relevant principle that constrains the process of filling-in seems to be the core object system principle of spatiotemporal continuity, as indicated by the study by Kominsky et al.—and, as we already noted in the previous section, core object system principles are not accessible to higher-level cognitive processes (Jenkin, 2020, p. 268).

In addition, there is some evidence that indicates that the filling-in effect is insensitive to explicit cognition. For instance, the effect still occurred even when the participants were informed that the context of the task was the testing of false memories (Papenmeier et al., 2019). In other words, their explicit knowledge about the task context did not affect how mnemonic processes filled in the missing content. If the filling-in effect is insensitive to explicit cognition, this suggests that the constraints under which mnemonic processes that are responsible for it operate are distinct and independent of the principles of other belief-forming processes, suggesting INACCESSIBILITY (memory).[23]

Returning now to the issue of whether there are epistemically generative cases of memory—if INACCESSIBILITY (memory) is true of event completion cases, then we have some reason to think that also NOPRIOR can be true of such cases: if an agent is justified in believing that p on the basis of a memory that results from event completion, then there was no earlier time before the formation of that memory at which she already had prima facie propositional justification for believing that p from some other, non-mnemonic source. Because of INACCESSIBITY (memory), a non-mnemonic process could not put her in the epistemic position that was required for prima facie propositional justification for forming beliefs about that part of the past event that one did not perceive; only mnemonic processes could do that.

Since the filling-in effect in event memory results in misremembering the event, it could be argued that such memories cannot constitute a source of justification for beliefs about past events, and that therefore, JUSTIFICATION is false. This objec-

[22] "Participants were significantly less likely to fill in the moment of release when there was a violation of spatiotemporal continuity (M = 67.5%, SD = 30.8) than when there was not (M = 77.9%, SD = 28.1)." (Kominsky et al., 2021, p. 528).

[23] We should stress that INACCESSIBILITY is consistent with agents being able to arrive at understanding the content of core object system principles through non-mnemonic higher-level cognitive processes (this, after all, is what psychologists have already achieved). It is just that those cognitive processes do not have access to the representations of those principles that govern mnemonic processes. In other words, the agent can have explicit knowledge about the content of core object system principles and that knowledge is accessible to non-mnemonic cognitive processes but this does not mean that the constrainers on mnemonic processes are accessible to non-mnemonic cognitive processes.

tion can be rejected, however, because even misrememberings can justify beliefs formed on their basis, as long as such beliefs are reasonable. In the case of event completion, such beliefs are reasonable because the filled-in content is causally implied by what was perceived.

Furthermore, there can also be cases in which event completion results in accurate memories. To illustrate such a possibility, consider the following case:

> **Football Case**: Naomi recalls when she scored a difficult goal in a football game in her childhood. As a matter of fact, she did not watch the entire trajectory of her shot because she fell down immediately after the shot and lost track of the ball. In her memory, however, she recalls the entire trajectory of the ball; her memory system fills in the gap between the moment when she lost track of the ball and the moment when she found it again in the goal net.

Intuitively, if the remembered trajectory of the ball matches the actual trajectory, Naomi can believe accurately on the basis of the apparent memory that the ball flew in the remembered trajectory. By tapping into mnemonic constrainers, her mnemonic processes were properly sensitive to the spatiotemporal dynamics of a football in flight. The Football Case admittedly does not exactly match the situations that were tested in Strickland & Keil (2011) and Kominsky et al. (2021) in that mnemonic processes fill in the content of event memory across a longer period of time. However, we don't think that this is a fatal problem, given that the case is only meant as a vivid illustration of a situation where a memory of such a part of an event that the agent did not witness can still justify beliefs about what happened during that part.

We have been arguing that justification provided by memory can satisfy both JUSTIFICATION and NOPRIOR by appealing to INACCESSIBILITY (memory). However, there is an objection to this line of reasoning. In the case of the constrainers that guide the process of event completion in memory, it makes sense to think that these constrainers are also accessible to *imaginative* processes. As the study by Kominsky et al. (2021) indicates, the relevant constrainer for the filling-in effect is the core object system principle of spatiotemporal continuity. As we saw from the previous section, however, it is highly plausible that core object system principles are also implicated in mental simulations or perceptual imaginings of the movements of physical objects. For instance, people's perceptual imaginings of the movement of occluded objects need to be constrained by the principle of spatiotemporal continuity for the imaginations to be predictively accurate—and often, they really *are* predictively accurate, suggesting that they might be appropriately constrained by that principle. But if imaginative processes can also tap into core object system principles, then it looks like INACCESSIBILITY (memory) is false: it is not only mnemonic processes that can tap into mnemonic constrainers, but also imaginative processes.

The seriousness of this objection depends on whether memory and imagination are the same or different types of processes.[24] If they are the same type of process, INACCESSIBILITY (memory) should be understood as referring both to memory and imagination. In that case, they would not contrast with each other as distinct processes. Consequently, the objection in question can be easily evaded because it would not make sense to say that mnemonic constrainers that are tapped into by mnemonic processes are accessible or inaccessible to imaginative processes: they are simply the same kind of process.[25] If memory and imagination are distinct types of processes, however, the objection in question seems to be much more serious. It would then be the case that the relevant constrainers, such as core object system principles, would also be accessible to certain *distinct* belief-forming processes, i.e., imaginative processes. This straightforwardly seems to contradict INACCESSIBILITY (memory).

However, we think that even if we accept memory being distinct from imagination, the data on event completion can still be used to support epistemic generationism about memory. This is because although INACCESSIBILITY (memory) is useful for our purposes, its truth is not necessary for arguing that there are generative cases of memory justification.[26] What is crucial is that the data on event completion suggest that there are cases of memory which satisfy both JUSTIFICATION and NOPRIOR, even when INACCESSIBILITY (memory) is false. How?

If memory and imagination are distinct processes, it is plausible that it is specifically the mnemonic process that is responsible for generating justification in the case of event completion, not imaginative or any other non-mnemonic process, i.e., NOPRIOR is true. Episodic memory is past-directed in that its function is to represent past events that the subject takes to have experienced herself. Imagination is not past-directed in that way. Instead, its function is to represent future or counterfactual events that the subject does not take to have experienced herself in the past. Due to this functional difference, it is plausible that even if the principle of spatiotemporal continuity that the mnemonic processes tap into is accessible also to imaginative processes in some contexts, when it comes to event completion, it

[24] In the literature on memory, whether memory and imagination are the same or different kinds of process is debated by continuists and discontinuists, respectively. According to continuists, memory and imagination are outputs of the same type of mechanism, such as episodic construction mechanism, while discontinuists take memory and imagination to be grounded in distinct psychological mechanisms (for discussion, see Michaelian et al., 2020).

[25] Interestingly, if memory and imagination are the same kind of process, then the previous argument from INACCESSIBILITY (imagination) in favor of epistemically generative cases of imagination in the previous section would already support epistemically generative cases of memory because if INACCESSIBILITY (imagination) is true then also INACCESSIBILITY (memory) is true. Nevertheless, the empirical data regarding event completion that was adduced in this section would count as *additional* evidence for INACCESSIBILITY (memory).

[26] Independently of whether memory and imagination are the same or different kinds of process, introducing the argument from inaccessibility and its applicability to memory was useful for the purposes of this paper because it allowed us to import the idea of constrainers and their epistemic relevance to the discussion about the epistemic generativity of memory.

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is only mnemonic processes that can tap into that principle in constructing representations of past events that their subject takes to have experienced herself. It is therefore only memory that can justify beliefs about one's past experiences in such a situation.[27]

As an illustration, consider the Football Case again. Naomi is justified in believing by memory that the ball flew in the trajectory it did. The memory that justifies this belief resulted from past-directed mnemonic processes that constructed a representation of the ball's trajectory during the match that occurred in Naomi's childhood. Imagination, on the other hand, cannot justify Naomi's belief about the ball's trajectory in the past because it is not past-directed like memory is.

We can thus see that whether or not memory and imagination are processes of different kinds, we can still argue for epistemic generationism about memory, although by using slightly different argumentative strategies.

6 Conclusion

In this paper, we argued that episodic memory can be a generative source of justification in that there are cases in which episodic memories can provide epistemic justification that is not owed to any other source. In particular, the cases of event completion are such that by filling in event memory representations, mnemonic processes can produce memories with new content that was not given in the original experience. Since such memories can justify beliefs independently of other, non-mnemonic sources, this gives a reason to think that generationism about memory is true.

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[27] Notice that although mnemonic processes being distinct from imaginative processes implies that INACCESSIBILITY (memory) is false, the previous line of reasoning suggests that we still have a reason to embrace a contextualised version of that principle where the inaccessibility in question is defined in terms of memory's proprietary context of use:

> INACCESSIBILITY (memory)*: In some cases of remembering, memory is properly constrained by some mnemonic constrainers that are "cognitively inaccessible" in the sense that only memory processes can tap into the mnemonic constrainers *in the context of constructing representations of one's personal past* for the purpose of belief formation and that other belief-forming processes, such as inference, do not have access to them.

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