RHV, 2025, No 28, 45-69 eISSN 0719-4242
DOI: https://doi.org/10.22370/rhv2025iss28.4790
Philosophy of memory / Articles

Rethinking Memory and Imagination: A Philosophical and Neuroscientific Perspective

Repensar la memoria y la imaginación: Una perspectiva filosófica y neurocientífica

Tzofit Ofengenden*

Tulane University, The School of Medicine
tofengenden@tulane.edu
https://orcid.org/0009-0007-1122-5036

Abstract

Can we distinguish memory from imagination? The contemporary constructive view of memory, which replaced the archival view, has been the dominant perspective for the last thirty years. However, while it is widely accepted that episodic memory is constructive, there is no consensus on the extent to which episodic remembering is factive or constructed and how it aligns with imagining. The current debate centers on the (dis)continuity between episodic remembering and imagining, specifically, whether episodic remembering must preserve some causal connection to past episodes through a memory trace (engram) or if it can be fully constructed. This debate continues the longstanding philosophical challenges of distinguishing memory from imagination. The article connects historical philosophical discussions on the distinctions between memory and imagination with the current debate on whether they are of the same kind. It begins by examining the criteria philosophers have used to differentiate memory from imagination, tracing the discussion from Hume to contemporary debates. The second part explores how cognitive psychology and neurobiology have initiated a new discussion on memory formation**,** arguing that recent neuroscientific research supports the constructive theory of memory and aligns with the continuum approach, suggesting that memory and imagination are of the same kind.

Received: 18/03/2025. Final version: 12/07/2025
eISSN 0719-4242 – © 2025 Instituto de Filosofía, Universidad de Valparaíso

Keywords: memory, imagination, neuroscience, reconsolidation, Multiple Trace Theory, simulationism, causal theory of memory

Resumen

¿Podemos distinguir la memoria de la imaginación? La visión constructiva contemporánea de la memoria, que sustituyó a la visión archivística, ha sido la perspectiva dominante durante los últimos treinta años. Sin embargo, aunque está ampliamente aceptado que la memoria episódica es constructiva, no hay consenso sobre hasta qué punto el recuerdo episódico es factivo o construido y cómo se alinea con la imaginación. El debate actual se centra en la (des)continuidad entre el recuerdo episódico y la imaginación, en concreto, si el recuerdo episódico debe conservar alguna conexión causal con episodios pasados a través de un rastro de memoria (engrama) o si puede ser totalmente construido. Este debate continúa los antiguos desafíos filosóficos de distinguir la memoria de la imaginación.
El artículo conecta las discusiones filosóficas históricas sobre las distinciones entre memoria e imaginación con el debate actual sobre si son del mismo tipo. Comienza examinando los criterios que los filósofos han utilizado para diferenciar la memoria de la imaginación, rastreando la discusión desde Hume hasta los debates contemporáneos. La segunda parte explora cómo la psicología cognitiva y la neurobiología han iniciado una nueva discusión sobre la formación de la memoria, argumentando que la reciente investigación neurocientífica apoya la teoría constructiva de la memoria y se alinea con el enfoque del continuum, sugiriendo que la memoria y la imaginación son del mismo tipo.

Palabras clave: memoria, imaginación, neurociencia, reconsolidación, teoría de las marcas neuronales múltiples, simulacionismo, teoría causal de la memoria

1. Introduction

Most of us still perceive memory as a source of knowledge and a reliable reference to our past. We regard memory as a preservative source that justifies our beliefs (Miyazono & Tooming, 2023). We generally believe that, even if memories are not entirely accurate in their details, the events we recall likely took place. The trust we place in memory has significant ethical implications; we rely on the truthfulness of our memories to form an authentic personal identity, provide testimony in courts, and construct trustworthy personal accounts of historical events. When memory exhibits forgetfulness, errors, or inaccuracies, we perceive them as a dysfunction, deficiency, or failure. Imagination, on the other hand, is associated with the unreal and the fantastic. We are not obligated to verify its realness or truthfulness, and therefore, there is no reason to doubt its epistemological status. Not only do we not refer to imagination as a representation of a real past, but it also does not necessarily need to correspond to anything that truly exists. Imagination can represent anything, at any time. However, the portrayal of memory and imagination as distinct cognitive acts with different

epistemological foundations is misleading. Imagination is not necessarily fictional; it has various manifestations. Imaginings can be grounded in reality and align with past events.[1] For example, imagination can simulate past counterfactual possibilities or anticipate potential future events.[2] Alternatively, imagination can deceive us into believing that its representations are true memories rather than products of the imagination. We frequently misattribute imaginative constructs as memories and vice versa. Memories can be inaccurate, false, or even stem from imagination. False memories, which are actually imaginative re-presentations accompanied by belief, are the most convincing evidence of the close relationship between imagination and memory (Bernecker, 2010). There are many instances in which remembering and imagining interact, generating vivid details and memories of events that never occurred. We use imagination, for example, to fill in gaps, reconstruct missing elements of our memories, and envision alternative past actions to better plan future responses. While we are aware of the role of imagination when reflecting on how we could have acted differently, in many other instances, we are unaware of the extent to which imagination shapes our memories. Often, counterfactual representations become integrated into episodic memories, and we are convinced that they correspond accurately to the past. Whenever we encounter inconsistent information, external counter-evidence, or a reality that contradicts our memories, we unconsciously modify or add details to reconcile discrepancies, providing a coherent narrative (Neisser, 1967). These gaps in memory are automatically filled, often without our awareness, making our conscious experiences more comprehensible and internally consistent. We become certain that we saw or experienced the additional details rather than merely imagined them. We construct an outline of events and then insert false elements that align with the overall narrative. Memory cannot provide us with all necessary details, and, in many cases, we retain only a fragmented picture of complex events. To provide a coherent story, we incorporate additional details from external sources or our own imagination, leading to new interpretations of the remembered experiences.

However, imagination does not merely supplement missing information; it can also produce entirely false autobiographical memories. Indeed, studies show that people can develop both a belief in and a memory of an event that never occurred simply by imagining its occurrence, thereby inducing a false autobiographical memory (Loftus, 1997). If memory and imagination both generate mental images, interact, represent the same experiences, and can

[1] See the example that Martin and Deutscher (1966) provide, which illustrates how one can confuse a memory image with an imagination image. The painter believes his imagined scene originates from his imagination, but its actual source is his memory.

[2] Philosophical discussions debate the scope and nature of imagination, with no consensus on its definition. Some scholars, for instance, argue that conceiving or supposing qualifies as a form of imagination (see Arcangeli, 2018; Kind, 2016).

coincide or overlap, how can we distinguish the representations of memory from those of imagination?

2. Philosophical Criteria for Distinguishing Memory from Imagination

Challenging the view that memory and imagination are distinct cognitive capacities is especially difficult. For centuries, these functions were believed to be separate and directed toward different purposes. Before discussing the neurobiology of memory and its association with imagination, along with how this challenges previous philosophical conceptions, it is important to recognize that, although these cognitive forms were once perceived as distinct, the complex interactions between memory and imagination have been acknowledged since the earliest attempts to define memory. This recognition has led philosophers to establish criteria for distinguishing between the two. I will discuss only some of the most prominent theorists.[3]

Hume, for example, distinguishes memory and imagination in terms of the characteristics of mental representation. In his view, memory has greater vivacity, intensity, and stability, in contrast to the protean, volatile, and voluntary characteristics of imagination. According to Hume, there are two criteria for distinguishing memory from imagination. The first criterion is that they differ in force and vivacity; the second relates to whether the original form and temporal order of the experience are preserved. While both memory and imagination may correlate with prior perceptions, memory preserves the original form in which its objects were presented. Imagination, by contrast, is unconstrained by that form and free to rearrange, transform, or combine ideas. (Book I, Part I, Section III, pp. 18–19).

Hume acknowledges that we cannot prove an image is a memory, as it is impossible to compare it with the past's original form and order to confirm its accuracy (Book I, Part III, Section V, pp. 70–71). As a result of these reservations, Hume renounces his second criterion of maintaining form and temporal order and adheres to the first —memory's superior force and vivacity over imagination. However, relying solely on relative vivacity leads to a variety of epistemic errors due to the constant conjunction of memory and imagination. We cannot distinguish low-vivacity memories from highly vivid imaginations (Holland, 1954). Therefore, the following questions arise: Would a highly vivid representation without the form and order of the original perceptions be considered a memory? Alternatively, would a low-vivacity representation with the form and order of the original perceptions be counted as imagination? When a memory's vivacity fades, does it thereby become imagination? Can a memory

[3] For a discussion of how Plato and Aristotle distinguish between memory and imagination, see De Brigard (2017) and Kind (2023).

degenerate into imagination? Can an imagined event be revived so vividly that it turns into memory?

Hume was aware of the possibility that we might confuse memories and imagination, that a memory could mistakenly be taken as imagination and, conversely, that a vivid imagination could be mistakenly taken as a memory. Additionally, image characteristics cannot serve as a criterion for distinguishing remembering from imagining, as factors like vividness and intensity are established inductively. That is, if an image is vivid, we might infer it is a memory; if not, we might assume it is imagined. However, this inference does not reveal the image's origin or the cognitive processes behind it but instead assumes the distinction after the fact. We cannot apply Hume's second criterion or the first, as memories and imaginations both exhibit varying levels of vividness, making them indistinguishable. Therefore, vividness must also be discarded as a distinguishing feature.

Husserl offers a different approach in *Phantasy, Image Consciousness, and Memory*, where he characterizes both imagination and memory as reproductive re-presentations of absent objects, that is, objects no longer bodily present in the perceptual field. These acts share a crucial feature: they are modifications of original perception that stand in contrast to perception itself. Neither memory nor imagination presents its object as actually present; both refer to what is absent.

Reproductive representation, for Husserl, involves double intentionality: the act is directed not only toward the remembered or imagined object, but also reflects the act of remembering or imagining itself. Thus, both memory and imagination involve two elements: (1) the image that appears, and (2) the subject of the image, which remains absent. Due to this structural similarity, Husserl contends that the distinction between memory and imagination lies not in their content, but in the way in which consciousness intends the object. The meaning of the object is thus constituted by the type of intentional act through which it appears to consciousness.

Memory intends an actually existing past object —what has been— while imagination intends a non-actual object—what might have been. As a time-constituting form of consciousness, memory unfolds in the present and coexists with perception. It not only retrieves the past but also mediates the relationship between past and present. Through recollection, the present moment interacts with the original temporal field, enabling the reintroduction of what is absent into present experience. This interaction defines the temporal distinction between the act of remembering and its object. Thus, memory involves both the past perception and the present act of recalling it.

By contrast, imagination relates to what is not actual. It does not reproduce a past "now" or coincide with a previously lived present. In imagination, we remain aware that what we envision is not real. As Husserl observes, imaginative representations "lack the consciousness of reality in relation to what is imagined" (2005, p. 4). Unlike illusions or hallucinations,

which impose themselves on perception and blur the line between real and unreal, imagination explicitly signals its distance from reality through its "as if," "as it were," or "quasi" mode (pp. 172, 345, 672).

While Husserl distinguishes each act's features and their relation to the object, he does not fully explain how each act constitutes its specific object, how memory constitutes its object as a remembered event and imagination as a non-actual one. He outlines their modes of apprehension but not the unique processes by which they generate meaning. Moreover, the phenomenological method does not dispel all doubt or error; it remains unclear how acts of consciousness correlate with objects. Can an intentional act produce a false objectivation? If both modes represent absence, how can we avoid confusing one for the other? Is belief in the reality of memory sufficient to distinguish it from imagination? Husserl's phenomenology outlines the ideal constitution of different modes of apprehension and their relation to objects but does not guarantee the reliability of the appearance of those objects as intended by consciousness.

William James defines memory as an image that refers to the past: "It is the knowledge of an event or fact, of which meantime we have not been thinking, with the additional consciousness that we have thought or experienced it before" (1981, p. 648). He acknowledges that memories, imagination, and desires can sometimes overlap in their representations. However, what sets memory apart from imagination is this *additional consciousness* —an awareness that marks a representation specifically as a memory. According to James, memory images are accompanied by a feeling of "warmth and intimacy" (1981, p. 649) and a sense of belief, which allows us to attribute them confidently to past experiences. In contrast, imagination lacks this emotional warmth and conviction.

Similarly to Husserl and James, Bertrand Russell distinguishes between memory and imagination based on the individual's attitude toward the representation. For Russell, it is the subject's relation to the image, how it is experienced, that determines whether it is classified as memory, imagination, or another mental state. He defines memories as images accompanied by a feeling of familiarity and a "belief-feeling," a sense that the image refers to a past experience (Russell, 1921, p. 186).

Russell acknowledges that this feeling can be misleading; imagined events can sometimes be experienced with a false sense of familiarity or belief.[4] He also notes that the judgment identifying an image as a memory is made in the present, not the past, and is not inherently tied to the actual occurrence of the remembered event. Thus, there is no necessary link between present memory beliefs and actual past events. What makes a representation a

[4] Russell is not the only one to connect memory and belief. See also Locke (1690, Bk. II, Ch. 10, Sec. 2); Furlong (1948, pp. 73, 75, 93); and Harrod (1942, p. 53).

memory, for Russell, is not its objective truth but the subjective experience of pastness and belief. Consequently, even false memories, representations mistakenly believed to be real, are still categorized as memories.

In addition to belief and pastness, Russell introduces *context* as another distinguishing feature: memory involves situating the representation within a temporal sequence, connecting it to other events to form a coherent narrative (1921, pp. 162, 186).

In a related effort to differentiate memory from imagination, F. C. Bartlett emphasizes the structural composition of each act. According to Bartlett, memory typically draws on a single schema, while imagination integrates elements from multiple schemas. However, he also cautions that this difference is not absolute: "even this difference is largely only a general one, for as has been shown again and again, condensation, elaboration, and invention are common features of ordinary remembering, and these all very often involve the mingling of materials belonging originally to different 'schemata'" (1932, p. 205).

Expanding upon the notion of attitude in distinguishing memory from imagination, J. O. Urmson similarly emphasizes the *initially intended attitude* as the key determinant. For Urmson, what defines a mental event as either imagination or memory is the consciously chosen orientation toward the representation. This intended attitude sets the criterion for success and fulfillment, thereby determining the type of representation (1967, pp. 87–88). Like Husserl, who highlighted the subject's relation to the representation, Urmson also focuses on the *intention* behind the mental act rather than on the content itself. If the individual intends to recall, the event counts as recollection; if the intention is to imagine, then it is imagination, even if the resulting representation closely resembles a past experience. These intentions arise from conscious awareness and purposeful goals.

However, what if there is no deliberate intention, and the mental event occurs spontaneously or automatically, without the subject's awareness? In such cases, although it may seem that one is remembering a past event, one might actually be imagining an alternative scenario. This lack of clear intention challenges the neat distinction between memory and imagination based solely on intended attitude.

The challenge of distinguishing memory from imagination has existed since ancient philosophy and remains unresolved. Recently, the debate over its proximity to imagination has been renewed in philosophy, following research in psychology and neuroscience. While the scientific community agrees that memory is a constructive and dynamic process, replacing the traditional archival view,[5] there is no consensus in the philosophy of memory regarding

[5] While the constructive theory of memory was introduced by researchers such as Bartlett (1932) and Neisser (1967), Tulving and Loftus played crucial roles in shifting the paradigm from the archival model to the con-

the extent of this constructiveness. Philosophers debate the threshold at which revisions and modifications in episodic memory still qualify as genuine memory, as well as whether memory and imagination should be considered fundamentally the same kind of mental process. Views differ between the causal theory of memory and simulationism (Perrin & Michaelian, 2017; Michaelian, Perrin & Sant'Anna, 2020; Langland-Hassan, 2021; 2023a; Michaelian, Sakuragi, Openshaw & Perrin, 2024).

Causal theorists argue that while memory is constructive, genuine episodic remembering requires content preservation and a causal link to the past. Unlike the archival view, which sees memory as storing discrete representations, current causal theorists acknowledge memory as constructed yet causally linked to past experiences. They maintain that memory preserves content from past experience, though not necessarily in discrete representations, while remaining distinct from imaginative reconstruction. Therefore, there is a fundamental discontinuity between remembering and imagining (Martin & Deutscher, 1966; Bernecker, 2010; 2017; De Brigard, 2014b; 2020; Debus, 2014; McCarroll, 2018; Perrin, 2016; 2018; Robins, 2016; 2020a; Werning, 2020; De Brigard, 2025).

In contrast, proponents of the simulation theory of memory, or continuists, endorse a more constructive view of episodic memory. They claim that memory functions as a broader general capacity for mental time travel (Suddendorf & Corballis, 2007), enabling the construction of simulations such as episodic hypothetical thoughts, future thought, and counterfactual thinking. They view remembering and imagining as fundamentally continuous, differing in degree rather than as distinct mental states.

Some simulationists, such as Michaelian, argue that episodic remembering does not need to derive from the subject's particular past experience or require a causal relation to the past to be considered a memory. As Michaelian writes, just as the system can simulate a future or counterfactual event without relying on a particular prior experience, it can also simulate a past event without drawing on prior experience, although it might incorporate a particular prior experience if available (2016b, p. 3). Simulationists maintain that episodic remembering could be entirely a form of constructive imagining (Michaelian, 2016a; 2016b; 2016c; 2021; 2022; 2023; Michaelian, Perrin & Sant'Anna, 2020; Addis, 2020; McCarroll, 2020; 2023).[6]

structivist model. Loftus's research focused on memory's malleability and susceptibility to errors, demonstrating how memory can incorporate, confuse, or be influenced by information that was not present in the original experience (Loftus, 1997; Loftus & Pickrell, 1995; Loftus, 2003). See also Tulving (1972, 1983, 1985, 2002). This line of work was further developed by Schacter, Norman & Koutstaal, 1998; Sutton, 2007; Michaelian, 2011; Klein, 2013; and De Brigard, 2014a, 2014b.

[6] Some forms of simulationism may align with causalism (De Brigard, 2014b; Hopkins, 2018; Shanton & Goldman, 2010). See attempts to reconcile some aspects of the two views (Sutton & O'Brien, 2023; McCarroll *et al.*, 2024; Michaelian, Álvarez & Openshaw, 2025).

3. Does neuroscience challenge the distinction between memory and imagination?

Among the various functions and types of memory, I refer here to episodic and autobiographical memory, namely, memories of personal experiences. Episodic and autobiographical memories hold greater implications for our understanding of truthfulness and falsity in memory than any other form, as they are the only ones with direct reference to the past (Tulving & Markowitsch, 1998; Klein, 2013).

As Tulving points out, "Episodic memory is the only form of memory that, at the time of retrieval, is oriented toward the past: retrieval in episodic memory means 'mental time travel' through and to one's past. All other forms of memory, including semantic, declarative, and procedural memory, are, at retrieval, oriented to the present" (Tulving, 1999, p. 15).[7]

Researchers in cognitive psychology, particularly those studying memory expression, have explored how episodic and autobiographical memories are created, reconstructed, and modified, and to what extent these memories align with actual past experiences (Koriat, 2007, p. 243). They maintain that episodic and autobiographical memories are more susceptible to manipulation or changes than other types of memory due to their dynamic nature.

Episodic memory is not a replay of past events but rather a dynamic and continual process of reconstruction. This view of memory as a constructive process, initially put forth by cognitive psychologists, has gained additional support from the neurobiology of memory, which demonstrates the dynamic and flexible nature of memory formation at the neural level. Studies of brain function have revealed that memory formation and retrieval involve dynamic and flexible neural processes, aligning with the concept of memory as an active, reconstructive mechanism rather than a static repository of information.

3.1 The Multiple Trace and Reconsolidation Theories

Two prominent theories account for the constructive nature of memory: Multiple Trace Theory (MTT) and Reconsolidation Theory (RT). According to MTT, no single brain region stores an entire memory. Rather, the components of a memory are distributed across multiple areas of the brain. When a memory is retrieved, it is reconstructed by assembling these dispersed components from various neural regions (Moscovitch, 2007, p. 19). However, this process is not straightforward, as not all components necessarily align during retrieval to recreate an exact representation of the original experience. Instead, elements of the original memory may be altered, omitted, or replaced with features from related memories. Consequently, retrieving a memory is not simply about accessing a stored object or recalling a past

[7] See also Tulving (1983; 1985; 2002).

event from a specific location but actively reconstructing and reforming it (Dudai, 2004; 2006).

The revision that neuroscientists have made to consolidation theory also emphasizes the elastic and constructive formation of memory. In the past, researchers posited that memory consolidation, the process by which memories stabilize, occurred only once. They suggested that new memories are initially fragile but become stabilized over time through consolidation, transforming an unstable short-term memory into a durable long-term memory. According to this view, once a memory was consolidated, it was thought to remain stable and resistant to disruption. However, recent findings in neuroscience have challenged this view. Researchers are now focusing on the neural mechanisms underlying memory persistence, particularly synaptic plasticity and synaptic strength. They have discovered that consolidation occurs not only after initial learning (encoding) but also following each act of memory retrieval. Synaptic plasticity enables memory reconsolidation by allowing the reactivation and modification of synaptic connections each time a memory is recalled, making it possible for the memory to be updated or strengthened. This new understanding suggests that when we retrieve a memory, it temporarily returns to a malleable state, requiring a process called reconsolidation to be re-stabilized.

This reconsolidation phase is thought to provide an opportunity for existing memories to be updated with new information (Alberini, 2005; Tronel, Milekic, & Alberini, 2005). Thus, our understanding of memory has shifted from a model of static, unchanging storage (the Archival model) to one of dynamic and continual reconstruction. Memory traces are continually altered and reconstructed to adapt to changing circumstances. Each time we recall a memory, it becomes susceptible to influence from our current perceptions, expectations, attitudes, emotions, and perspectives. This process effectively creates a new version of the memory, potentially altering its meaning and significance (Dudai, 2004; 2006; Rose, 2003; Nader & Hardt, 2009).

Reconsolidation is a natural and normal brain process during which the original memory trace may be updated or adjusted. While these alterations might seem like errors or fabrications when compared to the initial experience, they are actually part of the brain's adaptive mechanism. This process allows our memories to remain relevant and useful in light of new experiences and knowledge. In other words, memory distortion is characteristic of normal rather than pathological or abnormal remembering.

The constructive process can take place over and over again, modifying the original trace to be very different from the initial experience. Additionally, the integration of new information, emotions, and attitudes can significantly alter a memory, making it vastly different from the original past experience. Thus, multiple trace theory and reconsolidation theory not only support the idea that memory is not a literal reproduction of the past but also demonstrate that it is a constant constructive process capable of incorporating non-pertinent information.

3.2 Deficits in Episodic Memory Impair the Ability to Imagine

Additional evidence for the constructive nature of episodic memory and its close relationship with imagination comes from studies on patients with episodic memory deficits, which show that impairments in recall also hinder the capacity to imagine new experiences (Klein, Loftus, & Kihlstrom, 2002; Squire, 2004; Addis, Wong, & Schacter, 2007; Hassabis, Kumaran *et al.*, 2007; Hassabis & Maguire, 2009; Comrie, Frank, & Kay, 2022). These studies not only demonstrate that memory is constructive but also provide compelling support for the idea that remembering and imagining lie on a cognitive continuum. If the two were distinct processes, impairments in episodic memory would not be expected to affect the ability to construct novel or future scenarios. Yet, individuals with episodic memory loss frequently exhibit a parallel inability to simulate new experiences, suggesting that both faculties rely on overlapping neural mechanisms.

Further supporting this view, research has shown significant overlap in the brain regions involved in both true and false memories, indicating that they are produced by the same underlying processes (Schacter & Addis, 2007b; Schacter, Addis, & Buckner, 2008; Slotnick & Schacter, 2004; Schacter, 2001). Memory distortions, including the integration of false memories through repeated misinformation, arise from these same mechanisms (Mullally & Maguire, 2014). These findings reinforce the conclusion that memory operates not as a passive recording system but as an active, constructive, and even creative process. Together, the neurological and clinical evidence supports the philosophical view that memory and imagination are interdependent functions of a unified system for navigating both past and future experience.

3.3 With which approach does the neuroscience of memory align?

That said, current research in cognitive science and neuroscience hasn't yet settled the debate between continuism and discontinuism, mainly because there are still major gaps in our understanding. (Schirmer dos Santos, McCarroll, & Sant'Anna, 2023; Perrin & Michaelian, 2017; Michaelian, Perrin, & Sant'Anna, 2020; Robins, 2020a). It remains unclear what precisely enables these processes and whether they arise from the same mechanism or if one depends on the other. This lack of knowledge makes it difficult to determine the exact nature of their involvement and interdependence. While episodic memory and episodic imagination represent different attitudes, they both draw on content from the same underlying neurocognitive system and seem to display a tight interplay between them, which is the primary source of ongoing disagreement.

There are multiple attempts to challenge continuism and the idea that episodic memory and episodic imagination are the same kind. I will mention two challenges presented by Robins (2020a) and Schwartz (2025), who argue that the similarities are overstated. Their arguments are compelling, and I do not have the space to fully address them here, as it would

require much more room, but I would like to briefly mention them and will argue, however, that these objections do not ultimately undermine the continuism thesis.

Robins, for example, argues that we still need to explain why we experience different mental attitudes such as seeming to remember, imagining, and remembering, and how we are able to distinguish between them if they are of the same kind. She refers to studies in which researchers observed overlapping brain areas activated when participants were instructed to remember a past event, imagine a future event, or imagine a possible past or counterfactual scenario. However, she claims that although these different attitudes rely on the same neurocognitive system, the fact that participants could reliably distinguish between these mental attitudes indicates that they are distinct mental acts. Based on this, she concludes that even though episodic remembering and episodic imagining are similar in terms of neural systems, they are different as mental attitudes, which supports a discontinuity between the two (2020a).

However, the fact that participants can follow instructions and identify whether they are remembering or imagining does not establish that these are ontologically distinct mental states. It merely indicates that they can adopt different metacognitive framings in response to task demands. In structured experiments, participants may classify their experience as either memory or imagination, but this distinction reflects a self-interpretive act rather than evidence of discontinuity. Moreover, the very possibility of switching between memory and imagination with reference to the same event suggests a continuity in representational resources. If these states were fundamentally different, one would expect a corresponding discontinuity in content or cognitive architecture. This experimental distinction therefore does not undermine the memory-imagination continuum hypothesis; rather, it illustrates how multiple cognitive attitudes can operate over shared, constructive content.

In addition to sharing representational content, the neural overlap observed in relevant studies lends strong support to the continuum view, suggesting that differences highlighted in experimental contexts may reflect surface-level distinctions rather than deep functional separations. The use of explicit task instructions, such as directing participants to remember or imagine, may amplify perceived differences between the states. In everyday cognition, memory and imagination often blend together, as in future planning or other forms of episodic thought, where the boundary between them becomes far less distinct. Controlled tasks, while informative, may fail to capture this natural fluidity and the dynamic interplay between remembering and imagining.

Drawing on Buckner's (2016) argument that transitional gradations do not eliminate meaningful kind distinctions, Schwartz also challenges the view that shared neural mechanisms and transitional cases dissolve distinctions between cognitive states such as episodic memory and episodic simulation. He argues that simulation theorists overstate the epistemic significance of neural overlap, which does not in itself imply that memory and simulation are

not distinct in kind (Schwartz, 2025). While memory and imagination may share neural substrates, they serve distinct functional and epistemic roles. The continuum thesis, Schwartz argues, fails if it assumes that continuity and neural reuse eliminate meaningful distinctions. As in biology, where gradual transitions between species do not undermine taxonomic categories, shared mechanisms do not preclude kind distinctions when those distinctions serve explanatory purposes. Similarly, memory and imagination remain distinct despite overlapping processes. That imagination may recombine elements from memory to simulate future scenarios does not erase their differing aims. Memory tracks past reality and supports knowledge and justification, while imagination is generative, exploratory, and unconstrained by actual events. These functional differences justify treating them as separate cognitive kinds. Collapsing them into a single continuum risks obscuring their unique roles in thought, much like conflating episodic and semantic memory would. Episodic memories that were once vivid and specific gradually lose their sensory detail and evolve into general knowledge, the gist or meaning of the event. That is, the memory becomes more semantic (fact-like) than episodic (experience-like). While episodic memories are initially represented in the hippocampus, as they consolidate and lose specific detail, they shift to the neocortex. The transition from episodic to semantic memory, and their shared neural mechanisms, does not entail that the two are the same kind. Likewise, the existence of transitional forms between episodic memory and episodic imagination does not entail that they are the same kind (Schwartz, 2025).

Further supporting this line of argument against simulationism, Schwartz argues that episodic memory and episodic imagining, such as episodic simulation, possess different features and properties that constitute them. For example, episodic memory requires processes and mechanisms such as formation, consolidation, and retrieval, which episodic imagining does not. Episodic imagining does not causally depend on the particular experiences it represents, nor does it rely on consolidation processes or the labile states of underlying memory traces.

These differences in process and structure suggest that episodic imagining and episodic memory do not rely on the same mechanisms or properties. Therefore, even if there is no sharp dividing line between individual instances and some features are shared, episodic imagination and episodic memory should still be treated as distinct natural kinds of phenomena (Schwartz, 2025, pp. 15–16).

While the two arguments raised by Schwartz are indeed challenging, his position may underestimate the significance of functional and phenomenological overlap. Emerging neuroscientific research (e.g., Schacter & Addis, 2007; Hassabis & Maguire, 2009) shows that the hippocampus and the default mode network are simultaneously recruited during both episodic recall and episodic simulation. This indicates not only anatomical overlap but also shared computational processes such as scene construction, perspective-taking, and temporal projection. Furthermore, the way we experience remembering and imagining often depends

more on our purpose (intention) and the situation (context) than on any deep, built-in difference in how these mental processes work. For example, a vivid episodic memory and a richly detailed counterfactual imagination may feel subjectively similar and are frequently confused in everyday cognition. If the mechanisms involved are not merely shared but enacted in indistinguishable ways, then the boundary between these mental kinds may be more psychologically and epistemically fluid than Schwartz allows.

The appeal to biological species boundaries, as in Buckner's evolutionary analogy, may also be misleading. In biology, species serve classificatory and reproductive purposes, whereas in cognition, kindhood should be judged by how cognitive systems actually operate. If memory and imagination regularly interpenetrate, inform, and transform each other in practice, such as in future planning, then imposing a strict division may obscure rather than clarify their role in mental life.

Also, the analogy between the transition from episodic to semantic memory and the distinction between episodic memory and imagination is misleading when used to argue they are not part of a continuum. Gentry and Buckner (2024) claim that episodic memory and semantic memory have overlapping features and mechanisms without clear separation, and that episodic memory can incorporate semantic elements during retrieval, blurring the boundary. In addition, memory traces underlying both types often overlap in neural substrates and function. Therefore, they may not be genuinely distinct kinds.

Even if we do not follow Gentry and Buckner's natural kind reasoning, and we claim that episodic memory and semantic memory are not the same, this does not necessarily apply to the relation between episodic memory and episodic imagining, since the shift from episodic memory to semantic memory is not quite the same as that between episodic memory and episodic imagination. The transitional gradation between episodic memory and semantic memory is a neurocognitive transformation, which is not the case with episodic memory and episodic imagining. The process of semanticization, which involves losing spatiotemporal and sensory detail and becoming abstract general knowledge, is accompanied by a neural shift from reliance on the hippocampus to neocortical areas (e.g., the temporal neocortex), indicating a structural and functional reorganization in how the memory is stored and accessed (Aronowitz, 2023).

By contrast, the imaginative use of episodic memory does not involve degradation or reencoding into a separate system. Instead, imagination typically involves the recombination of episodic fragments such as people, places, and actions, using many of the same hippocampal circuits involved in recalling actual past events. There is no equivalent shift in representational structure or a long-term consolidation process that relocates imaginative content to a distinct neural architecture, as occurs in the transition from episodic to semantic memory. In addition, brain damage that affects episodic memory often leaves semantic

memory intact, but the ability to imagine new experiences is usually impaired when episodic memory is compromised.

As for Schwartz's argument that these processes appear distinct because they require different properties, if the formation of episodic memory is enabled and integrated with the mechanisms of episodic imagination and vice versa, then their properties are blended. For example, retrieving a past experience is not independent of our imaginative capacity. Both imagination and remembering are interwoven in forming and retrieving past experiences, just as they are integrated in the creation of episodic simulations. Episodic memory formation, consolidation, and retrieval do not rely solely on perception and recall; imagination plays an essential role in these processes. Thus, memory and imagination not only rely on the same mechanisms, but their formation and maintenance are deeply intertwined and appear to function through a continuous and integrated process. Reconsolidation theory supports this view, as it emphasizes the ongoing revisions that memory traces, known as engrams, undergo through each act of retrieval and reactivation.

Therefore, the continuum thesis is not undermined but rather reinforced by shared mechanisms and transitional forms, especially when these overlaps contribute meaningfully to cognition. Memory and imagination may be better understood as modes within a dynamic generative system, rather than discrete, non-overlapping kinds.

Returning to the reconsolidation theory, the discontinuists claim that the revisions to consolidation theory and the shift from a preservative model to a reconstructive model of memory do not entail a lack of causality or the abandonment of engram theory (which posits that a structural change in the neural system becomes stable and permanent as a result of consolidation). They acknowledge that the dynamic view of neural processes necessitates a revision of engram theory. However, this does not compel them to abandon engram theory (causal theory) entirely. Robins asserts that "Remembering need not be dynamic simply because the underlying neural systems that support it are dynamic" (2020b, p. 1135). The engram may change in some ways (e.g., be altered or weakened) but nonetheless persists as an engram (Robins, 2020b, p. 1136). However, others argue that current research leads to the rejection of engram (trace) theory (Nadel, 2007, p. 181; Silva, 2007, p. 168).

This approach aligns with the current neuroscience of memory. If consolidations never truly end, as neuroscientists and neurobiologists of memory claim (Dudai, 2012, p. 227), and if memories arise from dynamic neural systems that require repeated stabilization, where the stabilization process occurs under circumstances very different from the original experience, then memory is inherently reconstructive and dynamic. This challenges the neural stability required by engram theory. It seems that the underlying neural system necessarily determines the dynamic nature of remembering. Therefore, we need to abandon direct causality in the sense that there is not necessarily a specific engram that corresponds to a specific past experience. However, a broader causal theory still plays a role. While an engram may have once

existed, over time, it transforms and changes entirely. No particular trace or engram is maintained from a past experience; rather, multiple components from multiple experiences contribute to the construction of memory. Even if an engram does exist, it could be that all its components are very different from the original. As a result, episodic and autobiographical memories are not causally tied to one particular past event but instead integrate multiple events and components to support or construct the memory. As Michaelian (2016b) claims, imagination draws on general knowledge and multiple memories of past events to generate counterfactual thoughts and facilitate future planning. Similarly, memory also relies on multiple past experiences and general knowledge to construct specific recollections.

3.4 What are the reasons for claiming that episodic memory is constructive, and how are the mechanisms of episodic memory and imagination intertwined?

Neuroscientists propose that memory is a constructive process rather than a mere reproduction of past events because simply replaying the past is not optimal. One hypothesis suggests that episodic and autobiographical memories are reconstructed to serve present needs. Memory distortions—rather than failures—are byproducts of adaptive evolutionary mechanisms that balance accuracy with flexibility (Schacter, 2001, pp. 6, 184; Squire, 1998). This tradeoff allows memory to adapt to changing circumstances, making it more useful than exact recall. In a constantly evolving world, modifying and reorganizing memories to align with current beliefs, attitudes, and emotional needs enhances their functional value (Dudai, 2006, p. 175).

However, researchers also show that adapting the past to the present is not the only function now ascribed to memory; memory also prepares us for the future (Tulving, 2005; Schacter & Addis, 2007a, 2007b; Buckner & Carroll, 2007; Buckner, 2010). The function of constructive episodic memory is to allow individuals to simulate and imagine future episodes, happenings, and scenarios (Addis, 2018; Schulz & Robins, 2023). Since the future is not an exact repetition of the past, simulating future episodes requires a complex system that flexibly extracts and recombines elements of previous experiences.

Suddendorf and Corballis write, "our ability to revisit the past may be only a design feature of our ability to conceive of the future" (2007, pp. 301-302; Suddendorf & Corballis, 1997, pp. 133–167; Suddendorf & Busby, 2003, pp. 437–438). Conway further argues that episodic memories preserve information highly relevant to goal processing, plan execution, motives, outcomes, and evaluations (2001, p. 1375). Consistent with this hypothesis, neuropsychological and neuroimaging evidence shows that the psychological and neural processes involved in remembering the past and imagining the future overlap (Schacter & Addis, 2007a; 2007b; De Brigard *et al.*, 2013).

Episodic memories integrate into autobiographical memory based on their relevance to long-term goals, undergoing transformation and revision to align the self with future objectives (Conway, 2009, p. 2306). If memories were not modified to reflect the present or anticipated future, they would impede the ability to adjust to changes, creating a discrepancy between past and present. Since the present is in constant flux, past representations must also have the same dynamic nature. Therefore, rather than accurately preserving the past, memory and imagination work together to construct a coherent self, continuously adapting to present and future needs.

Autobiographical memory is shaped and formed by episodic memories that function to ground the self in personal experiences; retrieved information is recollected with reference to oneself, and memory reconstructs narratives to make sense of experiences and integrate them into one's personal identity. These narratives serve various functions, such as reinforcing one's goals or compensating for unmet desires (Singer & Salovey, 1993, pp. 47–48). The need for congruence between the self and its memories drives changes in both: the self adapts through shifts in attitudes and beliefs, while memory undergoes inhibition, misremembering, revision, or modification (Schnider, 2008). As a result, autobiographical memory, composed of both real experiences and constructed narratives, ensures the continuity and stability of the self and personal identity. Our personal identity is grounded not only in factual memory but also in narrative reconstruction, where imagination and memory intertwine to shape a coherent life story over time. Its inherently reconstructive nature makes episodic and autobiographical memories prone to revision and even falsehoods to maintain a coherent self (Conway, 2002, p. 55). Despite this, the act of remembering carries the belief that memories accurately represent exact past events rather than being recognized as reconstructions (Ofengenden, 2014). This belief fosters an integrated and comprehensive self, preventing fragmentation. Thus, episodic and autobiographical memories are shaped, reconstructed, and integrated with the conviction that they reflect reality, ensuring a unified and justified sense of self.

4. Conclusion: Rethinking memory and imagination

Historically, philosophical attempts to distinguish between imagination and memory have consistently encountered difficulties and remained unsuccessful, as the complexity and interrelated nature of these two cognitive processes preclude any clear-cut distinction.

Contemporary neuroscience highlights the intertwined ontological nature of memory and imagination, challenging traditional epistemological distinctions between these cognitive processes. Current hypotheses suggest that they are closely linked and in constant interaction. This neuroscientific portrayal of memory as continually reactivated and altered by normal brain processes reshapes our understanding of remembering and blurs the boundary between memory and imagination. It suggests that remembering is more akin to a creative process

than a simple retrieval of stored information. Describing memory as a generative, reconstructive process aligns with how we define imagination. Both cognitive capacities alter, compound, dissociate, and reconstruct content. Rather than being separate faculties responsible for distinct processes, memory and imagination are fused in various forms of representation, reflection, simulation, and introspection. As such, the distinction between them becomes increasingly unclear, with both involving reconstruction and creation based on past experiences and current cognitive states. Memory and imagination share similar functions and rely on each other—imagination is integral to remembering the past, just as remembering the past enables multiple forms of imagining. Our lack of awareness of this construction process sustains a sense of an integrated, coherent self rather than a fragmented one. Thus, episodic and autobiographical memories are integrated with the belief that they reflect the real past, reinforcing a unified and justified sense of self.

References

Addis, D. R. (2018). Are episodic memories special? On the sameness of remembered and imagined event simulation. *Journal of the Royal Society of New Zealand, 48*(2–3), 64–88. https://doi.org/10.1080/03036758.2018.1439071.

Addis, D. R. (2020). Mental time travel? A neurocognitive model of event simulation. *Review of Philosophy and Psychology, 11*(2), 233–259. https://doi.org/10.1007/s13164-020-00470-0.

Addis, D. R., Wong, A. T., & Schacter, D. L. (2007). Remembering the past and imagining the future: Common and distinct neural substrates during event construction and elaboration. *Neuropsychologia, 45*(7), 1363–1377. https://doi.org/10.1016/j.neuropsychologia.2006.10.016.

Alberini, C. M. (2005). Mechanisms of memory stabilization: Are consolidation and reconsolidation similar or distinct processes? *Trends in Neurosciences, 28*(1), 51–56. https://doi.org/10.1016/j.tins.2004.11.001.

Arcangeli, M. (2018). Supposition and the Imaginative Realm: A Philosophical Inquiry. Routledge.

Aronowitz S. (2023). Semanticization challenges the episodic–semantic distinction. *The British Journal for the Philosophy of Science.* https://doi.org/10.1086/721760.

Bartlett, F. C. (1932). *Remembering: A study in experimental and social psychology*. Cambridge University Press.

Bernecker, S. (2010). *Memory: A Philosophical Study*. Oxford University Press.

Bernecker, S. (2017). Memory and truth. In S. Bernecker & K. Michaelian (Eds.), *The Routledge handbook of philosophy of memory* (pp. 51–62). Routledge.

Bernecker, S. (2023). An explanationist model of (false) memory. In A. Sant'Anna, C. J. McCarroll, & K. Michaelian (Eds.), *Current controversies in philosophy of memory* (pp. 38–58). Routledge.

Buckner, C. (2016). Transitional gradation in the mind: Rethinking psychological kindhood. *British Journal for the Philosophy of Science, 67*(4), 1091–1115. https://doi.org/10.1093/bjps/axv020.

Buckner R. L. (2010). The role of the hippocampus in prediction and imagination. *Annu. Rev. Psychol., 61*, 27–48. https://doi.org/10.1146/annurev.psych.60.110707.163508.

Buckner R. L, Carroll D. C. (2007). Self-projection and the brain. *Trends Cogn. Sci., 11*, 49–57. https://doi.org/10.1016/j.tics.2006.11.004.

Conway, M. A. (2001). Sensory–perceptual episodic memory and its context: Autobiographical memory. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences, 356*(1413), 1375–1384. https://doi.org/10.1098/rstb.2001.0940.

Conway, M. A. (2002). Sensory–perceptual episodic memory and its context: Autobiographical memory. In A. Baddeley, J. P. Aggleton, & M. A. Conway (Eds.), *Episodic memory: New directions in research* (pp. 53–70). Oxford University Press.

Conway, M. A. (2009). Episodic memories. *Neuropsychologia, 47*(11), 2305–2313. https://doi.org/10.1016/j.neuropsychologia.2009.02.003.

Comrie, A. E., Frank, L. M., & Kay, K. (2022). Imagination as a fundamental function of the hippocampus. *Philosophical Transactions of the Royal Society B: Biological Sciences, 377*(1866), 20210336. https://doi.org/10.1098/rstb.2021.0336.

De Brigard, F. (2014a). Is memory for remembering? Recollection as a form of episodic hypothetical thinking. *Synthese, 191*(2), 155–185. https://doi.org/10.1007/s11229-013-0247-7

De Brigard, F. (2014b). The nature of memory traces. *Philosophy Compass, 9*(6), 402–414. https://doi.org/10.1111/phc3.12133.

De Brigard, F. (2017). Memory and imagination. In S. Bernecker & K. Michaelian (Eds.), *The Routledge handbook of philosophy of memory* (pp. 127–141). Routledge.

De Brigard, F. (2020). The explanatory indispensability of memory traces. *The Harvard Review of Philosophy, 27*, 23–47.https://doi.org/10.5840/harvardreview202072328.

De Brigard, F. (2023). *Memory and remembering*. Cambridge University Press.

De Brigard, F. (2025). Simulationism and memory traces. In S. Aronowitz & L. Nadel (Eds.), Space, time, and memory. Oxford University Press.

De Brigard, F., Addis, D. R., Ford, J. H., Schacter, D. L., & Giovanello, K. S. (2013). Remembering what could have happened: Neural correlates of episodic counterfactual

thinking. *Neuropsychologia, 51*(12), 2401–2414. https://doi.org/10.1016/j.neuropsychologia.2013.03.007.

Debus, D. (2014). 'Mental time travel': Remembering the past, imagining the future, and the particularity of events. *Review of Philosophy and Psychology, 5*(3), 333–350. https://doi.org/10.1007/s13164-014-0182-7.

Debus, D. (2023). Memory, imagination, and narrative. In F. Macpherson & F. Dorsch (Eds.), *Perceptual imagination and perceptual memory* (pp. 72–91). Oxford University Press.

Dudai, Y. (2004). The neurobiology of consolidations, or, how stable is the engram? *Annual Review of Psychology, 55*, 51–86. https://doi.org/10.1146/annurev.psych.55.090902.142050.

Dudai, Y. (2006). Reconsolidation: The advantage of being refocused. *Current Opinion in Neurobiology, 16*(2), 174–178. https://doi.org/10.1016/j.conb.2006.03.010.

Dudai, Yadin. (2012). The Restless Engram: Consolidations Never End. *Annual Review of Neuro-science, 35*, 227–47. https://doi.org/10.1146/annurev-neuro-062111-150500.

Gentry, H., & Buckner, C. (2024). Transitional gradation and the distinction between episodic and semantic memory. Philosophical Transactions of the Royal Society B: Biological Sciences, 379(1913), 20230407. https://doi.org/10.1098/rstb.2023.0407.

Hassabis, D., Kumaran, D., Vann, S. D., & Maguire, E. A. (2007). Patients with hippocampal amnesia cannot imagine new experiences. *Proceedings of the National Academy of Sciences, 104*(5), 1726–1731. https://doi.org/10.1073/pnas.0610561104.

Hassabis, D., & Maguire, E. A. (2009). The construction system of the brain. *Philosophical Transactions of the Royal Society B: Biological Sciences, 364*(1521), 1263–1271. https://doi.org/10.1098/rstb.2008.0296.

Holland, R. F. (1954). The Empiricist Theory of Memory. *Mind*, *63*(252): 464–86. https://www.jstor.org/stable/2251500.

Hopkins, R. (2018). Imagining the past: On the nature of episodic memory. In F. Macpherson & F. Dorsch (Eds.), *Perceptual imagination and perceptual memory* (pp. 46–71). Oxford University Press.

Hume, David. (1739/1896). A Treatise of Human Nature. L. A. Selby-Bigge, (Ed.). Clarendon Press.

Husserl, E., (2005). *Phantasy, Image Consciousness and Memory (1898- 1925),* Trans: John B. Brough. Springer.

James, W. (1981). *The principles of psychology* (Vol. 1). Harvard University Press.

Kind, A. (2016). Introduction: exploring imagination. In A. Kind, (Ed.), The Routledge handbook of philosophy of imagination, (1–11). Routledge.

King, R. A. H. (2023). Aristotle on distinguishing phantasia and memory. In F. Macpherson & F. Dorsch (Eds.), *Perceptual imagination and perceptual memory* (pp. 9–27). Oxford University Press.

Klein, S. B. (2013). The temporal orientation of memory: It's time for a change of direction. *Journal of Applied Research in Memory and Cognition, 2*(4), 222–234. https://doi.org/10.1016/j.jarmac.2013.08.001.

Klein, S. B., Loftus, J., & Kihlstrom, J. F. (2002). Memory and temporal experience: The effects of episodic memory loss on an amnesic patient's ability to remember the past and imagine the future. *Social Cognition, 20*(5), 353–379. https://doi.org/10.1521/soco.20.5.353.21125.

Koriat, A. (2007). Remembering: Metacognitive monitoring and control processes. In H. L. Roediger III, Y. Dudai, & S. M. Fitzpatrick (Eds.), *Science of memory: Concepts* (pp. 243–246). Oxford University Press.

Langland-Hassan, P. (2021). What sort of imagining might remembering be? *Journal of the American Philosophical Association, 7*(2), 231–251. https://doi.org/10.1017/apa.2019.44.

Langland-Hassan, P. (2023a). Remembering and imagining: The attitudinal continuity. In A. Berninger & I. Vendrell Ferran (Eds.), *Philosophical perspectives on memory and imagination* (pp. 11–34). Routledge.

Langland-Hassan, P. (2023b). Remembering, imagining, and memory traces: Toward a continuist causal theory. In A.Sant'Anna, C. J. McCarroll, & K. Michaelian (Eds.), *Current controversies in philosophy of memory* (pp. 19–37). Routledge.

Loftus, E. F. (1997). Creating false memories. *Scientific American, 277*(3), 70–75. https://doi.org/10.1038/scientificamerican0997-70.

Loftus, E. F. (2003). Our changeable memories: Legal and practical implications. *Nature Reviews Neuroscience, 4*(3), 231–234. https://doi.org/10.1038/nrn1054.

Loftus, E. F., & Pickrell, J. E. (1995). The formation of false memories. *Psychiatric Annals, 25*(12), 720–725. https://doi.org/10.3928/0048-5713-19951201-07.

Martin, C. B., & Deutscher, M. (1966). Remembering. *Philosophical Review,* 75, 161–196. https://doi.org/10.2307/2183082

McCarroll, C. J. (2018). *Remembering from the Outside*. Oxford University Press.

McCarroll, C. J. (2023). Memory and imagination, minds and worlds. In A. Berninger & Í. V. Ferran (Eds.), *Philosophical perspectives on memory and imagination* (pp. 35–53). Routledge.

McCarroll, C., Michaelian, K., & Nanay, B. (2024). Explanatory contextualism about episodic memory: Towards a diagnosis of the causalist-simulationist debate. *Erkenntnis, 89*, 2273–2301. https://doi.org/10.1007/s10670-022-00629-4.

Michaelian, K. (2011). Generative memory. *Philosophical Psychology, 24*(3), 323–342. https://doi.org/10.1080/09515089.2011.559623.

Michaelian, K. (2016a). Against discontinuism. In K. Michaelian, S. B. Klein, & K. K. Szpunar (Eds.), *Seeing the future* (pp. 62–92). Oxford University Press.

Michaelian, K. (2016b), Confabulating, Misremembering, Relearning: The Simulation Theory of Memory and Unsuccessful Remembering, *Frontiers in Psychology*, 7: 1857. doi:10.3389/fpsyg.2016.01857.

Michaelian, K. (2016c). *Mental time travel: Episodic memory and our knowledge of the personal past*. MIT Press.

Michaelian, K. (2021). Imagining the past reliably and unreliably: Towards a virtue theory of memory. *Synthese, 199*, 7477–7507. https://doi.org/10.1007/s11229-021-03125-4.

Michaelian, K. (2022). Towards a virtue-theoretic account of confabulation. In A. Sant'Anna, C. J. McCarroll, & K. Michaelian (Eds.), *Current controversies in philosophy of memory* (pp. 144–161). Routledge.

Michaelian, K. (2023). If remembering is imagining, then what is forgetting? In A. Berninger & I. Vendrell Ferran (Eds.), *Philosophical perspectives on memory and imagination* (pp. 77–93). Routledge.

Michaelian, K., Perrin, D., & Sant'Anna, A. (2020). Continuities and discontinuities between imagination and memory: The view from philosophy. In A. Abraham (Ed.), *The Cambridge handbook of imagination* (pp. 115–134). Cambridge University Press.

Michaelian, K., Sakuragi, S., Openshaw, J., & Perrin, D. (2024). Mental time travel. In L. Bietti & M. Pogačar (Eds.), *Palgrave encyclopedia of memory studies*. Palgrave.

Michaelian, K., Álvarez, J. F., & Openshaw, J. (2025). Is De Brigard a simulationist? *Philosophy and the Mind Sciences, 6*. https://doi.org/10.33735/phimisci.2025.11720.

Miyazono K., & Tooming. U. (2023). On the Putative Epistemic Generativity of Memory and Imagination. In Anja Berninger and Ingrid Vendrell Ferran (Ed.), *Philosophical Perspectives on Memory and Imagination* (pp.128-145). Routledge.

Moscovitch, M. (2007). Memory: Why the engram is elusive. In H. L. Roediger III, Y. Dudai, & S. M. Fitzpatrick (Eds.), *Science of memory: Concepts* (pp. 17–21). Oxford University Press.

Mullally, S. L., & Maguire, E. A. (2014). Memory, imagination, and predicting the future: A common brain mechanism? *The Neuroscientist, 20*(3), 220–234. https://doi.org/10.1177/1073858413495091.

Munro, D. (2021). Remembering the past and imagining the actual. *Review of Philosophy and Psychology*, *12*(2), 175–197. https://doi.org/10.1007/s13164-020-00499-1.

Nadel, L. (2007). Consolidation: The Demise of the Fixed Trace. In H. L. Roediger III, Y. Dudai, & S. M. Fitzpatrick (Eds.), *Science of memory: Concepts* (pp. 177–82). Oxford: Oxford University Press.

Nadel, L., G. Winocur, L. Ryan, & M. Moscovitch. (2007). Systems Consolidation and Hippocampus: Two Views. *Debates in Neuroscience, 1*, 55–66. https://doi.org/10.1007/s11559-007-9003-9.

Nader, K., & Hardt, O. (2009). A single standard for memory: The case for reconsolidation. *Nature Reviews Neuroscience, 10*(3), 224–234. https://doi.org/10.1038/nrn2590.

Neisser, U. (1967). *Cognitive Psychology*. Appleton-Century-Crofts.

Ofengenden, T. (2014). Memory formation and belief. *Dialogues in Philosophy, Mental and Neuro Sciences, 7*(2), 34–44. https://philpapers.org/rec/OFEMFA.

Perrin, D. (2018). A case for procedural causality in episodic recollection. In K. Michaelian, D. Debus, & D. Perrin (Eds.), *New directions in the philosophy of memory* (pp. 33–51). Routledge.

Perrin, D., & Michaelian, K. (2017). Memory as mental time travel. In S. Bernecker & K. Michaelian (Eds.), *The Routledge handbook of philosophy of memory* (pp. 228–239). Routledge.

Robins, S. (2020a). Defending discontinuism, naturally. *Review of Philosophy and Psychology, 11*(2), 469–486. https://doi.org/10.1007/s13164-020-00462-0.

Robins, S. (2020b). Stable engrams and neural dynamics. *Philosophy of Science*, 87(5), 1130–1139. https://doi.org/10.1086/710624.

Robins, S. (2023). The 21st century engram. Wiley Interdisciplinary Reviews: Cognitive Science,14(5), e1653.https://doi.org/10.1002/wcs.1653.

Rose, S. (2003). *The making of memory* (2nd ed.). Vintage.

Russell, B. (1921). *The analysis of mind*. Macmillan.

Schacter, D. L. (2001). *The seven sins of memory*. Houghton Mifflin Harcourt.

Schacter, D. L., & Addis, D. R. (2007a). On the constructive episodic simulation of past and future events. *Behavioral and Brain Sciences, 30*(3), 299–351. https://doi.org/10.1017/S0140525X07002235.

Schacter, D. L., & Addis, D. R. (2007b). The cognitive neuroscience of constructive memory: Remembering the past and imagining the future. *Philosophical Transactions of the Royal Society B: Biological Sciences, 362*(1481), 773–786. https://doi.org/10.1098/rstb.2007.2087.

Schacter, D. L., Addis, D. R., & Buckner, R. L. (2008). Episodic simulation of future events: Concepts, data, and applications. *Annals of the New York Academy of Sciences, 1124*(1),

39–60. https://doi.org/10.1196/annals.1440.001.

Schacter, D. L., Norman, K. A., & Koutstaal, W. (1998). The cognitive neuroscience of constructive memory. *Annual Review of Psychology, 49*, 289–318. https://doi.org/10.1146/annurev.psych.49.1.289.

Schirmer dos Santos, C., McCarroll, C. J., & Sant'Anna, A. (2023). The relation between memory and imagination: A debate about the right concepts. In A. Sant'Anna, C. J. McCarroll, & K. Michaelian (Eds.), *Current controversies in philosophy of memory* (pp. 38–58). Routledge.

Schnider, A. (2008). *The confabulating mind*. Routledge.

Schulz, A. W., & Robins, S. (2023). Episodic memory, simulated future planning, and their evolution. *Review of Philosophy and Psychology, 14*(3), 811–832. https://doi.org/10.1007/s13164-021-00601-1.

Schwartz, A. (2025). Are episodic memory and episodic simulation different in kind? *Philosophical Psychology, 38*(1), 1–19. https://doi.org/10.1080/09515089.2025.2451819.

Shanton, K., & Goldman, A. (2010). Simulation theory. *Wiley Interdisciplinary Reviews: Cognitive Science, 1*(4), 527–538. https://doi.org/10.1002/wcs.33.

Singer, J. A., & Salovey, P. (1993). *The remembered self*. Free Press.

Silva, A. J. (2007). Consolidation: Molecular restlessness. In H. L. Roediger, Y. Dudai, & S. M. Fitzpatrick (Eds.), *Science of memory: Concepts* (pp. 167–170). Oxford University Press.

Slotnick, S. D., & Schacter, D. L. (2004). A sensory signature that distinguishes true from false memories. *Nature Neuroscience, 7*(6), 664–672. https://doi.org/10.1038/nn1252.

Smith. B. (1966). *Memory*. George Allen & Unwin LTD.

Squire, L. R. (1998). Memory and brain systems. In S. Rose (Ed.), *From brains to consciousness? Essays on the new sciences of the mind* (pp. 219–232). Princeton University Press.

Squire, L. R., Stark, C. E. L., & Clark, R. E. (2004). The medial temporal lobe. *Annual Review of Neuroscience, 27*, 279–306. https://doi.org/10.1146/annurev.neuro.27.070203.144130.

Suddendorf, T., & Busby, J. (2003). Like it or not? The mental time travel debate: Reply to Clayton *et al. Trends in Cognitive Sciences, 7*(10), 437–438. https://doi.org/10.1016/j.tics.2003.08.012.

Suddendorf, T., & Corballis, M. C. (1997). Mental time travel and the evolution of the human mind. *Genetic, Social, and General Psychology Monographs, 123*(2), 133–167.

Suddendorf, T., & Corballis, M. C. (2007). The evolution of foresight: What is mental time

travel, and is it unique to humans? *Behavioral and Brain Sciences, 30*(3), 299–313; discussion 313–351. https://doi.org/10.1017/S0140525X07001975

Sutton, J. (2007). *Philosophy and memory traces: Descartes to connectionism*. Cambridge University Press.

Tronel, S., Milekic, M. H., & Alberini, C. M. (2005). Linking new information to a reactivated memory requires consolidation and not reconsolidation mechanisms. *PLoS Biology, 3*(9), e293. https://doi.org/10.1371/journal.pbio.0030293.

Tulving, E. (1983). *Elements of episodic memory*. Oxford University Press.

Tulving, E. (1985). Memory and consciousness. *Canadian Psychology, 26*(1), 1–12. https://doi.org/10.1037/h0080017.

Tulving, E. (1986). What kind of a hypothesis is the distinction between episodic and semantic memory? *Journal of Experimental Psychology: Learning, Memory, and Cognition, 12*(2), 307–311. https://psycnet.apa.org/doi/10.1037/0278-7393.12.2.307.

Tulving, E. (1999). On the uniqueness of episodic memory. In L.-G. Nilsson & H. J. Markowitsch (Eds.), *Cognitive neuroscience of memory* (pp. 11–42). Hogrefe & Huber Publishers.

Tulving, E. (2002). Episodic memory: From mind to brain. *Annual Review of Psychology, 53*, 1–25. https://doi.org/10.1146/annurev.psych.53.100901.135114

Tulving, E. (2005). Episodic memory and autonoesis: Uniquely human? In H. S. Terrace & J. Metcalfe (Eds.), *The missing link in cognition: Origins of self-reflective consciousness* (pp. 3–56). Oxford University Press.

Tulving, E., & Markowitsch, H. J. (1998). Episodic and declarative memory: Role of the hippocampus. *Hippocampus, 8*(3), 198–204. https://doi.org/10.1002/(SICI)1098-1063(1998)8:3%3C198::AID-HIPO2%3E3.0.CO;2-G.

Urmson, J. O. (1967). Memory and imagination. *Mind, 76*(301), 83–91. https://doi.org/10.1093/mind/LXXVI.301.83

Vendler, Z. (1984). *The matter of minds*. Clarendon Press.

Werning, M. (2020). Predicting the past from minimal traces: Episodic memory and its distinction from imagination and preservation. *Review of Philosophy and Psychology, 11*(2), 301–333. https://doi.org/10.1007/s13164-020-00471-z