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## Enactive Memory

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**Abstract**

This chapter describes the concept of enactive memory, which is quite new but increasingly discussed in contemporary philosophy of memory. Although the enactive approach has been used to investigate several memory systems, e.g., procedural memory, episodic memory, and autobiographical memory, this chapter focuses only on the enactive approach to episodic memory because most of the current debate on enactive memory is about this memory system. Section "Introduction" specifies what type of enactive memory is discussed in this chapter. Section "The Concept of Enactive Memory" introduces the concept of enactive memory, clarifies its central theoretical commitments and goals, and describes how enactivists have explained episodic remembering. Section "The Philosophical Context of Enactive Memory" provides a brief contextualization of the enactive approach to memory with respect to approaches and theories with which, for one reason or another, it shares some theoretical insights, like the embodied, the extended, and the distributed approach, and the simulation theory. Section "Forgetting as a Challenge for Enactive Memory" explains why forgetting poses an important explanatory challenge to the enactive approach to memory and describes one philosophical proposal that has been developed to address this challenge. Section "Summary" provides a summary of the chapter, mentions some ongoing projects on enactive memory, and identifies some topics that advocates of the enactive approach to memory may want to investigate in the future.

### Synonyms

Enactive forgetting; Enactive remembering; Episodic memory; Memory mechanisms; Metaphysics of memory; Mnemonic representations

### Introduction

"Enactive memory" is an approach to memory that uses the key principles of enactivism to explain what memory is and how it works, i.e., its metaphysics and its mechanisms. So far, the enactive approach has been applied mostly to procedural, episodic, and autobiographical memory and is usually theoretical in character. Indeed, it has been developed and discussed mostly in the philosophy of mind, philosophical psychology, and philosophy of cognitive science. Although there are exceptions to "for philosophers only" enactive memory, e.g., work in experimental

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psychology, memory modeling, and psychotherapy (Ataria 2015; Briglia et al. 2018; Brouillet 2020), this chapter focuses only on enactive memory in philosophy, including empirically informed philosophy. It focuses on the enactive approach to *episodic memory* because an important part of the current debate on enactive memory is about its ability to explain episodic remembering and forgetting. This chapter proceeds as follows. First, it introduces the concepts of enactive memory and of enactive remembering (section "The Concept of Enactive Memory"). Second, it contextualizes the enactive approach to memory with respect to similar approaches in the philosophical literature (section "The Philosophical Context of Enactive Memory"). Third, it describes forgetting as an explanatory challenge for the enactive approach to memory (section "Forgetting as a Challenge for Enactive Memory"). Last, it provides a short summary of the previous sections (section "Summary").

## The Concept of Enactive Memory

In *The Embodied Mind*, Francisco Varela, Evan Thompson, and Eleanor Rosch (1991) defined enactivism as an anti-Cartesian and anti-cognitivist research program based on two main claims.

[1] **Metaphysical claim about the mind**: The human mind is constituted by the dynamical coupling between embodied agents – including their brains – and their environment.

[2] **Claim about cognitive mechanisms**: Human cognition is based on perceptually guided action. Cognition does not involve the manipulation of subpersonal representations.

Enactivists elaborate on these claims to investigate memory as a particular aspect of the human mind and of human cognition. Current versions of the enactive approach to memory elaborate on these claims as follows (Caravà 2021a; Hutto and Myin 2017; Hutto and Peeters 2018; Myin and Zahidi 2015; Myin and van Dijk 2022).

[1′] **Metaphysical claim about memory**: Human memory is not like an archive that stores information about external states of the world or representations of past events. Rather, it is the dynamical coupling between the agents' brains and bodies, and the sociomaterial environment they inhabit.

[2′] **Claim about memory mechanisms**: Human memory processes are action-like. These processes do not involve the encoding, storage, retrieval, or manipulation of contentful mnemonic representations.

In line with the general argumentative strategy of the enactive approach, advocates of enactive memory support [1′] by arguing for [2′], i.e., they derive their explanation of what memory is from their explanation of how memory works. For example, in the chapter ▶ "The Roots of Remembering: Radically Enactive Recollecting" (Hutto and Peeters 2018), Daniel Hutto and Anco Peeters have argued in favor of an anti-storage, dynamical, embodied, active, and world-involving conception of human episodic memory by showing how the subjects' bodies and their interaction with the environment support and shape episodic remembering, including cases that are semantically rich. Their core idea is that episodic forms of remembering, (i.e., cases in which subjects recall episodes of their personal past) are underpinned by similar mechanisms as those involved in procedural forms of remembering (i.e., cases in which subjects recall how to enact a procedure). In procedural remembering, perceived external memory triggers serve to reinstantiate patterns of response through which subjects re-enact embodied procedures. Similarly, in episodic remembering, the subjects' brains and their bodies re-enact the series of embodied procedures involved in an event experienced in the past through imaginative simulations based on neural reuse, neural reactivation, and the reactivation of embodied patterns of response. More than often, subjects engage in these past-oriented imaginative simulations thanks to the support of external memory scaffolds (Prezioso and Alessandroni 2022). For example, to

remember how the weather was like last week, a subject may be triggered by a particular aspect of the environment (e.g., TV weather forecast), through his/her body and brain he/she may covertly simulate a series of world-involving actions that he/she performed on each of these days, and come to the conclusion that it was sunny all the past week (adapted from Hutto and Peeters 2018: 113).

As Kourken Michaelian and André Sant'Anna have noted in their article "Memory Without Content? Radical Enactivism and (Post)Causal Theories of Memory" (Michaelian and Sant'Anna 2021: 318), judgements resulting from memory processes (i.e., the conclusion one reaches) may be understood as contentful representations. Nonetheless, as Hutto and Peeters made clear (Hutto and Peeters 2018: 113) and as work by other enactivist scholars suggests (Gallagher 2017: 187–192; Thompson 2007: 290–291), the enactive approach to memory holds that the process of remembering in itself is not representational. This non-representational view of remembering is supported by several lines of arguments. These arguments appeal to the lack of correctness and accuracy conditions for the imaginative simulations that are involved in the process of remembering (Hutto and Peeters 2018) and in the sensory-like experience of remembering (Kiverstein and Rietveld 2018), conditions that would otherwise have guaranteed a representational status to remembering. Moreover, these arguments are emboldened by defending the claim that, at present, there is not a satisfactory naturalistic account of information processing for human episodic memory (Hutto and Myin 2017), namely an account that would justify a general representational explanation of memory mechanisms.

The argumentative move from this non-representational explanation of memory mechanisms to arguments about the metaphysics of memory is straightforward: If remembering is not representational, i.e., if it does not amount to the retrieval of representations that carry information about the past, then there are no reasons to suppose that human memory is a storage or an archive of mnemonic representations. Rather, as the example discussed above suggests, memory is better understood as a "type of action" (Loader 2013: 173), as "something agents do" (adapted from Myin and van Dijk, 2022: 276), or as a "contextualized capacity" (Myin and Zahidi 2015: 404). It is the capacity to re-enact past events thanks to the dynamical coupling of a variety of mnemonic resources that are distributed between a subject who engages in the act of remembering and his/her environment, such as dispositions of the brain to reactivate patterns of neural activation that occurred during a past experience, his/her interaction with external material and social resources (e.g., evocative objects, persons, and linguistic prompts; Caravà and Scorolli 2020; Carmona 2021; Hutto and Peeters 2018), and a variety of embodied processes, including the embodied navigation of the perceptual landscape in the present (Peeters and Segundo-Ortin 2019).

## The Philosophical Context of Enactive Memory

The enactive approach to memory shares several intuitions with some popular theories of memory in philosophy, including empirically informed theories. For example, it shares the core intuitions of the embodied approach to memory in that it conceives of embodied action as a central ingredient of the process of remembering (Dings and McCarroll 2022; Fuchs 2016; Ianì 2019; Perrin 2021; Sutton and Williamson 2014; Trakas 2021). In part, it grasps the intuitions about the centrality of external resources in remembering advanced by extended mind theorists and by proponents of the distributed approach memory (Bietti 2013; Clark and Chalmers 1998; Clark 2005; Heersmink 2018; Heersmink and McCarroll 2019; Sutton 2018, 2020), although it does so without invoking the notion of distributed informational content, which on the enactive approach is controversial (Hutto and Myin 2013, 2017, 2021). Moreover, to explain the imaginative aspects that underpin simulations in remembering and to support an anti-storage and generative conception of memory, it builds on the simulationist theory of episodic

memory, according to which remembering does not involve the retrieval of representations of past events but is rather a past-oriented constrained form of imagination (Michaelian 2016, 2022). Still, despite these similarities, the enactive approach differs markedly from these approaches because it takes an anti-representational stance as *central* to its explanation of episodic memory.

As Daniel Hutto has noted in his chapter ▶ "Remembering Without a Trace? Moving Beyond Trace Minimalism" (Hutto 2023), this anti-representational stance is motivated in part by concerns about the central tenets of the classical causal theory of episodic memory (Bernecker 2010; Debus 2014; Martin and Deutscher 1966; Robins 2016, 2017a) similar to those advanced by post-causal and non-transmissionist (i.e., neo-causal) theories of memory (Michaelian and Sant'Anna 2021). According to the causal theory, a subject's occurrent mental state is a state of episodic remembering if and only if the subject represents an event he/she experienced in the past and his/her occurrent representation is causally connected to that past event through a memory trace. The memory trace stores and transmits representational content over time (Robins 2017b). In contrast with the causal theory, post-causal and non-transmissionist theories hold, respectively, that a subject's occurrent mental state does not necessarily need to be causally connected to a past experienced event through a memory trace to be considered a state of episodic remembering (Michaelian 2022), or that, even if memory traces play a relevant causal and explanatory role in and for remembering, the transmission of representational content over time does not (Perrin 2018).

The enactive approach to memory partially aligns with post-causal and non-transmissionist theories. Indeed, it argues that a theory that focuses on the storage and transmission of representational content entails difficulties in explaining the ampliative character of episodic remembering and that it does not accommodate empirical findings on episodic memory as mental travel, i.e., the idea that episodic memory is just *one* component of a broader cognitive system that allows subjects to navigate not only the past, but also the present, the future, and the possible (Addis 2020; Caravà 2021b; De Brigard 2014; Hutto and McGivern 2016; Michaelian et al. 2022).

However, in the enactive approach to memory the non-representational and non-transmissionist stances are motivated by broader concerns about representational explanations of human cognition and by a fundamental theoretical goal of the enactivist project: to account for basic cognitive capacities (such as perceptually guided action) and higher-level cognitive capacities (such as episodic memory) along the same non-representational explanatory line (Gallagher 2017). As Daniel Hutto and Erik Myin have explained in their book *Evolving Enactivism: Basic Minds Meet Content* (Hutto and Myin 2017), this project does not exclude that human cognition may involve contentful representations in some particular cases and contexts, e.g., when cultural achievements like narrative practices come into play (see, e.g., Hutto's narrative approach to autobiographical memory; Hutto 2017). Nonetheless, with respect to higher-level cognitive capacities that are not narrative in character like pure episodic memory, the enactive approach takes non-representational explanations of these capacities as further arguments in support of the general enactivist project. Hence, if it is considered within this broader theoretical context, the enactive approach to episodic memory acquires particular value for the enactive approach to cognition and the mind: arguments in favor of enactive episodic memory provide further evidence in favor of the general enactive explanatory framework (Hutto and Myin 2017).

## Forgetting as a Challenge for Enactive Memory

These considerations about the centrality of a non-representational explanation of episodic memory for the broad enactivist project have pushed enactivist scholars to investigate memory processes other than remembering to expand the explanatory breath of their theory (Caravà 2021a; Myin and van Dijk 2022). For example, in her article "An Exploration into Enactive Forms of

Forgetting" (Caravà 2021a), Marta Caravà has argued that a satisfactory enactive approach to memory should explain not only remembering but also the other pole of memory: forgetting. As it has been suggested in work on the epistemology and ethics of forgetting (Basu 2022; Frise 2018; Michaelian 2011), this type of reasoning applies to any philosophical theory of memory because explanations of forgetting make individual theories more complete and stronger. However, as Caravà has noted (Caravà 2021a: 707–709) and as Christopher McCarroll has explained in one of his critiques of the simulation theory (McCarroll 2020), investigating forgetting is particularly useful to check whether theories with anti-storage commitments can explain *any* memory process without appealing to the notion of stored content, e.g., representations of past events.

To tackle this explanatory challenge, Caravà has built on the central commitments of the enactive approach to remembering and on empirical work on forgetting in psychology and neuroscience to develop an enactive explanation of forgetting. According to this explanation, forgetting is not best explained as the passive loss of mnemonic representations but rather as an active and context-dependent process that prevents the subject from engaging in imaginative simulations that target past experienced events. She has defended the claim that, on a par with remembering, forgetting is supported by neural, world-involving, and bodily processes that do not target representations of pasts events. These processes include paths of neural simulation that become down-prioritized and in the long run inaccessible through the recurrent engagement in past-oriented simulations that target certain events rather than others and strengthen the neural paths related to events that are recalled recurrently. In line with enactivist critiques of the notion of neural representation and with the enactive approach to memory proposed by Hutto and Peeters (Gallagher 2008; Hutto and Peeters 2018), she has argued that these paths of neural simulations are non-representational in character because they do not meet theconditions that philosophers usually use to identify representational entities. Moreover, she has defended the claim that processes of forgetting sometimes are world-involving and recruit embodied processes.

The exemplary case discussed by Caravà (2021a: 715–719) is the active decoupling from certain objects and environmental features, like evocative objects and emotion-laden contexts, which tend to afford embodied and neural simulations of particular past events by virtue of mnemonic and affective associations rather than by virtue of their representational content. Her argument is as follows. Since the engagement with those objects stimulates the recall of particular past events, and since the repeated recall of those events contributes to strengthening certain sub-personal paths of recall, this form of decoupling contributes to forgetting through cue-dependent mechanisms occurring at the personal level, which in turn contribute to making certain sub-personal paths of recall less likely to be activated in the present and in the future.

This explanation of forgetting has strenghtened the enactive approach to memory with respect to both its metaphysical claim and its claim about memory mechanisms. It has shown that forgetting can be explained without appealing to the loss of stored representations and that no representational entity is required to account for forgetting at the level of mechanisms.

## Summary

This chapter has provided an overview of current research on the enactive approach to episodic memory in philosophy of mind and philosophy of cognitive science, it has contextualized this approach within the literature in the philosophy of memory, and it has emphasized the role played by enactive explanations of episodic memory in the broader enactivist project. The enactive approach to memory is a quite new player in the philosophical debate on memory. Efforts to refine this approach in light of empirically informed theories of episodic remembering and forgetting are ongoing (Fawcett and Hulbert 2020; Michaelian 2023; Werning and Cheng 2018). An investigation of further memory processes (e.g., misremembering and confabulation) should be

carried out to make the enactive approach to memory more complete. This investigation would also stimulate further dialogue with approaches to memory that have investigated these processes in depth and are at the center of current debates, such as the simulationist theory (Michaelian 2021) and contemporary causal theories (Bernecker 2017; Robins 2019). Moreover, it may prompt further discussion on the relationship between the enactive approach to memory and neo-causal theories of episodic memory, such as non-transmissionist theories (see section "The Philosophical Context of Enactive Memory"; Perrin 2018, 2021) and the minimal causal view developed by Markus Werning (Werning 2020). Although the latter has been criticized in recent work by enactivist scholars (Hutto 2023), perhaps its appeal to minimal non-representational traces could offer useful resources for developing a new (neo-causal) version of the enactive approach to memory. This new version of the enactive approach to memory could serve to address some of the objections against extant enactive approaches raised by advocates of the causal theory (McCarroll 2020) and to make this approach stronger. Furthermore, considering that debates on the explanatory and metaphysical status of memory traces in anti-storage views of memory are ongoing (Hutto 2023; Langland-Hassan 2023; Michaelian 2016; Sutton and O'Brien 2023), more work on the concept of memory trace and on its place in the enactive approach to memory should be done.

## Cross-References


- ▶ Distributed Memory
- ▶ EmbodiedMemory
- ▶ Extended Memory
- ▶ Mental Time Travel


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