

Is mental time travel *real* time travel?

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“When one thinks today about what one did yesterday, time's arrow is bent into a loop. The rememberer has [mentally traveled back into her past](#)” (Tulving 2002, p. 2)

“An event happens ... memory traces are laid down ... The memory traces ... are retrieved, and the person remembers the event. ... **There is certainly no violation of any law of time**” (Tulving 2002, p. 19)

/s mental time travel merely a **metaphor**?

Aim of talk: articulate an interesting, controversial, and non-metaphorical way in which episodic memory affords something like MTT. On this notion, an experience involves (something like) MTT if it not only presents some event outside the present as **a merely intentional content** but also affords its subject **genuine awareness** of that event.

Preliminaries:

1. Episodic memory should be distinguished from other forms of memory (e.g., procedural or semantic) and involves “re-experiencing” the recalled event.
2. Episodic memory is part of a broader **episodic cognition system** also facilitating future prospection, counterfactual imagination, and other episodic simulation.
3. **What is experienced** via states of this episodic cognition system are the recalled, prospected, or otherwise imagined objects and events themselves, *not* “mental images” of them.

Preliminaries: It's widely agreed that episodic memory involves “re-experiencing” the recalled event and is part of a broader **episodic cognition system** also facilitating future prospection, counterfactual imagination, and other episodic simulation (Tulving 2002; Buckner & Carroll 2007; Schacter & Addis 2007; Suddendorf & Corballis 2007; De Brigard 2014; Michaelian 2016; Beaty, Seli, & Schacter 2018).

Preliminaries: Perhaps more controversial is the assumption that **what is experienced** via states of the episodic cognition system are the recalled, prospected, or otherwise imagined objects and events themselves, *not* “mental images” of them.

Preliminaries: Many memory researchers instead assume that **what we experience**, e.g. when engaged in episodic recall, are **mental images representing the remembered event**.

Preliminaries: But this is an outdated way of construing **the role of representations** in our mental lives. Instead of taking a representation to be *what* you are aware of while in a certain mental state, following contemporary work in philosophy of perception, you could instead take the mental state itself to be a representation, and *what you're aware of* while in that state *is* not the state itself (a representation), but *what that state represents* (Dretske 2003; Crane 2006; Bernecker 2008; Clark 2012; Genone 2016).

Preliminaries: Note that this assumption of direct realism does *not* amount to assuming a form of *naive realism*, aka *relationalism*, about memory experiences. The naive realist (e.g. Debus 2008) not only holds that memory experiences make us aware of recalled events themselves, but further hold that these experiences (i.e., these states) are fundamentally relations to the recall event and not a representation of them.

Question: Granting direct realism about memory experiences, doesn't that already make them a form of *time travel* in some interesting sense? After all, it means that memory experiences afford a form of *conscious awareness* of past-perceived events, as if we're able to *connect again with*, *peer into*, or *bring into mind* the past.

Answer: No. Consider the difference between veridical **perception** and perceptual **hallucination**.

Hallucination: If you **visually hallucinate** a pencil, then **a pencil** is *what* you experience while hallucinating. The direct representationalist says that your hallucinatory experience is a representation of a pencil. You experience a pencil because that's what's represented by the experience. But this content of the hallucinatory experience is *merely intentional*, i.e. **unsatisfied**. There is no particular pencil out in the world which is represented.

Perception: If you have a **successful visual experience** of some actual pencil that's in your environment, your visual experience represents a pencil, just as the hallucination did. But **what it represents is an actual object out in the world:** the pencil that's stimulating your photoreceptors. Thus, the content of this representation (the content of your perceptual experience) **isn't merely intentional**. What you experience is an actual object out in the world. Your visual perceptual experience affords you ***genuine awareness*** of this pencil.

Upshot: direct realism or not, some experiences (like successful perceptual experiences) *put you in contact with some actual bit of the external world*, they afford *genuine awareness* of this bit, or *bring it into mind*.

Note: the question isn't answered merely by the fact that the objects of memory experiences (past-perceived events) exist. What makes the difference between successful perception and perceptual hallucination, for example, isn't that the object of experience doesn't exist in hallucination — since sometimes it does exist!

Note: what matters for **genuine awareness**, as opposed to merely intentional content, isn't the **existence** of the object of experience, but a certain sort of **contact** with that thing.

Naive Realism: If naive realism about memory experiences is true (e.g., Debus 2008), then it trivially follows that memory experiences afford the sort of contact needed for genuine awareness. But let's set naive realism aside and assume direct representationalism instead.

Proposal: To start, consider the cases of successful perception and perceptual hallucination and what makes perception (but not hallucination) a case of genuine awareness. Roughly, perception and hallucination are distinguished by the involvement of causal-informational links in the former. The reason a hallucinatory experience of (e.g.) your favorite pencil is merely “as of” that pencil and fails to make you genuinely aware of it is that your sensory systems are not interacting with it.

The Argument: Now, the argument goes that there are **causal-informational links involved in episodic memory**, similar to how there are these links involved in successful perception, and **therefore memory experiences likewise involve genuine awareness** of the recalled event.

Causal-Informational Links: During an initial sensory interaction, reciprocating patterns of neural activity cycle through the sensory cortex and other related neural circuits. These patterns of activity **tune synaptic connections** between neurons via **synaptic plasticity**. This tuning **primes the circuit to repeat the patterns** when and if they are later partially reformed by other neural input, whether that input is stimulus-driven or top-down from extraperceptual processing (Feldman 2012; Jackson 2013; Zylberberg & Strowbridge 2017). This priming facilitates episodic memory: **episodic memories are recalled when partial inputs prompt the completion of activity patterns from previous sensory interactions** (Brogaard & Gatzia 2017, p. 9). The distributed effect of the synaptic tuning from the original pattern (which primes the circuit to repeat it) is the memory trace which is so often discussed in theorizing about memory (Liu, Ramirez, Redondo, & Tonegawa 2014, p. 59).

P1. Memory experiences of the past depend on the neural patterns reactivated in the recall.

P2. These neural activity patterns depend on the synaptic tuning which primed the neural circuit to repeat them.

P3. This synaptic tuning depends on the original pattern of activity which shaped it.

P4. That original pattern of activity was due to a particular past sensory interaction with particular objects in a particular event.

Conclusion 1: Memory experiences of the past depend on these particular objects and events and what those objects and events were like.

P5. If a memory experience of the past is of a past-perceived event and causally depends on that event and what it was like, then that experience involves genuine awareness of the event itself.

P6. Memory experiences of the past are of past-perceived events.

Conclusion 2: The memory experiences of the past that occur in episodic memory involve genuine awareness of the remembered events themselves.

Mental Time Travel: If we're right that successful memory experiences involve genuine awareness of past-perceived events, why does this amount to MTT in a way that goes beyond mere metaphor? The main idea is that genuine awareness of a past-perceived event would entail that **that past event is "brought into consciousness" (as we might put it), or (alternatively put) that our state of recall extends back into the past to include that event.** To borrow some evocative language from the naive realists, when you make experiential contact with the world, the world itself "shape[s] the contours" of your experience (Martin 2004, p. 64); there is "an incursion or intrusion of the objective within the nonobjective---of 'brute' nonconscious matter within conscious life" (Hellie 2014, p. 247). As Debus (2008) says, your "point of view extends over" the part of the world of which you're conscious (p. 418).

Mental Time Travel: So the idea is that if memory experiences afford genuine awareness of past-perceived events, they are a way of (literally) **bringing the past into mind**, a way of “peering again” into the past, or **extending the mind into the past** to include these events as constituent parts.

Thank You!

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