

Dissertation Abstract

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Memory traces feature in nearly every account of memory. They appear as birds in Plato's aviaries and images in Locke's storeroom of ideas, as well as grooves in phonographic records, pictures in a gallery, and textual and digital archives in the vast library of the mind. The persistence of such metaphors reveals our long-standing commitment to the existence of memory traces as well as a lack of clarity about their nature. What role do memory traces play in an account of memory? And why are memory traces so often portrayed as stored images of past experiences? In my dissertation, I develop an account of memory traces that answers these questions and I show how my account informs the study of memory traces in psychology and neuroscience.

I begin by explaining what a theory of memory should do. Using the philosophy of perception as a blueprint, I propose that an account of memory faces two opposing challenges: an account of remembering should be broad enough to encompass all forms of memory, and yet narrow enough to preclude error states. I refer to these challenges as the *containment problem* and *relearning problem*, respectively. In chapter 1, I argue that solving these problems requires commitment to memory as a causal process (containment), and to memory traces as the marker of the specific form of causal connection involved in remembering (relearning). For any experience of remembering, there must be a previous experience on which the remembering depends. It is, however, possible that one's reminiscence derives from a later relearning rather than the original experience. To distinguish remembering from relearning, an account of memory must appeal to the distinct causal history of the capacity retained from each experience. Doing so requires memory traces, as the causal connection between what is remembered and the act of remembering. In chapter 2, I defend this account against skeptical objections to memory traces, as are often formulated by Rylean and Wittgensteinian critics of cognitive science. Without the means for distinguishing remembering from other capacities and error states, most particularly relearning, it is the skeptical account that fails to accommodate our everyday concept of memory.

What must memory traces be like in order to play this role? The standard view is that memory traces are stored representations of past experiences. This view invites skeptical objections and allusions to metaphor, and so I focus the second half of the dissertation on evaluating standard arguments for memory traces as stored representations. First, some have thought that the need for stored representations emerges directly from our commitment to a causal theory of memory, on the assumption that causation at a distance is impossible. Second, it has been proposed that memory traces must be stored in a particular representational format so that they are distinguishable from the retention of other capacities. These claims are the focus of chapters 3 and 4, where I argue that they offer insufficient reasons for endorsing the standard view. The claim about action at a distance is controversial, and as I argue, unhelpful for addressing the unity and relearning problems that face an account of memory. And while some

have invoked representations to disambiguate capacities, I show that this problem is not, at its heart, a representational issue.

In the final chapter, I address the third argument for traces as stored representations, which is often thought to be the most compelling. On the assumption that retrieval from memory is a search process, then the memory trace must serve as the target of that search, representing the content one aims to retrieve. Ideas of how traces are stored have changed over time in order to accommodate the growing consensus that retrieval from memory is a constructive process, containing information from multiple past experiences. Most contemporary views assume that traces are stored as networks of interconnected features. To explain the constructive nature of remembering, these accounts stipulate that remembering, reconstructing, and guessing are the same process of making inferential transitions amongst nodes in this network. My account accommodates the constructive nature of retrieval without sacrificing the distinction between remembering and other inferential processes. On my view, retrieval is constructive, but memory traces are not. Responses to retrieval cues are manifestations of the capacity to remember a past experience. Memory is constructive in the sense that the response is generated at the moment of cueing. This allows the features manifested in the representation to vary as a function of the cue with which the capacity is partnered. To this end, I argue that a memory trace is a capacity to recreate a previous experience, which manifests when the right retrieval conditions obtain.

By distinguishing memory traces from their manifestations in retrieval, my account has several advantages over stored representation accounts. First, my account provides a taxonomy of memory errors, distinguishing between the multiple ways in which remembering can go awry. Instances of remembering are those in which the cue is partnered with a capacity whose causal history is linked to the targeted experience and where the response accurately represents that experience. When the manifestation of this capacity results in an inaccurate response (e.g., when the cue is a leading question), then misremembering occurs. When the cue interacts with a different capacity, then the result is either relearning (when the representation accurately represents the target) or false memory (when it does not). Second, my account has the resources to explain why proposed distinctions between implicit versus explicit memory and semantic versus episodic memory have been difficult to maintain. Finally, my account allows for a unique take on the function of memory. As capacities, memory traces allow for the preservation of the past *and* an orientation toward the future.

The account of memory traces I develop in the dissertation suggests several lines of work that I am eager to pursue. First, I want to revisit areas of philosophy in which memory has often been invoked, especially debates over the retention of knowledge and nature of personal identity. How does the constructive nature of memory retrieval impact the claim that memory is retained knowledge and the use of memory as a criterion for personal continuity over time? In addition, I aim to pursue several puzzles about memory that have emerged during my research. The use and success of mnemonic devices, for example, reveals a startling conclusion: sometimes remembering is easier when we learn more information than less. I intend to explore why this occurs and why learning some associations is easier than others.