



Commentary

I Forgot to Remember to Forget



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The thesis of the [Fawcett and Hulbert \(2020\)](#) article, as stated in the closing sentence of the Abstract, is that “forgetting provides memory with many of its cardinal virtues.” The article goes on to present a series of what are essentially memory vignettes characterized as deriving from, and as providing support for the importance of, forgetting. Fawcett and Hulbert argue for a view of forgetting as an active process of memory control. Their story-telling is evocative, with quite a number of memory phenomena—many well-known but others less so—being briefly considered in support of their thesis. In this commentary, I begin by considering generally what is meant by, or maybe what should be meant by, forgetting. From there, I sketch a perspective on memory that does not rely on active control. Finally, I focus specifically on whether forgetting is better conceived of as an active, even strategic, process, as opposed to a consequence of routine memory operation.

A dictionary definition of “to forget” typically leads with something along these lines: “to lose the remembrance of; to be unable to think of or recall” (<https://www.merriam-webster.com/dictionary/forget>). The layperson, despite being fully cognizant of occasions when something believed to have been (entirely) forgotten is nonetheless subsequently recovered, likely thinks of forgetting more dramatically as the loss of memory due to inexorable erosion over time. This amounts to a lay version of [Thorndike’s \(1914, p. 4\) law of disuse](#): “When a modifiable connection is *not* made between a situation and a response during a length of time, that connection’s strength is decreased.” [McGeoch \(1932, p. 369\)](#) found this idea of gradual decay to be preposterous: “Ascription of effectiveness to time violates the usage of science and is logically meaningless.” [Osgood \(1953, p. 549\)](#) was in total agreement with McGeoch and equally harsh,

writing that “Just about everything is wrong with this theory . . . the entire notion that time itself is a variable is indefensible.”

Today, memory theorists rarely appeal to decay as an explanation of forgetting¹: Instead, the dominant explanation is provided by the mechanism of interference (see [MacLeod, in press](#), for a review), sometimes augmented by the concept of inhibition (see [Anderson, 2003](#); [Anderson & Hanslmayr, 2014](#)). We fail to recover information from memory because of competition both from memories acquired before and from memories acquired after the particular memory that we are trying to retrieve. The “signal” for the target memory is, consequently, obscured by the “noise” of other memories, particularly of related memories, and the result is retrieval failure. The idea is that the target memory is not gone, in the sense of deletion or erasure; rather, it is not accessible, at least temporarily on that occasion. Retrieval difficulty may often be aggravated by another form of interference—output interference (see, e.g., [Criss, Malmberg, & Shiffrin, 2011](#); [Roediger, 1974](#)): In the act of searching for some target memory, other memories may be recovered instead, further contributing to obscuring the target memory.

This inaccessibility points to a key factor in forgetting—the role of the cues, including contextual cues, that are available at the time of an attempted retrieval. Retrieval never happens in a vacuum: There are always cues present, both those that initiate the retrieval attempt and others present contiguously, often thought of as *context*. In [McGeoch’s \(1932\)](#) theory, there were two major sources of forgetting—interference and inadequate cuing. Over 40 years later, [Tulving \(1974, p. 74\)](#) emphasized cue-dependent forgetting as a principal cause of retrieval failure: “Holding constant any qualitative changes in memory traces, impaired recall results from a lack of cognitively appropriate

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This title is borrowed from the song written by Stan Kesler and Charlie Feathers and made famous by Elvis Presley in 1955 (the single was released

as Sun 223). Both of my lifelong interests—in human memory and in popular music—may have begun here.

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retrieval information.” Again, the core idea is that target information that is actually in memory cannot be recovered because the information being used to guide recovery is inadequate—at least in that particular context. Phenomena such as spontaneous recovery and above-chance second guessing following an error (see [Atkinson & Shiffrin, 1968](#), for discussion) are evidence that a particular memory believed to have been lost is in fact still available in long-term memory.

What is it that is being forgotten? Fuzzy trace theory ([Brainerd & Reyna, 1990, 2004, 2015](#)) provides a compelling account, proposing that there are two kinds of information in memory: details and gist. At the core of this theory is the idea that, during encoding, memory routinely extracts the essence of an episode, storing only some of the details. The classic study of [Carmichael, Hogan, and Walter \(1932\)](#) provides a perfect illustration: Ambiguous figures given names favoring one interpretation at study (e.g., two circles joined by a line described as eyeglasses rather than as a barbell) were altered by participants to conform more closely to that interpretation at the time of test (e.g., when drawn at recall, the line joining the circles became curved).² Of course, in any episode, many details are extraneous and hence are never stored, but under fuzzy trace theory even those that are initially stored are subject to more rapid forgetting than is the gist. Presumably, extraction of gist is how we derive schemas that help to guide us through similar episodes in the future. And remembering gist will very often be all that we need to do at a later time.

This details—gist dichotomy appears to be reflected structurally in the brain. The posterior hippocampus is thought to be responsible for detail, with the anterior hippocampus responsible for gist (see, e.g., [Evensmoen et al., 2013](#)). Remembering of gist and details thus requires an orchestration of function along the hippocampal axis. [Brunec, Bellana, Grady, Moscovitch, and Barense \(2020\)](#) offer an intriguing hypothesis—that with age there is a loss of functional connectivity between these two regions that results in a gradual shift away from details and toward gist in what is remembered. The well-established loss of detailed episodes with age ([Moscovitch, Cabeza, Winocur, & Nadel, 2016](#)) makes sense viewed through this lens.

The perspective on forgetting just sketched leads to a different framing than the perspective taken by [Fawcett and Hulbert \(2020\)](#), which emphasizes the control of forgetting. Their framing of forgetting is as active and even strategic, and they cite a variety of phenomena—directed forgetting, retrieval-induced forgetting—in support of this view. Each of their three major roles for forgetting is portrayed as actively altering memories: The Guardian *protects memory*, the Librarian *updates experience*, and the Inventor *selectively forgets*. Put simply, all three

roles are those of an Editor pruning memories. This is in sharp contrast to the perspective outlined above, which does not assume any active strategy: There is no goal to forgetting. Rather, forgetting is simply a consequence—a by-product—of the way that memory works. Such a standpoint does not make forgetting any less important but it does place forgetting in a different context. Let us reconsider a few of the illustrations raised by [Fawcett and Hulbert \(2020\)](#), one from each purported role, in light of a view of “uncontrolled” forgetting.

First, the Guardian. Here, [Fawcett and Hulbert \(2020, p. 4\)](#) maintain that “we tend to smooth the sharp edges of our experience by pruning or dulling any negative or unflattering elements.” The result would be a positivity bias. But is this in fact so intentional? Could not the more rapid forgetting of detail and hence the greater salience of gist over time accomplish this same outcome without the requirement of memory control? Bias would more easily be applied to gist than to detail, and no “controller” would be needed. This not only would capture the experience of remembering a given episode more positively over time, as memory for detail loses ground to memory for gist, but would also fit with the observation (see, e.g., [Mather & Carstensen, 2005](#)) of a positivity bias in aging. The bias would be not in the memory but in the interpretation of the memory, particularly given the increasing reliance on gist which would be more vulnerable than detail to this external bias.

Second, the Librarian. Directed forgetting has long been marketed as a way to study the updating of memory (see, e.g., [Bjork, 1978](#)). This is a seductive idea, but is a paradigm where people are instructed to forget while learning actually analogous to forgetting one’s former phone number? In the item method, where each item receives an individual instruction to be “remembered” or to be “forgotten,” the dominant explanation is selective rehearsal—that the to-be-remembered items are rehearsed whereas the to-be-forgotten items are not rehearsed (see [MacLeod, 1998](#)). Surely the poorer performance for the to-be-forgotten items is because they are not well learned during study, not because they are selectively forgotten. Investigators often will then point to the list method, where a single instruction to forget is given after a series of items, as not being readily explained by selective rehearsal (see, e.g., [Johnson, 1994](#)). After all, the argument goes, the instruction encompasses multiple items after most of them have left working memory, the site of rehearsal. But the fact that the directed forgetting effect is smaller in the list method than in the item method led [Sheard and MacLeod \(2005\)](#) to suggest that maybe only some of the to-be-forgotten items were being affected by the single instruction in the list method. They showed evidence of negative recency for the items in the to-be-forgotten set (i.e., for those items just prior to the forget instruction), consistent with the effect being restricted to those items still in working memory and therefore subject to selective rehearsal when the instruction was presented. Not learning in the first place is not really forgetting.

[Fawcett and Hulbert \(2020\)](#) also highlight context under the Librarian role, and forgetting based on contextual change is represented as adaptive. Yet it is well established that context routinely forms part of the set of retrieval cues used to probe memory for a particular target episode (see, e.g., [Smith & Vela,](#)

¹ It is certainly the case, though, that decay as a potential mechanism does appear periodically. As an illustration see [Hardt, Nader, and Nadel \(2013\)](#) for a neuroscience perspective in support of decay as an updating mechanism.

² In fact, extraction of gist can also occur during retrieval, as [Hanawalt and Demarest \(1939\)](#) pointed out when they essentially replicated the Carmichael et al. study but gave the interpretive labels at the time of test and obtained the same result. Presumably, the details had been largely forgotten so the gist had to be relied on.

2001). Indeed, change in context has also been used to explain such phenomena as retrieval-induced forgetting (Jonker, Seli, & MacLeod, 2013) and directed forgetting (see, e.g., Sahakyan, Delaney, Foster, & Abushanab, 2013). But viewing retrieval failure as cue-dependent, and assuming that context is ordinarily incorporated into the set of cues, does not necessitate any intentionality or strategy to achieve forgetting: It is a natural consequence of insufficient cuing.

Third, the Inventor. Here, one of the emphases of Fawcett and Hulbert (2020) is the notion of mental fixation—the failure to step free of a current thought to permit new thinking. Their explanation is that forgetting must occur to allow new thoughts to emerge. But it seems more plausible that what stepping away from unproductive thoughts permits is returning to the situation with a new set of retrieval cues, including a new context. Whatever was getting in the way and causing mental fixation need not—and probably should not—be forgotten; indeed, forgetting of some information caused by innovative thinking might mean that when that information is subsequently actually useful, it would be less available. The problem, then, is not in our memories, but in the cues that we provide ourselves at the time of any given retrieval.

Although whether it qualifies as a “constructive view of memory” might be questioned, the target article is, undoubtedly, an interesting read and likely even a provocative one that will reach a broader audience. And there certainly are emerging findings, such as the possible disruption of memories during reconsolidation (see, e.g., Alberini & LeDoux, 2013; Hupbach, Gomez, & Nadel, 2015), that suggest tantalizing new features of how forgetting works. The goal of this commentary is simply to (re)present a view of forgetting that does not rely on the concept of memory control, and to consider how such a framing of memory readily accommodates the same phenomena as the memory control framing does. Under this account, the only active process is rehearsal, with repeated rehearsals of episodes increasingly emphasizing gist over details. Thus, rather than memory as an Editor, as Fawcett and Hulbert would have it, memory is cast in the role of Storyteller.

Author Contribution

My research is supported by the Natural Sciences and Engineering Research Council of Canada (NSERC). I thank Evan Risko and Derek Besner for helpful readings of the initial draft.

Keywords: Memory, Forgetting, Interference, Control, Retrieval

Conflict of Interest

The author declares no conflict of interest.

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Received 17 December 2019;
accepted 18 December 2019