

Memory's Fragile Power

Review of *Searching for Memory: The Brain, the Mind, and the Past* by D.L. Schacter.

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REVIEW OF: D.L. Schacter (1997) *Searching for memory: The brain, the mind, and the past*. HarperCollins. xii + 398pp. ISBN 0-4650-7552-5. Price: \$US14.00; pbk.

Written in an engagingly anecdotal style, *Searching for memory* provides a review of recent, and not-so recent, research into memory, focusing particularly on the fallibility of memory. Subtitled "The brain, the mind, and the past" one might be forgiven for thinking that the book would deal with explanations at the level of neuroscience. In fact, with the exception of a brief foray into brain regions implicated in amnesia acquired as a result of brain damage (chapter five) the level of explanation used throughout the book is very firmly psychological, and written in a manner which is easily accessible to a general audience. This "popular science" style of the book, and the frequent references to depictions of memory and amnesia in the arts (out of thirty figures in the book, only four are technical pictures of the brain; the remaining twenty-six are artistic works) make the book very readable, but might persuade professional scientists working in this area that the book is unsuitable for them. This would be a shame since although it is true that the anecdotal evidence presented in this book does need to be viewed with some suspicion, especially when dealing with the contentious issues of false memory syndrome (chapter nine), psychogenic amnesia (chapter eight) and memory distortion (chapter four), none of the anecdotal evidence is put forward as anything more than suggestive. As it is, the book is wide-ranging enough to cover background material that will probably be new to both readerships. For the non-scientist there are overviews of areas of current scientific controversy within memory research, and for the scientific readership there are numerous allusions to artistic endeavours to portray the essentially subjective experience of

memory. Perhaps as a consequence of this, individual topics are not dealt with in as much detail as I would like to have seen, but it is an edifying experience nonetheless to see how Schacter ties in attempts to portray the subjective qualities of memory with scientific explanations of the same subject.

The book begins by dealing with the subjective experience of remembering, a topic which has attracted much interest of late, and which Schacter chooses to illustrate by relating the personal experiences of three artists (Proust, Magnini and the neuropsychological patient GR) and the various ways in which they have attempted to convey their impressions of their own mnemonic experiences. These three examples are used as demonstrations of different aspects of subjective, explicit memory, which are then contrasted with the impersonal memory of a computer retrieving information. The examples demonstrate the impression of a remembering self, a sense in which the memories "belong" to the rememberer in a manner qualitatively different from the way in which information is stored and retrieved in a standard serial computer. Schacter contends that the richness of human recollective experience cannot be reproduced without the biological substrate supporting such activity in humans. The matter is presented as a side-issue however, and Schacter makes no attempt to defend this position other than to make a brief appeal to the feelings of subjectivity and "belonging" which accompany recollective experience.

In all of this, the influence of Endel Tulving, and the pioneering work of Richard Semon at the turn of the century (see Tulving, 1983) are apparent, and are explicitly acknowledged in chapter two, which deals with the relationship between encoding and retrieval processes. The basic idea, which Schacter introduces through a discussion of mnemonic devices, and particularly the method of loci (imagining items at different geographical locations, and then mentally touring those locations to find the objects) is that the cues used to recall will determine the amount, and type of information that will be recalled. In other words, the nature of the recall cue is of equal importance to the encoding of the memory. Hence, one supposes, the extreme flexibility of human memories, which can encode and cue memories in a variety of different ways, when compared to the restrictiveness of stored data retrieval from a standard serial computer. Using this basic idea as his foundation, Schacter goes on to discuss the possibility that the prevailing social environment might produce cues that actively distort the memory which is finally retrieved (chapter four).

Schacter himself has a long-standing and honourable history of research into implicit memory, a topic to which an entire chapter is devoted, and which is given prominence elsewhere in the book. It is here, where his main interest clearly lies, that his fascination with the subject shows through, and the writing profits accordingly. I found his description of using the method of "vanishing cues" to teach a dense amnesic patient new skills by targeting her unimpaired implicit memory capacity particularly fascinating, and a fine example of the dialogue between pure and applied research which has been seen all too seldom in psychology. I am unable to comprehend, however, why he finds the fact that experience might change a person's behaviour without that person having any explicit conscious recollection of the experience such a "curious" phenomenon. Such an

observation falls naturally out of the laws governing the simplest finite-state automata, and on a more biological level, it is known that the behaviour of the sea snail, aplysia, and many other physiologically simple organisms can also be shaped by conditioning techniques (Carew, Walters & Kandel, 1981). To what extent is the learning evident within these examples to be regarded as "memory", and why should it be such a surprise that the same phenomena can be observed in humans? The fact that amnesics can be taught to operate computers without conscious recollection does seem curious because learning even the simplest computer commands is daunting for many people, and may ordinarily require explicit memory. The complexities of human behaviour are obviously far removed from learning in such simple systems; certainly in both cases there are very few people willing to argue that conscious or explicit recollection is involved in the process, although behaviour has clearly changed as a result of past experience. The point of interest here is surely not that such learning can occur without explicit retrieval, but the extent and complexity of the learning displayed. If such changes in overt behaviour occur without explicit retrieval of the prior experience in simple systems, then there is every possibility that they constitute general characteristics of many forms of learning systems, and the existence of implicit memory ceases to be of such intrinsic interest. The mere existence of implicit memory phenomena thus loses much of its theoretical interest, although as Schacter comments, the phenomenon, like many observed in neuropsychological case studies, is sufficiently counterintuitive to excite a great deal of popular interest.

What remains of great interest to the psychologist is the complexity of the implicit memory phenomenon in human subjects, and how it dissociates from explicit awareness. Schacter distinguishes between implicit memory based upon perceptual processes (which he refers to as the perceptual representation system (Tulving & Schacter, 1990)) which probably form the bulk of implicit memory phenomena, implicit procedural memory (learning "how to"), and implicit semantic memory. Implicit procedural memory is well-documented in the literature, particularly with regard to dense amnesic patients who are often able to learn new skills without acquiring or retaining any explicit knowledge of when and how they learned those skills. Implicit semantic memory effects have been observed using conceptual priming techniques with both normal and amnesic subjects, implying the existence of a semantic network which operates separately from explicit, episodic memory. This then suggests that in the absence of explicit retrieval of a particular learning episode it is possible to be influenced by perceptual, motor, and semantic aspects of the episode (although these three elements may act independently of each other). If all of this is possible without explicit retrieval, this leaves the function of explicit, conscious memory retrieval open to question, a question which is addressed elsewhere in the book.

In chapters one through three Schacter considers the use of autobiographical memory in the context of the phenomenology of remembering and in the final chapter he again addresses the same issue, but views it rather more from a social point of view than a personal one, by expressing the continuity of cultural traditions across generations. These chapters go some way to providing an answer to the question of the function of explicit memory posed by the earlier observations that implicit memory can remain intact for

semantic, procedural, and perceptual skills without explicit awareness. Schacter suggests that the function of explicit, episodic memory is to build up a self-narrative, the structure of which is apparent in examinations of personal, autobiographical memory. Such a self-narrative may be seen as a reference point which can be employed to direct flexible, goal-driven behaviour. The flexibility of this behaviour may rely partly upon the simple networks of activations and associations so far demonstrated by implicit perceptual or semantic memory, but unlike these systems, which react blindly to a change in circumstance, an explicit memory system has the capacity to choose whether or not to alter behaviour in the light of previous experience. A self-narrative may provide the basis for such a deliberate use of memory (a similar view is expressed by Johnson-Laird, 1983, amongst others). On a related topic, Schacter seems to suggest that even forgetting performs a functional role by allowing commonalities across events to be abstracted (p. 81). As presented here this seems a rather convoluted argument, and it is in fact, as acknowledged by Schacter, related to the argument presented by Anderson and Schooler (1991) that forgetting is an adaptive consequence of memory in that it frees resources for future use and allows memory retrieval to continue at a fast and efficient rate.

By focusing on forgetting, and the "fragile" power of memory, Schacter comes close to presenting the picture that all memories are inherently unstable and untrustworthy, a point of view which, as he acknowledges in his admirably even-handed appraisal of the false/recovered memories controversy (an unfortunately rare occurrence within this particular debate, where passions on either side tend to run high), can have devastating consequences. That he should be presenting this picture is not surprising. Memory researchers have long concentrated on over-loading the memory system in experimental trials in order to examine where, when and how it breaks down. Many studies do show that the existence of preformed schemata can disturb memory for later information which is inconsistent with the existing set of schemata (e.g., Bartlett, 1932), but likewise such knowledge structures when used appropriately can organise and support memory (Schank, 1982). It seems reasonably clear therefore that the reliability of any form of memory is critically dependent upon the conditions of testing. To suggest otherwise seriously misrepresents a complex situation.

On a related point, neuropsychologists and others have been concerned with the performance of the memory system after insult to the brain, or during abnormal "fugue" or dissociative states. (The notable exception to this is Luria's (1968) classic account of the mnemonist Shereshevskii, whose problem was an inability to forget rather than an inability to remember, which is referred to only briefly in this book). Consequently we have amassed a great deal of data concerning the fallibility of memory. What may be even more remarkable, and is often taken for granted, is the power of memory, rather than its fragility. Many of our experimental techniques for studying memory work well when testing memory in an abnormal setting, or in a way in which is unlikely to occur outside the laboratory, simply because if allowed the cues available in ordinary everyday life the system does far too well. It is, of course, also true that many memory studies are conducted in the lab because controlled observations allow for valid conclusions about cause and effect. Ordinarily the system works so well that it is only when it begins to break down that we realise the system is there at all.

Schacter's own theoretical stance concerning the influence of recall cues on the type of information recalled tends to emphasise those occasions on which the cue distorts the memory retrieved, perhaps at the expense of the many more occasions on which the cue elicits extremely accurate memories. Arguably, in a book like this one aimed at a general rather than a specialist audience, emphasis on memory failures is necessary not only because the bulk of our knowledge about how memory works comes from this source, but also because we tend to take the extremely successful nature of our memories for granted. However, because the breadth and detail of our recollections is generally accepted without comment, surely the power, as well as the fragility of memory is worth emphasising in its own right?

Overall this is a well-written and interesting book on a fascinating topic. Although I was occasionally frustrated with its breadth rather than depth of information approach, the book is intended to introduce the casual reader to the whole spectrum of current issues in memory research. Any one of the subjects dealt with in each of the chapters has inspired entire books by itself, and it is therefore also not surprising that most contentions and the most fascinating, only skims the surface on the current debates on occasion. The attempt itself is laudable. This is not the last word on memory theory, but as the title implies, it is not meant to be. For an implicit memory researcher to give centre stage to recollective experience as a defining feature of human memory is unusual in itself, and for those who are unsatisfied with the depth of detail presented within the main text there are copious footnotes and a generous reference section to follow up any of the issues raised.

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