Douwe Draaisma, ***Metaphors of Memory: a history of ideas about the mind.*** 241pp. Cambridge University Press. 18.95. 0 521 65024 0.

Review by John Sutton, Macquarie University: john.sutton@mq.edu.au and http://johnsutton.net/
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According to a 17th-century European fantasy, certain sponges were used in the South Seas to record and transmit sound. A message spoken into one of these sponges would be exactly replayed when a recipient squeezed it appropriately, even across great distances in time and space. It's hard for us to remember just how magical it is, in a world of constant flux, that *any* information can be enduringly stored, transported without distortion, and precisely reproduced. Our lives are irretrievably tangled up with institutional archives and databases which hold their contents ordered and immune from melding, and we trust that our computers won't creatively blend our files overnight. But our own minds are not so easily kept tidy, for *human* memory, in contrast, often resists both control and understanding.

This attractive book, translated by Paul Vincent from the Dutch version of 1995, offers an illustrated intellectual history of theories of memory from Plato to neural networks, by way of the medieval arts of memory, blind chess players, Freud's mystic writing pad, and the marvels of the hologram. Unlike overconfident cognitive psychologists, Douwe Draaisma does not see a decisive epistemic rupture in the development of modern experimental methods, and recognizes the residual, if often disavowed, roles of high-level theory and metaphor in the diverse contemporary sciences of memory. But unlike overly cautious historians of science, Draaisma is willing to flirt with truth-claims, acknowledging that his selection and critical evaluation of historical material is partly driven by his concerned interest in the current state of these strange sciences. Since Draaisma also frames his description of specific memory metaphors with an economical and well-directed survey of literary, philosophical, and psychological theories of metaphor-in-general, his book is an unusually successful interdisciplinary enterprise.

Some historians and cultural critics, sceptical of the very idea of a cognitive science of memory, see the recurrence of patterns of metaphor as evidence of the self-deluding poverty of modern psychology. Does contemporary science still implicitly rely on old images of memory traces stamped into the brain as if on wax, or written in some neural code? Perhaps the fleeting animal spirits, which Descartes found filtering and retracing patterns through the pores of the brain, and which Hume described rummaging mischievously in adjacent cells, still haunt the vectors and matrices of the most fashionable new computational models. If so, the weary humanist may think, the historical study of memory metaphors may unmask the conceptual incoherence behind apparently empirical investigation.

Draaisma does reveal, in a rather ill-fitting final chapter, that he thinks no mechanistic account of memory can deal with the "unfathomable" nature of my 1st-personal privileged access, through consciousness, to my own memory. His worries about invoking little men inside the brain to recognize the memory trace as the right one are entirely reasonable. But he overgeneralizes the concern, assuming that it must undermine all causal and representational theories of memory. The unwanted homunculus is in fact required only by problematic 'localist' conceptions of passive traces in a separate storage system, a repository from which someone must choose which items to extract. Because he doesn't see how thoroughly such an inner self or central executive is dissolved or dismantled by alternative dynamic accounts of active memory traces (both historical and contemporary), Draaisma takes voluntary memory to be a 'secret door from inside' forever barred to science.

But at least Draaisma rarely argues that a model is undermined simply because its metaphoric elements are not entirely new. After all, the same processes might be partially or imperfectly described and redescribed in differing frameworks over time. Metaphors are not all equivalent: Draaisma offers a lovely case study of the way descriptions of memory based on the vague and indistinct but continuous and dynamic images of the camera obscura gave way swiftly in mid-

19th-century psychology to the contrary notion, inspired by photography, that memories are fixed and precise but static.

Draaisma's narrative still presents an independent history of successive external information technologies - from storehouse to switchboard to computer - as if their subsequent metaphoric applications to human memory are little more than tempting but sad mistakes. Metaphors for memory, amusingly bizarre as the lists' range from grottoes to purses to aviaries to honeycombs may be, then appear bewilderingly arbitrary. We are offered here no inchoate classification of the context-dependent psycho-political or theoretical functions which particular kinds of metaphor might fill. And with the notion of a *literal* description of memory processes never more than a dream, psychologists on this view haplessly and excitedly project the properties of the latest swish machines back onto the mind. The history of memory, Draaisma suggests, is like 'a tour of the depositories of a technology museum'.

Memory theorists have of course often been prone to forgetting the contingency of their current explanatory apparatus: Draaisma enjoys deflating the future-oriented rhetoric of recent new connectionist theorists by carefully tracing the prehistory of key notions like composite traces, superposition, and content-addressable storage. But minds and technologies have not developed independently, to be then only arbitrarily reconnected in metaphor and theory. Instead, internal memory systems and external information systems have been coevolving ever since the beginnings of visuographic symbolic invention, pictorial representation, and writing. Humans construct, manipulate, and parasitize the external systems which supplement the unstable engrams of "natural" memory, and often prosthetically internalize aspects of the artificial systems thus produced. As the philosopher Andy Clark puts it in developing the idea of the "extended mind", what's special about humans is that "our brains make the world smart so that we can be dumb in peace". Systems of 'exograms' like photographs, computers, and indeed languages are themselves, among other things, tools for remembering: and their history, like the histories of fashions, rituals, rhymes, monuments, counting, and mourning, thus becomes an integral part of a historical and comparative cognitive science, rather than a humanistic curiosity.

The role of metaphors in the history of theories of memory, then, has not always been merely to *identify* our mental processes with the operations of particular technologies. It's true that many theorists have wishfully eliminated dynamics, seeking to impose cognitive discipline and to maintain control over the personal past, by assuming that memory traces must be as passive as the marks in our diaries, waiting at their separate addresses for the call of an active central executive. But the appropriate level of analysis at which to see the utility of memory metaphors is that of the extended memory trace, involved in a kind of *doubly* distributed processing, across body and world as well as brain. Representations in the external systems with which human memory has been compared may in various ways complement, rather than replicate, quite different operations inside the head.

Perhaps, as individualist critics of the extended mind idea complain, this condemns memory theorists to the study of an unscientific motley of hybrid systems: the old ideal of approximation to exceptionless laws is ruled out by the sheer diversity of external information systems with which human memories couple. This is the cost of expanding the domain of a theory of memory to include these exograms crafted in culture to retain and transmit information across diverse media in ways which the naked brain cannot. But we gain in return the beginnings of a framework with which to understand the bewildering diversity of actual and imagined relations between the inner and the outer. Richly detailed historical work is essential if these 'sciences of the interface', as they might be called, are to get off the ground. If psychology is a discipline with the most porous of collective memories, Douwe Draaisma's engaging and accessible book preserves, transmits, and actively uses some of its most unusual and important historical traces.

John Sutton's book *Philosophy and Memory Traces: Descartes to connectionism* was published in 1998. He is coeditor, with Stephen Gaukroger and John Schuster, of *Descartes' Natural Philosophy* (2000).