*Philosophical Psychology*
*Vol. 19, No. 3, June 2006, pp. 281–289*

Routledge
Taylor & Francis Group

# Introduction: Memory, Embodied Cognition, and the Extended Mind

John Sutton

*I introduce the seven papers in this special issue, by Andy Clark, Jérôme Dokic, Richard Menary, Jenann Ismael, Sue Campbell, Doris McIlwain, and Mark Rowlands. This paper explains the motivation for an alliance between the sciences of memory and the extended mind hypothesis. It examines in turn the role of worldly, social, and internalized forms of scaffolding to memory and cognition, and also highlights themes relating to affect, agency, and individual differences.*

*Keywords: Memory; Embodied Cognition; Extended Mind; Autobiography; Affect; Agency*

Whatever one's overall assessment of the current state of the sciences of memory, which span a daunting range of disciplines across the neurosciences, the cognitive sciences, and the social sciences, an integrative spirit can be identified in recent research trends. By this I refer not only to the development of frameworks—whether broadly reductive or not—for making sense of interfield or interlevel relations in memory studies (Bickle, 2003; Craver, 2002; Craver & Darden, 2001; Hardcastle, 1996; Sutton, 2004); but also to insistent attempts to integrate methods and results from the core laboratory disciplines of cognitive psychology and neuropsychology with memory research in ecological or "real-life" contexts. In 1978 Ulric Neisser could fairly lament that "If X is an interesting or socially significant aspect of memory, then psychologists have hardly ever studied X" (1978/2000, p. 4). But the situation changed swiftly, partly as a result of brave conceptual innovations and institutional initiatives taken by Neisser and other leading figures in the field, and partly because of complex and independent shifts both within psychology and in the wider cultural significance attributed to memory. So in 2000, introducing the second edition of *Memory Observed: Remembering in Natural Contexts*, Neisser and Hyman

Correspondence to: John Sutton, Department of Philosophy, Macquarie University, NSW 2109, Australia. Email: jsutton@scmp.mq.edu.au

ISSN 0951-5089 (print)/ISSN 1465-394X (online)/06/030281-09 © 2006 Taylor & Francis
DOI: 10.1080/09515080600702550

could afford understatement in noting that the study of everyday or real-world memory "has now become an influential and widely accepted research tradition" (p. xiii).

Although the reconciliation of ecological and laboratory approaches did not always come easily, the pluralism of contemporary memory studies is reasonably happy: ambitious and syncretic recent syntheses deliberately triangulate robust data and constraints from distinct sources, incorporating evidence from neuroimaging, neuropsychology, and from cognitive, developmental, social, and personality psychology all at once (Conway & Pleydell-Pearce, 2000; Siegel, 2001; Welzer & Markowitsch, 2005). In particular, the broadly constructivist consensus in the cognitive psychology of memory—to which Sue Campbell refers in this issue—has encouraged attention to the range of activities involved in remembering, across a vast and uneven array of natural, social, bodily, affective, and neural contexts. On Endel Tulving's notion of "synergistic ecphory", for example, any inner memory traces—whatever they may be—are "merely potential contributors to recollection," conspiring with current cues in rich contexts (Tulving, 1983, pp. 12–14; Schacter, 1996, pp. 56–71, 105). In her paper, "Our Faithfulness to the Past: Reconstructing Memory Value," Campbell rightly argues that this constructivist turn has sometimes been over-described, and offers us alternative ways of thinking about virtues like accuracy and integrity in memory, rejecting the equation of construction with distortion and error. So perhaps we should seek a still more thoroughgoing ecological or everyday approach to memory, which sees constructive processes in remembering—and, more generally, memory's openness to various forms of influence—as more mundane or natural and less dangerous than sometimes appears from, for example, the literature on false memory.

This is the opening for a natural alliance between memory research and the independent set of ideas in theoretical cognitive science variously labelled "distributed" or "situated" or "dynamical" or "enactive" or "embodied" cognition, "active externalism," or the "extended mind" hypothesis (Clark, 1997; Clark & Chalmers, 1998; Dennett, 2000; Haugeland, 1998; Hurley, 1998; Hutchins, 1995; Rowlands, 2003). These views share the constructivist stress on cognitive practices, by which internal representations are incomplete contributors in a context-sensitive system rather than fixed determinants of output: and they too focus on the ongoing interactive dance between brain and world through which, by forms of "continuous reciprocal causation," adaptive action results (Clark, 1997, pp. 163–166). Key precursors of these ideas had long been central points of reference in some subdomains of memory theory, e.g., the developmental psychology of autobiographical memory (Nelson & Fivush, 2004; Vygotsky, 1978). But the equal relevance to situated or enactive cognition of other harbingers of the modern constructivist sciences of memory, such as Bartlett (1932) and Halbwachs (1950/1980), had not often been noticed: only recently have explicit links been forged by theorists treating the vehicles of representation in memory, as well as the processes of remembering, as potentially spreading across world and body as well as brain (Auyang, 2000; Donald, 1991; Rowlands, 1999; Sutton, 2003, 2004; Tribble, 2005; Wilson, 2004, 2005).

Mutual theoretical benefits—e.g., better joint ways of thinking about factors too long neglected in philosophy of cognitive science, such as the role of individual differences in styles of remembering—might follow if we bring the resources of these traditions together.

It was to explore the possibilities and pitfalls for this potential integration between theories of memory and the embodied, extended mind that four days of workshops on memory, mind, and media were held in Sydney in late November and early December 2004, with contributions from anthropologists, literary historians, and media theorists as well as psychologists and philosophers. Early versions of all the papers in this special issue were presented at these workshops.[1] The idea was to take memory as a test case for evaluating the optimistic vision of a new kind of cognitive science defended by Andy Clark, who had argued:

> Much of what matters about human intelligence is hidden not in the brain, nor in the technology, but in the complex and iterated interactions and collaborations between the two . . .. The study of these interaction spaces is not easy, and depends both on new multidisciplinary alliances and new forms of modelling and analysis. The pay-off, however, could be spectacular: nothing less than a new kind of cognitive scientific collaboration involving neuroscience, physiology, and social, cultural, and technological studies in about equal measure. (2001, p. 154)

Ambitious as this program may be, memory does clearly require a framework which allows us to study brain and culture simultaneously; and—loosely-formulated and loosely-related as they may yet be—these ideas about embodied cognition and the extended mind are arguably the most promising such framework currently available. The seven papers in this special issue, then, address different facets of the emerging framework: some focus more directly on autobiographical memory, others on features of the extended mind hypothesis and on its implications for related topics like agency and affect. Rather than offering a summary of the papers in order, in the rest of this introduction I selectively highlight some overlapping themes across the contributions.

Much philosophical attention to ''active externalism'' has thus far focussed on metaphysical claims about minds spreading into the world as hybrids of biological and non-biological resources. Richard Menary's paper, ''Attacking the Bounds of Cognition,'' directly addresses a number of criticisms of the extended mind hypothesis. In responding to these challenges, Menary develops the hypothesis into a broader project he calls ''cognitive integration,'' which is ''the view that internal and external vehicles and processes [of cognition] are integrated into a whole.'' Where some critics of the extended mind hypothesis frame it as requiring that inner and outer resources are somehow identical, Menary argues that this is an inessential and implausible requirement: rather, quite different neural and (for example) technological resources couple or are otherwise coordinated, the various elements in the distributed larger system complementing each other on some time scale for particular purposes (see also Kirsh, in press; Sutton, 2006; Wilson & Clark, in press). The elements involved can be of many different kinds, and some initial tasks—as much methodological as metaphysical—are to taxonomize them, and to identify

relevant dimensions of variation across them. This project, as Menary suggests, will also help to answer the complaint that extended mind hypotheses would make cognitive science impossible by so radically diversifying its proper objects into a chaotic biological, technological, and social motley (Adams & Aizawa, 2001). For convenience, we can expect to find distinctive relevant patterns and properties in the nature and use of three different broad classes of cognitive scaffolding: external tools, whether natural or technological; interpersonal and social supports; and internalized versions of these two classes. But this must go alongside acknowledging—and exemplifying in case studies—the ways in which such distinct components typically work together in coordinated, real-world distributed systems (Hutchins, 1995; Kirsh, in press).

The first kind of more-or-less ''transient extended cognitive system'' (Wilson & Clark, in press) might include natural features of the cognizer's environment, such as those exploited in the ongoing sensorimotor mastery of couplings between perception and action, as discussed in both Menary's and Mark Rowlands' papers. In his paper ''The Normativity of Action,'' Rowlands introduces a new type of actions, ''deeds,'' which are centrally involved in representation-in-action, and offers an account of the normativity of deeds which is independent of any connection to prior intentional states: this account, Rowlands argues, leaves the way open to appeal to action in developing a theory of representation without any circular presupposition of internal representation. Rowlands gives us an intriguing and detailed example of how the saccadic deeds involved in a particular kind of acquired skilled movement—cricket batting—have a function grounded in the individual and collective history of the skilful practice in question.

Other contributors focus on a different environmental contribution—the use of particular objects or artifacts in remembering and acting. Taking a lead from the sociology of material culture, we might call this the study of ''the cognitive life of things'' (Sutton, 2002; drawing on Appadurai, 1986). Such cognitive aspects of material culture have recently been highlighted in cognitive archaeology (DeMarrais, Gosden, & Renfrew, 2004) and art history (Kwint, 1999). Sue Campbell's treatment adds the vital dimension of emotion to these approaches, as she examines the role of mementos, journals, or other treasured objects in extended mnemonic and affective systems, arguing that their personal and interpersonal use transforms the psychological space of the individuals and groups involved. This analysis covers not only the ordinary use of tokens and symbols—or exograms (Donald, 1991)—in personal memory, but also highly-charged political or emotional activities of remembering, as when the Argentine Madres de Plaza de Mayo walked together wearing the photo IDs of their disappeared children. The point is not that grief or anger is embodied *in* an artifact, but that a wider extended cognitive-affective system is formed across the group and the artifacts: this allows the ongoing social negotiation of the past, bringing certain events to the joint attention of people with quite different perspectives and stakes in the earlier events.

Complex real-world examples like this suggest how closely the artifacts or media used in activities of remembering are coupled with the interpersonal and social

features of extended cognitive systems. At the end of their influential paper ''The Extended Mind,'' Clark and Chalmers (1998) briefly but tentatively wondered about some possible cases of ''socially extended cognition'' (pp. 17–18). The example of memory encourages us to bring to bear on this topic the full resources of social, developmental, and personality psychology. Not only is the sharing of memories an ordinary human activity: more specifically it is very often in an interpersonal context that we renegotiate our own memories, shifting the patterns of salience in our personal past, or rejigging the links between episodic detail and our autobiographical knowledge base. Pursuing themes related to Campbell's from the perspective of personality psychology, Doris McIlwain addresses, in her paper ''Already Filtered: Affective Immersion and Personality Differences in Accessing Present and Past,'' the spread of ''personal'' memories across different individuals—e.g., mothers and daughters—by describing the intersubjective effects of affective memory schemas. Anchoring her account in a detailed picture of dramatic individual differences in attention, memory, and emotion-regulation, McIlwain argues that social aspects of memory are often mediated through affect. In particular, self-reflective emotions can shape the style as well as the content of recollection, driving the various forms of psychological partitioning which can make us ''strangers to ourselves.'' Socialized affects, operating through flexible but enduring schemas and internal working models, underlie implicit judgements of salience in both perception and recall: they thus act as ''little chunks of culture'' (McIlwain, in press), implicit structures of motive and orientation which permeate both expectation and memory.

Although anchored in a different conception of agency, Jenann Ismael's paper, ''Saving the Baby: Dennett on Autobiography, Agency, and the Self,'' also highlights the dynamism of autobiographical memory as a revisable and negotiable record of the personal past, an extravagant structure that is constantly updated and subjected to ongoing retrospective revision. Framing her positive account of the unity of the self within a critique of Daniel Dennett's view of the self as a fiction, Ismael offers a moderate defence of the idea of ''an inner locus of information and control,'' a more-or-less unified single self-representing informational stream. But rather than a reversion to the ''Cartesian Theater'' which Dennett convincingly rejected, Ismael takes her view to be wholly compatible with Dennett's account of the complex and distributed nature of our self-representing processes: where he sees the ''Joycean machine'' as spinning misleading propaganda about an inner brain-pearl, Ismael argues that it gives the (complex) mind a more-or-less unified collective voice. Integration is not a psychological given, but a synchronic and diachronic achievement, the hard-won and fragile product of ongoing cognitive work.

There are intriguing questions here about how truly multiple and competing the autobiographical narratives within an individual might be, and about individual differences in the ways in which such a unifying collective voice might be forged. McIlwain's point that coherence and narrative integration can, in certain circumstances, have significant cognitive-affective costs can perhaps be put together here with the discussion of self-scaffolding in Andy Clark's paper ''Material Symbols.'' Clark stresses the role of the third class of extended cognitive system

mentioned above, in which external or cultural resources are internalized. We use a wide range of stratagems to bootstrap, manage, transform, and discipline our minds, and these techniques can co-opt internal surrogates just as easily as worldly exograms. In Clark's picture, we are essentially incomplete machines, apt to incorporate what has—in the course of evolutionary, cultural, and developmental history—become apt for incorporation. This paper examines ways in which we manipulate ourselves through the use of language and other symbol systems: as well as its communicative role, any word, phrase, label, tag, or image can also have a key cognitive role as a material symbol, becoming "a new target for selective attention and a new fulcrum for the control of action." As well as underlining Menary's case that the extended mind hypothesis sees the relationship between inner and outer resources as complementarity or integration rather than replication, Clark shows that our abilities to vehicle our thoughts in language and other symbolic formats are entirely continuous with other, more direct ways in which we actively structure our cognitive environments. Describing a sequence of increasingly strong respects in which "the actual material forms of language may impact cognition," Clark offers a picture of cognitive discipline which should be integratable with the approaches to emotion sketched above. Our collective and individual cognitive strategies, which may be more or less idiosyncratic, often address the "problem of stabilization," of working out how "to productively dampen and control (but not counter-productively destroy altogether) the fluidity and context-sensitivity of biologically basic forms of neural representation," by creating "a kind of affect-dampening layer of insulation" (Clark, 2005, pp. 262–263).

Such coordinated use of either incorporated or external targets of attention and control introduces extra dimensions of variation in the sculpting of our cognitive-affective processes. In his concluding discussion of some recent computational models of the "internal re-use of a public symbol system," Clark notes that the productive cognitive use of words as material symbols may require "ongoing control over the current degree of coupling" with current inputs. So the context-sensitivity of remembering, feeling, and thinking is itself context-sensitive: under certain conditions and in certain circumstances, we may temporarily approximate a more detached cognitive agent, dynamically buffered from the world in order to recalibrate or renegotiate the inner representational regime. Perhaps this is the entry-point of the richer representational environment identified by Ismael, in which arises "the conception of ourselves as perceivers and agents, effecting and effected by events in our surroundings" within a causally structured world. In his paper, "From Linguistic Contextualism to Situated Cognition: The Case of *Ad Hoc* Concepts," Jérôme Dokic calls this the "official" conception of the world, in which the constituents of thought are stable, articulated concepts apt for inferential use across contexts. Building on relevance theory and the psychology of concepts, Dokic argues, however, that much of our thinking does not use such official concepts, but instead involves cognitively *un*articulated constituents which have merely pragmatic rather than inferential roles. Such thoughts are formed through "sub-inferential monitoring" for the control of action, and are anchored, e.g., to a particular place which is not explicitly identified

in those thoughts. Dokic integrates this account with the post-connectionist picture of partial, action-oriented representation mentioned above, in particular with Rob Wilson's (2004) notion of ''exploitative'' representations which exploit the structure of the world without encoding it. The *ad hoc* concepts used by such minimal representational mechanisms, geared more directly to action than to inference, may still owe something to more stable context-independent concepts. But the official, articulated conception of the world and the self is not our only one, and it may emerge and be used differently by different individuals and in different contexts.

Both memory theorists and cognitive scientists interested in the extended mind hypothesis, then, need all available tools for investigating ''the complex and iterated interactions and collaborations'' between embodied brains and their techno-social milieux. Together these papers offer a rich array of tools to aid our ongoing attempts to characterise the remembering and feeling embodied subject as thoroughly embedded in natural, technological, social, and internal environments.

## Acknowledgements

I am very grateful to everyone who helped with running the original workshops, and with this special issue, especially Tim Bayne, Wayne Christensen, Russell Downham, Jordi Fernandez, Philip Gerrans, Oliver Granger, Mitchell Herschbach, Cees van Leeuwen, Catriona Mackenzie, Peter Menzies, Anne Monchamp, Monte Pemberton, Huw Price, and Carl Windhorst. Many thanks too to the Australian Research Council, the Division of Society, Culture, Media and Philosophy at Macquarie University, the Centre for Time at the University of Sydney, and the Royal Australian Institute of Architects for their generous support of the workshops.

## Note

[1] Other papers from the workshops have been published in special issues of *Scan: Journal of Media Arts Culture*, 2 (2), September 2005; and *Cognitive Processing: International Quarterly of Cognitive Science*, 6 (4), December 2005.

## References

Adams, F., & Aizawa, K. (2001). The bounds of cognition. *Philosophical Psychology*, *14*, 43–64.

Appadurai, A. (1986). *The social life of things: Commodities in cultural perspective*. Cambridge, England: Cambridge University Press.

Auyang, S. (2001). *Mind in everyday life and cognitive science*. Cambridge, MA: MIT Press.

Bartlett, F. C. (1932). *Remembering: A study in experimental and social psychology*. Cambridge, England: Cambridge University Press.

Bickle, J. (2003). *Philosophy and neuroscience: A ruthlessly reductive account*. Dordrecht, The Netherlands: Kluwer.

Clark, A. (1997). *Being there: Putting brain, body, and world together again*. Cambridge, MA: MIT Press.

Clark, A. (2001). *Mindware*. Oxford, England: Oxford University Press.

Clark, A. (2005). Word, niche and super-niche: How language makes minds matter more. *Theoria*, *20*, 255–268.

Clark, A., & Chalmers, D. (1998). The extended mind. *Analysis*, *58*, 7–19.

Conway, M. A., & Pleydell-Pearce, C. W. (2000). The construction of autobiographical memories in the self-memory system. *Psychological Review*, *107*, 261–288.

Craver, C. F. (2002). Interlevel experiments and multilevel mechanisms in the neuroscience of memory. *Philosophy of Science*, *69*(supplement), S83–S97.

Craver, C. F., & Darden, L. (2001). Discovering mechanisms in neurobiology: The case of spatial memory. In P. Machamer, R. Grush, & P. McLaughlin (Eds.), *Theory and method in the neurosciences* (pp. 112–137). Pittsburgh, PA: Pittsburgh University Press.

DeMarrais, E., Gosden, C., & Renfrew, C. (2004). *Rethinking materiality: The engagement of mind with the material world.* Cambridge, England: McDonald Institute for Archaeological Research.

Dennett, D. C. (2000). Making tools for thinking. In D. Sperber (Ed.), *Metarepresentations: A multidisciplinary perspective* (pp. 17–29). Oxford, England: Oxford University Press.

Donald, M. (1991). *Origins of the modern mind*. Cambridge, MA: Harvard University Press.

Halbwachs, M. (1980). *The collective memory*. New York: Harper and Row. (Original work published 1950)

Hardcastle, V. G. (1996). *How to build a theory in cognitive science*. Albany, NY: State University of New York Press.

Haugeland, J. (1998). Mind embodied and embedded. *Having thought: Essays in the metaphysics of mind* (pp. 207–237). Cambridge, MA: Harvard University Press.

Hurley, S. E. (1998). *Consciousness in action*. Cambridge, MA: Harvard University Press.

Hutchins, E. (1995). *Cognition in the wild*. Cambridge, MA: MIT Press.

Kirsh, D. (in press). Distributed cognition: A methodological note. *Pragmatics and Cognition*.

Kwint, M. (1999). Introduction: The physical past. In M. Kwint, C. Breward, & J. Aynsley (Eds.), *Material memories* (pp. 1–16). Oxford, England: Berg.

McIlwain, D. (in press). Rezoning pleasure: Drives and affects in personality theory. *Theory and Psychology*.

Neisser, U. (2000). Memory: What are the important questions? In U. Neisser & I. E. Hyman Jr. (Eds.), *Memory observed: Remembering in natural contexts* (2nd ed., pp. 3–18). New York: Worth. (Original work published 1978)

Neisser, U., & Hyman, I. E. Jr. (2000). Preface to the second edition. *Memory observed: Remembering in natural contexts* (2nd ed., pp. xiii–xiv). New York: Worth.

Nelson, K., & Fivush, R. (2004). The emergence of autobiographical memory: A social cultural developmental theory. *Psychological Review*, *111*, 486–511.

Rowlands, M. (1999). *The body in mind: Understanding cognitive processes*. Cambridge, England: Cambridge University Press.

Rowlands, M. (2003). *Externalism: Putting mind and world back together again*. Chesham, England: Acumen.

Schacter, D. L. (1996). *Searching for memory: The brain, the mind, and the past*. New York: Basic Books.

Siegel, D. J. (2001). Memory: An overview, with emphasis on developmental, interpersonal, and neurobiological aspects. *Journal of the American Academy of Child and Adolescent Psychiatry*, *40*, 997–1011.

Sutton, J. (2002). Porous memory and the cognitive life of things. In D. Tofts, A. Jonson, & A. Cavallaro (Eds.), *Prefiguring cyberculture: An intellectual history* (pp. 130–141). Cambridge, MA: MIT Press.

Sutton, J. (2003). Memory. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy*. Retrieved April 6, 2006, from http://plato.stanford.edu/archives/spr2003/entries/memory/.

Sutton, J. (2004). Representation, reduction, and interdisciplinarity in the sciences of memory. In H. Clapin, P. Staines, & P. Slezak (Eds.), *Representation in mind: New approaches to mental representation* (pp. 187–216). Amsterdam: Elsevier.

Sutton, J. (2006). Exograms and interdisciplinarity: History, the extended mind, and the civilizing process. In R. Menary (Ed.), *The extended mind*. Aldershot, England: Ashgate.

Tribble, E. (2005). Distributing cognition in the Globe. *Shakespeare Quarterly*, *56*, 135–155.

Tulving, E. (1983). *Elements of episodic memory*. Oxford, England: Oxford University Press.

Vygotsky, L. S. (1978). *Mind in society*. Cambridge, MA: Harvard University Press.

Welzer, H., & Markowitsch, H. J. (2005). Towards a bio-psycho-social model of autobiographical memory. *Memory*, *13*, 63–78.

Wilson, R. A. (2004). *Boundaries of the mind*. Cambridge, England: Cambridge University Press.

Wilson, R. A. (2005). Collective memory, group minds, and the extended mind thesis. *Cognitive Processing*, *6*, 227–236.

Wilson, R. A., & Clark, A. (in press). How to situate cognition: Letting nature take its course. In M. Aydede & P. Robbins (Eds.), *The Cambridge handbook of situated cognition*. Cambridge, England: Cambridge University Press.