

John Sutton

## Memory and the extended mind: embodiment, cognition, and culture

Received: 14 September 2005 / Published online: 11 October 2005  
© Marta Olivetti Belardinelli and Springer-Verlag 2005

### Introduction to the special issue

This special issue, which includes papers first presented at two workshops on ‘Memory, Mind, and Media’ in Sydney on November 29–30 and December 2–3, 2004, showcases some of the best interdisciplinary work in philosophy and psychology by memory researchers in Australasia (and by one expatriate Australian, Robert Wilson of the University of Alberta). The papers address memory in many contexts: in dance and under hypnosis, in social groups and with siblings, in early childhood and in the laboratory. Memory is taken as a test case for evaluating the optimistic vision of a new kind of cognitive science defended by Andy Clark. Clark (2001:154) argues:

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 modeling 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.

So the central motivation is to investigate critically how well the case of memory would fit the extended mind’ thesis put forward by Clark and Chalmers (Clark and Chalmers 1998; Clark 1997, 2006)—according to which mental states and processes can spread across the

physical, social, and cultural environments as well as bodies and brains—and to ask how realistic are such dreams of multidisciplinary interaction when tested against a range of existing approaches to memory with very different aims, styles, and assumptions. In addition to the papers presented in this issue, three further papers (by Mitch Parsell, Pamela Lyon, and by Gerard O’Brien and Jon Opie), which deal not directly with memory but with the broader framework of the extended mind’ and the foundations of cognitive science, will appear as part of the next issue of *Cognitive Processing*.

The current special issue of *Cognitive Processing* focuses specifically on approaches to memory with direct connections to current empirical work in cognitive psychology and the cognitive sciences in general. Two papers are primarily philosophical, four are primarily psychological in orientation, but all the authors take conceptual and scientific integration—both ontological and methodological—as at least a guiding ideal for the sciences of memory (compare Craver 2005 for a more detailed framework for interfield integration across the neurosciences of memory).

### Memory between the cognitive sciences and the social sciences

The fact that memory is studied in a daunting range of disciplines often leads to mutual suspicion. How could, say, neurobiologists and narrative theorists who happen to use the same term for their object of study really be addressing the same phenomena? What could possibly link computational investigations of memory with cross-cultural psychology, or developmental studies with political theory? Cognitive scientists can react to this diversity by dismissing work on memory in the humanities as social sciences as inevitably anti-naturalistic, or by politely neglecting it as simply a different set of projects. Social scientists and humanities researchers, on the other hand, can react by criticizing psychological

J. Sutton  
Department of Philosophy, Macquarie University,  
NSW 2109 Sydney, Australia  
E-mail: jsutton@scmp.mq.edu.au  
Tel.: +61-2-98508817  
Fax: +61-2-98508892  
URL: <http://www.phil.mq.edu.au/staff/jsutton/>

and neuropsychological work on memory as tainted by scientism or individualism, or by politely remaining ignorant of it on the ground that their projects are simply different.

For one example of the gulfs between the two cultures which are further entrenched by such attitudes, we can look at an influential line of thought about memory in the recent history of psychology. Kurt Danziger, for example, complains that mainstream psychology has 'too easily assumed that psychological objects, like memory for example, have essential qualities forever fixed by nature': this assumption is incompatible with evidence of historical change in meaning, because 'regarded as a natural object memory has no history' (2002:1). Danziger thinks, in contrast, that sophisticated historical analysis 'shows that, contrary to the inspiration that drives much modern theorizing, memory has no natural essence' (2002:9). On similar grounds, Roger Smith argues (in a paper titled 'The history of psychological categories' which builds directly on Danziger's work) that 'basic psychological categories refer to historical and social entities, and not to natural kinds' (2005:55; and see especially pp. 81–85 on memory).

However, these are false dichotomies. If we do not assume in advance that everything must be either discursive or natural, either constructed or psychological, either historical or scientific, our understanding of memory in both science and history might be improved. The challenge here, then, is to take seriously the diversity of uses in successful practice across the disciplines, and to find theoretical frameworks which do not seek to reduce that diversity to a unitary view of memory, but allow different phenomena and concepts of memory to be related more or less tightly. Robert Wilson's paper 'Collective Memory, Group Minds, and the Extended Mind Thesis' is an intriguing and promising step on such a path. Wilson couples a detailed survey of the way social scientists actually use concepts of social memory and collective memory with an account of the extended mind thesis. This thesis, as applied to memory, suggests that the activity of remembering can be partly constituted by the social contexts in which the individual is embedded. Extending to the case of memory a more general account of the 'boundaries of the mind' which is firmly anchored in the cognitive and biological sciences (Wilson 2004), Wilson shows that the idea of memory as distributed across individuals and/or artefacts can strengthen some (but not all) invocations of shared or social memory in contemporary sociology, history, and political theory. By 'putting brain, body, and world together again' (Clark 1997) in the study of memory, we can thus reconstruct some social-scientific explanatory schemes without treating the idea that memory can go 'beyond the individual' as merely metaphorical.

As Wilson notes, analytical clarity is vital here in distinguishing among some quite different claims about social remembering. Two natural routes for further research along the lines suggested by Wilson thus emerge. One primarily philosophical task is to apply to memory

the idea of a 'plural subject' developed by Margaret Gilbert and others in the literature on social ontology (Gilbert 1989): just as it is natural to think and talk of joint intentions, or of acting together, so in a range of mundane social contexts we accept that two people, or small groups, or indeed institutions can remember. What kinds of memory might be expressed in such 'we remember' statements, and what conditions must be met for such statements to be true? Meanwhile, a jointly empirical and theoretical task is the investigation of the mechanisms and processes of interaction across individuals in activities of remembering. Enthusiastic defences of the extended mind and the study of cognitive technologies will be stronger if these frameworks are tested against and integrated with the relevant strands of the cognitive psychology of memory. This takes us directly to our research reports.

---

### The cognitive psychology of autobiographical memory

Psychological studies of interpersonal aspects of remembering over the last 15 years have focussed on the important and often confronting evidence for the constructive nature of remembering, even in its most personally significant form in 'autobiographical memory' (Schacter 1995; Hyman and Loftus 1998). The papers here by Deryn Strange, Matthew P. Gerrie, and Maryanne Garry, by Carl Windhorst, and the lab report by Amanda Barnier and her colleagues address this 'false memory' research directly.

Strange, Gerrie, and Garry's paper, 'A few seemingly harmless routes to a false memory', picks up on the role, also mentioned in Wilson's paper, of certain kinds of external objects in memory. Strange et al. are particularly interested in the differential influences of different media on our own personal memories. Working within the broad paradigm established by Elizabeth Loftus's research, Strange et al. review recent research which shows that doctored photographs can lead subjects to 'come to report having an experience that they never really had', but that (perhaps surprisingly) false narratives giving the same information as personalized false photographs are much more effective in cultivating false memories. The critical factor, they suggest, is not necessarily the particular medium itself as the room offered for imaginative elaboration by the false information and by the context of remembering: in particular, exposure to normal (true) photographs can significantly encourage subjects to accept and embellish false verbal narratives about their own past, by acting as cues to other associated events and emotions. So as well as the need for us to investigate the effect of personality on susceptibility to false memory (also discussed in Barnier et al.'s lab report), this kind of psychological research could draw profitably on work in cognitive archaeology and in media theory which forces us to attend to the specific properties of different external symbol systems (compare also Donald 1991:308–333, Renfrew and Scarre 1998).

Loftus's work on false memory has been criticized for its individualism: the philosopher Sue Campbell, for example, argues that it is misleading to see external influences on memory as always or primarily distorting (Campbell 2003). Both in development and in interpersonal remembering activity as adults, Campbell notes, other people can be essential parts of a narrative and emotional environment conducive to good remembering. The same could be true in appropriate contexts of certain kinds of technological or archival external support too (Campbell 2004). Perhaps the residually artificial experimental situations of some research in the Loftus tradition is in danger of neglecting the potentially positive role of factors outside the individual brain. In this light, Strange et al.'s treatment of the role of discussion in developing false narratives is particularly interesting. They acknowledge that in real settings, 'when confronted with a difficult to remember narrative about [their] childhood, people are likely to rely on others to verify their memories': so, in the recent study by French, Sutherland, and Garry which they report, subjects exposed to false information were allowed to discuss their memories with a sibling. Whereas a significant number of those that had initially given the false information had incorporated it into their own memories when recalling independently, after this phase of 'discussion' with their sibling the proportion dropped dramatically. This is an intriguing result both in its own right and also for the methodological reorientation it suggests: there's no reason that the established procedures developed in the false memory literature thus far cannot be rerouted slightly to address the circumstances in which other people, photos, and other artefacts can actively and successfully promote or maintain good remembering.

A further natural link between cognitive psychology and the broad 'extended mind' framework lies in the study of embodiment and memory. What are the relations, in human cognition, between the various kinds of declarative memory, on the one hand, and the more gradually-learned, more deeply ingrained varieties of skill and habit memory on the other hand? In extending the study of procedural memory further beyond the realm of conditioning into the study of flexible skill learning and memory, we need to understand the subtle and intricate links between explicit, conscious, verbally accessible memory and the less easily modifiable forms of memory which underline complex motor skills, for example. There are a number of natural domains for examining such interplay between 'knowing' and 'doing', such as sport and music: in their paper 'Thinking in Action: thought made visible in contemporary dance', Catherine Stevens and Shirley McKechnie take modern dance as another case study in the relations between declarative and procedural memory. Building on long-term collaborations between psychologists and dance practitioners in Sydney and Melbourne, Stevens and McKechnie survey problems about the cognitive processes involved in creating, performing, and responding

to contemporary dance. In contrast to stereotypical views of procedural memory as rigid and inflexible, Stevens and McKechnie show just how unique and idiosyncratic embodied thought can be, both in its development and in its expression. Their paper concludes with some intriguing suggestions about potential experimental investigations of the fluctuating interplay between procedural and declarative systems in dance, and of individual differences in the relative dependence on each.

Carl Windhorst, a philosopher deeply engaged with the cognitive psychology of memory, focuses in his paper ('The slave model of autobiographical memory') on different ways of thinking about the relationship between semantic or factual memory and episodic memory for particular events and experiences. After explaining Endel Tulving's view that episodic remembering is 'embedded' in knowing or semantic remembering, Windhorst argues, on the basis of the false memory literature, for the stronger idea that episodic memory is actually directed by or 'enslaved to' semantic memory. False memories of alien abduction, for example, or of having done something which was actually done by a twin, are due to the constraint and organization imposed by semantic memory on raw materials retrieved from episodic memory. Windhorst compares this theory with other available explanations of memory construction, and concludes with some remarks on the function of autobiographical memory.

---

### **Laboratory reports: memory in the south, memory on the beach**

Our two laboratory reports in this special issue were inspired in part by the excellent report on 'The Northernmost Cognitive Science Laboratory' which appeared recently in this journal (Laeng et al. 2004). The conditions in the southernmost psychology department, at the University of Otago in Dunedin, New Zealand, may not be quite as extreme as at that laboratory, at Tromsø in Norway; however, the lab report by Elaine Reese and Michael Colombo does confirm that outstanding research activity is indeed in no way compromised by cold climates. They describe, for example, one interesting modification required by the weather to the traditional mirror test for self-recognition! Reese and Colombo restrict their informative survey to memory research, in keeping with the theme of this special issue. Among the highlights of their account is a remarkable range of studies in the developmental psychology of memory. This work includes, notably, the most substantial longitudinal studies of memory development in childhood ever undertaken (Reese 2002).

In a way, the apparently arbitrary slice through the levels of memory research offered in this description of an active research department is the best answer to the scepticism about interdisciplinarity I mentioned earlier in this introduction. Within just one of the many

buildings housing the University of Otago psychologists, as Reese and Colombo explain, researchers are examining the microstructure of the rat hippocampus, and watching subjects trying to recognize upside-down faces, repeating well-learned motor actions, or revealing the complex social influences on their early life stories. Although there is an enormous amount of work to do in piecing together the relations between the various distinct phenomena being simultaneously examined in these different projects, there seems to be ample room for confidence in the possibility of constructive and synthetic frameworks for interfield integration.

Back in Sydney, for our final paper we visit the memory laboratory on (or near) Coogee beach, at the University of New South Wales (UNSW) which will be host for the 4th in the series of international conferences on memory (ICOM-4) in July 2006 (details are at <http://www.psy.unsw.edu.au/Groups/ICOM4/>). In their laboratory report, Amanda Barnier and her colleagues offer a detailed overview of their projects in the cognitive, clinical, and forensic psychology of memory. It is worth picking out a few strands of their approaches here to stress their importance for the broader study of autobiographical memory in particular. Barnier et al. use post-hypnotic amnesia to model and investigate clinical amnesias, examining in particular the ways in which episodic memories which are temporarily inaccessible to consciousness can still influence cognitive processing in other ways: this form of 'implicit' testing of autobiographical memory poses some challenges to some theories of what such a form of memory is. The effects here are then compared with other forms of experimentally created autobiographical forgetting, such as retrieval-induced forgetting and directed forgetting. And in some of the most promising work across subdisciplines of psychology which too often remain distinct, Barnier's group also studies personality styles in recall, looking for example at the mechanisms of memory suppression in 'repressive copers' or 'repressors'.

One necessary step for any substantial interfield integration across the sciences of memory is a willingness on the part of specialists to overcome the difficulty of understanding work in a number of disparate traditions. Of course, merely juxtaposing ideas which happen to be consistent with each other is not enough: as Patricia Kitcher has argued, interdisciplinary theory-construction runs the risk of underestimating the internal problems within any single tradition (1992:159–183; compare Sutton 2004). However, the need for care and caution should not stop us collectively seeking both general frameworks for integration, and whatever specific points of contact we can find. The broad 'extended mind' hypothesis offers one promising such framework just because it encourages us to study brain, mind,

society, and technology simultaneously, which may be appropriate if the phenomena of memory refuse to fall neatly within only one of those domains.

**Acknowledgements** For help on a wide range of tasks involved in running the original workshops and in developing this special issue, warm thanks to Amanda Barnier, Tim Bayne, Andy Clark, Russell Downham, Oliver Granger, Christoph Hoerl, Thomas Hünefeldt, Cees van Leeuwen, Doris McIlwain, Richard Menary, Anne Monchamp, Mitch Parsell, Monte Pemberton, Huw Price, Mark Rowlands, 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.

---

## References

- Campbell S (2003) *Relational remembering: rethinking the memory wars*. Rowman and Littlefield, Lanham
- Campbell S (2004) Models of memory and memory activities. In: DesAutels P, Walker MU (eds) *Moral psychology: feminist ethics and political theory*. Rowman and Littlefield, Lanham
- Clark A (1997) *Being there: putting brain, body, and world together again*. MIT, Cambridge
- Clark A (2001) *Mindware: an introduction to the philosophy of cognitive science*. Oxford University Press, Oxford
- Clark A (2006) Memento's revenge: the extended mind, extended. In: Menary R (ed) *The extended mind*. Ashgate, Aldershot
- Clark A, Chalmers D (1998) The extended mind. *Analysis* 58:7–19
- Craver C (2005) Beyond reduction: mechanisms, multifield integration, and the unity of neuroscience. *Stud Hist Phil Biol Biomed Sci* 36:373–395
- Danziger K (2002) How old is psychology, particularly concepts of memory? *Hist Phil Psychol* 4:1–12
- Donald M (1991) *Origins of the modern mind*. Harvard University Press, Cambridge
- Gilbert Margaret (1989) *On social facts*. Routledge, London
- Hyman IE, Loftus EF (1998) Errors in autobiographical memory. *Clin Psychol Rev* 18:933–947
- Kitcher P (1992) *Freud's dream: a complete interdisciplinary science of mind*. MIT, Cambridge
- Laeng B (2004) The northernmost cognitive science laboratory. *Cognitive Processing* 5:57–63
- Reese E (2002) A model of the origins of autobiographical memory. In: Fagen JW, Hayne H (eds) *Progress in infancy research*, vol 2. Lawrence Erlbaum, Mahwah, NJ, pp 215–260
- Renfrew C, Scarre C (eds) (1998) *Cognition and material culture: the archaeology of symbolic storage*. MacDonald Institute for Archaeological Research, Cambridge
- Schacter DL (ed) (1995) *Memory distortion: how minds, brains, and societies reconstruct the past*. Harvard University Press, Cambridge
- Smith R (2005) The history of psychological categories. *Stud Hist Phil Biol Biomed Sci* 36:55–94
- Sutton J (2004) Representation, reduction, and interdisciplinarity in the sciences of memory. In: Clapin H, Staines P, Slezak P (eds) *Representation in mind: new approaches to mental representation*. Elsevier, Amsterdam, pp 187–216
- Wilson RA (2004) *Boundaries of the mind: the individual in the fragile sciences: cognition*. Cambridge University Press, Cambridge