



PERSONAL MEMORY, THE SCAFFOLDED MIND, AND COGNITIVE CHANGE IN THE NEOLITHIC

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MEMORY, SELF AND COGNITIVE CHANGE IN THE NEOLITHIC

‘The Çatalhöyük evidence as a whole’, write Hodder and Pels, ‘gives many indications that, indeed, people began to link themselves to specific pasts, by burying pots, tools, humans and hunting trophies in ways that indicate particular memories rather than a generic reference to a group’ (2010, 182). Hodder draws on his multidisciplinary team’s impressive studies of a wide range of artifacts and practices – household symbols, pit-digging, burial, figurines, tools, decoration, and more – to argue that forms of remembering emerged or consolidated at Çatalhöyük that were neither merely routinized and habitual, nor merely traditional and generic, and that took as their objects neither repeated activities nor widespread factual knowledge. Rather, the new forms of social memory being constructed at Çatalhöyük were ‘conscious, specific, and commemorative’, as household groups ‘began to make specific connections between the present and the past’ (Hodder & Cessford 2004, 35; Hodder 2006, 143).

Such striking claims about Neolithic cognitive change seem to chime neatly with the other ambitious hypotheses explored in this volume, intended to link measurable changes in the archaeological record to historical changes in consciousness, creativity, and self. Cognitive archaeology flourishes, confirming a wholehearted embrace of ‘the murky subject of the human psyche’ (Tattersall 2008, 121). Yet memory does not figure directly among the potential changes in cognitive capacities for abstraction, innovation, and integration with which this particular project began. It is not easy to pin down just what historical changes in memory practices and capacities might be in question, or to compare the forms of remembering under investigation with those featured in our current taxonomies of memory. Hodder’s claims about Çatalhöyük do not directly concern possible changes in the capacity and operation of ‘working memory’ (Coolidge & Wynn 2005, 2008; Ambrose 2010). And in shifting archaeological attention away from embodied memory and collective memory, Hodder is

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probing the kind of precise recall of specific events, objects, or experiences that is now typically understood as episodic, autobiographical, or personal memory. In this chapter I return to memory as a test case for evaluating claims about cognitive change in the Neolithic, trying to flesh out and generalise Hodder's suggestive remarks about memory at Çatalhöyük by setting them in the context of a broad theoretical approach to personal memory that might both make sense of and in turn be buttressed and developed by the archaeological case study.

I use 'personal memory' as a usefully general label, less embedded than is 'episodic memory' in the current cognitive disciplines of psychology, neuroscience, philosophy, and psychiatry. It involves, roughly, our capacities to remember the particular events, episodes, or experiences of our own past. Typically, 'autobiographical memory' is a more complex construction, one of a number of ways in which more basic memory capacities can be deployed. Some theories of autobiographical remembering treat it as combining factual, semantic, or schematic knowledge of our past with sensory, imagistic, or affective episodic fragments to generate transient mental constructions that (in the ideal case) are partly caused by the events and experiences they are about (Conway & Pleydell-Pearce 2000; Conway 2005). Both the terms and these ways of dividing up the phenomena should be treated flexibly and as entirely compatible with strong further interests in embodied or collective memory: one point of identifying distinct forms of remembering is to be able to ask questions about how they interact (Sutton 2009). Approaches to episodic and autobiographical memory ramify and complicate (see

later) as we glimpse more of the neural dynamics, the developmental complexity, the social and contextual dependence, the functional diversity, and the cultural openness of these capacities. Pulling autobiographical memory apart, treating it as multiple, complex, variable, entangled, and open, may show how rich and uneven a developmental achievement it is and thus build a richer sense of the uneven historical tuning processes by which we came by it.

The aim is mutual or bidirectional illumination. On the one hand, theories of personal and autobiographical memory offer some help to cognitive archaeologists in interpreting features of their evidence base and their developing historical narratives. On the other hand, in reverse, the cognitive archaeology of specific periods helps other cognitive theorists in assessing the nature, functions, and components of episodic remembering. This hopeful picture contrasts with the baleful alternative possibility (considered later) that memory is not a proper topic of or for direct historical investigation and needs to be addressed with only the existing resources of biology, neuroscience, and experimental psychology.

I return to memory in the context of this project's aims in the hope that its challenges, in Neolithic settings, differ from those posed by investigating 'consciousness', 'creativity', and 'self'. Those terms – like 'cognition' and 'mind' themselves – drag with them such historical, cultural, and semantic variability and consequent scientific and theoretical uncertainty that further translation or mediating precision may be needed to begin identifying their traces. 'Memory' too is far from a likely natural kind (or whatever the nearest equivalent in the cognitive sciences might be),

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but despite its multiplicity may afford firmer grip on the kind of inferences needed.

In light of the extraordinarily detailed archaeological material found and integrated by the Çatalhöyük team (Hodder 2014, 2017a), Hodder enumerated factors that might correlate with or mark cognitive change in the Neolithic (2017b). With appropriate inferences, we might find signs of ‘higher levels of consciousness’ and/or ‘greater creativity’, in traces of (for example) intensified trade and exchange, new or increased patterns of metrication and standardisation, newly diverse technologies, or increased tendencies towards abstraction or towards recombination. With regard to any possible ‘greater awareness of an integrated personal self’, in particular, we might identify new practices or markers of self in the material record of patterns of domestication and property, or of privacy and self-sufficiency, and in evidence concerning certain artifacts and associated practices. Specifically, greater self-awareness might be *evidenced by* changing burial practices, which reveal different emerging attitudes to body parts, bodily integrity, and individuality; by related changes in the nature and treatment of figurines; and by increased personal adornment and novel patterns of wear, use, and repair of some personal artifacts such as pendants. And among the possible *causal factors* involved in such developing awareness of an integrated self, Hodder suggested examining a range of economic, demographic, and religious factors (Hodder 2017b).

These factors need not be either mutually exclusive or independent. There may be dependency relations or feedback loops between them in particular historical contexts. But there are difficulties in seeing how

to advance appropriately multicausal versions of these hypotheses. One reason it is challenging to interpret the notion of ‘greater awareness of an integrated personal self’ here is that for expository purposes Hodder retains a dichotomy inherited from anthropological theory between the distributed, fragmented, partible selves of societies, which are focussed more firmly on the collective and on sharing and more integrated individuals (Strathern 1988; Fowler 2004). Yet distinctive individuals can be the members and constituents of certain sorts of integrated collective groups, and conversely certain forms of distributed agency can flourish in more atomised and individualised societies. The striking evidence about houses and burials that Hodder has marshalled in addressing these topics might just as firmly indicate that forms of individualised agency long coexisted with transformable and unbounded selves as the former emerged clearly from the latter over a clean historical transition (Hodder 2011). Further, the looseness of fit between evidence and hypothesis that shadows cognitive archaeology is more troubling when the target is harder to catch and characterise. Historical facts about, say, beads, bricks, or bones may be clear enough without settling anything about which cognitive processes they indicate or what kind of ‘self’ they implicate.

So I add a further, compatible dimension to our investigation into the possibility of changing Neolithic awareness of an integrated personal self. Perhaps such changing awareness might also be *evidenced by* changes in forms and nature of personal or autobiographical remembering. And perhaps, in interaction with some of the factors mentioned earlier, further *causal factors* involved

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in such awareness of self in and over time might include new demands on more precisely tracking events and commitments, as well as the changing social and material memory practices and technologies that archaeologists have long studied.

I proceed by first explaining and defending the possibility of historical changes in autobiographical memory, anchoring this exercise in speculative cognitive archaeology and cognitive history in the picture of the ‘scaffolded mind’ suggested by the ‘distributed cognition’ framework. I discuss features of autobiographical memory and its components, which are highlighted in various domains of recent science and theory, and which taken together reveal personal remembering as a rich and complex set of learned and enculturated skills. I then lay out the background conditions for the putative historical changes, in or before the Neolithic, before I go on to sketch a picture of the nature, causes, and implications of the hypothesised changes in memory capacities and practices.

MEMORY, DISTRIBUTED COGNITION AND COGNITIVE HISTORY

What would personal memory need to be, or to be like, to be the kind of psychological capacity that might undergo cognitive change in the Neolithic? Can we find conceptual and empirical space to allow for this possibility? I briefly consider the evolution and nature of the systems involved in personal memory, assessing implications for interdisciplinary cognitive historical research. I then back up to describe briefly the theoretical framework against which it makes sense to treat some changing sociomaterial settings as directly

sculpting and retuning cognitive capacities like autobiographical memory.

Some ability to track what happened, when, and where is often ascribed to many non-human animals. Both the basic molecular mechanisms and the systemic neural circuitry of basic event memory may be ‘fundamentally conserved across avian and mammalian species’ (Allen & Fortin 2013, 10379). Lively experimental, methodological, and conceptual debates continue on how to characterise the exact ways in which non-human animals are sensitive to time (Hoerl & McCormack 2017). For current purposes, we can accept that much of our most basic memory capacity is deeply ancient, in place before the advent of anatomically modern humans.

Before, in, and soon after the emergence of *Homo sapiens*, these memory capacities developed further. Some stress an enhanced capacity for ‘survival processing’, by which it’s natural and easier for us to remember concepts or scenarios that were more relevant for survival in our ancestral environments (Nairne & Pandeirada 2008). Others are cautious about postulating unique adaptive trajectories with direct survival or reproductive benefits, suggesting instead that episodic memory ‘may just as well have evolved as a by-product of another capacity with benefits in other domains’ (Redshaw & Suddendorf 2018). Among the related capacities often associated with potential developments in human episodic memory are changes in working memory and executive control, in theory of mind and social cognition and perspective-taking, perhaps in some forms of reasoning and metarepresentational capacities, and perhaps in some forms of narrative and

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language. There is insufficient evidence to settle questions about the historical and conceptual relationships between these various capacities, so that, for example, we just don't know whether recognisably modern basic human episodic memory capacities developed before, alongside, or after human language. Many also place at least some forms of human awareness of the location of self and events in time, often now labelled 'autonoesis' or 'mental time travel', around these early phases of *Homo sapiens*, and before or alongside the more dramatic changes in lifeways and social organisation of the last 50,000–70,000 years (Tulving 2002; Boyer 2009a; Suddendorf, Addis, & Corballis 2009; Michaelian 2016). The emerging suite of more flexible and integrative cognitive capacities in our ancestors at that stage likely included fairly sophisticated abilities to track events and sequences, to imagine and plan future actions, and to consider alternate possibilities, as well as involving the kind of rich links between emotion, imagery, and past or future experience with which we are now familiar (Boyer 2009a).

Though not perhaps impossible, it would therefore be difficult to base an argument for later, *Neolithic* changes in memory and cognition, long after any significant changes in brain size or structure, on a claim that the basic elements of episodic memory were not yet in play. But what lessons *should* we draw about the history and archaeology of episodic and autobiographical memory? One approach is to insist that while human memory has a biological history, of the kind sketched earlier, it has a cultural history in only a thin or minimal sense. If it was already fully formed before any of the signs of 'behavioural modernity', well before the Neolithic, then

any historical changes in practices and activities of remembering, let alone in material or social supports for memory, are merely curious variation, ethnographic window-dressing or cultural froth on its real internal neural nature. On such a view, there are no genuinely *cognitive* ecologies of memory, shifting and varying across (pre)historical time, because memory and cognition are behind or outside culture. And in turn, archaeology will be of merely humanistic and casual interest to genuine memory scientists, who study the neurobiological capacities as they exist now and have since their biological evolution; while memory science can only help cognitive archaeology at the general level of specifying constraints on all human activity in history.

This is not the only or the right lesson. We can accept the consensus sketched earlier about the core elements of human memory while still allowing substantial variability in the development and deployment of those elements in cognitive practice. The first step here, before I deal with the nature of memory and with the specific historical changes in question, is to outline the way of thinking of memory as scaffolded and distributed across complex cognitive ecologies that provides the framework. Human brains are particularly plastic and incomplete, prone to construction and selection and pattern-transformation, deeply open to shaping by conditions, artifacts, places, and activities that we ourselves – individually and collectively – have partly created, shaped, and regulated. Our brains are situated and nested in wider cognitive ecologies of heterogeneous elements displaying 'webs of mutual dependence' (Hutchins 2010; Sutton 2010). As a result, just as there is a looseness of fit between cognition and

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material culture within which archaeological theory and inference must operate, so there is a looseness of fit between cognition and the brain, which is the space of psychology and cognitive theory.

In the language of distributed cognition, the *activities* or *practices* of remembering (as of feeling, sensing, problem solving, and so on) are often not located in the brain alone, but are hybrid and spread across brains, bodies, and worlds. In the language of niche construction, humans are epistemic engineers engaged in the iterative construction of cognitive niches, which are cultural and technological by nature. Compared to discussions of ‘extended mind’ in philosophy, we want to be less focussed on metaphysics and more on method, pointing to the cognitive activities and practices in which human minds tune themselves and identifying dimensions of variation that can be studied empirically across contexts (Sterelny 2010; Sutton, Harris, Keil, & Barnier 2010; Heersmink 2015). Where interactive scaffolding most strongly and specifically shapes ongoing cognitive processing, we will see some social and technological resources as playing unique and distinctive roles in differently balanced solutions to diverse, context-specific problems of managing the past and flourishing in present and future. Arguing that cognitive archaeology and ideas of embodied, scaffolded, and distributed cognition can be mutually beneficial, Kim Sterelny writes:

If thinking depends on doing, and on the world in which the agent is embedded, ancient thinking is more tightly linked to ancient activity. Much knowledge is know-how, and know-how is manifest in actions that leave physical traces . . . To the extent we can reconstruct their social, technical,

and ecological lifeways (admittedly, very partially) we can identify their cognitive and motivational capacities, as their lifeways are not just effects of hidden internal cognitive processes; they are causes, supports, and scaffolds of those processes.

(Sterelny 2017, 244–6)

So any cognitive ecology is a more or less integrated array, implicating embodied brains in meshed social and material settings. As intelligent agents, we are cultural and technological by nature, ‘natural-born cyborgs’ always adapting to cognitive niches that we have ourselves engineered (Donald 1991; Clark 2003; Sutton 2010). There is space and need for history and archaeology in cognitive science because mind and memory incorporate social and environmental techniques differently across distinctive contexts. We look for convergences between independently motivated debates or projects in history or archaeology, on the one hand, and cognitive theory and science on the other, like the productive parallel implementations of these ideas about distributed cognitive ecologies applied to the early modern cultural history of memory by Lyn Tribble (2011; compare Tribble & Keene 2011; Sutton & Keene 2017). In working our way back to Çatalhöyük, then, we want to hold neural, material, and social components of distributed memory systems equally in focus. By first probing harder on some of the features of rich modern human memory, we will then be able to identify some differential ways it is scaffolded across distinctive cognitive ecologies.

EPISODIC MEMORY AND AUTOBIOGRAPHICAL MEMORY

The basic capacities for remembering, imagining, and mental time travel, which were in

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place well before the Neolithic, have been, are, and can be deployed or knitted together in a range of ways. As children, we learn the skills of autobiographical remembering and of constructive episodic simulation in slow, multistaged, variable processes of enculturation, involving many cognitive, affective, interpersonal, and narrative resources. The ways that we come to remember the personal and shared past, and to imagine the future, are culturally and socially scaffolded. These processes of enculturation in turn transform some of our more basic inherited capacities to track isolated events and episodes. Along with other dimensions of cognitive development, social interaction shapes children's emerging capacity for joint attention to the shared past and the gradual emergence of richer temporal understanding. The norms, practices, and abilities grounding spontaneous personal memory soak in from and through the child's social and cultural setting (Sutton 2002; Nelson & Fivush 2004; Fivush 2011; Salmon & Reese 2016).

As a result, there is substantial variation, with regard to children's memory, in just what skills are learned and in the ways they are deployed. Cultural differences have been studied to date more thoroughly than gender, economic, and individual differences, but significant influences of all these kinds are likely. The mechanisms of this early scaffolding are diverse and go well beyond the child's interactive acquisition of language and local linguistic and narrative norms, although language socialization practices play a major role (Miller et al. 1990). Unique affective dynamics shape remembering from the start, as do the rhythms of embodied interaction and the live norms about interdependence, morality, and self-representation (Leichtman,

Wang, & Pillemer 2003; Wang 2013, 2018). Likewise, distinctive or privileged balances emerge among many distinct functions and uses of thinking and talking about past and future events (Harris, Rasmussen, & Berntsen 2014; Pasupathi & Wainryb 2018). Children come to acquire specific styles of reminiscence – more or less elaborative, more or less self-focussed, more or less emotionally involved, and so on – in complex interaction over time with their adult carers and their peers, as demonstrated by longitudinal studies of the mutual influences of parents and children on each other's memory practices (Reese 2014).

This rich sociocultural scaffolding of children's memory, which is there from the start across non-verbal as well as narrative modes of accessing the past, goes all the way down: in modern human memory there is no clear gulf between culturally mediated autobiographical memory and a more 'basic' or 'pure' episodic memory (Miller et al. 2014; Sutton 2015). The distributed cognition perspective helps us see that scaffolding does not fade or dismantle over time, but shifts and transforms: our adult memory remains entangled in multiple forms of scaffolding, even as we learn to transfer our habits and skills across contexts and to latch on to a wider array of assembled and systemic resources in our socially and technologically mediated worlds (Brown & Reavey 2015).

Adding to this sketch of the openness or porosity of our memory capacities in development and enculturation, as suggested by these robust, broadly Vygotskian sociocultural traditions in developmental psychology, we can consider further widely accepted features of the neuroscience and psychology of

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episodic and autobiographical memory. At a neural level, some central dynamic circuits involving the medial temporal lobe and other parts of the ‘core’ or ‘default mode network’ may be necessary for binding or coordinating episodic memories (Addis 2018). Complexity is added not only in that significant redundancy or cognitive reserve is built in, but also in that other distinctive neural processes are involved in autobiographical remembering in practice, with sensory, spatial, scene-building, self-other, emotional, motivational, linguistic, narrative, and kinesthetic systems contributing to retrieval (Rubin 2005, 2006; Palombo et al. 2018). Memory processes are neatly bounded neither within the biological system, nor across its interfaces with the environment.

These are among the reasons that a focus on the *constructive* nature of remembering, imagining, and simulating past and future is ubiquitous in the contemporary cognitive sciences of memory. The same reasons underpin frequent claims that our fallible and imperfect ability to remember particular past events runs alongside or is subsidiary to broader capacities to imagine future and counterfactual events (Schacter, Addis, & Buckner 2007; de Brigard 2014; Addis 2018), such that on some views remembering is simply one way of imagining the past (Michaelian 2016).

Yet these shifts in scientific thinking about memory can seem to loosen our grip on the past. No matter how much overlap there is – neural, psychological, phenomenological – between constructive past and future thinking, or between remembering and imagining, personal memory still makes claims on the past, and despite its imperfections it is generally recognised as so doing (Campbell 2004; Poole

2008). Our peculiar human forms of autobiographical memory are also centrally implicated in constructing and maintaining identity over time, with self and memory in mutually sustaining and entangled relations, and in grounding temporally embedded emotions, which must be tracked over time (Sutton 2018). Taken together, these roles that memory is thought to play in connecting present and past, and in opening up access to past events, have – at least in the West – underwritten its cultural and moral importance within modern institutions, from promises and contracts to legal responsibility to our practices of loving and grieving. Even while we also deploy memory for many things other than tracking the past accurately, we want when necessary to be able to distinguish what happened from what was imagined or wished, what I experienced directly from what I learned through testimony, and what happened on one particular occasion from what typically used to happen.

On the one hand, then, the basic components of our memory systems or our ‘constructive episodic simulation’ capacities (Addis 2018) are constructive, social, and future-directed, to the extent that it becomes a little puzzling to work out whether, how, and why we can ever more or less accurately remember past events at all (Boyer 2009b). But on the other hand, much of modern life seems to depend, both personally and socially, on our capacities – fallible as they may be – to track the past more or less accurately. The developed, modern, mature, enculturated autobiographical memory, in other words, is set up to achieve or to approximate forms of source monitoring that are challenging given our dynamic neural inheritance. We manage

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these challenges culturally, collectively, and individually in part by setting up stabilizing and enduring external systems and interactions to buttress and support our naturally constructive memories (Donald 1991; Laland & Rendell 2013). But we also train up our more basic inherited cognitive systems, knitting them together to be better able to latch on to and exploit this ubiquitous social and worldly scaffolding, to be tuned to attend in the right ways to memory processes or to the phenomenological and metacognitive cues that help us work out the sources of our images, feelings, and thoughts. This enculturation of human memory is developmentally slow and uneven, even where it delivers more or less stable outcomes, though we won't know how diverse the processes and results are until a more thorough cross-cultural cognitive psychology of memory really looks beyond the WEIRD (Western, educated, industrialised, rich, democratic) participants on which much psychology has to date been based (Henrich, Heine, & Norris 2010).

A cognitive archaeology of memory, then, can probe some of the ways that memory capacities might have been harnessed and shaped in particular historical circumstances. Were there relevant changes in the constraints for identifying and linking past events more precisely and in attributing experience to the right sources? There may be spaces between the basic memory capacities of the earliest anatomically modern humans and the richer, ambitious, and heterogeneous ways in which we later sought to tap and track our past.

To put this program into practice, we need to identify some of the relevant functions of

memory across the periods in question. What did the inhabitants of Çatalhöyük need to remember, and how did those needs differ from the primary functions in play earlier, before such new settlements? This requires, first, a diachronic focus, examining Neolithic lifeways with their new scale and complexity to pick out key changes, and second, some indication of possible archaeological signatures of variation in these scaffolded, culturally mediated forms of remembering, identifying at least some kinds of revealing material trace. While the research programs are tentative, we can build suggestions from both archaeology and cognitive theory.

BACKGROUND CONDITIONS

Hypotheses about cognitive change in the Neolithic need to be modest. Any such 'change' is likely to have been gradual, uneven, incomplete, variably implemented, multiply caused, and multiply instantiated – less a single rupture or decisive transition than an array of entangled and partial shifts. In considering interrelated non-cognitive background conditions for cognitive change, we can treat newer features of Neolithic lifeways as coexisting with older practices and commitments rather than decisively replacing them. Wengrow and Graeber (2015) posit extensive periods in which economic and political arrangements that may look incompatible to us alternate or operate together in the same social groups, across more 'egalitarian' and more 'hierarchical' social ecologies, in deliberate collective exploration of a range of possibilities. In a body of work that I deploy later, Woodburn (1980, 1982, 2005) insists that his distinction between

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‘delayed-return’ and ‘immediate-return’ societies does not describe a one-way historical transition: instead, adaptable and flexible immediate-return systems continued to operate alongside delayed-return systems. Any cognitive change in the Neolithic, long after significant changes in the human brain, was responsive to and entangled in an array of environmental, economic, and technological developments, which were themselves unevenly distributed: and so such cognitive change – as in later periods – is not likely to show up as a once-and-for-all revolution.

Such caveats in place, we can state an overdramatic hypothesis about memory in the Neolithic and then build an argument around it. The idea is, in the language of this volume’s overall target claims, that perhaps a more integrated personal self emerged during or around the occupation of Çatalhöyük *in the form of richer narrative personal memories of specific past events, partly because of new demands on tracking events and on social commitments over time, and supported by new social and material memory norms, practices, and technologies.* As well as motivating and explaining this hypothesis, I want to ask if it is the right *kind* of hypothesis for the form of enquiry in which the authors of this volume are engaged, even if it turns out not to be plausible in detail. I start by describing existing archaeological suggestions about the relevant changes in a little more detail, before tracking back to examine key background conditions by comparing the distinct (if overlapping) lifeways of previous hunter-gatherer groups and the people of Çatalhöyük.

Although ideas about memory were not explicitly included in this project’s scope, related claims have been advanced for both

to the Neolithic in general and Çatalhöyük in particular. Drawing on niche construction theory, Watkins (2004, 2006, 2012, 2013, 2016) suggests that new forms of shared cultural memory are visible in the novel architectural and monumental building and ritual projects of early Neolithic South-West Asia. The symbolic imagery of this period, Watkins argues, reveals a novel reliance on external symbol systems that predated writing but still dramatically expanded and transformed human memory and cognition, as our ‘evolved capacity for the “extended mind” was taken a huge step further’ (Watkins 2012, 32; compare Donald 2001, 301–20; Renfrew 2007, 95–105). While his primary focus is on the strengthening and perpetuation of shared and social memory, Watkins sees episodic and autobiographical memory as one key medium (2012, 34; for recent psychological work connecting individual and collective memory, see Hirst, Yamashiro, & Coman 2018). To suggest how ‘memory was formed, modified, shared, reframed and shared again’ in the early Neolithic, Watkins refers to Ian Hodder’s work on history houses and burial practices at Çatalhöyük, to which we can now again briefly turn.

Hodder is probing the notion of the house as a new kind of ‘site for social memory’, such that his unit of analysis is the small cohesive household group rather than the isolated individual, and the labels ‘personal’ or ‘autobiographical’ memory may look out of place. But the form of remembering at issue is specific, directed at particular objects, people, or past experiences. So whatever the agent or agents of memory, the component functions that Hodder claims to be newly visible at Çatalhöyük are just those that came to

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distinguish later capacities for remembering the personal past. Hodder distinguishes those social memories that were ‘general and site-wide . . . embedded in practices and routines’ from those which ‘linked a specific past to a specific present’, in which particular events, people, and places were precisely recalled (Hodder 2006, 143; Hodder & Pels 2010, 183). Key evidence for ‘specific memory’ of ancestors, events, and histories lies in a number of burial disturbances in which ‘there are clear indications that the precise locations and nature of earlier burials were remembered years or even decades later’: the heads of particular individuals who had been treated differentially at burial are specifically sought, removed, and curated, demonstrating memory also of very particular locations (Hodder & Cessford 2004, 35; Hodder 2006, 144–7). Some accuracy in the locations of heads, sculptures, and installations remembered over decades is demonstrated: ‘there were clear memories within house clusters of the exact location and significance of the burials beneath the platform floors’ (Whitehouse & Hodder 2010, 137). Hodder builds a case on the basis of such practices for a special category of ‘history houses’, which concentrate unique symbolism, are differentiated one from another, and transmit specific regulatory codes (compare Hodder 2016a).

Puzzles might be identified about how this stress on a new specificity in some memory practices relates to the reverse suggestion made by Hodder in collaboration with Whitehouse that an ‘increasingly routinized religious life’ emerged at Çatalhöyük with stronger doctrinal authority, repetitive activities, and reliance on semantic rather than episodic memory (Whitehouse & Hodder

2010). Postponing that enquiry to another occasion, here I run with the primary line of postulated development, that of increasing specificity, which is a corrective to interpretations of Çatalhöyük lifeways as entirely levelled and routinized, as in Steven Mithen’s assessment that for the inhabitants of Çatalhöyük, ‘every aspect of their lives had become ritualized, any independence of thought and behaviour crushed out of them by an oppressive ideology manifest in the bulls, breasts, skulls and vultures’ (Mithen 2003, 95). Hodder’s search for specificity of memory pushes us to look harder at the nature of episodic memory, and at what kinds of specificity may have been available and required in distinctive settings.

Hodder plausibly argues that any forms of ‘active memory construction’ visible at Çatalhöyük are likely to have first emerged earlier and elsewhere, perhaps in the early Natufian period, and alongside a raft of related shifts in social, economic, and ritual practices. One significant point is that gradually ‘people became entangled in longer-term, delayed return systems’ (Hodder 2016b, 42): elsewhere Hodder makes this connection more firmly, arguing that ‘the construction of longer-term memories, both specific and general, would have been the basis for the social, ritual, and economic practices involved in delayed-return societies’ (Hodder & Cessford 2004, 36; compare Hodder 2007 on the ‘emergence of greater temporal depth’, and Hodder 2012, 84–85 on Woodburn). I can build on the general approach to memory sketched earlier to explore further these suggestions about shifts in Neolithic memory.

First we want to look at the possible demands on memory of the periods prior to

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the Neolithic. Sophisticated forms of human memory, in terms of the effective tracking of events, long predate the Neolithic. Across the later Pleistocene, even as hunting and foraging lifeways became more complex, our hunter-gatherer ancestors could deploy flexible *embodied* memory and a capacity for increasingly high-fidelity transmission of skills through *apprenticeship learning* (Sterelny 2012); memory for generic, repeated, or typical events; and some abilities to deploy both environmental features and artefacts, both portable and fixed, for mnemonic purposes, especially perhaps in the recall of important factual or semantic information, and perhaps as curated by specialists (Kelly 2015).

But at the same time, hunter-gatherer lifeways may not have imposed heavy extra demands on tracking the precise sources of event knowledge. In our worlds, such demands are met partly by social and technological scaffolding and partly by richer forms of autobiographical memory involving distinctive metacognitive and phenomenological features. Perhaps the hunter-gatherers did not need, or need so often or so much, the kind of rich and specific narrative memories of unique personal experiences that we often simply think of as ‘memory’. Among smaller groups of hunters and foragers, at least, many or most experiences were shared, and many actions were joint actions. Information tended to be mutually available and easily shared. Trust was built and maintained over histories of interaction involving strong social emotions. Events and sequences were relatively predictable and rhythmic. The choices and decisions made in many contexts brought fairly immediate returns. Much practically and socially significant information and

know-how could be partly left in places, to be accessed again when needed as those with a relevant history came by again (Basso 1996; Ingold 2005; Sterelny 2012, 2013, 2014; Kelly 2015).

For these reasons, then, perhaps these hunting and foraging ancestors had less of a need to track the precise sources of information in the past and to be able sharply to distinguish information arising from one’s own experiences from information derived from others’, first-hand from second-hand experience, what we call memory from what we call testimony. There were, we might say, less pressing demands for specific forms of ‘epistemic vigilance’ (Mercier & Sperber 2017) in such small and fairly egalitarian societies. A view of this kind has recently been developed and defended in a provocative paper by the biologist and philosopher Eva Jablonka. For Jablonka, at a period before more modern forms of autobiographical memory emerged, ‘an individual’s memory of her own specific role in a group event was less distinct than it is for individuals in modern societies. In such settings, not only was recollection spurred on by others, other individuals contributed to the recall of the event that the individual had experienced’ (Jablonka 2017, 844; and compare Mahr & Csibra 2018). Jablonka’s case is built around points about the highly constructive nature of our basic biological memory capacities like those I sketched earlier. In these earlier periods, there was less of a need to be able to compensate for, scaffold around, or reduce any uncertainty resulting from the constructive and social nature of remembering. Sufficient compensation or scaffolding was provided by more or less stable small-world

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social and ecological supports, so monitoring or epistemic vigilance did not have to be individual or internalised.

In the mutualist cooperation characteristic of the earlier foraging societies of anatomically modern humans, resources were typically shared on the spot. As Sterelny notes, ‘this form of cooperation does not pose problems about discount rates, the certainty of future interaction, or tracking individuals and their generosity over time . . . [or] on mechanisms for tracking and policing’ (Sterelny 2014, 44). My modest extra suggestion is that this form of cooperation therefore also placed significantly different demands on memory. Woodburn hinted at a similar point in describing immediate-return systems as ‘strongly oriented to the present’: without strong commitments to specific other people ‘deriving from the past’, or obligations incurred in the present, ‘which would require careful planning for future reciprocation’, Woodburn saw people in immediate-return systems as characterised by ‘a lack of concern about the past or the future’ (Woodburn 1980, 106).

Recalling the general notes of caution I chimed earlier, a couple of disclaimers are required here. First, my account here does not rule out that *some* specific, rich episodic memories may have played significant roles in these earlier social worlds, especially those deriving from rare, high-arousal ritual activities or unusual natural events (Whitehouse 2004; Whallon 2011). The basic sensory, emotional, and self-referential components of autobiographical memory capacities were in place and would be deployed in response to intense stimuli. This is still some distance from the regular monitoring of the sources of

particular items of information involved in the forms of autobiographical remembering with which we are familiar. Second, this picture is not the ascription of ‘a classically primitive type of social intelligence’ to early hunters and foragers: Wengrow and Graeber are right to caution against depictions of early *Homo sapiens* ‘as effectively (or perhaps stereotypically) childlike, living the only lives they were able to imagine’ (Wengrow & Graeber 2015, 602). Though I have drawn on contemporary developmental psychology to characterise the malleability of enculturated autobiographical memory, the point is not that there was a linear shift or a process of maturation from forms of remembering typical of ‘the childhood of man’ to a single sophisticated modern capacity. Rather, just as there were and are a range of overlapping or hybrid socioeconomic systems, so there were and are many possible ways of tuning the diverse and interacting cognitive and affective components of our various human ways of being in time, as we adapt more or less effectively to dynamic environments and social demands.

If there is something to this point that the various features of memory did not always need to be knitted together in quite the same way, we could expect relatively minor shifts across some initial social and economic transitions, from more straightforward collaborative mutualist interaction to more reciprocation-based cooperation with greater division of labour and some increased planning horizons (Sterelny 2014). But what more substantial new conditions and new cognitive demands might then have introduced pressures to track the past, and the sources of information about the past, more precisely?

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A HYPOTHESIS ABOUT NEOLITHIC MEMORY

Of the big-picture changes in demographics and lifeways in the Neolithic, and at Çatalhöyük in particular, which might have altered demands on personal memory, the most significant is likely to have been the expansion in group size in such larger settlements. As Sterelny and Watkins put it (2015, 677),

The less the group lives together and acts together as a single entity, the less information about others is available for free, as a side-effect of shared mutual activity; the more information is filtered through others' minds and voices, and the more information must be deliberately sought. Fractionation into family groups living and working together, or into differing economic roles, tends to create private information. Information about one's group and its members becomes less of an automatic, common pool resource.

In the new larger and more complex groups, social worlds 'were less intimate, less informationally transparent, and the expectation of repeated interaction was less secure' (Sterelny 2014, 50). With the population at Çatalhöyük perhaps ranging between 3,500 and 8,000 (Hodder 2007, 1–6), richly shared histories are no longer a default scenario, but become rarer, each person and household embedded in a world of virtual strangers (Coward 2016), as well as among greater numbers of ancestors, some of whom may have been buried under the current household. Group cohesion and commitment was less automatically maintained. Settlement also brings different relations to place, perhaps requiring new means to localise or materialise certain memory content, such as the informational use of monuments (Kelly 2015).

As archaeologists have argued, existing forms of memory – embodied and skill memory, and some forms of event memory – were supplemented and perhaps partly transformed by new and often larger-scale forms of social and material memory, with new affordances for the kind of hybrid mind that could effectively deploy new symbol systems and architectural or environmental markers (Watkins 2004, 2016). Other symbolic media, from centres of congregation or ritual activity in some settlements to smaller artifacts and ornaments could act as external anchors for individual and social identity. Although it is not clear what abstracted or recombinable symbols might have been in operation at Çatalhöyük (compare, for example, Bennison–Chapman's Chapter 5 in this volume), it is at least possible that expanded and more widely distributed access to some forms of information may have been enabled by new portable media such as small geometric objects or 'tokens', symptoms of transitioning towards Donald's 'theoretic culture' and a key phase in the history of distributed cognition, allowing new forms of 'mind invasion' as well as mind expansion (Donald 1991; Slaby 2016). But even when factual information comes to be shareable and socially negotiable with external symbol systems, such changes in human memory mostly relate either to processing capacities (working memory), or to fairly *general* semantic information.

To begin to identify pressures towards additional changes in personal or episodic memory, we can first note simple requirements of more delayed-return systems involving farming and domestication of plants and animals. Agricultural production comes to depend on earlier clearing of forests and land.

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Particular commitments and developments in working the land have to be tracked over periods of months, seasons, and years. As I understand the Çatalhöyük evidence, there's no clear sign of private property or of the restricted ownership of resources, so memory is not yet so systematically objectified or concentrated in unshared resources (Ingold 2005). But movements towards a delayed-return system intrinsically encourage some temporal forms of abstraction with more temporally extended resource management and planning across longer investment horizons.

Both practical and social commitments in larger group settlements, then, perhaps require more effective capacities for tracking such commitments over longer time periods, and in particular for keeping track of the past source of the commitments. Plans often bring agreements, promises, and contracts in their wake, operating over longer timescales than in a shared world of shorter-term action-consequence pairings. The maintenance, fulfilment, and enforcement of more diverse and longer-term social commitments requires stronger, more secure memory for the source of current beliefs and feelings. But this is difficult when memory processes are naturally constructive, and when it's not easy to tease apart the sources of specific items of information. Remembering specific past events as part of richer narrative sequences comes to play a larger communicative and persuasive function, with memory's role as making a claim on the past (and on present activities and future plans constrained by that past) coming to the fore. Greater epistemic vigilance about the past is required, with memory to provide more or less mutually acceptable reasons for action on the basis of professed

past experience. So, gradually, some people developed, or more regularly and firmly deployed, more individualised or internalised practices and mechanisms of memory control and memory checking, enabling firmer attribution of beliefs to their own past experience. Perhaps they attend differently to memory processes. Perhaps they deploy auto-noetic consciousness and the range of phenomenological signs of recollective experience more effectively to track distinctions between self and other and between memory and imagination. Remembering is still fallible, imperfect, selective, and partial. But now perhaps people come to share both stronger capacities to track past events more precisely, and regulatory ideals about the normative importance of so doing. Such normative developments, by which we keep ourselves and each other in line over time, are related to new practices of responsibility-attribution and new forms of enforcing norms and punishing violations in increasingly competitive societies (perhaps after rather than at Çatalhöyük): they do not operate in the moral and political realm alone, but also have a directly cognitive element as people internalise a sense that they should be able to avoid confusing distinct past events.

One natural strategy for thus tracking decisions, plans, and resources over longer timescales is to expand the forms of externalisation in widespread use. It could thus be argued that my suggestion that a richer and more reliable autobiographical memory might have developed is redundant. As Kim Sterelny points out to me, one way delayed return economies work is to decouple tracking economic history from autobiographical memory. In the end, that is one thing money will do: it finesses the problem

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of remembering credits and debts. I have indeed been focussing here more on the 'internal' wing of shifting cognitive ecologies than on the development of the symbolic or technological solutions and forms of material engagement that have received more attention in archaeology to date (Donald 1991; Renfrew & Scarre 1998; DeMarrais et al. 2004; Sutton 2008; Malafouris 2013). But to point to the vital and increasing role of artifacts and 'exograms' in helping to stabilise and anchor is not to rule out parallel and integrated changes in the memory capacities and processes into which these external resources are taken up. Such developments are always hybrid and interactive, with new technologies affording and shaping new ways of using them, or on occasion actively leading changing memory practices as new norms for the right ways to manage the past emerge.

This compressed and speculative narrative stands in for a more realistic tale of the kind of gradual, uneven changes that would require long multichannel enculturation processes, with local variation but slowly increasing grip in larger societies. In developing her similar account, Jablonka emphasises the social nature of memory sharing in earlier social systems as imposing more strain on individual memory capacities:

Whereas in small, intimate societies collective memory aligned individual and social experiences, increased group cohesion, and allowed the social control of collectively-constructed individual false memory through correction by knowledgeable group members, such memory-control may often have failed as societies grew in size and migration among them increased.

(Jablonka 2017, 849)

Whereas in smaller groups the fusion or confusion of individual experiences would matter less, a more specialised form of autobiographical memory was required to control the reliability of communication about past events: in particular, 'humans had to remember not only who did what to whom, but also who *said* what to whom, and had to be able to distinguish between reported-imagined and first-hand experiences, something that is still a big problem today' (2017, 845). Likewise, as developmental psychologist Katherine Nelson argues, still in childhood now we must learn to resist this kind of fusion, confusion, or overwriting of memories, learning through enculturation a range of tricks to keep parts of the past separate and distinct and to enforce a clear distinction between one's own experience and that of other people (Nelson 2007, 228–9).

In both Jablonka's and my version of such a hypothesis about changes in memory in (pre-) historical timeframes, the idea is not that a single environmental transition drives or selects for a novel cognitive capacity. Rather, these are subtler processes of sociocognitive tuning that, we suggest, may have emerged more recently in our history than the basic memory mechanisms onto which they latch. A cognitive archaeology of memory precision seeks to identify a range of interacting and entangled factors driving a new individualising of memory, whereby people gradually and imperfectly came to learn how better to track specific past events and experiences, and to find more secure ways to stabilise constructive and social memory systems.

I have suggested that richer and more precise personal memories of specific past events

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may, in or around the Neolithic, have been *demanding* by new demands on tracking events and on social commitments over time, and *supported* by new social and material memory norms, technologies, and practices, and by new forms of enculturation that permitted distinct ways of deploying our basic memory capacities. The hypothesis can be challenged on developmental, psychological, ethnographic, and historical grounds. We need to specify which memory and responsibility-attributing practices might reveal evidence about different ways the components of episodic memory can be knitted together. If we reject the hypothesis, however, we owe alternative accounts of the evolution or historical development and the nature of rich and precise narrative autobiographical memory, and of any changing demands on remembering the past in and around the Neolithic. My hope is that it is at least the right *kind* of claim about cognitive change in the Neolithic, exhibiting the right kind of (potential) fit between the ultimate explanatory targets (self, consciousness, creativity, or cognition), their specific instantiation (here, personal memory), an array of interacting causal/ historical factors, and available forms of evidence. In refining or rejecting this hypothesis, we will want to develop better alternative ways to link theory and data, and cognition and history.

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