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Spongy Brains and Material Memories*

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I. Openness, influence, and scaffolding

"Our brains make the world smart so that we can be dumb in peace," writes Andy Clark in *Being There: Putting Brain, Body, and World Together Again*, a key text in the "situated cognition" movement in cognitive science.[1] In early modern studies too, theorists such as Peter Stallybrass and Evelyn Tribble describe certain objects as having a cognitive life of their own, as "exograms" within external symbol systems which couple with and complement the distributed, context-ridden traces or "engrams" of the humoral body.[2] Embodied human minds operate in and spread across a vast and uneven world of things—artifacts, technologies, and institutions which they have collectively constructed and maintained through cultural and individual history. This chapter seeks to add a historical dimension to the enthusiastically future-oriented study of "natural-born cyborgs" in the philosophy of cognitive science,[3] and a cognitive dimension to recent work on material memories and symbol systems in early modern England, bringing humoral psychophysiology together with material culture studies. The aim is to sketch an integrative framework which spans early modern ideas and practices relating to brains, bodies, memory, and objects. Embodiment and environment, I'll argue, were not (always) merely external influences on feeling, thinking, and remembering, but (in certain circumstances) partly constitutive of these activities.

In the early modern period it was dangerous, as Mary Floyd-Wilson has shown, for the English to travel. Although survival and morality alike required appropriate openness to the world—to perceive, judge, and act as the situation demands—English bodies, and in particular English brains, were excessively porous. Overly vulnerable to the idiosyncratic

impressions of a hostile world, the Englishman's bodily and cognitive processes alike were thus prone "to absorb foreign vice indiscriminately." In both medical and historical writings, in the drama and the moral physiology of the period, the moist complexions of the "fantastique *English*-men" with their "braine-sick humors" are blamed for their inconstant behavior.[4] The roiling motions of these islanders' watery surrounds are internalized: in 1653 James Howell wrote that "the sea tumbleth perpetually about . . . so their braines do fluctuat in their noddles, which makes [the British] so variable and unsteady."[5] Worse still, even if the texture of this naturally "spungy brain" allows for sharp perception and quick wit, it does not lend itself to stability and is notoriously unfit for the solid retention of moral matters in memory: what is "apte to take" is "unapte to keepe."[6] How could cognitive discipline be maintained if it had to inhere in such a fluid medium?

If there are multiple channels by which brain, body, and world interact and dynamically couple—material and bodily, cognitive and informational, emotional and phenomenological, interpersonal and cultural—then in early modern England these channels were unusually open, at an unusually high bandwidth. Alongside the cultural and emotional "sense of unsettlement" which Steven Mullaney explores in this volume, deep-seated and recurrent worries concerning control of the personal and shared past were also grounded in and exacerbated by prevailing ideas about (and experiences of) embodiment and environment. In various ways across the period, from the Reformation to the Restoration, the organization of both collective and cognitive memory required stratagems to discipline the fluid brain as much as to impose narrative structure on uncertain events.[7]

But despite its perils, psychophysiological openness to external influence is not optional, and so—as even the anxious English knew—can be accepted and exploited rather than denied. Just as humoral theory motivated sophisticated forms of regimen by which to manage the "mutually modulatory influences linking brain, body, and world," so our modern cognitive sciences at last begin to acknowledge the embedded, situated, relational nature of remembering, feeling, and thinking.[8] Not all external influence inevitably leads to distortion and confusion, for—on such views—the functioning mind of essentially incomplete creatures like us is itself literally extended and naturally hybrid. In attempting to understand the resulting webs of continuous reciprocal causation between insides and outsides, between self and culture, and between physiology and technology, we must examine

specific manifestations of the extended mind.[9] The historical dimension is vital here: the point is not just that brains themselves are "biosocial organs" that are "permeated by history,"[10] but that this anti-individualism has direct methodological implications. As Clark writes optimistically,

> much of what matters about human-level 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.[11]

Since there is dramatic historical diversity in the nature and the properties of external symbol systems, notations, labels, techniques, and other forms of scaffolding and cognitive artifacts, a genuinely historical cognitive science—which examines not just the history of theories of mind but also the history of cognitive practices—becomes an integral part of the interdisciplinary enterprise.[12] Early modern studies are thus a doubly appropriate partner in the coevolutionary framework, not just because of the general need to introduce more detailed historical case studies, but because of specific parallels in the way relations between inside and outside, or between brain, body, and world were experienced and conceptualized. The idea is not to *apply* a particular theory in cognitive science to early modern studies, but to seek mutually illuminating interaction and coevolution across the fields. Then as now, I'll argue, cognitive order and stability were not natural to the isolated brain, but were integrative achievements often distributed over tools and other people as well as the unstable nervous system. It's just *because* the humors and the animal spirits—or the patterns of activation flickering across neural networks—are naturally fleeting and inconstant that we coopt exograms and other external props.

This chapter describes four phases of this framework in the early modern context, here rather artificially separated for analytic purposes. I examine the shared picture of relations between memory, brain, and body, underlining a general acceptance that the fleeting innards (however differently conceived in various physiological schemes) were insufficient to anchor psychological and moral order, and to ground

continuity of self over time: the porous nature of the boundaries between humoral body and environment was the source not only of anxiety and increased policing but also of different forms of invented stability. I offer some examples of early modern cognitive and mnemonic technologies, building up a picture of relevant dimensions of variation in their characteristics which should be generalizable to other cases, and also addressing one case in which such technologies were internalized. I hope the attempt at historical applications of these distributed cognition/extended mind ideas is unusual or interesting enough to warrant the sketchiness of the current treatment. Rather than expecting to convince skeptics here, the final section of the chapter briefly specifies some challenges to be met for this general framework to be able to deal with genuine historical and cultural change.

II. Spongy brains and humoral bodies

All brains were "spungy," not just Englishmen's. And like brains, sponges were peculiar because of their porous nature, able both to absorb and erase. John Marston's malcontent Malevole, insatiably absorbing all happenings at court, will "fall like a sponge into water, to suck up, to suck up": but such soaking-up is not careful or secure storage, but a chaotic transmission of passing information used only to snarl at and "bespurtle" his audience.[13] Sponges were used, among other things, to wipe the erasable leaves of table-books, which became increasingly common in England from the 1580s onwards. Frank Adams's writing-tables, published in 1581, include instructions about how to clean them with a wet sponge; in 1637 Richard Whitaker sent Sir Thomas Barrington three such books and a "Spunge," which "on its own cost the relatively large amount of three shillings."[14] In their groundbreaking discussion of writing-tables in Renaissance England, Peter Stallybrass and colleagues pinpoint "the tension between imagining tables as enduring records and as surfaces that can be wiped clean," and neatly align this with the related or identical tension within human memory, which must record information while remaining always open to new pressures and influences.[15] I trace this same dynamic of history and erasability across the brain and the body below: but first it's worth noting that sponges shared these almost contradictory characteristics with the writing-tables which they wiped clean, both retaining fluids and yielding them, absorbing and effacing.

The semantic field of the sponge in early modern English is bewildering, marked by the OED with the dry note that "in various passages

of Elizabethan writers the exact sense of the word is not quite clear." The idea of a "spungy brain," in particular, was barely metaphorical, for the best theories of brain structure and function described networks of pores traversed by fluids. Most important among these fluids were the animal spirits distilled from the blood which flowed through hollow nerves and around the brain, leaving traces in the flexures of its fibers and thus altering the networks' subsequent responses. The way in which history endured in brains like these was not by keeping independent records of specific experiences in distinct cells or locations, but as the sedimented overlay of all experience condensed within a single complex system.[16]

With the demise of the Aristotelian belief in the psychological centrality of the heart, even the most dualistic early modern theologians and natural philosophers took the brain to have something to do with the mind. They agreed further that mental and moral life alike—in remembering, meditating, thinking, feeling—had much to do with the ability to represent things which are not present: not just God, the soul, and moral principles, but especially particular events and actions in the personal past. Yet these same capacities for retention, which allow for access to past thoughts and deeds, also bring moral dangers because they allow equally for the representation of things which are absent in a different sense, not because they are no longer present but because they are imagined, fictional, or dreamt. Some thought it unlikely that other animals had any kind of contact with the absent in either guise, but in any case for humans memory and imagination had long gone together. A character in Marston's *What You Will* (1601) describes the Aristotelian phantasy or "fantasticness" thus:

> By it we shape a new creation
> Of things as yet unborn, by it we feed
> Our ravenous memory, our invention feast:
> 'Slid, he that's not fantastical's a beast.[17]

Marston's audience well knew that this "fantasticness" can feed the ravenous mind with "chimeras, imaginations, tricks, conceits" as easily as it could sometimes help the search for truth about the world, the soul, or the past.

If these transitions between mental representations were driven by the spongy, changeable brain, with all of its humoral and temperamental openness to environmental influence, the cognitive stability required for moral discipline might be threatened. Later in the seventeenth century,

for example, the Platonist Henry More fixed on two of the undesirable properties shared by sponges and brains. On the one hand, because of the sponginess and laxness of the brain, it is apt to take up and respond to things it should not. But because the nervous spirits roaming its pores are "nothing else but matter very thin and liquid,"[18] any appropriate patterns which they do retain, when acted on by "the bare laws of matter," would become "strangely depraved, if not obliterated."[19] So philosophers who see remembering as the reconstruction of particular motions of these animal spirits, such as Descartes, "force a great deal of preposterous confusion" on the memory.[20] As a "loose Pulp" of "a laxe consistence," the brain is no more fit to perform our noble cognitive operations than is "a Cake of Sewet or a Bowl of Curds."[21]

Although the details varied across different systems of natural philosophy, animal spirits were taken to be embedded in nested systems of spirits circulating in the cosmos, the environment, the body, and in inanimate objects. If memory depended on these nervous spirits, it would be affected as they were by (among other things) angels and evil spirits and ghosts, alcoholic spirits and music, climate and airs and waters, by diet and by all else which influenced the blood from which they arose, by movement and activity and gesture and rest and sleep and wake and sexual activity and passion.[22] As the cognitive wing of the vast early modern pneumatic ecologies of spirits and fluids described throughout this book, the animal spirits were a fickle basis for linking the self to the moral universe, for remembering the personal past, and for focusing on the truths of morality and religion: yet early modern moralists, as Gail Paster shows, "had no choice but to take psychophysiology seriously, because it was their governing paradigm for theorizing the bodily wellsprings of human behavior."[23] It's not that memory was thus rendered impossible, but that control over memory was vanishingly difficult. Animal spirits theories could not guarantee our success either in intentional forgetting—the wiping away of unwanted pressures past, for example—or in deliberate willed recollection of specific ideas alone under rational direction, without the spirits rummaging in the adjacent cell, as David Hume would note much later (showing, incidentally, the long afterlife of these ways of thinking).

So Paster's description of humoralism in general applies specifically to the early modern understanding of the role of animal spirits in the cognitive and mnemonic economy:

> it is a way of thinking about bodily behaviour that . . . finds it much easier to account for a subject's moment-to-moment fluctuations

> in mood and action than to account for emotional steadiness and a high degree of psychological self-sameness. . . . Psychological self-sameness presupposes disembodied consciousness, not the humoral subject's full immersion in and continuous interaction with a constantly changing natural and cultural environment.

The resulting anxieties, and the baroque stratagems used in different contexts to control, delay, or otherwise manage such "moment-to-moment fluctuations," are revealed in many of the uneasy, distempered, highly charged scenes of early modern drama. But I want briefly to push on a different point also noted by Paster, that even highly idiosyncratic volatility of this sort in dramatic characters is still "a humoral inevitability" and an ordinary consequence of "the pneumatic character of life."[24]

The humoral subject's interwoven medical, mental, mnemonic, moral, and metaphysical plight, therefore, can't be understood by considering the vulnerable humoral body and the fleeting spirituous brain in isolation from the world. In particular, resources external to the body were actively constructed, exploited, and incorporated into practices designed to promote both physical and psychological health. So there is continuity between the collection of context-dependent and complexion-dependent practices of health and action which we gather under the label "regimen," and the vast and uneven range of objects, props, and institutions used to scaffold and buttress activities of remembering, feeling, thinking, imagining, reasoning, communicating, and so on. In the early modern period, as now, the vulnerable embodied brain constructed, used, and leant on nonbiological supports. Such biotechnological hybridity isn't an innovation of our age of new media and telerobotics: the human mind, as Clark argues, was always leaky, always seeping out of "the ancient fortress of skin and skull."[25] Neither anxiety nor cognitive and emotional stability was or is an inevitable consequence of increased reliance on such hybrid modes of thinking, feeling, and remembering. If, across specific local social and psychological contexts, we find significant historical diversity in practices of remembering and thinking, this is not because changing external technologies latch on to the same pure pre-technological biological mind: rather, as different such coalescing systems emerge, they transform their constitutive physiological, social, and technological resources. The more-or-less flexible, more-or-less context-sensitive minds which result are both embodied and historical.

III. Early modern cognitive technologies: The recording sponge

Before discussing some real early modern cognitive technologies, we can return to the strange sponge. The oddly contradictory qualities I identified above, whereby sponges both suck up and obliterate, operated (like much else in the discourses of humoralism) at physical, psychological, moral, and social levels all at once. Flattering sponges at court are those who absorb and thus consume resources which they do not deserve: a true king, according to the outcast Andrugio in Marston's *Antonio and Mellida* (1601?), "is not blown up with the flattering puffs of spongy sycophants."[26] Yet those who saw confession as a sure mechanism of effacement used the same image: it is "that happy Spunge, that wipeth out all the blottes and blurres of our lives."[27] And not only are body parts—skin and sense organs, as well as brain—highly porous and spongy: so too is the natural world. Later in the same scene of *Antonio and Mellida*, the grief-crazed Antonio rants that he will "howl out such passion that even this brinish marsh / Will squeeze out tears from out his spongy cheeks, / The rocks even groan."[28] In wishing to wring salty crying from the sodden marshes, to make even the stones capable of high emotion, Antonio's sense that his "extremest grief" extends into the environment seems at first a typical-enough case of affective projection or anthropomorphism, more mere Marstonian excess.

We tend automatically to read any such attribution of a cognitive, informational, or emotional state to an object metaphorically, or as expressing the same kind of moral/micro-/macrocosmic correspondences by which black deeds are done at night. Such a reading may be apt in this case—Antonio's numbed, unbuckled spirits and unhinged behavior render him comic, and in fact the rocks remain mute, the marsh won't cry, and in any case his lost lover Mellida quickly turns up again so they can "point [their] speech / With amorous kissing, kissing commas, and even suck / The liquid breath from out each other's lips."[29] But the case of sponges reminds us that the lines between feeling and merely existing are not always so clear. The whole world need not be a mind, as panpsychists and Gaia enthusiasts have thought; but if cognition is intrinsically ecological, then (under certain circumstances, on certain dimensions, more or less temporarily, and to varying degrees) certain parts of the environment—natural, social, and technological alike—can become part of dynamical cognitive systems which are distributed across brain, body, culture, and environment.

Sponges also star in an exotic European fantasy of the early 1630s, which I've discussed elsewhere.[30] Historians of sound recording tell us of a pamphlet called *Le courrier veritable* which informed Parisians about a fabulous type of sponge discovered by a Captain Vosterloch when voyaging in the South Seas. Local people used these sponges to communicate across long distances: a message spoken into one of them would be exactly replayed when the recipient on another island squeezed it appropriately. This wonder from the edges of all maps, retold in Europe with the thrill of its magical primitivism, is specifically a *cognitive* technology. The skilled users reliably passing information are extending their communicative powers, detaching their *voices* as well as their plans and wishes from their own bodies in a way that perhaps only Rabelais had previously dreamed of. These marvelous sponges, then, were unique cognitive artifacts, soaking up sound, embodying particular acoustic signals in this unusually porous medium. They were "apt" not only to "take" the recording, but also to keep it just long enough to yield it up to the expert recipient, who would presumably be able to reuse the sponge after replaying its message.

We can now appreciate this delicious fable still better by juxtaposing it to our new understanding of the Renaissance writing-tables which sponges were used to wipe clean. Both inner and outer technologies of memory and storage, as Stallybrass and colleagues point out, are also technologies of erasure, for information held in both brains and external surfaces—table-books, sponges, archives—is "vulnerable to the material form on which it is inscribed." This does not mean that all technologies are equal or that the internal and external components of coupled mnemonic systems have equivalent characteristics. Inner surfaces were less accessible and manageable, for within the humoral system it was particularly clear that "erasability is endemic to the human body." But each medium of memory has its own properties, varying on a number of relevant dimensions in regard to (for example) permanence, erasability, portability and transmissibility, detachability, reliability, medium-dependence, and so on, and combining differently with other biological or technological forms.[31] The mythical sponge suggests just how magical it is, in a world of flux and mixture, that information is ever enduringly stored, transmitted without distortion, and precisely reproduced. Early modern Europeans did not have the vast networks of media and technologies we use without thinking to fix, transmit, and reformat information, and to shift or transform representations from one context to another. The unstable, porous recording sponge in the story reminds us that durable information storage is an achievement,

not a bio-psychological given, and that it depends on the construction and exploitation of all kinds of cultural and technological resources, and alters the cognitive dynamics of those who have it.

IV. Clothes and other material memories

Yet there were, of course, by the Renaissance an enormous array of alternative real mechanisms and media of memory and cognitive technology, a few of which we can now describe. There's no single quantitative scale on which to assess the extent or complexity of exograms in external symbol systems, or the degree to which they were enmeshed in daily life or transformed it, just because of the multiplicity of relevant dimensions. Among key cognitive and emotional artifacts *before* the Reformation, for example, were the many sacred objects used in public and private ritual, ranging from real sacramental objects such as candles and palms, through the cycles of practice embedded in the religious calendar, to cognitive-sensual-poetic structures for thinking and feeling such as conjurations, blessings, and prayers.[32] As a first example of the new cognitive-mnemonic challenges of post-Reformation England, we can take the recent study by Evelyn Tribble of techniques and symbol systems which were intended directly to replace that rich multimodal engagement with the sacred. As Tribble argues, there were "new requirements on the faithful in Protestant England to recall sermons after having heard them once," as "attention and memory became a spiritual duty."[33] From this period date the new divisions of chapter and verse in the Bible, to chunk text for better memorability; new physical layouts of church interiors to minimize visual distraction and improve hearing; and new practices of designing sermons according to more tightly organized topical structures and methods. Tribble neatly shows, in particular, that the new sophistication of printed charts, tables, and figures was recommended by divines such as William Perkins as the structural basis for preachers "seeking to create memorable—or perhaps memorizable—sermons." This example neatly shows the range of forms of scaffolding which can operate together: new physical/architectural and symbolic/textual modes of scaffolding are united with new moral injunctions on religious attention and behavior, all in service of encouraging hearers to get more direct cognitive access to, and better retention of, the new religious message.

The range of this case study is paralleled in Tribble's groundbreaking reinterpretation of the mnemonic environment of the theater, which supported actors' ability to remember and perform many different plays,

which I discuss in detail elsewhere.[34] But whereas Tribble's projects, like mine, are explicitly working toward early modern exemplifications of the distributed cognition framework, some examples inspired by material culture studies can also be used to demonstrate the cognitive life of things. I sketch one interpretation of themes from the work of Ann Rosalind Jones and Peter Stallybrass on clothes and memory.[35] In the "cloth" or "livery society" of Renaissance England, clothes were "forms of memory that were transmitted." We think of the person as prior to the clothes worn, so that anyone hooked by fashion into fetishizing merely material objects and garments has been contaminated by modern materialism: but then the clothes partly constituted the wearer, animated agents which as "material memories" molded the wearer's identity. In the Renaissance cloth was not only a valuable medium of exchange but also a key means of incorporation or of binding into social and psychological networks. As Stallybrass states,

> The particular power of cloth to effect these networks is closely associated with two almost contradictory aspects of its materiality: its ability to be permeated and transformed by maker and wearer alike; its ability to endure over time. Cloth thus tends to be powerfully associated with memory. Or, to put it more strongly, cloth *is* a kind of memory.[36]

This last and stronger formulation, I suggest, is supported by the general theoretical framework I've been developing: clothes, in this analysis, are not merely external triggers for forms of remembering which are always internal, but are rather themselves memories—enduring bearers of information and meaning and affect always standing in complex and more-or-less coupled and tangled relations to different embodied human wearers. Certainly, clothes don't do or remember anything on their own—but then, I've suggested, neither do brains or people, for essentially incomplete creatures like us naturally parasitize, lean on, and incorporate "external" tools for thinking. In trying to understand particular episodes or activities of remembering, we often need to refer to disparate features of the history and characteristics of many parts of the current context, enduring features which can span brain, body, and world. The dead, for example, can be remembered quite differently, in particular multimodal affectively laden ways, when we encounter or wear an article of their clothing which itself, as Stallybrass points out, remembers them.[37]

In an ambitious if tentative grand narrative, Jones and Stallybrass also describe "the end of livery." In a complex historical process involving new colonial comparisons between civilized autonomy and exotic overattachment to things, Europeans were driven by the new abundance of goods to assert "the detachment of the European subject from those goods." While demonizing cultures and subcultures in which clothes were still invested with significance as "the materializations of memory, objects that worked upon and transformed the body of the wearer," the idealized free agent would be detached from such goods, merely possessing them as commodities rather than being contaminated by their tangled historical or emotional meanings.[38] Such a diagnosis of a diachronic shift in the use of material memories—or at least in explicit attitudes to their use—is potentially a key feature of this object-oriented history, and one which could be fruitfully merged with parallel claims in distributed cognition and in science studies. Andy Clark's view of agency, for example, as constructed and maintained around technologies and stories, as well as nonconscious integrative processes, renders it an intrinsically historical notion: there is no basic biological individual mind "tethered to the ancestral realm" or "the good old Savannah" remaining underneath merely superficial cultural molds. The modern individualism which rests on what Clark calls "a deeply mistaken view of the thinking agent as some distinct inner locus of final choice and control" results in part from what J.B. Schneewind dubs "the invention of autonomy."[39] But even if this "fantasy of an individual who is not fashioned by 'mere' things," as described by Jones and Stallybrass, did emerge alongside the related modern fiction of a self which owns its own memories, thoughts, and feelings, we do not need to see this de-psychologizing of artifacts as either effective or complete. Both Clark's idea that we are *naturally* cyborgs, so that our new technologies are not marching us into a *post*-human future, and Latour's case that "we have never been modern" are supported by Stallybrass's evocative accounts of all the neglected ways in which clothes still now "have a life of their own" and still "carry the absent body, memory, genealogy."[40]

V. The arts of memory

I return briefly to these diachronic issues about transformations in the cognitive life of things in the final section below. For a final case of Renaissance cognitive artifacts, we can briefly rehearse the shift of emphasis encouraged by this framework in our understanding of the arts of memory.[41] This last twist on the notion of a cognitive

technology shows "external" systems being internalized. The initial feature of these memory practices to notice is the stress on *local* memory storage. Images or other representations encoded in or on the places of the various memory systems must be independent of each other, each content mapping individually onto its place. That's why strict division of material was required, keeping stored items distinct: and this independence of atomic items allowed in principle the random search through memory addresses by the active remembering subject, as described powerfully by Mary Carruthers.[42] This *localist* style of representation was a precondition for the ordering of fixed items on the prior rigid ordering of reusable memory places; and it grounded the crucial quest for cognitive discipline which drove the memory arts, for the items in artificial memory are themselves passive. After encoding, everything stored in memory is context-independent, to be inspected and manipulated only at will. Even in systems which allowed the images used to chunk encoded information to be strikingly affective, bloody and violent, each atomic item was to remain isolated at encoding. So the system should have no intrinsic dynamics: the point is to eliminate the activity endemic in what was called "natural" memory, because it leads inevitably to the confusion of items stored. Semantic stability is thus built in, allowing only the *deliberate* combination and recombination of units of information.

A first comment in this context is to stress that such architectures, systems, and practices should be seen as both cognitive and extended, whether or not they happened to be outside the skin in the physical environment. They are cognitive even though they are not, in a straightforwardly ancestral way, natural and biological; and they are extended even though they are not literally external. This is just to repeat that the cognitive skills which individuals roam round with, more or less successfully, have histories which are just as much cultural and developmental as biological.

Along with other commentators, I previously saw the rejection of dynamics in the memory arts as a wholesale defense against humoralist psychophysiology. This localist style of representation, with its built-in fantasy of totally voluntary remembering, was a wishful stabilizing of confusion from above. I saw the quest for control over items in memory, guaranteed by separating data from process, memory from executive self, as the external and artificial imposition of order by reason or will on the true and naturally confused memory system of fleeting animal spirits. So the arts of memory were the cognitive wing of a heavily moralized civilizing process: by freezing the contents of memory, and locking them into

separate rooms for later extraction, monks and scholars sought to tame and recalibrate their minds, in a retreat from multiplicity, disturbance, and embodiment. In similar vein, in his recent reading of the same techniques Paul Ricoeur describes the *ars memoriae* as "an outrageous denial of forgetfulness and . . . of the weaknesses inherent in both the preservation of traces and their evocation."[43]

But I now think this analysis was taken in by the practitioners' dichotomy between natural and artificial memory, which the framework developed in this chapter helps us to undermine. Accepting such a profound dichotomy between confused natural engrams and rigid artificial internalized exograms makes it seem as if there might be a way to avoid cognitive acculturation, the cultural taming of the mind. But this is not quite right: the true or natural memory is not that given by the brain alone, whether by humoral nervous fluids or by post-connectionist neural networks. The internal prostheses provided by the memory palaces and their internalized exograms are not in fact external impositions on the mind. Culture, artifice, and moral practice are not optional extras, merely dispensable surrogates which ride on top of the brain's own unchanged tendencies. They are instead (in some form or other) inevitable, structuring supplements which construct and maintain the biological processes which they simultaneously and deeply transform.

In contrast to later moral physiologists who simply *denied* the productive cognitive role of mixture and blending in the brain, these earlier memory practitioners took it very seriously. That's why they were so sensitive to the need for artifice—in this case internalized prostheses—creating secure locations, virtual nooks, and clear unswampy corners of the memory, secret angles of the mind in which they hoped to find what and only what they had deliberately put there. Of course the quest is imperfect: as Hamlet discovered, despite his promise to the Ghost, "baser matter" doesn't just disappear, and the personal past doesn't always flatten out. But it's not as if we can avoid leaning on artificial systems. Recalibration is ongoing, as we alter our own cognitive machinery by exploiting and importing whatever tools and labels we can. The memory artists' skillful use of a manageable and reliable set of cognitive artifacts was an unusually developed, culturally anchored way to deal with contextuality. The civilizing process, thus understood, includes the tidying of our own brains as well as of our behavior, and it isn't really optional.

This slightly shifted picture of these weird old practices should have further historical benefit: it allows us better to incorporate Mary

Carruthers' persuasive work on the meditative aspects of mnemotechnics as a skillful "craft of thought." Where previously we might have seen, with Ricoeur, a "deadly infatuation" with the exercise of sovereign choice after an "original denial" of "the constraints of traces," by putting Carruthers' revisionary history together with the distributed cognition framework developed here, we can reinstate a sense of the practical cognitive and emotional labor, and the riskiness of the quest for wisdom in the things and the devices of this "architecture for thinking."[44] Just as in offloading both information and procedures into *external* technologies and social systems we thereby reconfigure our cognitive tasks and profiles, so in constructing elaborate inner machines for sedimenting and working with affectively laden images and thoughts, the memory artists gradually developed different cognitive skills.

A range of means were thus used in various early modern contexts to redirect and redistribute attention in the service of thinking or remembering well. In relatively contained full-scale cognitive environments—such as the church or the theater—entire panoplies of technological and social scaffolding emerged and were adapted over time. Other more ubiquitous features of daily life, such as clothes and cloth, could in certain circumstances take on particular mnemonic and affective significance in keeping the past alive. And highly specialized cognitive practices, such as the arts of memory, continued to develop in their different rhetorical and meditational uses as internalized media for arranging and redeploying information.

VI. Conclusion and challenges

Can this general framework, adapted from ideas about distributed cognition and the extended mind, really take historical change seriously enough? How can it incorporate evidence of diversity in cognitive technologies across individuals, groups, or cultures, or of slow and complicated alterations in the uses of particular such technologies in certain contexts over time? Jonathan Gil Harris, for one, has criticized recent fascination with "the glittering world of goods" in Renaissance studies for treating arrays of "mundane yet magical things" as timeless windows into alluring lost worlds.[45] And in a wide-ranging polemic against the modern "memory industry" in the historical disciplines, Kerwin Lee Klein attacks notions of "structural memory" which make "a seemingly endless array of physical objects part of memory."[46] While full responses to these telling critiques must await another occasion, in conclusion

here I can pin down some challenges which historical cognitive science of the kind I've been recommending needs to meet.

A first point is that the distributed cognition and extended mind frameworks encompass a number of distinct dimensions, thus allowing for vast individual, cultural, and historical differences in the extent, style, and form of reliance on cognitive artifacts. The context dependence of cognitive processes is itself massively context dependent. Just as we all know individuals who do upload all the information they possibly can to their own brains, who rely as little as possible on external cognitive or mnemonic props, so we should expect to find groups and cultures whose minds and memories are, overall, relatively less extended, more internal, than others.

Harris's call to add a diachronic dimension to histories of the object, and the warnings against sentimentality in object history offered by both Harris and Klein, should simply be embraced wholeheartedly by those studying the cognitive life of things. On the first point, the histories of the production, exchange, and dislocation of objects which Harris recommends can be given a further twist through attending to the messages carried in and transformed by various material media: Harris's quasi-epidemiological investigation of migrations and transformations in the careers of objects can be extended by attending to distortions and alterations in the transmission of representations and information across instantiations.[47]

On the second point, Klein's complaint that a disavowed mysticism animates talk of photographs or monuments or statues as remembering does hit home against some strands in recent memory studies. But two kinds of resources are available to the extended mind theorist in response. Klein's positive argument against both "structural memory" and "social memory" comes to little more than the upholding of an "everyday use" of "memory" as "a property of individual minds," and the views he criticizes are characterized as attributing memory to objects on their own. But on my framework, remembering is an activity often spread across embodied brains and objects (or others) simultaneously, with neither brains nor things always doing it on their own.

Klein also offers an intriguing historical narrative, related to the one drawn from Jones and Stallybrass which I sketched in the section above. Klein accepts that the recent turn to structural memories has early modern parallels, noting that sixteenth- and early seventeenth-century usage allowed the ascription of memory to material objects such as clothes, memorials, or writing. But his conclusion is not that such usage had or has anything going for it, but that contemporary scholars

are mistakenly attracted to the religiosity of a pre-secularized world: "the convergence of archaic and contemporary meanings suggests a narrative in which memory found its early meaning in the union of material objects and divine presence, a meaning that was displaced by the rise of the modern self and the secularization and privatization of memory."[48] This sets us two challenges. First, we need more detailed examples drawing on semantic and social history as well as cognitive history, to pin down just what forms of religious or other essentialism were tangled in early modern notions of material memories. Secondly, we can pursue the subsequent history of "the secularization and privatization of memory" along the lines already suggested, to see whether the mnemonic autonomy of the subject was indeed a complete and pervasive achievement, or whether and in what contexts—through the strenuous histories of modern quests for cognitive discipline—brains still remained spongy, and remembering still spread and distributed across the smart things with which such spongy, embodied brains hooked up.

Notes

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1. Andy Clark, *Being There: Putting Brain, Body, and World Together Again* (Cambridge, MA: MIT Press, 1997), 180. Compare John Haugeland, "Mind Embodied and Embedded," in *Having Thought: Essays in the Metaphysics of Mind* (Cambridge, MA: Harvard University Press, 1998), 207–237.
2. For the terms "exogram" and "external symbol system," see Merlin Donald, *Origins of the Modern Mind: Three Stages in the Evolution of Culture and Cognition* (Cambridge, MA: Harvard University Press, 1991), 308–333; John Sutton, "Porous Memory and the Cognitive Life of Things," in D. Tofts, A. Jonson, and A. Cavallaro, eds, *Prefiguring Cyberculture: An Intellectual History* (Cambridge, MA: MIT Press and Sydney: Power Publications, 2002), 130–141. See section 4 below on Stallybrass and Tribble.
3. Andy Clark, *Natural-Born Cyborgs: Minds, Technologies, and the Future of Human Intelligence* (Oxford and New York: Oxford University Press, 2003).
4. Mary Floyd-Wilson, *English Ethnicity and Race in Early Modern Drama* (Cambridge and New York: Cambridge University Press, 2003), 14 and 55 (quoting William Slatyer's 1621 *Palae-Albion*), and in general 53–66.
5. From *A German Diet: or, the Balance of Europe*, quoted by Floyd-Wilson, 54.

6. Floyd-Wilson, 14 and 65, quoting Roger Ascham's *The Scolemaster* (1570) and Sara Warneke's *Images of the Educational Traveller in Early Modern England* (Leiden and New York: E.J. Brill, 1995), 132.
7. For a survey of links between memory and morality, see Daniel Woolf, "Memory and Historical Culture in Early Modern England," *Journal of the Canadian Historical Association* (1991), 283–308, esp. 285–289. My treatment of these topics here draws on but significantly revises the discussion in my *Philosophy and Memory Traces: Descartes to Connectionism* (Cambridge: Cambridge University Press, 1998), 132 and *passim*.
8. Clark, *Being There*, 163, with Sutton, *Philosophy and Memory Traces*, 38–41.
9. Andy Clark and David Chalmers, "The Extended Mind," *Analysis* 58 (1998): 7–19. For a compatible argument, from a quite different feminist philosophical perspective, that social and other external influences on memory often support good remembering rather than merely introducing error, see Sue Campbell, *Relational Remembering: Rethinking the Memory Wars* (Lanham, MD: Rowman & Littlefield, 2003).
10. Stephen J. Cowley, "Why Brains Matter: An Integrational Perspective on *The Symbolic Species*," *Language Sciences* 24 (2002): 73–95, esp. 75.
11. Clark, *Mindware: An Introduction to the Philosophy of Cognitive Science* (Oxford and New York: Oxford University Press, 2001), 154.
12. John Sutton, "Exograms and Interdisciplinarity: History, the Extended Mind, and the Civilizing Process," in R. Menary, ed., *The Extended Mind* (Aldershot: Ashgate, 2007).
13. John Marston, *The Malcontent*, ed. B. Harris (London: Ernest Benn, 1967), 1.2.14–15, 1.2.11.
14. H. R. Woudhuysen, "Writing-Tables and Table-Books," *The Electronic British Library Journal* (2004), articles 3, 3–4 and 7.
15. Peter Stallybrass, Roger Chartier, J. Franklin Mowery, and Heather Wolfe, "Hamlet's Tables and the Technologies of Writing in Renaissance England," *Shakespeare Quarterly* 55 (2004): 379–419, esp. 413.
16. Sutton, *Philosophy and Memory Traces*, 119–156.
17. John Marston, *What You Will*, ed. M. R. Woodhead (Nottingham, 1980), quoted by Rick Bowers, "John Marston at the 'Mart of Woe': the 'Antonio' plays," in T. F. Wharton, ed., *The Drama of John Marston: Critical Re-visions* (Cambridge: Cambridge University Press, 2000), 25–26, n. 10.
18. Henry More, *An Antidote against Atheism* (1653), in *A Collection of Several Philosophical Writings* (1662: reprinted New York and London: Garland, 1978), I.11.2, p. 33.
19. Henry More, *The Immortality of the Soul* (1659), in *A Collection of Several Philosophical Writings* (1662: reprinted New York and London: Garland, 1978), II.10.9, p. 105.
20. More, *The Immortality of the Soul*, II.2.7, p. 68.
21. More, *An Antidote against Atheism*, I.11.5, p. 34; Sutton, *Philosophy and Memory Traces*, 144–148. Since, for More, everything in the material world is more or less spongy, only the immaterial soul can keep "entire and unconfused images of things without." *An Appendix to the foregoing Antidote against Atheism,* in *A Collection of Several Philosophical Writings* (1662: reprinted New York and London: Garland, 1978), 10.10, p. 173.
22. Sutton, *Philosophy and Memory Traces*, 25–49; Gail Kern Paster, "Nervous Tension: Networks of Blood and Spirit in the Early Modern Body," in

D. Hillman and C. Mazzio, eds, *The Body in Parts: Fantasies of Corporeality in Early Modern Europe* (London and New York: Routledge, 1997), 107–125.

23. Paster, *Humoring the Body: Emotions and the Shakespearean Stage* (Chicago: Chicago University Press, 2004), 20.
24. Paster, *Humoring the Body*, 60.
25. Clark, *Natural-Born Cyborgs*, 5.
26. John Marston, *Antonio and Mellida: The First Part*, ed. G. K. Hunter, (London: Edward Arnold, 1965), 4.1.56–57.
27. John Trapp, *Commentary . . . Upon the Books of Ezra* (London, 1657), OED sv "sponge," 4b.
28. Marston, *Antonio and Mellida*, 4.1.150–152.
29. Ibid., 4.1.213–215.
30. Sutton, "Porous Memory and the Cognitive Life of Things," 130–131; T. Y. Levin, "Before the Beep: a short history of voice mail," in Alessio Cavallaro, Shaun Davies, Frances Dyson, and Annemarie Jonson, eds, *Essays in Sound 2: Technophonia* (Newtown, NSW, Australia: Contemporary Sound Arts, 1995); Douwe Draaisma, *Metaphors of Memory: A History of Ideas About the Mind* (Cambridge and New York: Cambridge University Press, 2000), 85–86.
31. Stallybrass *et al*., "Hamlet's Tables . . . ," 416–417; Katherine Rowe, "Remember Me: Technologies of Memory in Michael Almereyda's *Hamlet*," in R. Burt and L. E. Boose, eds, *Shakespeare, the Movie II: Popularizing the Plays on Film, TV, Video, and DVD* (London: Routledge, 2003), 37–55; Donald, *Origins of the Modern Mind*, 315–316.
32. Bob Scribner, "Cosmic Order and Daily Life: Sacred and Secular in Pre-industrial German Society," in K. von Greyerz, ed., *Religion and Society in Early Modern Europe 1500–1800* (London: Allen & Unwin, 1984), 17–32.
33. Evelyn Tribble, "The Chain of Memory: Distributed Cognition in Early Modern England," *Scan: Journal of Media Arts Culture* 2 (2005), at http://scan.net.au/ scan/journal/display.php?journal_id=53.
34. Evelyn Tribble, "Distributing Cognition in the Globe," *Shakespeare Quarterly* 56 (2005): 135–155, covering particular cognitive artifacts such as sides and plots, the physical environment of the theater, the social structure of the acting companies and the apprentice system, and the cognitive-poetic qualities of the memorizable texts. I discuss this case study in light of differing interpretations of the "extended mind" hypothesis in "Exograms and Interdisciplinarity," section 3.
35. Ann Rosalind Jones and Peter Stallybrass, *Renaissance Clothing and the Materials of Memory* (Cambridge: Cambridge University Press, 2000); Stallybrass, "Worn Worlds: Clothes, Mourning, and the Life of Things," *Yale Review 81.2* (1993): 35–50; M. de Grazia, M. Quilligan, and P. Stallybrass, eds, *Subject and Object in Renaissance Culture* (Cambridge and New York: Cambridge University Press, 1996). The lines between specifically *cognitive* artifacts and the "social life of things" more generally (Arjun Appadurai, ed., *The Social Life of Things: Commodities in Cultural Perspective* [Cambridge: Cambridge University Press, 1986]) need only be as sharp as the lines between the cognitive and the social: some technologies, exograms, or material prostheses will still be coopted more in activities of remembering, perceiving, thinking, and so on than others. So it's not, of course, that clothes in Jones'

and Stallybrass's treatment, were cognitive artifacts *rather than* social: they were both.

36. Stallybrass, "Worn Worlds," 38. Sometimes Jones and Stallybrass waver when expressing this point: discussing the ways in which transmission involving clothes can go astray, they note that "the detachability of clothes thus conjures up the alienability and reconfiguration of memory itself" (*Renaissance Clothing*, 272). This formulation still treats "memory itself" as distinct and separable from the external materials of memory.
37. Stallybrass, "Worn Worlds." It's easy to see how the distributed cognition/extended mind framework would apply to the wider historical study of mourning and memorials.
38. Jones and Stallybrass, *Renaissance Clothing and the Materials of Memory*, 7–11, and 277.
39. Clark, *Natural-Born Cyborgs*, 197; Clark, "Beyond the Flesh: Some Lessons from a Mole Cricket," *Artificial Life* 11 (2005): 233–244, esp. 242; Clark, "Memento's Revenge: The Extended Mind, Extended," forthcoming in R. Menary, ed., *The Extended Mind* (Aldershot: Ashgate, 2007); Schneewind, *The Invention of Autonomy: A History of Modern Moral Philosophy* (Cambridge: Cambridge University Press, 1998), 3–11.
40. Bruno Latour, *We Have Never Been Modern* (Cambridge, MA: Harvard University Press, 1993); Stallybrass, "Worn Worlds."
41. These paragraphs condense and draw on two longer treatments: my initial account in "Body, Mind, and Order: Local Memory and the Control of Mental Representations in Medieval and Renaissance Sciences of Self," in G. Freeland and A. Corones, eds, *1543 And All That: Image and Word, Change and Continuity in the Proto-Scientific Evolution* (Dordrecht and Boston: Kluwer, 2000), 117–150, significantly revised in my "Exograms and Interdisciplinarity," Section 5. As well as dramatically simplifying complex and diverse historical practices, I am assuming here that the use of these mnemonic techniques was not restricted to self-consciously "occult" contexts, and was continuous in many respects with mundane practices of remembering (contrast Woolf, "Memory and Historical Culture," 284). My revised reading owes much to Andy Clark's recent work on the role of language, images, and other labels and maxims in minimizing contextuality and temporarily dampening or recalibrating affect: see Clark, "Word, Niche, and Super-Niche: How Language Makes Minds Matter More," *Theoria* 20 (2005): 255–268.
42. Mary Carruthers, *The Book of Memory: A Study of Memory in Medieval Culture* (Cambridge: Cambridge University Press, 1990), 7; *The Craft of Thought: Meditation, Rhetoric and the Making of Images, 400–1200* (Cambridge: Cambridge University Press, 1998), 16.
43. Paul Ricoeur, *Memory, History, Forgetting* (Chicago: Chicago University Press, 2004), 66. See also the suggestive treatment by Lina Perkins Wilder, "Toward a Shakespearean 'Memory Theater': Romeo, the Apothecary, and the Performance of Memory," *Shakespeare Quarterly* 56 (2005): 156–175, esp. 160 on the memory arts as involving "an act of spectatorship" which avoids "the sticky process of humoral correction." The awareness of the limits and imperfections of the arts which Wilder sees in *Romeo and Juliet* is compatible with the revised view I sketch here.
44. Ricoeur, *Memory, History, Forgetting*, p. 66; Carruthers, *The Craft of Thought*, 7.

45. Jonathan Gil Harris, "The New Historicism's *Wunderkammer* of Objects," *European Journal of English Studies* 4 (2000): 112; "Shakespeare's Hair: staging the object of material culture," *Shakespeare Quarterly* 52 (2001): 483.
46. Kerwin Lee Klein, "On the Emergence of *Memory* in Historical Discourse," *Representations* 69 (2000): 131, 135.
47. Harris, "Shakespeare's Hair," 485–488; for the parallel notion of an epidemiology of representations in cognitive anthropology, see Dan Sperber, *Explaining Culture: a naturalistic approach* (Oxford and Cambridge: Blackwell, 1996), 26. Harris accepts that Stallybrass's approach to clothes is sufficiently alert to the diachronic dimension.
48. Klein, "Emergence of *Memory*," 132.

Index

Some frequently occurring terms such "humors," "body," "mind," "soul," "environment," "macrocosm," "microcosm," and "travel" are not indexed.