

Between brains, bodies and things: tectonoetic awareness and the extended self

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This paper presents the possible outline of a framework that will enable the incorporation of material culture into the study of the human self. To this end, I introduce the notions of *extended self* and *tectonoetic awareness*. Focusing on the complex interactions between brains, bodies and things and drawing a number of different and usually unconnected threads of evidence from archaeology, philosophy and neuroscience together, I present a view of selfhood as an extended and distributed phenomenon that is enacted across the skin barrier and which thus comprises both neural and extra-neural resources. Finally, I use the example of a gold Mycenaean signet ring to explore how a piece of inanimate matter can be seen (sometimes) as a constitutive and efficacious *part* of the human self-system.

Keywords: extended mind; material engagement; self; material culture; ‘tectonoetic’ awareness

1. INTRODUCTION: BEYOND THIS ‘I’ THAT I KNOW

The emergence of human sense of self is arguably among the most fundamental issues of human becoming, yet it rarely occupies the focus of explicit archaeological treatment (e.g. Fowler 2003; Knappett 2005; Gamble 2007). Besides remaining a great philosophical puzzle (e.g. Shoemaker 1968; Dennett 1991; Neisser 1988; Metzinger 2003; Zahavi 2005; Humphrey 2007), the question of self, and its manifold developmental, neurophysiological and anthropological dimensions (Gazzaniga 1998; Gell 1998; Strathern 1988; Damasio 1999; Gallagher 2000a, 2005; Rochat 2001; Lewis 2003; Gillihan & Farah 2005), cannot be easily extrapolated from the archaeological record. On the one hand, archaeology, apparently, lacks any ready-made methodological substitute for the classical, albeit contentious, ‘mirror self-recognition task’ widely used since the pioneering work by Gallup (1970, 1979) in developmental and comparative studies of human cognition (see Gallup 1998; Rochat 2003; Bard *et al.* 2006). From an archaeological perspective, we have no way to know how, for instance, the inhabitants of the Blombos cave in Africa (D’Errico *et al.* 2005) would have reacted to the view of their face and body as seen on the surface of the mirror. On the other hand, the material culture and the other physical remains of the past may often speak in their own enactive semiotic idiom (Malafouris 2007), but they certainly lack any direct equivalent of the first person pronoun ‘I’ through which, as it is customarily assumed, sapient minds posit themselves as agents. Even the footprints from the muddy floor of the Niaux cave in France or the impressive handprints and hand stencils from the Chauvet cave do not suffice, *in themselves*, to give

us access to the presence of selfhood or the absence of it—they can certainly be seen as indexes of an acting human body but provide no direct evidence of a self-aware acting body. From an archaeological perspective, there can be no ‘immunity to error through misidentification’ (see de Vignemont & Fournieret 2004), there is always the possibility of being mistaken in past self-attribution. Words like ‘me’ and ‘I’ neither fossilize nor do they leave any readily identifiable and universal material trace. So how do we identify the presence or absence of self-awareness in the archaeological record? How do the available models and conceptual distinctions of self-knowledge—e.g. ecological/interpersonal/conceptual (Neisser 1988, 1991), minimal/narrative (Gallagher 2000a), noetic/autonoetic (Tulving 2001, 2002), pre-reflexive/reflective (Legrand 2006)—fit in and interact with the archaeological data and scales of time?

Obviously, the question about how and when we develop the sense of being oneself and what this sense of self might consist of cannot be weighed or measured, and thus it cannot be definitely decided, especially from the perspective of cognitive archaeology. But I hope to convince you in my following discussion that it can be somewhat illuminated. In any case, what we can be sure of is that the question of self cannot be avoided. And it cannot be avoided because it is always present, underlying every single aspect of human prehistory and cognitive evolution. Whether archaeology explicitly looks for the self or not, it certainly carries with it, and constantly projects into the past, the implicit image of such a self moulded on the prototype of the modern Western individual. The existence of a transparent phenomenal inner ‘I’ causing the human hand to move and alter the world in full awareness is assumed before and behind even the earliest artefacts recovered in the archaeological record. But when and how did humans develop the experience that they own their bodies (sense of ownership) and started to feel as the authors of their actions (sense of agency; Gallagher 2000a)?

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Our nearest primate relatives present a number of features indicative of a core self-system and an autobiographical self (Damasio 1999). But they never make the passage to the reflective, conceptual or 'autonoetic' stages of selfhood. The nut-cracking Kanzi can certainly effect a forceful stroke. Certainly, it is he who causes the act but he will never acquire a sense of agency or a true understanding of causality. Why is that? Is it simply the lack of language and representational thinking or maybe something more basic and difficult to discern? Every phrase written about human prehistory that implicates some sort of 'I' that acts and thinks invites this question in one form or another. And the constant danger is that our modernist epistemic predisposition towards questions of the 'what is this 'I' that I know?' type may blind us to any alternative possibilities. For instance, the possibility that before this 'I' can be a 'we' or a 'many', or, even more importantly, that the boundary of this 'I' may be changeable and extendable to the outside world rather than fixed at the surface of the skin. It is these possibilities that I wish to bring forth and explore in this paper through the notions of the *extended self* and *tectonoetic awareness*.

2. THE SELF IN HOMER

As mentioned previously, our modernist epistemic predisposition towards questions of the 'what is this 'I' that I know?' type may blind us to any alternative ways of looking at the issue of human selfhood. I suggest that in attempting to get rid of some of the unnecessary modernist intellectual baggage, and to articulate some of the issues that will occupy our focus in this paper, the world of the Homeric epics might offer a useful starting point.

The following question by Gill may lead us directly to the heart of the matter: was the Homeric person aware 'of having, or being, a unitary self, an 'I', and conscious that it is this 'I' that makes the choice'? (Gill 1998, p. 31). Unexpectedly, for our 'common-sense dualism' and ideas about agency, over the last century, many researchers, following the lead of Snell (1960) and his influential treatment of the topic, have answered this question in the negative. In brief, the argument is that the Homeric epics show an absence of awareness of a unitary self and thus that no Homeric person can be seen to act as a fully integrated and autonomous agent. 'Agamemnon' and the other Homeric heroes do not act with full self-consciousness when they are making decisions, they are not self-aware of their doings: decisions are made *for* them rather than *by* them (Gaskin 1990).

From the above line of thinking emanates a second, equally perplexing question: if the notions of human agency and intentionality did not make any sense for the Homeric person who 'does not yet regard himself as the source of his own decisions' (Snell 1960, p. 8), then why assume, as archaeology so often does, that they made sense for humans in the Palaeolithic? If the attribution of agency—the 'who did it' question—can prove to be such a tricky and complex matter for a society of sapient minds that lived just a few centuries before the dawn of Greek philosophy and Plato's theory

of ideas, then why assume the existence of such an inner *conscious* individual self painting the walls of the Chauvet cave approximately 30 000 years earlier, or even shaping a symmetric hand axe approximately hundreds of thousand years earlier? We should remind ourselves that archaeology may question the precise cognitive, and, in particular, symbolic or linguistic, capabilities of the Palaeolithic knapper, but it has never questioned the self behind the artefact. Maybe, as the philosopher Taylor (1989, p. 112) argues, underlying the 'baffling contrasts' of human agency, 'we can probably be confident that on one level human beings of all times and places have shared a very similar sense of 'me' and 'mine''. But, given what we discussed in the case of the Homeric self, from where this confidence emanates? What are the evidence that qualify such a certainty and warrant the universality of this unitary minimal self?

An easy way out of this dilemma might be of course to argue that the above-presented hypothesis about the nature of human agency in Homer is based on a misunderstanding or a misinterpretation of the Homeric poems from Snell and his followers. Indeed, there is no doubt that the problem of the Homeric self and agency is a matter of extensive debate and speculation. But we must admit that there is more at issue here than the precise conceptualization of the Homeric self. The real issue, I suggest, concerns the very possibility of a 'non-unitary' self. Upon that, even if we deny the later possibility from the Homeric world, we should keep in mind that the concept of the delimited biological individual and our common-sense unambiguous location and unitary experience of self is in trouble in more places than just Homer or the decentralized trends in the twentieth-century French philosophy. The idea of the isolated human agent that acts upon the inert and inanimate world can hardly be accommodated, or even make any sense, in a number of ethnographic contexts where the categories of persons and things are inseparably interlinked (Gell 1998) and where 'agency' and 'cause' are split. A good example can be found in the case of Melanesia where action and doing, although associated with a basic sense of body ownership, is rarely associated with a sense of authorship (Strathern 1988; Ramsey 2000).

Clearly then, the possibility of a Homeric non-unitary or 'distributed self' cannot be denied on *a priori* conceptual grounds. At least not as easily as our well-trained 'right-hemisphere interpreter' (Gazzaniga 1998) would have wanted. But if the Homeric problem of self cannot be dismissed, how can we account for it?

Let us try to approach the matter of the Homeric self through some of the available conceptual stratigraphies of selfhood. The differentiation between a 'minimal' and 'narrative' self, recently proposed by Gallagher (2000a), encapsulates all major developmental stages proposed by Neisser (1988, 1991) and offers a useful starting point to answer our question. There are two principal ways to proceed to look for the self: the first is to focus on the 'conceptual' or 'narrative' domain of selfhood and to situate the Homeric self at the centre of some fictional, personal or cultural narrative. This would be fine as long as we avoid a common mistake that such a conceptualization embodies. That is, the

mistake of assuming that our own contemporary ideas and narratives of selfhood are somehow more objective and less fictional than those existing in the time of Homer. This is precisely the mistake Snell, and later also Adkins (Bernard 1993), made by interpreting the 'difference' which they recognized in the nature of the Homeric self as an 'absence' or 'deficit' of selfhood. Their normative developmental perspective firmly grounded on a Cartesian conception of what is like to be a person proper failed to recognize that an extended acting self is also a self proper, albeit of a different kind. Obviously, what Agamemnon lacks is not a proper self but simply the fundamental awareness of the organic unity of its soul parts characteristic of post-Platonic Western ideas about what a proper self should be. As Bernard (1993, p. 23) correctly observes, criticizing Snell's thesis, '[t]here is certainly one thing that Homer's descriptions of people did without, and that was a dualistic distinction between soul and the body'.

With this last consideration in mind let us now return to the second available approach to the Homeric self problem, focusing this time on the minimal domain of selfhood. It is this minimal self that is disrupted when, for instance, patients with schizophrenic delusion of control fail to identify the correct source of their own actions or mistake their intrusive thoughts for external voices (e.g. Daprati *et al.* 1997; Gallagher 2000b; Frith 2005). A deluded patient claims for example: 'Thoughts have been put in my head that do not belong to me. They tell me to dress. They check the bath water by doing this gesture' (Proust 2003, p. 504). And strange as it might appear, it is precisely this feeling of 'extraneity', a disturbance of the 'sense of agency', with the 'sense of ownership' remaining intact, that can be seen to characterize many aspects of the Homeric self. Agamemnon and the other Homeric heroes act as if they experience the world from the perspective of the 'anarchic hand' syndrome; that is, they act as if they own the hand but not the action. Should the above comparisons lead us to the rather extreme conclusion that people in the Homeric world suffered from some contagious 'agency delusion'?

Naturally, we do not have to suppose anything so bizarre. The Homeric self, I propose, is neither a 'figment of metaphysically fevered imaginations' to use, for example, Dennett's (1991) description of this sort of conceptualization, nor the sign of some sort of archaic 'Schneiderian syndrome' (see Frith 2005). A simpler solution may present itself if instead we simply recognize, following the suggestion of Clarke (1999, p. 118), that for Homer there is no mental part or true self that can be distinguished from the body because the 'body is indistinguishable from the human whole'. For Homer, the parts of the *soul* are not of a different kind than the parts of the body. Of course, this is not to deny that people in Homer had a brain and a body in the same manner that the later Greeks, modern Europeans or Melanesians do, but simply to say that they did not know that body *qua* body, but merely as the sum total of his limbs. This means that the Homeric self did not have a body in the sense that a modern individual understands what it is like or what it means to have a body from a Cartesian viewpoint. This is, however, far from a trivial issue because the kind of

mind we have depends on the kind of body we are, and if that body is not experienced as a 'container', then most probably the mind of that body will not be experienced as 'contained' either (Lakoff 1987; Lakoff & Johnson 1999; Gallese & Lakoff 2005). This also explains Clarke's suggestion that to seek a word for 'body' is to ask Homer a wrong and unanswerable question. That a man should have a body makes sense only if he has another part to be distinguished from it: soul, mind, and the ghost in the machine (Clarke 1999, p. 118–9). Indeed, if we adopt Gill's 'objective-participant conception of the person'—which Gill opposes to the 'subjective-individualist conception' characteristic of the views of Snell and Adkins and of much modern Western ideas of selfhood—then the Homeric mind can be understood as a 'complex of functions which are unified (in so far as they are unified) by their interaction, rather than as constituting the locus of a unitary 'I' (Gill 1998).

Thus, and concluding this section, I believe that there are two important lessons the debate over the Homeric self can teach us. First, that the problem of self is essentially a 'self-grounding' problem. That is, a problem of how to reconcile the distinctively unitary experience of the phenomenal self with the distributed fragmented character of the functional self and of how to ground self in action and the material world. Second, given that our objective is to ground self in action and the material world, then our point of initiation cannot take the form of some 'homunculus' however re-shaped and 'internally' redistributed this might be among the usual prefrontal, posterior temporal and inferior parietal right-hemisphere-based regions. It is one thing to say that the brain, or more specifically the right hemisphere, plays a special role in the creation of the self. It is indeed another, quite different thing to say that the self 'resides' in the right hemisphere (see also Feinberg & Keenan 2005, p. 675). The first seems to be at present a well-supported neuroscientific finding (Decety & Sommerville 2003; Gusnard 2005). The second is a good example of how a valuable finding can be turned into a category mistake, as it is often the case with questions of 'localization'; that is, questions about 'where in the brain is the self?'. *Self is more than a brain.*

A more concrete archaeological example might help us illustrate these theoretical points. Given our previous discussion of the Homeric self, a gold signet ring from Mycenae, the kingdom of Agamemnon, might offer an excellent point of reference.

3. A GOLD SIGNET RING

Figure 1 depicts a gold signet ring, named as 'The battle of the Glen' from grave IV of the so-called Mycenaean Grave Circle A excavated by H. Schliemann (Schliemann 1880; Mylonas 1973; Karo 1930–3). The ring depicts a battle scene characteristic of the transition between the Middle and the Late Helladic period (middle second millennium BC) of the Greek Bronze Age that those graves signify. Moreover, it offers a visual testimony to the establishment of the heroic ethos of the Early Mycenaean warriors, which is to be glorified in the Homeric epics (Voutsaki 1993, p. 161). I shall be leaving aside the usual historical, stylistic, chronological and

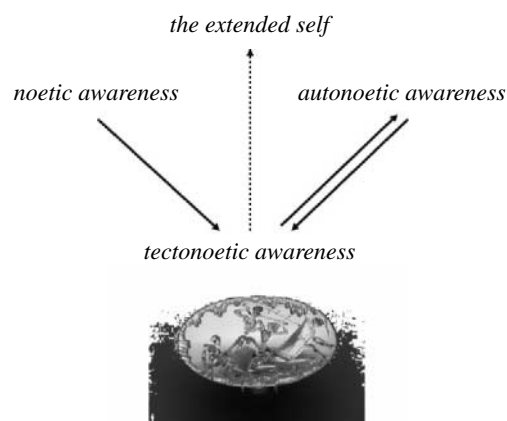


Figure 1. The Mycenaean gold signet ring ('The battle of the Glen') as part of the nexus of tectonoetic awareness.

aesthetic archaeological considerations and focus on the question that occupies our main concern in this paper: what, if anything, can such a ring tell us about the Mycenaean self? At first, it might seem that this ring, as probably any other isolated artefact from this period, has very little to tell. It appears that the best we can do as archaeologists is try to identify the material, functional and symbolic properties of this object, as a representational medium, and to place them against their relevant socio-cultural context in an attempt to decipher their hidden cultural message. This might give us some useful information about the social processes to which this object was embedded in the course of its social life and thus hopefully gain some information also about the processes implicated in the construction of Mycenaean personal identity. But is this really all that the unique archaeological preoccupation with material culture can offer to the study of the self and the body? Accepting that what we call the human mind, and by extension the human self, is essentially what the brain does inevitably leaves archaeology with no other options besides the above avenue of indirect inference and symbolic interpretation. But I have argued more extensively elsewhere (Malafouris 2004, *in press a*, *forthcoming*), and I will argue again in this paper, that the above view of mind and self does not necessarily have to be the case.

But let us first start with the commonplace. As mentioned, the ring was recovered from the famous Grave Circle A at Mycenae. It was intentionally placed there most probably as part of the elaborate funerary depositional processes that we witness in the early Mycenaean funerary record. Intentional burial is, of course, one of those unique behavioural traits of the sapient mind that we can take for granted in the late European prehistory. The ring deposited beside the Mycenaean body does not mark any important Rubicon in human cognitive evolution, as it would have been the case if it was found, for instance, in a Middle Palaeolithic context (see Mellars 1989; Riel-Salvatore & Clark 2001). What it signifies in this case is the emergence of a new, i.e. Mycenaean, cultural trajectory. By the same token, the change from single contracted to collective extended inhumations that took place during that period in the Greek mainland (Dickinson 1977; Rutter 1993; Voutsaki 1997) does not tell us anything about the human symbolic capacity and self-awareness *per se* but simply signifies one of the

countless possibilities about how this symbolic capacity can become actualized and transmitted in ritual, and thus cultural, time and space.

Separating biology from culture may sometimes make good analytic sense but it should not obscure the most interesting issue of how they are combined. Thus, it might be useful to remind ourselves that behind the intentional deposition of the ring as a funerary gift beside the dead Mycenaean body lays an *autonoetic* (Tulving 1983, 2001) conceptualization of human selfhood. This autonoetic self, although embodies millennia of cognitive evolution, needs to be instantiated anew, generation after generation, in cultural space and time. Through the act of burial and intentional deposition, the human sense of personal identity and continuity transcends the limits of human biology projecting into the supernatural realm of post-mortem personal continuity. Whatever the period under consideration, what intentional burial first and above all signifies is a new understanding of 'body ownership' and the 'projecting self'. Placed in such an analytic context, the presence of a funerary offering, whether a Palaeolithic hand axe or a Mycenaean gold signet ring, should be seen, at least in the first instance, not as the index of the human symbolic capacity, but of the equally unique human capacities for 'prospection' (i.e. thinking about the future) and self-projection. I shall return to the issue of self-projection again in §4. For now, having made those basic points concerning the ring as a funerary offering and as a part of the burial practice, it is important to keep in mind that, most probably, this ritual or funerary dimension of the ring constitutes only a small part, probably the last part, of its cultural biography and life history. Thus, more important to consider is the possible efficacy of the ring as a component of the Mycenaean-lived body and phenomenal self.

To this end, already, simply by looking at the variety of material and personal ornaments arrayed around the Mycenaean dead body from the same context that this ring was found (Dickinson 1977), one can get a first idea about the range of biographical possibilities (Kopytoff 1986, p. 66), which, especially if compared against the limited Middle Helladic social *habitus*, are indicative of a new self-awareness. This new awareness is testified in a number of important changes, one of which is the emphasis on the depiction of the human figure, and of the Mycenaean warrior in particular, that we see emblemized and commemorated on the signet ring. Does this mean, as Crowley suggests, that 'the human is now important enough in the scheme of things to take the centre stage' (Crowley 1989, p. 211)? Or, is it simply that new techniques of the body (Mauss [1934] 1973) and of social memory become active or available during that period? Whatever the correct answer, the fact remains that, from a long-term perspective, artefacts like the ring potentially signify important changes in the Mycenaean experience and understanding of what means to be a self and having a body. Thus, the critical question we need to tackle concerns the precise nature of the relation between the Mycenaean ring and the Mycenaean self in the above process of cultural change. That is, we need to ask what the ring does and how it might have affected the

Mycenaean self and body. What, in other words, is the causal efficacy of the ring in the Mycenaean cognitive and self-system? These are the sort of questions I wish to explore in the following sections by introducing the notions of extended self and tectonoetic awareness.

4. THE EXTENDED SELF: FROM EMBODIMENT TO THE ACT OF EMBODYING

To begin with, let me clarify that the notion of extended self I propose here is not confined to the temporal autobiographic dimension of personal continuity, or else the sense of oneself as an individual existing over time, that Neisser (1988) proposed. Although the proposal sketched here incorporates the ecological and interpersonal dimensions or criteria of self-knowledge discussed also in Neisser's scheme, it is essentially a proposal grounded upon the material engagement approach and the recently developed hypotheses of extended and distributed cognition (Hutchins 1995; Clark 1997; Clark & Chalmers 1998; Malafouris 2004, *in press a,b*; Renfrew 2006). Also important to clarify is that the notion of the extended self should not be understood as denoting some independent layer (social, cultural, technological or other) added to the periphery of some 'internal' and thus 'real' biological proto-self (bodily or neuronal). The extended self is rooted and inextricably coupled with the supposedly 'immune' compartments of the bodily self. It should be seen neither as an external layer of materiality—what anthropologists would call, a 'second' or 'social skin' (Turner 1993 [1980])—nor as simply the emergent property of some higher narrative, conceptual or representational self-dimension.

The idea of mind and by extension of selfhood that I want to bring forth through the notion of extended self is that of a self that is located neither inside nor outside the brain/body, but is instead constantly enacted in-between brains, bodies and things and thus irreducible to any of these three elements taken in isolation. Even though the self is by nature grounded and inextricably bound up with the body, it also escapes the natural confines of any single body or brain. The extended self I am proposing here is not simply a self embodied; it is a self enacted through *the act of embodying*.

This minor shift in perspective, *from embodiment to the act of embodying*, has some important implications that should be better spelled out. No doubt, with the advent of the embodied cognition approach, a successful step has been made towards resolving the traditional mind–body dichotomy. Nonetheless, the grounding of human cognition in bodily experience, and the concomitant recognition that the body shapes rather than simply contains the mind (Goldin-Meadow 2003; Gallagher 2005; Gallese 2005; Gallese & Lakoff 2005), did not in itself succeed to dissolve the ontological bounds of the *res cogitans*. Despite stretching the mind as far as the body's surface, the conventional use and understanding of the embodied character of the human cognitive agent remains, more often than not, trapped inside the biological boundaries of the individual. Consequently, the traditional drawback of cognitive science, i.e. mistaking the properties of the system for

the properties of the person (see also Hutchins 1995, p. 366), holds still. Obviously, the purpose of the above remarks is not to dispute the close interdependence of hand and brain function. What I am suggesting here is nothing more than what the classical phenomenological question of the blind man's stick pointed out some decades ago: consider a blind man with a stick. Where does the blind man's self begin? (Merleau-Ponty 1962, p. 143; Bateson 1973, p. 318) To leave material culture outside the human self-system is like leaving the stick outside the blind man's sensory system. More simply, if there is such a thing as the embodied self, then it is a self that constantly projects and extends itself beyond the skin actively engaging and incorporating its material surroundings via the interface of the body. Embodiment is not a delimiting property—far from it. It is instead the main perturbatory channel through which the world *touches us*, is *attached to us* and even *becomes part of us*.

But how does all these hold up against empirical evidence? At first sight, the above premises might seem difficult to follow from the perspective of neuroscience. For one thing, understanding the precise effects of things on the functional anatomy of the human brain is not an easy task and the evidence that bears on this question is hard to come by, especially in humans. Nonetheless, recent studies of visuotactile interactions exploring the effects of the temporary or permanent incorporation of inanimate objects (such as clothes, jewellery, tools, etc.) into the body schema (see also Iriki *et al.* 1996; Berti & Frassinetti 2000; Maravita *et al.* 2001; Holmes & Spence 2004, 2006; Holmes *et al.* 2004; Maravita & Iriki 2004) may well be seen as already articulating some very interesting possible points of intersection between archaeology and neuroscience. Thus, a more careful look at some recent findings in this domain, combined and informed with some classical phenomenological observations, might help us expose some basic aspects of the hidden bio-social anatomy of extended selfhood.

A good example can be found in the case of the distinction between *extrapersonal* space (the behavioural space that surrounds the body outside the hand-reaching distance) and *peripersonal* space (the behavioural space that immediately surrounds the body within the hand-reaching distance; Berti & Frassinetti 2000). Both animal and human neurophysiological studies show clear evidence that these two types of behavioural space are not represented homogeneously in the brain. What is more significant for our present purposes, however, is that this neural dissociation between near and far spaces can be associated with the use of tools. As Berti & Frassinetti (2000, p. 415) have shown, the use of objects and tools exert strong plastic effects in the cognitive topography of peripersonal space. More specifically, in their study, a right-hemisphere stroke patient showed a clear dissociation between near and far spaces in the manifestation of visual neglect—visual neglect is impairment in the processing and exploration of the space contralateral to the brain lesion—thus providing concrete experimental evidence that 'an artificial extension of the patient's body (the stick) caused a re-mapping of far space as near space' (Berti & Frassinetti 2000, p. 415).

But returning to our previous discussion of the Mycenaean ring, it is probably the case of the ‘anosognosic’ patient discussed by [Berlucchi & Aglioti \(1997\)](#) which offer our best evidence about how an ordinary personal possession, like a ring, can become coextensive with our body. This case study (published originally at *Neuroreport* ([Aglioti et al. 1996](#))) refers to a 73-year-old woman who after a large right-hemisphere stroke exhibited a total unawareness of her severe left-arm paralysis and repeatedly affirmed that the paralysed hand belonged to someone else. The peculiarity of this case was that the patient while able to see and describe the rings she had worn for years and was currently wearing on her left, now disowned hand, she resolutely denied their ownership. What makes this case even more interesting is that the patient immediately recognized these rings as her own when they were shifted to her right hand or displayed in front of her. In fact, not only she could identify the rings as her own but also was able to produce a great deal of autobiographical information about them. We should also note that the patient could easily acknowledge ownership of other personal belongings (e.g. a keyholder or a comb), which, in her previous experience, had not been ordinarily associated with the left hand and that in this case identification was not affected when those objects were in contact with the disowned hand.

Neurological findings, such as those presented above, cannot be easily extrapolated to fit our proposed scheme of extended selfhood. Nonetheless, they offer valuable indications and often resonate with our key premise that objects and tools attached to the body can be seen or treated as parts of the body as the biological body itself. According to [Berlucchi & Aglioti](#), the denial of ownership of the left-hand rings, observed in the above-discussed anosognosic patient, was conditional ‘not only on they being seen on the disowned hand, but also on the existence of a previous systematic association between them and that hand’ ([Berlucchi & Aglioti 1997](#), p. 561). From the perspective of archaeology and the material engagement approach, the crucial question lies on how precisely do we go about to understand the nature of these systematic associations between biology and culture or brains and things. This brings us to the notion of tectonoetic awareness.

5. TECTONOETIC AWARENESS: BETWEEN BRAINS, BODIES AND THINGS

The term tectonoetic derives from the Greek *teuton* for carpenter or builder—signifying more generally the maker and the poetic art of construction—and the word *noûs* for mind or intellect (see also [Renfrew’s](#) tectonic phase, [2007](#); [2008](#)). I introduce this term for two main reasons. First, in order to signify the form of *enactive knowing through* that characterizes human self-awareness in the context of material engagement. Second, in order to overcome the unwanted connotations of conventional terminology in the cognitive sciences, which, by leaving material culture outside the human cognitive system, fail to capture the ‘act of embodying’ as a continuous and interactive coordination between neural and extra-neural physical resources.

A good way to illustrate the key property and distinctive feature of tectonoetic awareness relevant to our previous discussion of extended selfhood is by placing it against the background of the distinction between noetic and auto-noetic consciousness initially proposed by [Tulving](#) in his *Elements of episodic memory* ([1983](#)). This will also enable us to link our discussion of self with the issue of memory, which, we should not forget, is probably the key property for the constitution of self as a historical object.

For [Tulving](#), the key difference between noetic and auto-noetic awareness lies in the following: whereas noetic consciousness refers simply to the act of knowing, auto-noetic consciousness refers to the process of self-recollection which involves the mental reinstatement of past events and experiences. Thus, for [Tulving](#), auto-noetic consciousness is the defining property of episodic memory, whereas noetic awareness is identified with semantic memory.

Seen from the angle of our previous considerations, two major drawbacks can be easily identified relevant to this model. On the one hand, both types of awareness have been conceived as being strictly of a ‘mental’ kind. For instance, episodic memory and auto-noetic consciousness are clearly subsumed under the general category of ‘mental time travel’, which refers both to the capacity of remembering past experiences and to the ability of prospection (also known as self-projection); that is, thinking, imagining and planning about the future. On the other hand, although according to [Tulving \(1983, 2001, 2002\)](#) episodic memory develops later in ontogeny compared with semantic memory, his theory offers no specific guidelines about how the two memory systems interact in the course of their developmental (ontogenetic and phylogenetic) trajectories. Thus, [Tulving’s](#) interpretation of infantile amnesia, as associated with the absence of a truly developed episodic memory and self-awareness prior to the age of five, leave us with no explanation about what makes possible this transition from noetic awareness to auto-noetic self-awareness.

Following that one may argue that the notions of noetic and auto-noetic awareness, although successfully pointing out the significance of subjective time and remembrance in the constitution of self, lack the ecological grounding that would have enabled the material anchoring of auto-noetic consciousness. This is precisely the role that *teutonetic* awareness comes to play signifying the active mediating role of material culture in the ontogenetic and phylogenetic passage from noetic to auto-noetic consciousness. The basic assumption behind tectonoetic awareness is simple: a self or a person cannot emerge (ontogenetically or phylogenetically) aside from a process of material engagement. Tectonoetic consciousness should not be understood as a distinct separate stage between the two—although this can be argued to be the case from an ontogenetic viewpoint—but as a scaffolding process of ongoing structural coupling that grounds in action and integrates the noetic and auto-noetic aspects of selfhood.

But where does all this leave us? How the above theoretical premises can help us answer our previous question about the causal efficacy and relationship of the ring with the Mycenaean self-system? Elsewhere I

have used the example of the blind man's stick to develop a hypothesis proposing that the functional structure and anatomy of the human brain is a dynamic construct remodelled in detail by behaviourally important experiences which are mediated, and often constituted by the use of material objects and artefacts which for that reason should be seen as continuous integral parts of the human cognitive architecture (Malafouris forthcoming). I suggest that the relationship between tectonoetic awareness and the Mycenaean ring can be understood along similar lines.

In particular, the thing we should probably note first is that the ring, beyond its significance as a personal ornament, embodies strong mnemonic potential. Not only the formulaic character of the iconic scene that we see depicted on the ring's surface points to a mnemonic function not dissimilar to 'the repetitive phrases and standard epithets in oral poetry' (Crowley 1989, p. 211), but whereas the oral formula may hardly be conceived of as a separate entity—meaning divorced both from the rest of the sentence and its performance context—the ring as a material object is capable of taking on a separate life of its own. Thus, beyond its obvious inscriptive qualities, the ring, as an object, embodies a dynamic cognitive biography that conventional notions like that of 'external symbolic storage' (Donald 1991) cannot fully accommodate. As Rowlands observes:

Objects are culturally constructed to connote and consolidate the possession of past events associated with their use or ownership. They are there to be talked about and invested with the memories and striking events associated with their use. The link between past, present and future is made through their materiality. Objects of a durable kind assert their own memories, their own forms of commentary and therefore come to possess their own personal trajectories.

(Rowlands 1993, p. 144)

The complex associative enchainment between the 'internal' and 'external' elements of remembering that such objects embody has two major implications. First, the biological limits of working memory (7 plus or minus 2; Miller 1956) no longer apply. Second, the structure of the cognitive process has changed. The ring has reorganized the circuitry and thus the nature of the cognitive operations involved. The noetic, semantic knowing, grounded in the physical and thus permanent structure of the ring is transformed to an auto-noetic, episodic remembering, which is now constitutively intertwined with the ring's social life (figure 1).

Thus, the ring as a portable and transparent bodily attachment enables the passage to explicit self-recognition through objectification. The capacity of the ring to modify and reshape the body, to which it becomes attached, suggests that the ring may cut across the conventional 'body image'/'body schema' distinctions and by extension the subject-object divide. It should be borne in mind that the importance of the physicality of the artefact derives from its ability to act as a bridge between the mental and physical worlds. In our case, the materiality of the

ring offers a bridge between personal and peripersonal space and grounds in action the different aspects of Mycenaean self-consciousness. Incorporated by the Mycenaean body, the ring potentially liberates the self from the here and now of ordinary experience; that is, from the temporal simultaneity and spatial coincidence of the subjective body so it can now be enchained into its social surrounding. In this connection, a possible synergy between object ownership and body ownership might offer an interesting link between the way humans come to feel that they own their body in comparison with other aspects of their material surrounding.

Of course, it needs to be underlined that Mycenaean self-objectification manifests in many different forms and is realized through a variety of material media. Yet, the main effect is the same, the Wittgensteinian immune 'I-as-subject' engaging the artefact is turned into a non-immune 'I-as-object'.

Another salient example of this process can be found in the case of the Mycenaean sword. As I argue in more detail elsewhere, for the Mycenaean warrior, like the one we see in the scene depicted on the ring, the centre of consciousness and bodily awareness is not some internal Cartesian 'I' but the tip of the sword (Malafouris in press b). The act of grasping the Mycenaean sword involves much more than a purely mechanical process of visuo-proprioceptive realignment of the Mycenaean body; it is also an act of incorporation which provides a new basis for self-recognition and self-awareness. The grasping of the sword as an act of embodying brings forth a new manifestation of tectonoetic awareness, the phylogenetic roots of which can already be traced in the 'temporal binding effects' (Haggard *et al.* 2002) of the earliest acts of tool knapping. The intentional stance of the Mycenaean person is partially determined by the skilled embodied engagements made possible by the use of the sword. Representational 'content' and 'aboutness' are not to be found inside the cabinet of the Mycenaean head, they are instead negotiated between the hand and the sword.

Similar to what we discussed in the case of the ring, the Mycenaean sword becomes a means of self-objectification and offers a portable material anchor for the blending of time, memory and consciousness (see Hutchins 2005). The sword should not be seen as an isolated detached object, because, once in the hand of the warrior, it is already an inseparable organic part of the warrior's body; an artificial, yet fully incorporated, body part in itself. This process of material engagement, which initiates as a distributed action assembly of brains, bodies and things and through time results in a new kind of 'we' intentionality (Tomasello *et al.* 2005)—not between humans, but between humans and things—constitutes the crux of *human tectonoetic consciousness*. Maybe it is the lack of a true *tectonoetic consciousness* that deprives the nut-cracking Kanzi from becoming a fully conscious agent.

6. FINAL DISCUSSION

We naturally come to think that we have a self, as the philosopher Taylor (1989, p. 112) remarks, in the

same way that we have legs, arms or livers. What is more important, however, is that 'distinctions of locale, like inside and outside, seem to be discovered like facts about ourselves, and not relative to the particular way, among other possible ways, we construe ourselves'. For indeed, 'who among us can understand our thought being anywhere else but inside, 'in the mind'?'

In this paper, I argued that the situated character of the human condition demands that human selfhood cannot be characterized and understood simply according to some internal, fixed and biologically predetermined taxonomy of bodily properties. A great deal of cultural parameters that operate beyond the skin needs to be taken under consideration. Unfortunately, the complex and dynamic nature of these extra-organismic causal factors means that they cannot be easily accommodated by conventional experimental (imaging or behavioural) protocols. Rings, like the one we discussed here, are not allowed in the fMRI scanner. Nonetheless, they do leave their trace in our cerebral architecture and in some cases can be seen as parts of our self. This type of, what we may call, 'epistemic extrasomatic neglect' has some drastic implications on our understanding of the human self and the sapient mind, which can only be counter-balanced by a new integrative and cross-disciplinary articulation of the problem of self that will incorporate all the relevant parameters to it. An important methodological implication of that, and this is what constitutes the crux of my argument in this paper, is that the common distinction between a physical and a social body—the first being the domain of life sciences and the second of anthropology/archaeology—can no longer be sustained. The two-body idea, one physical and another social or symbolic, as originally posed by Douglas (1970, p. 93), needs to be replaced with a more interactive framework. The aim of this framework should not be to translate a biological story into a cultural story and vice versa, but instead to discover possible links and construct conceptual bridges between the two.

It is only through the understanding of what being a self involves for an organism embedded in the world and thinking through things and its body that one will be able to search efficiently for the signatures of self-consciousness (neuronal, bodily, cultural or other). 'Mind', as the philosopher Clark (1997, p. 53) points out, 'is a leaky organ, forever escaping its 'natural' confines and mingling shamelessly with body and with the world'. And it is precisely this powerful metaphor that I applied here in the study of self. An epistemic unification of self cannot be achieved either by adding isolated neural, bodily and material correlates of self or by reducing the one to the other. It can be achieved by attempting to discern the connections and possible causal links between these different aspects of selfhood as they interact across the skin barrier and the scales of time.

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