Beyond Skin: Layering and Networking in Art and Archaeology

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This article puts forward two modes through which cognition and agency exist beyond skin: 'layering' and 'networking'. These bodily and artefactual processes are broadly equivalent to two fundamental social practices defined by Chapman (2000) — accumulation and enchainment, respectively. While the aim of the article is to develop theoretical frameworks for application in archaeological settings, the themes encountered have wider relevance to material culture as a whole. Examples are taken from modern and contemporary art, notably the work of Marcel Duchamp and Antony Gormley.

How do human cognition and agency come to operate through and beyond the surfaces of the body? How can the artefactual be considered cognitive, and vice versa? Within a Cartesian perspective that places mind and matter in different domains, these questions are not easily posed, let alone answered. However, Cartesianism does not have a monopoly on approaches to cognition; and, in cognitive science, post- or anti-Cartesian alternatives are increasingly prevalent (Wheeler 2005). Such perspectives stress that the human mind is embodied, situated and distributed (Malafouris 2004). An embodied mind is one that is not restricted to some inner computational core isolated from the body, yet from which the body is nonetheless controlled. Mind and body are so deeply interpenetrative that one can hardly equate 'mind' with 'brain', any more than one can equate 'cognition' with 'brain'. The whole body is implicated in cognitive processes — humans think through their bodies (*l'homme qui pensait avec ses doigts:* Warnier 1999). One might then say that in a sense the mind stretches as far as the body's surface. The idea that cognition is also situated and distributed implies that the mind may stretch further still; it suggests that the mind seeps out into the world, becoming coextensive with that world (Clark 1997; 1998; 2003). In other words, mind is in matter and matter is in mind.

From this some fascinating questions arise. If a human agent's mind is confined neither to the brain nor the body, how is it possible to assess where the subject stops and the object begins, if indeed the separation of subject and object is a viable proposition? Endless implications arise for how one might understand the *surfaces* of the body, the incorporation of objects into the '*synthèse corporelle*' (Merleau-Ponty 1962), and the shifting nature of the *interface* between the self and other. What are the physical, psychological and social facets of this process, and how do they interact? Through what kinds of processes are artefacts co-implicated in the bio-psycho-social subject (Mauss 1936; Warnier 1999; Pickel 2005)?

My reason for wishing to explore this further, as an archaeologist, is that there are evident ramifications for how material culture is understood. However, it goes beyond the strictly archaeological as it concerns material culture in general, from the present as well as the past. It is in part for this reason that I wish to tackle the issue from a variety of non-archaeological angles, involving philosophy, cognitive science, psychology, and modern and contemporary art, the last of which has been explored to considerable effect in archaeology of late (Renfrew 2003; Renfrew *et al.* 2004). The aim is to throw a little light on the ways in which mind, agency and object come to be intertwined and codependent.

I shall focus especially on two means whereby mind extends into the world — through layering and through networking. These are effectively two kinds of interface between subject and object, between the organism-agent-person and the world. An interesting parallel can be drawn between these terms and two basic social practices defined by Chapman (2000) as

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Figure 1. *Potter Véronique Durey at the wheel.*

'enchainment' and 'accumulation'. The former term refers to the processes whereby humans and artefacts are distributed, yet at the same time held together or 'enchained' in socio-technical networks; this is therefore equivalent to what we are here calling 'networking'. The second term describes those practices whereby identity is not distributed but, rather, 'accumulated' at particular locales; one way in which this is achieved is through the accumulation of sets of artefacts, for example in hoards or tomb assemblages (Chapman 2000; see also Gamble 2004a,b). Accumulation is thus broadly equivalent to 'layering' as used in this article, although some differences between the two will emerge.

The embodied, distributed and situated mind

But first we need to backtrack, to explain more clearly the nature of the anti-Cartesian (or post-Cartesian) reaction within cognitive science. Essentially, cognitive science is slowly opening itself up to phenomenological perspectives (Petitot *et al*. 2000), as researchers such as Varela *et al.* (1993), Hutchins (1995), Clark (1997; 1998; 2003) and Wheeler (2005) elaborate the idea that cognition is embodied, situated *and* distributed. While this position has attracted strong resistance from the long-dominant representationalist approach that sees cognition as a form of computation based on the serial manipulation of symbols, some scholars consider an eventual compromise between these two perspectives to be not only feasible but also essential (Bechtel & Abrahamsen 2002). The embodied/distributed viewpoint argues that the mind is doubly situated, or in a double bind, situated in a body, which is itself situated in an environment. If mind is to seep into the world it must presumably do so 'through the pores' of the body (compare Clark 1997). In other words, it is through contact with the body as a conduit of intentional action that objects come to be imbued with mindfulness.

The potter, for example, touches the clay and creates form (Fig. 1): it is through touch, a contact between surfaces, the one plastic and the other fleshy, that mind and matter achieve an active interface. The ideas of the potter flow into the clay and at the same time, imperceptibly, the clay's properties flow back the other way. The final form achieved testifies not only to the plastic properties of the clay body, but also to the character of bodily activity and of mindful intention — a kind of confederacy between matter, action and mind (Malafouris 2004, 59).

Now, with the potter it may seem self-evident where to locate the boundary of the body — at the skin of the potter's hands, which do not merge with the clay (although potters' hands seem to be permanently dirty with deeply-engrained clay!). One might argue that even though the physical surfaces of the body remain clear, the psychological and social interface between flesh and clay is rather less unblemished.

This distinction between the physical and the metaphysical, between the corporeal and the spiritual, is problematic. I would suggest that the body's skin holds no more than potential for being a metaphysical boundary. For example, we can see, in some circumstances, say of close confinement, personal threat and a minimalist object world — in some prisons — that the skin may serve as a very potent metaphysical boundary. There is research indicating that tattooed prisoners tend to have a stronger sense of the boundedness of their bodies than inmates without tattoos (Harré 1991). Thus tattooing might be seen as a kind of apotropaic practice, a means of strengthening the skin as metaphysical boundary (Le Breton 2002; Gell 1993;

Kuwuhara 2005; Thomas *et al.* 2005). One might also note that feelings of boundedness may vary over time for any given individual, susceptible during, for example, pregnancy or illness (physical and mental).

Fundamental here are notions of 'bodily image' (Schilder 1968) or '*synthèse corporelle*' (Merleau-Ponty 1962). To Schilder, the 'image du corps' was both a neurophysiological and a symbolic construct. In other words, one might say that the bodily image is both physical and metaphysical, concerning the human as biological organism, as psychological agent and as social person. That there are historical and sociocultural variations in bodily image is clear. Benthien (2002) documents the interesting changes in Western images of the body over the last few centuries. In the seventeenth and eighteenth centuries, the skin was seen as porous, 'interwoven with the world' but, over the last two hundred years, the bodily image has changed to that of 'a closed, demarcated individual body whose final boundary is the skin' (Benthien 2002, 62). As for cultural variation, anthropology has devoted a good deal of attention to variable conceptions of the body and personhood (Lambek & Strathern 1998). The idea that the individual body is the sole seat of personhood appears to be peculiarly Western. In other cultures, for example in Melanesia, the body is more or less inseparable from the natural world — '*a fortiori, le corps n'existe pas*' (Le Breton 2001, 18). The body is not a bounded entity that belongs to an individual person but is, to all intents and purposes, an indiscernible element amidst a symbolic whole. The other side of the coin is that personhood is a spatiotemporally distributed phenomenon, unconfined by the physical boundary of the skin (Gell 1998). Much of this article is indeed about exploring the ways in which personhood goes beyond skin to find itself in artefacts, in material culture.

Layering

Important in this respect are a number of other observations made by Schilder, namely that the bodily image is not fixed and that it can incorporate objects in such a way that the skin is no longer, in perceptual terms, the boundary of the body (e.g. blind man's cane: see Julien 1999 for discussion). The body adjusts itself to the incorporated object through different means, either by pouring itself out into the object or by bringing it in (or perhaps both).

> To get used to a hat, a car or a stick is to be transplanted into them, or conversely, to incorporate them into the bulk of our own body (Merleau-Ponty 1962, 166).

The hat reminds us that clothing is another means through which humans manipulate (accentuating or blurring) their external surfaces to create different kinds of bodily schemas. Clothing, and cosmetics too, are means of altering the outer fabric of the body to formulate different kinds of possibilities *vis à vis* the metaphysical extension of self. Clothes may, for example, be protective and impenetrable, or membranal and diaphanous.

While tattooing might alter the skin itself, the *second skins* we create for ourselves, of clothing and cosmetics for example, are generally in direct contact with the skin; however, this need not be the case for all second skins. The car has also been described as a second skin to those in the West who use this technology intensively. Paul Graves-Brown (2000) draws attention to the car's role as a cocoon, indeed as part of the person, and as an extension of self. And given that it is 'a home away from home', one might also think of a room or indeed a house also acting as a second skin, not only as a container protecting the body, but as an extended part of that body. This is directly conveyed in a sculpture by Antony Gormley entitled *Home* (1984), in which the head of a supine cast human figure is encased by a terracotta house model (Causey 1998, 253). One might also draw comparisons to Blier's (1987) description of the Batammaliba house as a metaphor for the body. And what are the limits of this outward extension of boundedness? If a house, why not a whole village compound? And might one not even think of an entire landscape, say a valley, as a form of second skin, enveloping the person?

One might further consider objects that, whilst not having such cocooning qualities, are nonetheless an integral and intimate part of human being. They might always, or almost always, be in close contact with the surface of the skin. Take a blind person who uses a stick or cane to move around: surely the stick is a part of that person's being, physically and metaphysically (Merleau-Ponty 1962; Gibson 1979; Harré 1991). For a hospital patient connected to a life-support machine, the same question, of where the body begins and ends, holds both a physical and a metaphysical dimension (Knappett 2005, 23). And here we may return to the potter who, instead of just using her hands, also makes close use of a tool to such an extent that it is almost a part of her, as an organism, an agent and a person.

If in such ways we can say that the body extends beyond itself, then the implication is that the same can be said for the mind. The seemingly well-delineated corporeal and spiritual boundaries of body and mind

evaporate, rendering the process of delineating the surface of the body, or the spatial limits of cognition, extremely problematic. In the cases described so far the limits are not extended very far; but is there any reason why they should not extend beyond the immediate confines of the body? Humans may co-opt a wide range of surrounding objects that do not necessarily stay in close contact, objects that are inalienably connected to one particular person yet which may be deliberately spread far and wide from that person. Or there are those objects which are kept very close to hand, such as mobile phones, but which have the capacity to connect the user to widely distributed networks of people and information. Such network technologies confound the idea of an individual mind being limited to certain spatio-temporal boundaries. Perhaps there are no limits to how far the self may be distributed through space and time, across ever-expanding networks. This is surely what Donna Haraway means when she dubs herself a cyborg, portraying herself as a spatio-temporally extended self that intractably comprises both human and non-human components (Haraway 1995; see also Clark 2003). Arguably, when the self moves beyond its protective skins and into widely distributed networks, it leaves itself vulnerable (in the film *Being John Malkovich*, Malkovich is so far distributed that his personhood is at risk). The varying strategies for self-extension that the self employs may have divergent consequences.

This in many ways moves us towards a position rather close to that described by Gell (1998, 222) in expounding upon 'the distributed person':

> A person and a person's mind are not confined to particular spatio-temporal coordinates, but consist of a spread of biographical events and memories of events, and a dispersed category of material objects, traces, and leavings, which can be attributed to a person and which, in aggregate, testify to agency … during a biographical career which may, indeed, prolong itself long after biological death. The person is thus understood as the sum total of the indexes which testify, in life and subsequently, to the biographical existence of this or that individual.

Although they do appear to surround themselves with layers of materiality in a way rather like second skins (cosmetics, clothes, cars, houses), Gell underlines the point that people also find themselves implicated in networks of materiality.

Networking

A network is a topological form composed of nodes and links. It can describe a wide range of phenomena at almost any scale: the interactions between cells within an organ, the interconnections between organs in a body, the links between predator and prey in an ecosystem, the distribution of urban nodes and the roads that interlink them. That the term network is currently so prevalent is in part because it can be applied to such a wide range of processes, with almost any kind of entity potentially conceptualized as a node, and almost any kind of connection as a link. Indeed, the interactions characteristic of a network can be enormously variable. They may transfer matter, energy and, or, information. They can be entirely random (e.g. interactions of smoke particles), entirely ordered (e.g. crystalline structure), or somewhere in between these extremes. Mathematicians have been using graph theory since the mid eighteenth century to model physical networks that are either random or ordered; but networks that fall in between the two have resisted such modelling. It has of course long been suspected that social networks are intermediate between the random and the ordered, exhibiting characteristics of both: the clustering of the ordered network at the same time as the 'long-distance' occurrences of the random (Milgram 1967; Granovetter 1973). It is only in the last five years or so that this has changed, with the ground-breaking work on small-world and scale-free networks (Watts & Strogatz 1998; Watts 1999; 2003; Barabási & Albert 1999; Barabási 2002). This has launched a wave of network studies across a wide range of disciplines from theoretical physics to sociology and from economics to biology. There has been some application also in anthropology (e.g. White & Johanssen 2004) and archaeology (Bentley 2003).

One particularly important feature of many complex networks is that they are self-organizing. The order they exhibit is not imposed in a top-down control hierarchy but emerges from the bottom up, out of the interactions created by simple sets of rules. One of the most elegant examples comes from recent work on ant colonies, which display very high levels of organizational complexity and adaptability at the 'global' level but which are based on very simple 'local' rules of interaction (Gordon 1999).

Societies too, it has been realized, can possess such characteristics, with heterarchical order emergent in many economic, social and political structures, sometimes in co-existence with hierarchical 'command' structures.

To understand social systems as networks composed of nodes and links may seem an oversimplification, particularly when the character of the interactions between humans can be so variable. One needs to take into account a number of factors, not

least the frequency, texture, distance and directionality of an interaction (Knappett forthcoming). Another consideration concerns the nature of what is being exchanged in such interactions: matter, energy and, or, information. But perhaps more pertinent is the observation that the nodes in social networks are also variable: not all of them are human, social agents. It may be more accurate to speak not of social networks but of 'socio-technical' networks that are heterogeneous, composed not only of humans but also of non-humans, artefacts (Latour 1994; 1996; 1999; 2000). Nor is it the case that people have the upper hand in these networks, merely manipulating materials as they see fit: agency is distributed between humans and non-humans such that we have to tackle them symmetrically rather than assume from the outset an unbalanced relationship. We have mentioned some human–non-human networks: the potter handling clay, the blind man with his cane, and human–non-human communication networks which may be much more widely distributed, even globally.

Latour provides us with other cases, such as the Berliner key (Latour 2000) and the man with gun (Latour 1996). In this last example, Latour makes the point that agency lies neither solely in the hands of the human agent nor in the destructive power of the gun but in the amalgam of the two that forms a new human–non-human network, man-with-gun. Agency is thus neither material nor human, but distributed in the relations between them. However, one might ask whether it is necessary to counter dualism through symmetry. Latour's perspective, in treating everything in relational terms, risks paying insufficient attention to the very material affordances of the gun (Lemonnier 1996; see also Geslin 2002). In turning our attention to relationality, to linkages, we must not totally overlook the characteristics of the entities themselves. Latour's symmetrical anthropology may be successful in countering the dualism between people and things, but it risks mistaking symmetry for equivalence. People and things ought not to be automatically hierarchized, but this does not mean that they play equivalent or interchangeable roles in socio-technical networks (Pickering 1995). They have different properties — objects, for example, may have the virtue of immobility, patience and silence — and thus make different contributions to the network (Kaufmann 1997, 41–2; see also Knappett 2005). Hence, through bodily action (entangled in heterogeneous networks), mind and matter imply each other, symmetrically if not equivalently.

Mind extends through the interface of the body into matter; mind also draws matter into the bodily scheme. How does this happen? From our discussion so far it appears that two processes can be identified: layering and networking. To explore these processes further, though, I turn now to the works of artists Marcel Duchamp and Antony Gormley. But why turn to artworks to explore these issues, and why these two artists in particular? There are three principal reasons.

First, many modern and contemporary artworks are material objects placed before us to provoke us into conscious consideration of the 'complex intentionalities' and agency that lie behind them. I suggest that this is what we do with all objects, albeit less consciously — what Costall (1997) has called the 'teleological' attitude towards objects, always asking what something is for rather than what it is. Artworks condense and distill this everyday process, pushing it from our everyday unconscious into the light of day. Thus the approach adopted here follows the spirit of Gell's approach to artworks, treating them within the same methodological framework as everyday objects (Gell 1998). In this sense, we can and should study the processes of layering and networking in everyday objects too; the present focus on artworks results from a need to be concise and explicit.

Secondly, the turn in material culture studies to modern and contemporary art is part of a growing interdisciplinary trend. Thus this article picks up on themes being developed in a growing number of publications, touched off by Gell's pioneering anthropology of art in which the work of Duchamp is considered side by side with Malangan sculptures (Gell 1998), and the groundbreaking work of Colin Renfrew dealing with a spectrum of modern and contemporary artists (Renfrew 2003; Renfrew *et al.* 2004; Gormley & Renfrew 2004). Of the latter, it is perhaps the substantial body of work produced by Antony Gormley that is the most consistently resonant for students of material culture. Thus, while there are many other modern and contemporary artists (e.g. Mark Dion, Cornelia Parker, Mike Nelson, Karsten Bott) that engage with material culture in interesting ways, here I shall focus on Duchamp and Gormley.

Thirdly, this choice of artists is not merely a crowd-pleasing gesture of choosing the biggest names. It is simply that their work best raises the points I wish to develop in this article. Duchamp, and indeed the avant-garde movement in which he was so instrumental, is crucial because he condensed and intensified the teleological attitude towards objects by rejecting the iconic, 'retina art' tradition which had dominated Western art up until that point (Dubois 1987; 1990). He committed himself instead to creating artworks in which meaning derived not from iconicity but from indexicality — traces, leavings (cf. Gell), imprints,

Figure 2. Untitled (for Francis) *(1986) by Antony Gormley (Hutchinson* et al. *2000, 85).*

residues — what Dubois (1987; 1990) has called 'index logic'. Gormley too explores the indexicality of traces and imprints (e.g. Gormley 2004, 148–9), but, in a most interesting development, often in combination with iconicity.[1]

Marcel Duchamp: layering and networking

Marcel Duchamp's oeuvre is highlighted by Gell as particularly rich for study as a network because a large body of his work constitutes a coherent project spread over time. Many of his artworks make very definite connections back to earlier works and forwards to future ones (what Gell calls respectively retentions and protentions). Gell (1998) uses a graph diagram to display this, treating each work as a node, linked causally and temporally to other works. One particular piece, the *Network of Stoppages*, is the subject of extended treatment by Gell. The initial impression of the work itself is indeed of a network: with its lines and nodes it looks rather like a map of a railway network. At a broader level, the overall piece is itself a node within the overall network of Duchamp's oeuvre: on the one hand it retains past elements by recapitulating an earlier piece (*The Three Standard Stoppages)*, and on the other it preempts future ones in being a preparatory study for the *Large Glass*. In Gell's diagram, then, the *Network of Stoppages* is tied to other works through a web of inter-artefactual relations. It may appear as if Duchamp's oeuvre has a dynamic of its own, but the network is in fact a single-mode projection from a two-mode network composed of both the works and the artist (on two-mode networks, see Knappett forthcoming; Wasserman & Faust 1994; de Nooy *et al*. 2005).

Most interestingly, Duchamp further exaggerates this oeuvre-networking by super-imposing artworks in layers or sediments. Duchamp does not use a fresh canvas to create the *Network of Stoppages*, but reclaims a canvas used twice already, once for a preliminary line sketch for the *Large Glass*, and once before that for another work, a version of *Young Man and Girl in Spring*. Traces of these can still be seen upon careful inspection. The *Network of Stoppages* is itself a moment, a stoppage, in Duchamp's movement towards the *Large Glass*, while at the same time incorporating an earlier line sketch that was itself a preparatory study for the *Large Glass*.

This manipulative combination of networking on the one hand and layering on the other (the sedimentation of physically contiguous layers on a single canvas), is a fascinating way of bringing together two forms of self-extension. Indeed, each artwork, Gell suggests, is a place where agency stops and assumes visible form. It is Duchamp's agency that is extending itself into matter to find itself instantiated in each of these artworks. Each artwork, in a sense, *is* Duchamp. Or, rather, in the one-mode representation of a two-mode network, Duchamp the artist constitutes the links between the artwork nodes.

Of course, in this example from Duchamp, the layering does not have the 'cocooning' quality of a second skin; the layers are sedimented on the artwork's surface rather than cocooning a human body. Yet, with Gormley, the sedimentation and layering in his artworks do literally wrap around and cocoon the human body in a second skin.

Antony Gormley: layering and networking

The work of contemporary artist Antony Gormley allows us to develop further these notions concerning the extension of self. Many of his works are extensions of self in an indexical sense, akin to the work of Duchamp in that there are imprints, traces, leavings; but, unlike Duchamp, many combine this 'index logic' with iconic representation. Whereas Duchamp's works

are traces of the artist's agency in a purely indexical sense, Gormley's human figures, formed in bronze or lead around plaster casts of his own body (Hutchinson *et al*. 2000, 30; Renfrew 2003, 120), are both indexical and iconic; the traces left by the artist are at the same time iconic versions of the artist. Levinson (2001, 74) comments that the mould is 'a magical thing', and cites Aristotle's theory that 'place is like a mould around a body, and space is a nested series of places'.

The sense of these figures being not just physical but also metaphysical and psychological imprints is very strong. The artist himself has emphasized that the potency of the figure depends on the 'internal pressure being registered' (Hutchinson *et al.* 2000, 18). And, in order to imprint inner space and mindfulness through the form of the body, Gormley holds a position with the maximum degree of concentration. The resulting ten minutes of synergy between mind, body and material is, I think, akin to another form of synergy alluded to above, that between the clay, the potter's hands and the potter's mindfulness.

There is something of a twist, however, since these iconic figures are not recognizable versions of Gormley as a particular individual: they lack distinguishing facial features etc., and so have more the character of everyman icons (Fig. 2). This lack of specificity, which also lends them a timeless quality (Renfrew 2003, 126), is attributable in part to their techniques of production, whereby the figures are in effect made from the mould of a mould (Levinson 2001, 95). Gormley has produced many different versions of his moulded metal figures, and appears to accentuate the spatio-temporal extension of his oeuvre by placing them across various forms of landscape and cityscape, sometimes isolated, and sometimes in groups (Fig. 3). The combination of layer with network is quite striking — personally I am made to think of a snake leaving its skincasts behind in the landscape as it grows and moves on (and those casts being an index of growth, a stoppage of a continuous process). These material stoppages are akin to the 'traces' and 'leavings' of distributed personhood as discussed by Gell. They may qualify as both enchained fragments and accumulated sets (Chapman 2000).

Figure 3. Land, Sea and Air II *(1982) by Antony Gormley (Hutchinson* et al. *2000, 14).*

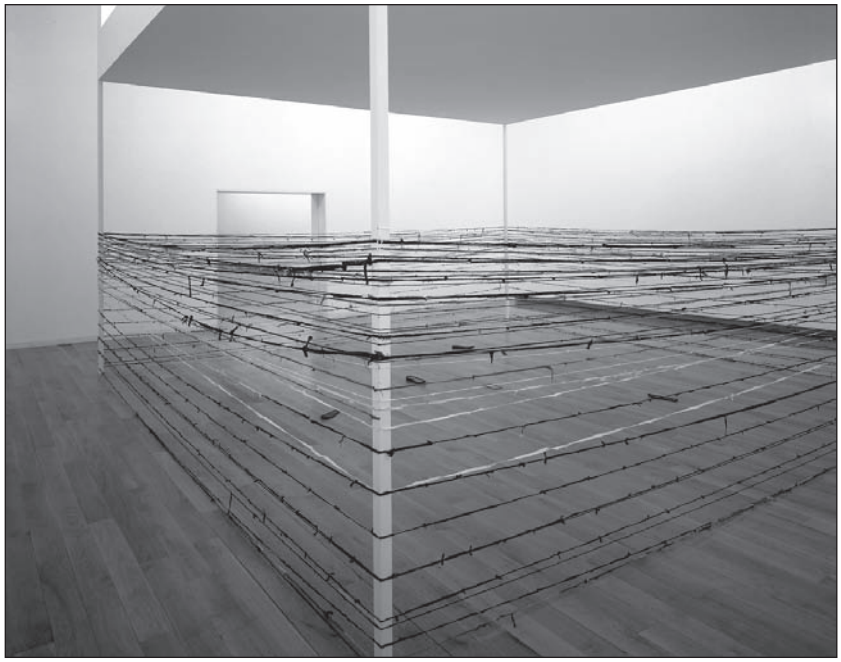

Figure 4. Room *(1980) by Antony Gormley (Hutchinson* et al. *2000, 72).*

Skin is important in Gormley's work (taking us back to the idea of second skins, raised earlier in this article). He has described skin as a container of 'personal space'. And it seems that in some of his work his

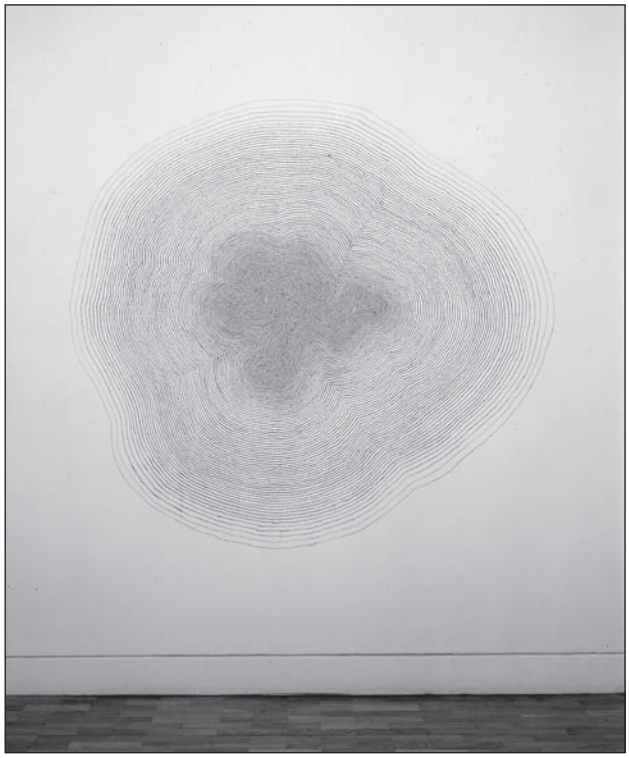

Figure 5. Exercise Between Blood and Earth *(1979–1981) by Antony Gormley (Hutchinson* et al. *2000, 72).*

understanding of skin as container or boundary moves beyond the organismal epidermis. For example, *Room* (Fig. 4) consists of a continuous strip of cut-up clothing enclosing a twenty-foot square: clothing as a second skin is normally directly contiguous with the body but here he uses clothing figuratively to show how the boundaries of personal space need not be defined in terms of the immediately contiguous. This idea finds further expression in *Exercise Between Blood and Earth* (Fig. 5), a work that shows multiple concentric lines radiating from a barely distinguishable central, human figure. It conveys the idea of a force-field emanating from the person in multiple layers, creating a kind of fuzzy personal space.

Indeed Gormley's idea of personal space goes beyond skin to take into account other means by which the reach of personal space may be extended. *Rearranged Desert* (Fig. 6) apparently addresses the question of how far inner self may reach out and claim external spaces. In the work, which is enacted in Death Valley, there are three photographs forming a sequence of before, during and after. 'Before' we see 'a centrally placed cairn made of stone cleared from a circular area, the radius being the distance of a hand-sized stone flung as far as possible'. 'During' we see the artist throwing the stones as far as possible in all directions from the central cairn. 'After' we see the redistributed, 'rearranged' stones lying in the desert. The stones are 'leavings', traces of human action, and as such can be seen to fall within the Duchampian tradition of indexical rather than iconic art (Hutchinson *et al.* 2000, 78). Of course, these leavings and traces are not imprints, unlike Gormley's moulded metal figures. Gell uses the terms 'traces' and 'leavings' to describe the material signs of distributed personhood — which is exactly what Gormley appears to be conveying here, his distributed personhood.

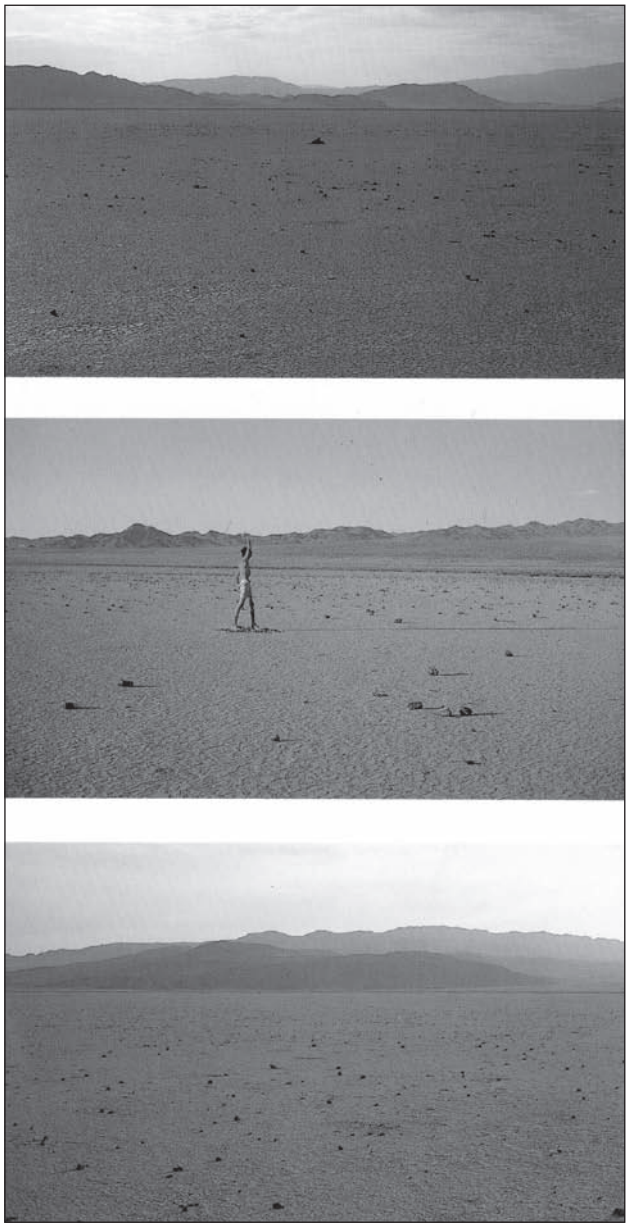

Figure 6. Rearranged Desert *(1979) by Antony Gormley (Hutchinson* et al. *2000, 78).*

Another more recent series of works exploring this idea of force-fields of human influence beyond the skin is *Quantum Cloud VII* (Fig. 7). As with *Rearranged Desert*, this series does not entail imprinting; but nor, on the other hand, is it indexical. Gormley's other iconic sculptures are in fact icon-index composites. So is the *Quantum Cloud* series iconic? Yes, in that the figures do take the overall shape of the human body. There is, moreover, something diagrammatic about them. The diagram is defined by Peirce (1932) as a form of iconic sign. They are diagrammatic in revealing the inner reticularity of the human form. One can trace back to Hippocrates and Galen the idea of the body as a network, the flow of blood through a reticular system of channels (veins and arteries) and nodes (organs). Gormley brings, in abstract form, this internal network into the open. As in all networks, the sculpture's pattern somehow combines rigidity and fluidity: despite the rigid angularity of the metal bars, the overall pattern created seems soft and fluid, particularly in its formation of a kind of fuzzy, undefinable outline rather than the flat definitive boundary of skin. Of course, although skin may give the impression of being a solid boundary, it is a dynamic interface. Whereas Gormley depicted the skin as an impermeable boundary in his earlier moulded metal figures, in *Quantum Cloud* there simply is no skin; it has evaporated to leave the body with a fuzzy edge, both physically and metaphysically. As an exploration of the boundaries of personal space and personhood it reaches beyond skin, as did *Rearranged Desert*, *Room*, and *Exercise Between Blood and Earth.* These four works succeed in conveying in various physical ways the sense of a metaphysical bodily aura or force-field. As W.J.T. Mitchell comments on *Quantum Cloud* (Hutchinson *et al.* 2000, 189):

> Once again the body is a place, but this time one whose boundaries are indeterminate, exploding or imploding, expanding or contracting.

One is reminded of Schilder's ideas on the mutability of bodily image (see also Benthien 2002), and of Le Breton's assertion that in some societies the body does not form a boundary but is open to flow and exchange with the environment (see also Sofaer 2006). A contrast certainly emerges between these four works of Gormley and the numerous metal figures he has produced. The latter mould and encapsulate inner space within an impermeable membrane (one metal he uses is lead, a particularly impermeable medium) but can nonetheless represent the distributed self in a far-flung way when spread across the landscape like the skin-casts from snakes.

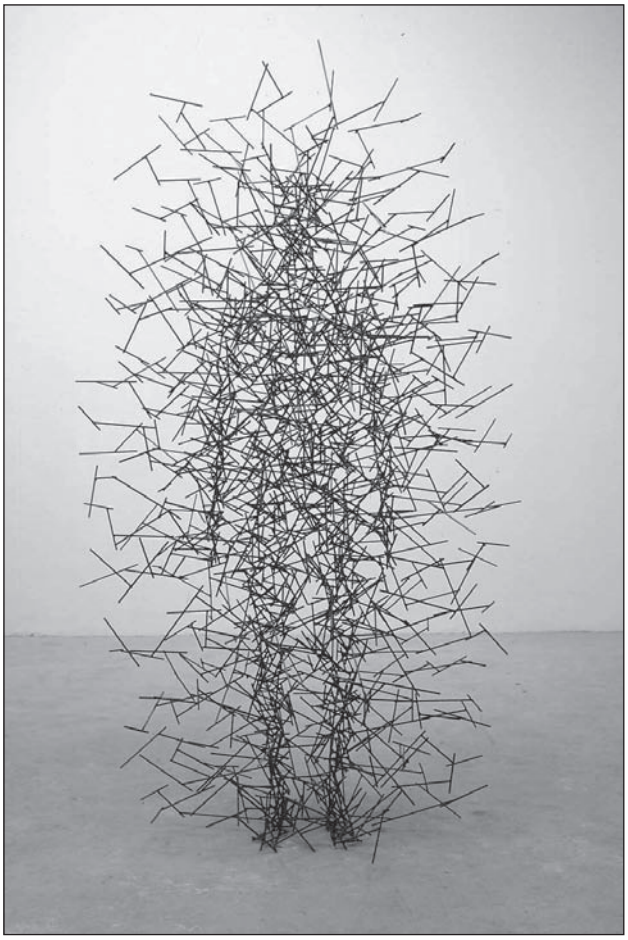

Figure 7. Quantum Cloud VII *(1999) by Antony Gormley (Hutchinson* et al. *2000, 187).*

Discussion

Three key points for discussion emerge from the above focus on the works of both Duchamp and Gormley. These concern the relationship between layering and networking (and indeed accumulation and enchainment); the semiotic differences that emerge between layering on the one hand and accumulation on the other; and the degree to which the spatial aspects of these processes have been adequately considered.

First, layering and networking, while distinct processes, may be complementary rather than mutually exclusive. Earlier in the article, a comparison was made between layering and networking and the concepts of accumulation and enchainment, respectively, even though Chapman's formulation focuses on social practices rather than semiotic processes. Chapman (2000, 222) describes a tension between accumulation and fragmentation, and states that this tension provides a critical dynamic in cultural and social change.

This suggests that the two practices are in opposition, whereas, in this article, there are some preliminary indications that they may be complementary. Just as layering and networking may work in tandem, often creating richer semiotic webs in the process, might not accumulation and fragmentation co-occur, creating more entangled socio-technical communities? Some support for the complementarity of accumulation and fragmentation presents itself in the work of Gamble (2004a,b). He suggests that 'the practices of enchainment and accumulation reach down deep into our hominid ancestry' (Gamble 2004a, 23), albeit with the balance between the two changing over space and time. This reiterates Chapman's statement (2000, 222) that 'fragmentation and accumulation have been fundamental to human behaviour ever since food sharing and lithic production'. However, Chapman at the same time suggests that the social practice of accumulation really came into its own with the innovation of metallurgy (Chapman 2000, 43ff.), an idea with which Gamble takes issue (Gamble 2004a, 22–4).

Secondly, a further difference emerges between the concepts employed in this article and those used by Chapman: layering and accumulation are not coterminous. While both processes do operate at particular points in physical space, they are nevertheless distinct semiotically. As illustrated in the examples from Duchamp and Gormley, layering involves working upon surfaces, creating sediments that accrue over time, admittedly at different temporal scales. In semiotic terms, the key sign relationship between different layers is contiguity (Knappett 2005, 92–102). Turning to accumulation, the sets of artefacts accumulated in a given locale (e.g. a tomb or hoard) may be spatially contiguous but, as Chapman clearly points out, they are in a part-to-whole relationship to that which they represent. A set of artefacts might represent a particular social role, in the way that a crown and sceptre might represent royalty. This kind of part-to-whole relationship can be described as 'factorality' or, in the terms of rhetoric, as 'synecdoche' (Knappett 2005, 94ff.). While both contiguity and factorality could be said to fall under the umbrella of indexical signs, there are nonetheless notable differences between them in how meaning is created, and indeed these differences are borne out in layering and accumulation respectively. Neither term does justice to the range of social and semiotic dynamics impinging upon material culture. Layering does not take sufficient account of artefactual sets, while accumulation fails to include a number of processes that the concept of layering does describe. Layering as a process in material culture can occur in a number of different ways. Artefacts may be repaired, adapted or simply curated, and their life histories may become sedimented and layered in a more or less conspicuous fashion (Lillios 1999). This may be as true of houses and installations as of portable items: a blocked doorway or window, or perhaps newly plastered interior walls or floors that may receive multiple, sedimented layers (Boivin 2000). Chapman's concepts of accumulation and enchainment do not adequately cover such kinds of material culture meaning.

Thirdly, the spatial component of these social and semiotic processes has not received sufficient consideration, notwithstanding the attempt earlier in this article to introduce some aspects of network topology. With the discussion of Gormley's work, it was seen that some layering can be immediately contiguous, as in *Untitled (for Francis)* (Fig. 2), while in other cases it can be more extended, as in *Rearranged Desert* (Fig. 6). At what point does contiguity stop showing its effects? Similarly, when one considers 'sets' as defined by Chapman, created through the social practice of accumulation, the degree to which this practice can extend spatially is not given much consideration. The very notion of accumulation would seem to imply that 'distributed sets' cannot exist. By the same token, 'accumulated nets' also cannot exist as nets are by their nature spatio-temporally distributed. As currently conceived, accumulation and enchainment are social practices that create different kinds of assemblages, sets and nets respectively. The former works to concentrate artefact assemblages in space-time, the latter works to distribute them. But is the only difference one of scale? If sets and nets are otherwise alike in structural terms, for example in their reliance on part-to-whole relationships, then could an accumulated set in some circumstances be a distributed set writ small? Or, *vice versa*, might a net be a set writ large?

Some of these uncertainties concerning the relationships between sets and nets, and their spatio-temporal dynamics, are symptomatic of the general reticence in archaeology to adopt explicitly relational approaches that highlight the links between entities. A stronger focus on inter-artefactual relations would allow for a clearer grasp of the nature of assemblages (Gosden 2005). Further work using the concept of the network, as introduced above, might help clarify the processes by which assemblages are constituted in physical and relational space (Knappett forthcoming).

Conclusions

It has been argued here that the mind interfaces with matter through the body. For this to happen, it is evident

that the body's edges constitute a permeable interface, a process, rather than a hard boundary (Sofaer 2006). This holds true for the biological and the psychological as much as the social. Mind, body and matter form a codependency, and this occurs through different processes of self-extension: of layers and second skins on the one hand, and distributed networks on the other, both of which involve a cognitive and bodily 'delegation of responsibility' (Graves-Brown 2000, 163). Although these points could potentially be illustrated through various material cultures, the decision was made here to use the work of two artists. Through their works, it has been possible to demonstrate not only that layers and networks create different kinds of potentiality for material meaning but also that they may well intersect in the generation of meaning. In that these modes oblige us to focus on the links that emerge between human and non-human entities in socio-semiotic networks, a much neglected area, they represent very worthwhile avenues for future research.

The use of examples from modern and contemporary art to explore the nature of the interface between objects and subjects, and the ways in which objects are incorporated, or indeed excluded, from the space of the physical and metaphysical self, serves another purpose too. It underlines that such questions are not just of relevance to the study of archaeological artefacts, but also to all objects of material culture, be they everyday objects or art objects, past or present. Although the growing field of material culture studies is already avowedly interdisciplinary in scope, there are still many more boundaries asking to be broken.

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Note

1. In semiotics, iconicity and indexicality are two kinds of meaning. The terms derive from the work of Charles Peirce, in which three basic types of sign are distinguished: icon, index and symbol (Peirce 1955). An icon is a sign that stands for its referent through a relationship of similarity, as with portraits for example. An index is a sign that stands for its referent through a relationship of contiguity and/or causality, some examples being a pointing finger, a weathercock, or a footprint. As for the third category, that of the symbol, the relationship between sign and referent is established through formal convention and may be arbitrary as far as physical characteristics are concerned; the canonical example is that of linguistic signs. For further discussion of these sign types, and of the possibilities for icon-index composites in particular, see also Knappett 2002, and Knappett 2005.

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