
discussion article

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Materials against materiality *Tim Ingold*

Abstract

This article seeks to reverse the emphasis, in current studies of material culture, on the materiality of objects as against the properties of materials. Drawing on James Gibson's tripartite division of the inhabited environment into medium, substances and surfaces, it is argued that the forms of things are not imposed from without upon an inert substrate of matter, but are continually generated and dissolved within the fluxes of materials across the interface between substances and the medium that surrounds them. Thus things are active not because they are imbued with agency but because of ways in which they are caught up in these currents of the lifeworld. The properties of materials, then, are not fixed attributes of matter but are processual and relational. To describe these properties means telling their stories.

Keywords

materials; landscape; artefacts; perception; agency; flux

Before you begin to read this article, please go outside and find a largish stone, though not so big that it cannot be easily lifted and carried indoors. Bring it in, and immerse it in a pail of water or under a running tap. Then place it before you on your desk – perhaps on a tray or plate so as not to spoil your desktop. Take a good look at it. If you like, you can look at it again from time to time as you read the article. At the end, I shall refer to what you may have observed.

I

I begin with a puzzle. It is that the ever-growing literature in anthropology and archaeology that deals explicitly with the subjects of *materiality* and *material culture* seems to have hardly anything to say about *materials*.¹ I mean by materials the stuff that things are made of, and a rough inventory might begin with something like the following, taken from the list of contents from Henry Hodges's excellent little book *Artefacts*:

pottery; glazes; glass and enamels; copper and copper alloys; iron and steel; gold, silver, lead and mercury; stone; wood; fibres and threads; textiles and baskets; hides and leather; antler, bone, horn and ivory; dyes, pigments and paints; adhesives; some other materials (Hodges 1964, 9).

This matter-of-fact volume is packed with information about all sorts of materials that prehistoric people have used to make things. Yet I have



Figure 1

never seen it referenced in the literature on materiality. Looking along my shelves I find titles like *The mental and the material*, by Maurice Godelier (1986); *Material cultures. Why some things matter*, edited by Daniel Miller (1998a); *Mind, materiality and history*, by Christina Toren (1999); and *Matter, materiality and modern culture*, edited by Paul Graves-Brown (2000). In style and approach, these books are a million miles from Hodges's work. Their engagements are not with the tangible stuff of craftsmen and manufacturers but with the abstract ruminations of philosophers and theorists. To understand materiality, it seems, we need to get as far away from materials as possible.

For me, the problem came to a head when, in November 2002, I attended a session at the annual meetings of the American Anthropological Association which were held in that year in the city of New Orleans. The session was entitled 'Materiality', and included presentations on such topics as 'Immateriality', 'For a materialist semiotics', 'Materiality and cognition', and 'Praxeology in a material world'. These presentations were overflowing with references to the works of currently fashionable social and cultural theorists, and expounded in a language of grotesque impenetrability on the relations between materiality and a host of other, similarly unfathomable qualities, including agency, intentionality, functionality, sociality, spatiality, semiosis, spirituality and embodiment. Not one of the presenters, however, was able to say what materiality actually means, nor did any of them even mention materials or their properties. For the most part, I have to confess, I could make neither head nor tail of what they were talking about. As anthropologists, I

thought to myself, might we not learn more about the material composition of the inhabited world by engaging quite directly with the stuff we want to understand: by sawing logs, building a wall, knapping a stone or rowing a boat? Could not such engagement – working practically *with* materials – offer a more powerful procedure of discovery than an approach bent on the abstract analysis of things already made? What academic perversion leads us to speak not of *materials and their properties* but of *the materiality of objects*? It seemed to me that the concept of materiality, whatever it might mean, has become a real obstacle to sensible enquiry into materials, their transformations and affordances.

Why should this be so? One clue to the answer lies in the title of a conference held at the McDonald Institute for Archaeological Research, Cambridge, in March 2003: ‘Rethinking materiality. The engagement of mind with the material world’. The pretext for this conference came, in large part, from a reaction against the excessive polarization of mind and matter that has led generations of theorists to suppose that the material substance of the world presents itself to humanity as a blank slate, a *tabula rasa*, for the inscription of ideational forms. For example, in *The mental and the material*, Godelier argues that there can be no deliberate action of human beings upon the material world that does not set to work ‘mental realities, representations, judgements, principles of thought’ (1986, 11). Where, then, do these mental realities come from? Do they have their source, as Godelier intimates, in a world of society that is ontologically distinct from ‘the material realities of external nature’ (*ibid.*, 3)? At the Cambridge conference Colin Renfrew argued, to the contrary, that the kinds of representation and judgement to which Godelier refers are not so much imported into arenas of practical activity as emergent within them, arising from the very ways in which human beings are interactively involved with material substance (Renfrew 2001, 127). Yet in his formulation of what he now calls ‘material engagement theory’, the polarity of mind and matter remains. For the engagement of which he speaks does not bring the flesh and blood of human bodies into corporeal contact with materials of other kinds, whether organic or inorganic. Rather, it brings incorporeal minds into contact with a material world.

What, then, is this material world? Of what does it consist? For heuristic purposes, Christopher Gosden suggests, we could divide it into two broad components: *landscape* and *artefacts* (1999, 152). Thus it seems that we have human minds on the one hand, and a material world of landscape and artefacts on the other. That, you might think, should cover just about everything. But does it? Consider, for a moment, what is left out. Starting with landscape, does this include the sky? Where do we put the sun, the moon and the stars? We can reach for the stars, but cannot touch them; are they, then, material realities with which humans can make contact, or do they exist for us only in the mind? Is the moon part of the material world for terrestrial travellers, or only for cosmonauts who touch down on the lunar landscape? How about sunlight? Life depends on it. But if sunlight were a constituent of the material world, then we would have to admit not only that the diurnal landscape differs materially from the nocturnal one, but also that

the shadow of a landscape feature, such as a rock or tree, is as much a part of the material world as the feature itself. For creatures that live in the shade, it does indeed make a difference. What, then, of the air? When you breathe, or feel the wind on your face, are you engaging with the material world? When the fog descends, and everything around you looks dim and mysterious, has the material world changed, or are you just seeing the same world differently? Does rain belong to the material world, or only the puddles that it leaves in ditches and potholes? Does falling snow join the material world only once it settles on the ground? As engineers and builders know all too well, rain and frost can break up roads and buildings. How then can we claim that roads and buildings are part of the material world, if rain and frost are not? And where would we place fire and smoke, not to mention liquids of all kinds from ink to volcanic lava?

None of these things fall within the scope of Gosden's second component of materiality, namely artefacts. Moreover, the category of the artificial raises its own anomalies. In an experiment I asked a group of undergraduate students to sort a motley collection of objects that they had found lying around outside into two piles, one of natural objects, the other of artefacts. It turned out that not a single thing could be unequivocally attributed to one pile or the other. If they seemed to vary on a scale of artificiality, it was only because for some more than others, and at different times in their histories, human beings had played a part in the processes that led to their being where they were, and taking the forms they did, at the moment when they were picked up. In this sense the bifacial stone hand-axe recently made for me by a professional flint-knapper is perhaps more artificial than the stone recovered from your garden that you have before you on your desk. But that does not make the former any more a part of the material world than the latter. More generally, why should the material world include only *either* things encountered *in situ*, within the landscape, *or* things already transformed by human activity, into artefacts? Why exclude things like the stone, which have been recovered and removed but not otherwise transformed? And where, in this division between landscape and artefacts, would we place all the diverse forms of animal, plant, fungal and bacterial life? Like artefacts, these things might be attributed formal properties of design, yet they have not been made but have grown. If, moreover, they are part of the material world, then the same must be true of my own body. So where does this fit in? If I and my body are one and the same, and if my body indeed partakes of the material world, then how can the body-that-I-am engage with that world?

II

An alternative way forward is offered by James Gibson, in his pioneering work on *The ecological approach to visual perception*. Here he distinguishes three components of the inhabited environment: *medium*, *substances* and *surfaces* (Gibson 1979, 16). For human beings the medium is normally air. Of course we need air to breathe. But also, offering little resistance, it allows us to move about – to do things, make things and touch things. It also transmits radiant energy and mechanical vibration, so that we can see and hear. And it allows us to smell, since the molecules that excite our olfactory receptors are diffused in

it. Thus the medium, according to Gibson, affords movement and perception. Substances, on the other hand, are relatively resistant to both. They include all kinds of more or less solid stuff like rock, gravel, sand, soil, mud, wood, concrete and so on. Such materials furnish necessary physical foundations for life – we need them to stand on – but it is not generally possible to see or move through them. At the interface between the medium and substances are surfaces. All surfaces, according to Gibson, have certain properties. These include a particular, relatively persistent layout, a degree of resistance to deformation and disintegration, a distinctive shape and a characteristically non-homogeneous texture. Surfaces are where radiant energy is reflected or absorbed, where vibrations are passed to the medium, where vaporization or diffusion into the medium occur, and what our bodies come up against in touch. So far as perception is concerned, surfaces are therefore ‘where most of the action is’ (Gibson 1979, 23).

It is all too easy, however, to slip from the *physical* separation of gaseous medium from solid substance to the *metaphysical* separation of mind from matter. Thus the artefact is characteristically defined – as it is by Godelier – as an object formed through the imposition of *mental* realities upon *material* ones (1986, 4). The artisan, it is argued, begins work with an image or design already in mind of the thing he plans to make, and ends when the image is realized in the material. For example, in the making of the stone biface mentioned above, the knapper must have begun – as Jacques Pelegrin says of his prehistoric counterpart – with a ‘pre-existing mental image . . . deserving of being termed a “concept”’ (1993, 310). Or, as Karl Marx famously declared of the human architect, the most incompetent of his profession is to be distinguished from the best of bees in that ‘the architect has built a cell in his head before he constructs it in wax’ (1930, 169–70). Here the surface of the artefact or building is not just of the particular material from which it is made, but of materiality itself as it confronts the creative human imagination (Ingold 2000, 53). Indeed, the very notion of material culture, which has gained a new momentum following its long hibernation in the basements of museology, rests on the premise that as the embodiments of mental representations, or as stable elements in systems of signification, things have already solidified or precipitated out from the generative fluxes of the medium that gave birth to them. Convinced that all that is material resides in things, or in what Bjørnar Olsen (2003) calls ‘the hard physicality of the world’, students of material culture have contrived to dematerialize, or to sublimate into thought, the very medium in which the things in question once took shape and are now immersed. Ironically, Olsen does just this when he accuses social scientists who take leave of the material world for the realms of cognitive experience of being guided by a hermeneutics in which ‘all that is solid melts into air’ (Olsen 2003, 88).

Another example of this kind of slippage, from materials to materiality, can be found in an article by the sociologist Kevin Hetherington, on the role of touch in everyday practices of placemaking. In the course of his argument,² Hetherington suggests that Gibson’s theory of perception offers only ‘a weak acknowledgement of the materiality of the world’. For whatever its virtues, the theory has so far failed to address ‘what an encounter between the fingertip

and the materiality of the world might have to tell us of a scopic we call place' (Hetherington 2003, 1938–39). Perhaps you might like to try touching the stone on your desk. To be sure, your finger has come up against a hard material – stone. It is cold to the touch, and perhaps still damp. But has touching this particular stone put you in touch with the materiality of the world? Is there nothing material that is not locked up in solid, tangible objects like stones? Are we really to believe that whatever lies on the hither side of such objects is immaterial, including the very air that affords the freedom of movement enabling you to reach out and touch them, not to mention the finger itself – and, by extension, the rest of the body, since fingers are not operated from the mind by remote control? Is the air you breathe an ether of the mind, and your finger but a phantom of the imagination? Gibson's whole point, of course, was that the surface separates one kind of material (such as stone) from another (such as air), rather than materiality from immateriality. It is precisely because of this emphasis on materials that Gibson downplays any notion of the materiality of the world.

Imagine you were a burrowing animal like a mole. Your world would consist of corridors and chambers rather than artefacts and monuments. It would be a world of *enclosures* whose surfaces surround the medium instead of *detached objects* whose surfaces are surrounded by it (Gibson 1979, 34). I wonder whether, if moles were endowed with imaginations as creative as those of humans, they could have a material culture. Anthropologically trained moles, of a philosophical bent, would doubtless insist that the materiality of the world is not culturally *constructed* but culturally *excavated* – not, of course, in the archaeological sense of recovering erstwhile detached, solid objects that have since become buried in the substance of the earth, but in the sense that the forms of things are hollowed out from within rather than impressed from without. In their eyes (if they could see), all that is material would reside beyond the things of culture, on the far side of their inward-facing surfaces. Thus these things could be phenomenally present in mole culture only as material absence – not as concrete objects but as externally bounded volumes of empty space. The very idea of material culture would then be a contradiction in terms.

This example is not entirely fanciful, for in many parts of the world – including Mediterranean Europe, North and Central America, the Near and Middle East, China and Australia – humans have set up house in caves or other underground dwellings, often carving elaborate systems of interconnected rooms and passageways from the bare rock. Even today, an estimated five million cave dwellings are still in use, the vast majority of them in China (Mulligan 1997, 238–40). The mundane activity of their inhabitants, however, plays havoc with our established categories of thought. We say houses are built, but can you 'build' a cave? Whether constructing or excavating, much hard physical work may be involved. But whereas the house-builder erects an edifice, a monument to his labour, by the time the cave is finished all that seems to have been created is an unfurnished volume. In fact a great many cave dwellings incorporate constructed elements, such as a roofed frontage that may be built out from the rock face where the latter rises from level ground. The result is a well-integrated structure, not a peculiar

hybrid. There must be something wrong with a way of thinking that forces us to treat only one half of the house positively as a material object, and the other half negatively as a hole in the ground. We need an alternative approach.

The source of the problem lies, once again, in the slippage from materials to materiality. It is this that leads us to suppose that human beings, as they go in and out of doors, live alternately on the inside and on the outside of a material world. It is as though this world were a Swiss cheese, full of holes yet nevertheless contained within the envelope of its outward surfaces. In the real world of materials, however, there are neither interior holes nor exterior surfaces. Of course there are surfaces of all sorts, of varying degrees of stability and permeability. But these surfaces, as Gibson showed, are interfaces between one kind of material and another – for example between rock and air – not between what is material and what is not. I can touch the rock, whether of a cave wall or of the ground underfoot, and can thereby gain a feel for what rock is like as a *material*. But I cannot touch the *materiality* of the rock. The surface of materiality, in short, is an illusion. We cannot touch it because it is not there. Like all other creatures, human beings do not exist on the ‘other side’ of materiality but swim in an ocean of materials. Once we acknowledge our immersion, what this ocean reveals to us is not the bland homogeneity of different shades of matter but a flux in which materials of the most diverse kinds – through processes of admixture and distillation, of coagulation and dispersal, and of evaporation and precipitation – undergo continual generation and transformation. The forms of things, far from having been imposed from without upon an inert substrate, arise and are borne along – as indeed we are too – within this current of materials. As with the Earth itself, the surface of every solid is but a crust, the more or less ephemeral congregate of a generative movement.

III

As they swim in this ocean of materials, human beings do of course play a part in their transformations. So, too, do creatures of every other kind. Very often, humans take over from where non-humans have left off, as when they extract the wax secreted by bees to make the cell walls of the honeycomb for further use in the manufacture of candles, as an ingredient of paint (alongside linseed oil, egg yolk and a host of other concoctions), as a means of waterproofing and as a hardener in leatherwork. Another example is the production of silk, which begins with the consumption of mulberry leaves by the grubs of the moth *Bombyx mori*. Liquid secretions exuded from the grub’s glands harden on contact with air to form filaments from which it winds its cocoon. To make silk, the filaments from several cocoons are unwound and reeled together, resulting in fibres of extraordinary strength. Then there is shellac, an essential ingredient of French polish. This material comes from the secretions of the lac insect (*Coccus lacca*), native to India. These secretions form a protective coating that covers entire twigs of the trees on which the insect larvae have settled. The twigs are collected, and the lac removed and purified by boiling in water. The lac itself, which is insoluble, is then concentrated by evaporation, and stretched into sheets which set hard when they cool (Hodges 1964, 125, 162–64).

Although insects are among the most prolific producers in the animal kingdom of materials subsequently taken up for human use, a full inventory of such materials would be virtually inexhaustible. As a small sample, just consider this list (paraphrased from Bunn 1997, 195–97) of materials traditionally used by nomadic pastoral people in making tents:

Skins: these usually have to be softened by being scraped and beaten – a long and arduous task. Then they have to be cured by soaking in substances such as sour milk, camel dung or bark fermented in urine.

Wool: in Central Asia wool is made into felt by pulling a long, waterlogged roll of five or more fleeces backwards and forwards for many hours.

Hair: North African pastoralists make ‘black tents’ from goat hair which is spun on a drop spindle and woven on a ground-loom. Hair is also used to fill mattresses and to make rope, and is suitable for warp threads in weaving rugs and blankets. In addition, it is used for making paint brushes.

Bone: used for tent frames, pegs and toggles, as well as for the needles used in sewing skins.

Horns, hooves and claws: split into thin layers these can be used to make window panes.

Sinews: used for sewing skins (with bone needles), or as warp-threads.

Feathers: used for strengthening warp threads and for bedding (along with lambswool and camel hair).

Dung: mixed with clay to form plaster (also acts as an effective insect-repellent).

Fish: the bones, skin and offal may be boiled to produce glue. Adhesives can also be made from dried blood, animal skins, bones and horns, muzzles and sinews, and cheese and quicklime.

Eggs and dairy produce: in painting, milk is used as an emulsifier while egg yolk is mixed with pigments to form a medium for distemper.

Plants, too, provide an endless source of materials for further processing and transformation. One has only to enumerate, for example, all the different materials that can be derived from trees, including wood, bark, sap, gum, ash, paper, charcoal, tar, resin and turpentine. Other flowering plants and grasses give us cotton, flax, jute and papyrus. Nettles still grow widely in Britain because the fibres of their stalks were used in the Middle Ages for bowstrings.

Many materials in common use are derived from the unlikely combination of ingredients from an astonishing variety of different sources. Here are two examples from medieval and early modern Europe. The first is of the material used for stucco work in 16th-century England. The basic ingredient of lime was mixed with the following materials of mostly animal origin: ‘hog’s lard, bullock’s blood, cow dung, wort and eggs, wort and beer, milk, gluten, buttermilk, cheese, curdled milk [and] saponified beeswax’ (Davey, cited in Bunn 1997, 196). The second example is of ink, an essential material for the medieval scribe. Two kinds of ink were used. One was made of lamp-black mixed with gum. For the other, which came into general use from the 12th century, the principal ingredient was the oak apple. This is the round, marble-sized tumour that often grows on the leaves and twigs of oak trees. It is formed around the larva of the gall wasp that has laid its egg in the tree bud.

The oak galls are collected, crushed and either boiled or infused in rainwater (or white-wine vinegar). The other main ingredient is copperas, manufactured by the evaporation of water from ferrous earth, or by pouring sulphuric acid over old nails, filtering the liquid and mixing it with alcohol. The copperas is added to the oak-gall potion and thoroughly stirred with a stick from a fig tree. This has the effect of turning the solution from pale brown to black. Finally, gum arabic – made from the dried-up sap of the acacia tree – is added in order to thicken the concoction (de Hamel 1992, 32–33). The scribe now has his ink, but of course to write he still needs a pen, made from the feather of a goose, crow or raven, and parchment prepared by a lengthy procedure from the skins of calves or goats (*ibid.*, 8–16, 27–29).

IV

Now, so long as our focus is on the materiality of objects – that is, on what makes things ‘thingly’³ – it is quite impossible to follow the multiple trails of growth and transformation that converge, for instance, in the stuccoed façade of a building or the page of a manuscript. These trails are merely swept under the carpet of a generalized substrate upon which the forms of all things are said to be imposed or inscribed. In urging that we take a step back, from the materiality of objects to the properties of materials, I propose that we lift the carpet, to reveal beneath its surface a tangled web of meandrine complexity, in which – among a myriad other things – oaken wasp galls get caught up with old iron, acacia sap, goose feathers and calf-skins, and the residue from heated limestone mixes with emissions from pigs, cattle, hens and bees. For materials such as these do not present themselves as tokens of some common essence – materiality – that endows every worldly object with its inherent ‘thingliness’; rather, they partake in the very processes of the world’s ongoing generation and regeneration, of which things such as manuscripts or house fronts are impermanent by-products. Thus, to cull one further example at random, boiling fish bones yields an adhesive material, a glue, not a fishy kind of materiality in the things glued together.

In this regard it is significant that studies of so-called material culture have focused overwhelmingly on processes of consumption rather than production (Miller 1995; 1998b, 11; though see Olsen 2003, 91–94 for a critical comment). For such studies take as their starting point a world of objects that has, as it were, already crystallized out from the fluxes of materials and their transformations. At this point materials appear to vanish, swallowed up by the very objects to which they have given birth. That is why we commonly describe materials as ‘raw’ but never ‘cooked’ – for by the time they have congealed into objects they have already disappeared. Thenceforth it is the objects themselves that capture our attention, no longer the materials of which they are made. It is as though our material involvement begins only when the stucco has already hardened on the house front or the ink already dried on the page. We see the building and not the plaster of its walls, the words and not the ink with which they were written. In reality, of course, the materials are still there and continue to mingle and react as they have always done, forever threatening the things they comprise with dissolution or even ‘dematerialization’. Plaster can crumble and ink can fade. Experienced



Figure 2 Ladder (wood, four metres high, Lake Biwa, Japan) by David Nash. Photo courtesy of the artist.

as degradation, corrosion or wear and tear, however, these changes – which objects undergo after they are ‘finished’ – are typically attributed to the phase of use rather than of manufacture. As the underbelly of things, materials may lie low but are never entirely subdued. Despite the best efforts of curators and conservationists, no object lasts forever. Materials always and inevitably win out over materiality in the long term.

This is a theme that has been taken up in the work of the sculptor David Nash. He makes things like boxes, ladders and chairs, but out of unseasoned timber, allowing the wood to live on beyond the life of the tree of which it was once a growing trunk or limb, without ever losing touch with its arboreal roots. Observing one of Nash's ladders, for example, the wood appears to body forth from the thing made from it, rather than retreating back-stage as is the case with its factory-made equivalent in the showroom. We see wood that has been made into a ladder rather than a ladder that has been made out of wood. Moreover, with the passage of time the wood – as it seasons – splits, warps and cracks, eventually settling into a shape quite different from that given to it by the sculptor's initial intervention. 'I keep my mind on the process', says Nash (cited in Warner 1996, 15), 'and let the piece take care of itself'. For beneath the skin of the form the substance remains alive, reconfiguring the surface as it matures. But in treating the wood as life-giving material rather than dead matter, Nash is only drawing our attention to what our predecessors already knew when they first coined the term 'material' by extension from the Latin *mater*, meaning 'mother'. As Nicholas Allen reminds us, the term 'has a complex history involving feminine-gender Latin and Greek words for wood . . . which is or has been alive' (Allen 1998, 177). Far from being the inanimate stuff typically envisioned by modern thought, materials in this original sense are the active constituents of a world-in-formation. Wherever life is going on, they are relentlessly on the move – flowing, scraping, mixing and mutating. The existence of all living organisms is caught up in this ceaseless respiratory and metabolic interchange between their bodily substances and the fluxes of the medium. Without it they could not survive. This of course applies to us human beings as much as to organisms of other kinds. Along with all terrestrial vertebrates, we need to be able to breathe.

In the world of solid objects envisaged by material-culture theorists, however, the flux of materials is stifled and stilled. In such a world, wherein all that is material is locked up in things, it would be impossible to breathe. Indeed neither life itself, nor any form of consciousness that depends on it, could persist. Suffocated by the dead hand of materiality, this world can only be brought back to life in the dreams of theorists by conjuring a magical mind-dust that, sprinkled among its constituents, is supposed to set them physically in motion. It has come to be known in the literature as *agency*, and great expectations have been pinned upon it. Action, we are told, follows agency as effect follows cause (Gell 1998, 16). Thus people are supposed to be capable of acting, and are not just acted upon, because they have acquired some of this agency. Without it, they would be but things. By the same token, however, if agency is imaginatively bestowed on things, then they can start acting like people. They can 'act back', inducing persons in their vicinity to do what they otherwise might not. In one of the most original and provocative discussions of materiality to have appeared in recent years, Peter Pels characterizes the logic of this argument as *animist*: 'a way of saying that things are alive because they are animated by something foreign to them, a "soul" or . . . spirit made to reside *in matter*' (Pels 1998, 94; original emphasis). Whatever its source might be, this animating principle is understood here as additional to the material object on which it has been bestowed.

There is, however, according to Pels, another way of understanding how things can act back. This is to say that the spirit that enlivens them is not *in* but *of* matter. We do not then look beyond the material constitution of objects in order to discover what makes them tick; rather the power of agency lies with their materiality itself. Pels characterizes this alternative logic as *fetishist*. Thus the fetish is an object that, by virtue of its sheer material presence, affects the course of affairs (1998, 94–95). I believe this argument to be an important step in the right direction, but it takes us only halfway. On the one hand it acknowledges the active power of materials, their capacity to stand forth from the things made of them. Yet it remains trapped in a discourse that opposes the mental and the material, and that cannot therefore countenance the properties of materials save as aspects of the inherent materiality of objects. Thus the hybrid quality that Pels attributes to the fetish – its capacity at once to set up and disrupt ‘the sensuous border zone between our selves and the things around us, between mind and matter’ (ibid., 102) – is in fact a product of the misrecognition of the active properties of materials as a power of the materiality of objects. There is nothing hybrid about one of Nash’s ladders, however. Like the living tree in the ground from which it was made, it inhabits the border zone not between matter and mind but between substance and medium. The wood is alive, or ‘breathes’, precisely because of the flux of materials across its surface.

Bringing things to life, then, is a matter not of adding to them a sprinkling of agency but of restoring them to the generative fluxes of the world of materials in which they came into being and continue to subsist. This view, that things are in life rather than that life is in things, is diametrically opposed to the conventional anthropological understanding of animism, invoked by Pels (1998, 94) and harking back to the classic work of Edward Tylor, according to which it entails the attribution of life, spirit or agency to objects that are really inert. It is, however, entirely consistent with the actual ontological commitments of peoples often credited in the literature with an animistic cosmology. In their world there are no objects as such. Things are alive and active not because they are possessed of spirit – whether *in* or *of* matter – but because the substances which they comprise continue to be swept up in circulations of the surrounding media that alternately portend their dissolution or – characteristically with animate beings – ensure their regeneration. Spirit is the regenerative power of these circulatory flows which, in living organisms, are bound into tightly woven bundles or tissues of extraordinary complexity. All organisms are bundles of this kind. Stripped of the veneer of materiality they are revealed not as quiescent objects but as hives of activity, pulsing with the flows of materials that keep them alive. And in this respect human beings are no exception. They are, in the first place, organisms, not blobs of solid matter with an added whiff of mentality or agency to liven them up. As such, they are born and grow within the current of materials, and participate from within in their further transformation.

V

If, as I have suggested, we are to redirect our attention from the materiality of objects to the properties of materials, then we are left with the question:

what are these properties? How should we talk about them? One approach to answering this question has been proposed by the theorist of design David Pye (1968, 45–47). His concern is to examine the idea that every material has inherent properties that can be either expressed or suppressed in use. This idea is frequently enunciated by sculptors and craftspeople who assert that good workmanship should be ‘true to the material’, respecting its properties rather than riding roughshod over them. Suppose, then, that we take a metallic material like lead. Among a list of its properties we might include the following: ductility, heaviness, low melting point, resistance to electrical current, impenetrability to X-rays, toxicity. Of these the first two might possibly be expressed artistically, but the others cannot. But if our aim is to be true to the material, then why, Pye asks, should we be content to select only certain aspects of the lead, according to choices that have been dictated by considerations that have nothing to do with it? Then again, some materials exhibit properties while being worked that they lose once the job is done. Red-hot iron at the forge has the consistency of beeswax, but if the smith seeks to bring out its softness and elasticity, then the result, once the iron has cooled, will express precisely those properties that the material, now hard and rigid, no longer possesses. Similarly, the rounded form of a clay pot, formed while the material was damp and pliable, can hardly be said to bring out the brittleness of clay that has been baked in a kiln. Nor can we deny the excellence of workmanship that allows a master sculptor to fashion the hardest of stone into surfaces that appear as soft and smooth as silken cloth or an infant’s skin.

On these grounds, Pye argues that it is not really the *properties* of materials that an artist or craftsperson seeks to express, but rather their *qualities*:

The properties of materials are objective and measurable. They are *out there*. The qualities on the other hand are subjective: they are *in here*: in our heads. They are ideas of ours. They are part of that private view of the world which artists each have within them. We each have our own view of what stoniness is (Pye 1968, 47; original emphasis).

The assertion, then, that a sculpture is good because it brings out the stoniness of stone cannot be justified on the basis of any properties of the stone itself that can be objectively known. It merely reveals our own personal preferences concerning the qualities we like to see in it. Now, of course it is true that we may hold such preferences concerning the materials we use to make things. It is also true that these materials may be subjected to a battery of tests in order to measure such properties as density, elasticity, tensile strength, thermal conductivity and so on. For an engineer setting out to design a structure and deciding what materials to use, such measurements – which can be as accurate and objective as current science and instrumentation allow – may be of critical importance. Yet the knowledge they yield is a far cry from that of, say, the stonemason, smith, potter or carpenter, which comes from a lifetime’s experience of working with the material. This is a knowledge born of sensory perception and practical engagement, not of

the mind with the material world – to recall Renfrew’s (2001) ‘material engagement theory’ – but of the skilled practitioner participating in a world of materials.

It may seem pedantic to distinguish between the material world and the world of materials, but the distinction is critical to my argument. The trouble with Pye’s dichotomy between properties and qualities is that it takes us straight back to the polarization of mind and matter from which our enquiry began. Materials, for Pye, are varieties of matter – that is, of the physical constitution of the world as it is given quite independently of the presence or activity of its inhabitants. Thus their properties are properties of matter, and are in that sense opposed to the qualities that the mind imaginatively projects onto them. Following Gibson, I have chosen to concentrate not on matter as such, but instead on substances and media, and the surfaces between them.⁴ These are the basic components, for Gibson, not of the physical or material world but of the *environment*. Whereas the physical world *exists* in and for itself, the environment is a world that continually *unfolds* in relation to the beings that make a living there. Its reality is not *of* material objects but *for* its inhabitants (Gibson 1979, 8; see Ingold 1992). It is, in short, a world of materials. And as the environment unfolds, so the materials of which it is comprised do not *exist* – like the objects of the material world – but *occur*. Thus the properties of materials, regarded as constituents of an environment, cannot be identified as fixed, essential attributes of things, but are rather processual and relational. They are neither objectively determined nor subjectively imagined but practically experienced. In that sense, every property is a condensed story. To describe the properties of materials is to tell the stories of what happens to them as they flow, mix and mutate.

This is exactly what Christopher Tilley does in his book on *The materiality of stone* (2004). Focusing on ancient monuments of massive stone or rock – the Mesolithic menhirs of Brittany, the temple architecture of Neolithic Malta and the Bronze Age rock carvings in southern Sweden – Tilley devotes a great deal of attention to the properties of stone *as material*. He shows how its ‘stoniness’, if you will, is not constant but endlessly variable in relation to light or shade, wetness or dryness, and the position, posture or movement of the observer. To describe the properties of stone he has to follow these variations as he walks around or over each monument, or crawls through it, at different times of day, in different seasons, and under different weather conditions. Yet, paradoxically, the very title of his book returns us from stone as material to the materiality of stone. And in that move the stone is instantly swallowed up by the landscape whose surface marks an interface not between earth and air but between nature and culture, the physical world and the world of ideas – ‘two sides of a coin which cannot be separated’, but two sides nonetheless (Tilley 2004, 220; see Ingold 2005b). This paradox, I contend, continues to permeate studies of material culture, converting the properties of materials into the materiality of things. My plea, in this article, is simply that we should reverse this trend, and once more *take materials seriously*, since it is from them that everything is made.



Figure 3

Now return to the stone that has been quietly sitting on your desk as you have been reading. Without any intervention on your part, it has changed. The water that had once covered it has evaporated, and the surface is now almost completely dry. There might still be a few damp patches, but these are immediately recognizable from the darker colouration of the surface. Though the shape of the stone remains the same, it otherwise looks quite different. Indeed it might look disappointingly dull. The same is true of pebbles washed by the tide on a shingle beach, which never look so interesting once they have dried out. Though we might be inclined to say that a stone bathed in moisture is more ‘stony’ than one bathed in dry air, we should probably acknowledge that the appearances are just different. It is the same if we pick up the stone and feel it, or knock it against something else to make a noise. The dry stone feels and sounds differently from the wet one. What we can conclude, however, is that since the substance of the stone must be bathed in a medium of some kind, there is no way in which its stoniness can be understood apart from the ways it is caught up in the interchanges across its surface, between substance and medium. Like Nash’s sculptures of unseasoned wood, though much more quickly, the stone has actually changed as it dried out. Stoniness, then, is not in the stone’s ‘nature’, in its materiality. Nor is it merely in the mind of the observer or practitioner. Rather, it emerges through the stone’s involvement in its total surroundings – including you, the observer – and from the manifold ways in which it is engaged in the currents of the lifeworld. The properties of materials, in short, are not attributes but histories.

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Note

¹ I hasten to add that, of course, the greater part of archaeology is dedicated precisely to the study of materials and the ways they have been used in processes of production. Even in anthropology there is some ethnographic work on the subject. My point is simply that this work does not seem to impinge significantly on the literature on materiality and material culture. For scholars who have devoted much of their energies to the study of materials, this literature reads more like an escape route into theory – one which, I confess, I have previously used myself. Thus my argument is directed as much at myself as at anyone else, and is part of an attempt to overcome the division between theoretical and practical work.

² I do not pretend to offer a comprehensive critique of Hetherington's argument, which is mainly focused elsewhere. In any case I concur with much of it. I cite it here simply as an exemplary instance of the role that the concept of materiality plays in arguments of this kind.

³ Though vague, this is about as close as I can get to a definition of what students of material culture, in the literature I have read, actually mean by materiality. For example, seeking reasons for the philosophical and scientific marginalization of 'the materiality of social life', Olsen asks why research has forgotten or ignored 'the physical and "thingly" component of our past and present' (2003, 87).

⁴ I have found Gibson's tripartite scheme a useful starting point for thinking about the inhabited environment. But it is by no means without its problems, which I have begun to address elsewhere (Ingold 2005a; 2007).

Materiality in materials *Christopher Tilley*

I really welcome Tim Ingold's paper because intellectual debates about the meaning and significance of material culture or general attempts to theorize material forms are comparatively rare as opposed to the mass of literature discussing particular categories of things. In the paper he systematically sets out to oppose a concept of materiality (apparently worthless) to the study of materials which, in contrast, he suggests, may lead to many new insights

and understandings. I do not find this supposed opposition all that helpful. Indeed I believe that it may have a conservative and reactionary effect in relation to studies of material culture which is no doubt contrary to Ingold's intentions.

To start off this debate we need to recognize that each object has its own material properties but that these are processual and in flux, as Ingold demonstrates in relation to the wet stone slowly drying out and changing on his or my desktop. This will differ according to what kind of stone he and I have to hand; its shape, texture, colour and composition; whether the sunlight is shining on his desk or mine; the humidity of the air and so on. We are discussing and describing something highly specific, place-bound and variable. Now what might provide a link between what happens to Ingold's stone and what happens to mine? On what basis might we compare and contrast these stones? From an empiricist perspective we can objectively measure and weigh them and so on, consider their porosity and other attributes, thin-section them and determine their chemical composition, age, place of origin, and so on as a good geologist might do. But this does not help us very much in understanding their human significance without being put into a much broader social and historical context. This is precisely why we require a concept of materiality. To put it another way, there is on the one hand a processual world of stones which takes place oblivious to the actions, thoughts and social and political relations of humans. Here we are dealing with 'brute' materials and their properties. On the other hand there is the processual significance stones have in relation to persons and sociopolitical relations. The concept of materiality is required because it tries to consider and embrace subject-object relations going beyond the brute materiality of stones and considering why certain kinds of stone and their properties become important to people. The processes involved here are far more complex and require an altogether different kind of interpretative work than that which can be provided by empirical scientific studies of the type undertaken by geologists who are not usually concerned with what stones mean. All materials have their properties which may be described but only some of these materials and their properties are significant to people. The concept of materiality is one that needfully addresses the 'social lives' of stones in relation to the social lives of persons.

Let us imagine that the stone drying out on Tim Ingold's desk is a modern road stone that has fallen off the back of a lorry on the way to a construction project in Aberdeen. Blasted from a local quarry it was intended to form the foundation, together with tons of the same material, of a Tesco supermarket. This stone has no significance to anybody except to Ingold in the context of his personal experiment. He will throw it away as soon as it dries out. Let us further imagine that my stone, similarly drying out, is a piece of spotted dolerite. It is from an excavation trench at Stonehenge, a chipping from one of the bluestones transported there from the Prescelli mountains of south Wales over 4,000 years ago. I will not throw this stone away and its material properties will be of far greater interest to me than Ingold's road stone because I can reasonably assume that these properties of the stone would be of interest to prehistoric people. I would like to interpret what qualities of this stone made it of such significance that it was brought so

far: was it its hardness, colour, spottedness, precise point of origin in the mountains where it came from, perhaps high up from a jagged peak, and so on? In asking these questions I am concerned with the properties this stone has in relation to people. I am going beyond an empirical consideration of the stone to consider its meaning and significance. In doing so I move from a 'brute' consideration of material to its social significance. This to me is what is meant by the concept of materiality. To consider the materiality of stone (the title of my book, which Ingold objects to as somehow obfuscation) is to consider its social significance, the stone as meaningful, as implicated in social acts and events and the stories of people's lives, in both the past and the present. If Ingold's stone had been a granite chipping from a Scottish prehistoric stone circle then the contrast between the material properties of his stone and my stone would have been potentially very important indeed. In considering the *materiality* of this stone and in contrasting it with mine we would be comparing landscapes, contexts, movements, social and political strategies and the effects the different stones had on people, the manner in which they perceived and understood them. So the concept of materiality is all about going beyond the stone itself and situating it in relation to other stones, landscapes, persons and their doings – in other words developing a holistic and conceptual theoretical and interpretative framework.

Ingold refers positively to Henry Hodges's book *Artefacts*. This was almost certainly on my undergraduate reading list. No doubt a worthy book in many respects, it is the type of publication that made me seriously question why I had decided to study anthropology and archaeology. Its sheer tedium was that it considered artefacts from a purely technical point of view. People and the social significance of things were not really part of the agenda at all. Archaeology was revealed as a dry-as-dust empirical discipline incapable of embracing the social significance of things. This is because Hodges was dealing splendidly with materials but had no concept of materiality or a conceptual and theoretical framework capable of linking persons and societies to things. The categories of pots, bone, leather and so on he discusses are completely decontextualized from their social and historical contexts and thus no meaningful social interpretation of them can even be attempted. Everything is reduced to a technological process. The discipline has now changed radically precisely because of a move from considering materials and their properties to considering materiality, or what these properties mean in different social and historical contexts and how they are experienced. Hodges, as a typical empiricist, considers categories of material in isolation, listed by Ingold, 'hides and leather, pottery' and so on. But what have stone and pottery, for example, got in common and how do they contrast? This is not a question that Hodges would even address because these are artefacts of different kinds with different material properties. To ask questions about the meaning and significance of stone and pottery in relation to people requires a move from considerations of the materials in and for themselves to considerations of materiality, their meaning and significance, similarities and differences, places of origin, modes of manufacture, depositional contexts in relation to places, paths and landscapes. It is to set up an entirely new and post-empiricist

intellectual agenda. In archaeology this has become termed 'postprocessual' and (far better) interpretative archaeology in order to distinguish it from both traditional empiricist and positivist 'processual' conceptual approaches. So the concept of materiality has a dual significance. It signals both a disciplinary move away from empiricism and a new holistic concern with the understanding of the meaningful relationship between persons and things.

I agree with Ingold on many points made in his paper and it is perhaps worth listing some of these, as the differences between his position and mine may be more apparent than real. A great deal can, of course, be learnt from rowing a boat or chopping down a tree providing that we have a conceptual framework adequate to the job (for me a phenomenological perspective linked to a concept of materiality). Some recent writing on 'materiality' in the abstract does indeed lead us absolutely nowhere, but to suggest some kind of embargo on more abstract theoretical writings is not helpful at all. Here, for me, is a third significance of the concept of materiality. In employing this term I am not just trying to discuss materials and their processual properties but attempting to develop a general theoretical and conceptual framework for understanding these in relation to people and their worlds. I am attempting to engage with the manner in which the material properties of things profoundly affect human conduct, both enabling and empowering people's lives and constraining them. The concept of things providing affordances to people is indeed very useful here, and a stress on the materiality of these affordances is important because it runs against the grain of the kind of idealism which would propose that people can think about or react to the material world in pretty much any way they like, which again Ingold rightly objects to. People are indeed embedded in a material world, immersed within it, and this sensuous world of material things has effects on the way people think and behave, but not in any simple or deterministic sense. Ingold stangely objects to the concept that things have agency in relation to people. If, as I do, we translate the term 'agency' as meaning providing affordances and constraints for thought and action, then I cannot understand why the term should trouble Ingold or anyone else.

There are two striking absences in Ingold's paper. There is the virtual absence of discussion of people and the meaning and significance of materials made (artefacts) or encountered (unaltered materials). The problem with his one-sided stress on materials rather than materiality is that the meaning and significance and agency (effects) of things on people tends to become sidelined, and this consideration of the recursive relationship between people and things is why we need a concept of materiality rather than simply considering materials. Most of what Ingold writes about in his paper is for me embraced by the concept of materiality but I feel that he has ignored much that is important: the manner in which the experience of materials has profound effects on people's lives and understanding of the worlds in which they live, and on their actions. We have long since, I hope, abandoned the old empiricist trap of considering materials in and for, and only in terms of, themselves, the spectre of which Ingold threatens to advocate once again.

So to write about materiality is (i) to attempt to develop a general theoretical and conceptual perspective or a theory of material culture in a material world; (ii) to consider the manner in which the materiality or properties of things, always in flux, are differentially experienced in different places and landscapes and social and historical contexts; (iii) to concern ourselves with the recursive relationship between people and things and the material world in which they are both embedded; and (iv) to address the affordances and constraints that things in relation to media such as the weather offer people and why some properties of things rather than others come to have significance in their lives. Ingold's consideration of materials thus forms an essential element in a much broader consideration of materiality in general.

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Materials *with* materiality? *Carl Knappett*

Many scholars working in the domain of material culture will welcome this forceful statement from Ingold, sharing his frustration with the seemingly immaterial materiality emergent in the material-culture literature, the singular focus on things already made rather than their processes of becoming, and the apparent lack of contribution from those who do study materials in depth (e.g. archaeologists) to questions of materiality and material culture. His intervention is a timely one, although the message has been expressed before, albeit in more muted tones (e.g. Ingold 2000, 53). But while Ingold may be justified in bemoaning the lack of definition and clarity in 'materiality', is there scope for stepping back from the polemic and finding a middle ground? I would argue that materiality may still be a useful way of understanding the conjunction or intersection of the social and the material, without the former swallowing the latter.

Latour vs. Lemonnier

The debate over materiality that Ingold launches here is reminiscent of the argument between Latour and Lemonnier over the agency of human and gun (Latour 1996; Lemonnier 1996). Latour sees the well-worn debate between the pro-gun and anti-gun lobbies as a dead end: it is neither the gun that makes the human act (materialist explanation) nor the human that decides and then acts with the gun (sociological explanation). Instead, he argues, the two bring each other forth. The active agent is neither human nor gun, but human-with-gun, and any attempt at isolating either individual element is hopeless. This is, I would argue, the perspective endorsed in much of the current work on materiality. Artefacts may have material properties, but it makes little sense to study them in detail as they are secondary to the role of the artefact in social relations. Lemonnier, however, disagrees with Latour. Surely the gun has its own properties that can be assessed independently of the human, and

vice versa? Once these entities, material and social, have been ‘independently’ assessed, then one can analyse how the two elements come together. This approaches Ingold’s position: all kinds of materials have properties that can be described independently of the particularities of a social context: bees secrete wax, which has properties, as do bird feathers and fish bones. So when Ingold asks us to touch the stone and feel its dampness, he is quite right to tell us that we are encountering a material rather than materiality. Well, yes, because in materiality there is the social, and this is a rather asocial, solitary experiment; and while the Gibsonian approach he propounds (i.e. medium, surface, substance) deserves full attention from students of material culture, it too is deeply asocial (as Ingold says, p. 6: ‘Gibson downplays any notion of the materiality of the world’). Those who are trying to develop materiality as a concept are, I suspect, Latourian – they would not want to analyse the properties of materials independently (however much they might lose in the process).

Materials and materiality: in the field and the classroom

Touching the damp stone, and watching it change colour as it dries, is to understand something about a material rather than materiality. And this is a real problem that archaeologists frequently face, without perhaps realizing it. Let me give two examples. First, I started to read this paper while on fieldwork in Crete, sorting through many thousands of pottery sherds at the Bronze Age site of Palaikastro. The interaction with one class of material – ceramic – is quite intense, involving not only visual perception but also touch, and indeed sound (sherds of different qualities). One of my student assistants began one day a brief experiment in ‘blind strewing’ – sorting through the pottery spread out on large tables by touch and sound. This is a surprisingly worthwhile exercise. And I subsequently learnt that Molly Cotton, the pottery assistant of Mortimer Wheeler, always recommended strewing by touch rather than, or as much as, by sight (Sara Paton, personal communication). In this way one pays most attention to ware (through texture) and shape (one can distinguish bases, body and rims by touch), only considering decoration last. Second, I continued to read the paper once back in my department, while preparing for our first-year archaeology course on ‘Materials’. The students, from the very first weeks of their degree, learn to handle, observe and describe a range of archaeological materials (and I should add that the bibliography is headed by Hodges’s *Artefacts*, see Ingold p. 2). Yet in both instances, in the field and the classroom, it is very difficult to engage simultaneously with the inevitable social aspects of these materials. Someone made these pots, or knapped those flint artefacts, and many people may have used them over time in various social settings. This is what we should really be after as archaeologists (we are not material engineers, after all), and I often say that, contrary to expectations, I am not that interested in ceramics per se; all the more frustrating that the social component invariably seems intractable when one is deeply immersed in material study. A comment of Ingold’s comes to mind in this context – ‘materials always and inevitably win out over materiality in the long term’ (p. 10) – I take this to mean that the material is more durable than the social, and this is one of its ‘properties’. And perhaps just as archaeologists find it

difficult seeing through the material to the social, so it seems the ethnographer or sociologist struggles to see through the web of social relations to materials and their properties.

Material and social, material and mental

Keeping the social and material separate may provide analytical clarity, while the conjunction of the two implicit in the term ‘materiality’ is more realistic. We fall between these two poles when it comes to the material and the cognitive, too. Just as he is critical of materiality for being social but immaterial, so Ingold is critical of those mentalist accounts that consider the skilled craftsperson to have a mental plan of the artefact before execution. He cites Renfrew’s recently developed notion of ‘material engagement’, in which this mental–material dualism is seemingly overcome. Yet Ingold remains unconvinced, for the engagement is still one between representations and materials, and ‘does not bring the flesh and blood of human bodies into corporeal contact with materials of other kinds’ (p. 3).

Ingold’s perspective is oriented around practice. It is anti-representationalist, in the spirit of Gibson’s ecological psychology. Meaning simply resides in the affordances of the medium, substances and surfaces of the world of materials; it does not hide behind them. The implication is that everything can be directly perceived. This is a controversial position. Are there not, after all, associations that go beyond the immediate world of materials; what of remembrance of past situations, or imagination of future ones? Is there no role for indirect perception? Ingold does not explicitly address this problem, but other scholars have recently made some interesting proposals. Working principally in the field of music and auditory perception, Windsor (2004) and Clarke (2005) have sought to get away from this entrenched division between two forms of perception, direct and indirect, arguing for an ecological approach to representation. It would be interesting to know what Ingold makes of their intriguing argument.

Flux and networks: spatio-temporal properties

Ingold turns his attention to another bugbear – ‘agency’ – perhaps as frequently used and abused as ‘materiality’. He takes issue with the way it has come to be used as a ‘magical mind-dust’ (p. 12), sprinkled upon inert objects to bring them to life. This notion that agency is bestowed upon something follows an *animist* logic; another way of understanding is to follow a *fetishist* logic, whereby the object’s power comes from within (Pels 1998). Although Ingold sees the latter logic as more satisfactory than the former, he finds both lacking in their focus on individual entities. The key, he suggests, is to restore things to the generative fluxes and circulatory flows of the world of materials (‘Things are in life rather than . . . life in things’, p. 13). This introduces, presumably, a spatial component to the world of materials, and I wonder if a concept such as that of the network might not be useful here, as a means of exploring these fluxes and flows more systematically across a range of spatial scales. Network thinking encourages a focus not only on entities but also on connections; with regard to agency, it should enable a relational perspective wherein the properties of materials can be seen to

emerge rather than simply be. In that they may be dynamic and emergent, networks have a temporal as well as a spatial occurrence. As the network as a whole shifts and alters over time, so do the positions of each node within it. Ingold does mention that the properties of materials are experienced, and that in this sense each one is a condensed story, but does not develop the temporal or narrative dimension any further here. His closing line, that the properties of materials are not attributes, but histories, is therefore rather enticing, particularly to an archaeologist, and one wonders how Ingold might have taken this further. His emphasis on the coming into being of materials will be music to the ears of those who engage in experimental archaeology, as it hints at an often lacking philosophical background or framework to such study. There is considerable scope here for developing a narrative perspective on material properties. Perspectives from materiality have perhaps paid too little attention to time.

Materials with materiality

In encouraging us to take materials seriously, Ingold has provided a powerful corrective to what risks becoming an unhelpful bias in material-culture studies. But if the materiality perspective critiqued by Ingold has focused on social relations at the expense of material relations, then how is Ingold's 'world-of-materials' perspective going to avoid doing precisely the opposite? We may be provided with a fruitful means of looking at material relations, but what about social relations? As with Gibson, relations between people do not seem to feature that prominently. Just as in a materiality perspective the things become ciphers for social relations, so in an ecological approach the humans seem to take a back seat to the trajectories of materials. We need to find a way, surely, of combining the two; or, in other words, of following both Latour and Lemonnier. There is also, perhaps more importantly, a pressing need for systematic methodologies with which to study material culture in the past and the present, and the development of such methodologies might enable the different disciplines concerning themselves with material culture to communicate more effectively, with archaeologists engaging more fully with 'materiality' and anthropologists with 'materials'. Ingold, occupying a unique position between various disciplines, is well placed to identify these discrepancies, and his bold statement should serve as a wake-up call across the multi-field domain of material-culture studies.

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Stone age or plastic age? *Daniel Miller*

Ingold starts his critique with a claim to find recent writing and talking about material culture essentially obscure and orientated to fashion. If one reads Ingold's own writing you will find plenty of references to philosophical

figures such as Heidegger and to phenomenology. I find such writing often incomprehensible and obscure, and much of its contemporary use pretentious. I would hope a reader would find that my own recent books, on the cell phone (Horst and Miller 2006), materiality (Miller 2005) and the sari (Banerjee and Miller 2003), are written in just as straightforward a style as those of Ingold, which I much admire, both eschewing unnecessary jargon. Clearly we happen to find very different theories more or less congenial and comprehensible. But I do not think the implication of his opening remarks is a fair one, and I would hope that readers would judge this for themselves.

A second problem is that much of Ingold's paper rests of a dualism of his own creation, between substantive concern with the material processes through which objects pass and of which they consist, and some kind of mentalist imagination and conceptualization of objects per se. To construct this dualism he has first arbitrarily to divide material-culture studies to fit his scenario. So, for example, Chris Tilley comes in on the side of the good while I organized the AAA session referred to (now published as Miller 2005). But Chris Tilley and I are pretty much equally representative of these contemporary material-culture studies he wants to critique. Indeed we have always edited the *Journal of material culture* together, and Chris Tilley (1999; 2004) writes books about metaphor as well as about stone. So the idea that he is criticizing a fixed object like a genre called 'material-culture studies' is unsustainable. He is extracting those aspects of these studies he does not like and calling them material-culture studies.

The next question then is whether writers such as myself do indeed ignore these material processes. My last book on an object was a study of the sari (Banerjee and Miller 2003). In this book Mukulika Banerjee and myself have a great deal to say about the physical attributes of the textiles used in the sari. At different times we dwell on transparency and sheen, and in particular are very much concerned with the relative propensities of silk, cotton and polyester. We discuss at length issues of colour, form, embroidery and other treatments. But we do so not in the abstract, nor by tracing them back to some natural state of inherently bundled attributes, though we are well aware these exist. Instead we always consider such properties in the context of our ethnographic encounter as dynamic processes, constantly being shifted for a wide range of reasons. In short we do not decide for ourselves that colour, transparency or sheen have this or that property. Instead we try and understand which attributes are salient for the population we encountered and why and at what times. We are not concerned with what transparency is, but with what for particular peoples is considered to be relative transparency, or the processes of becoming more or less transparent, and the consequences this has for them. These are not representations of prior mental categories. The whole point of most of the material-culture studies I work within is to eschew such static imagery. They are the very means by which imagination is made possible as the form and material of eroticism, for example, or, in the case of porosity, as relative spirituality.

The same applies to the concept of materiality. Ingold complains that no one tells him what materiality is. That is because we are not philosophers and also do not accept this static concept which elsewhere he criticizes. Instead we

are anthropologists constantly engaged in ethnography. Ingold uses Gibson to assert there is no immateriality, only the flow of relationships between materials. But I think that here, as throughout his paper, although Ingold claims to be in touch with ordinary experience, he is rather removed from the experience of ethnography. Because, in ethnography, one constantly comes across people who do see the world in terms of immateriality and degrees of materiality. I start my edited volume on this topic once again with South Asian ethnography where this issue is pretty much the central point of religion, both in Hinduism and in Buddhism, and thereby of many people's lives. Gibson and Ingold may not accept the beliefs of Hindus and Buddhists with regard to immateriality, but surely they cannot deny our need as anthropologists to try and understand them.

Furthermore, understanding how the specific material qualities of the sari have an impact on people depends on understanding this concept of materiality. Ingold want us to pick up a stone, but his paper is actually not a stone but a text. He is trying to convey issues of materiality and material properties through semantics. A paper such as that by Webb Keane (2005) in the same edited collection on materiality is a brilliant analysis of the implications of this use of language to address these issues – how red and redness correspond and differ; when and how we can consider materiality or red or hardness as an attribute, a process or indeed sometimes a thing-like quality. Ingold is right then that there are people concerned, as Keane is, with issues of representation, but obviously so is Ingold's paper and it seems to me that Ingold and Keane have a good deal to say to each other and that the writings of people such as Keane are also a good deal more nuanced and sophisticated than Ingold gives them credit for.

I would also strongly contest the claim by Ingold that 'the very notion of material culture, which has gained a new momentum following its long hibernation in the basements of museology, rests on the premise that as the embodiments of mental representations, or as stable elements in systems of signification, things have already solidified or precipitated out from the generative fluxes of the medium that gave birth to them' (p. 5). My own work on material culture started quite specifically from a book about dialectical processes, the relational and processual view that Ingold aspires to. In my case I have struggled to develop a systematic philosophical grounding based in Hegel but understood and exemplified through a wide series of ethnographic encounters, all of which have shown why objects often considered as mere things, such as the Internet, or indeed persons, emerge in ethnography always as processual and relational. I cannot think of any study I or my students have been involved in which even vaguely resembles this premise about embodiments of mental representation. The concept of materiality in such an approach is not a stable element either, but a process by which people, observed through ethnography, open up a dimension of comparative thingness as part of that dynamic interaction with the world.

None of this, though, really addresses the crux of Ingold's problem with material culture, as it emerges from the paper he presents here, which is effectively his primitivism. Above all the problem is that Ingold seems to want to escape from the contemporary world and reimagine us back into

some kind of stone age, when human beings interacted with the world largely in terms of its given material processes and qualities, as if we actually spent our time transforming nature, which for Ingold I suspect is the essence of authenticity.

The trouble is, we do not. We may deal with materials all day long, but it is increasingly rare to find what one might call virgin materials. They are all, from Ingold's perspective, sullied. The reason the vast majority of material-culture studies deals with industrial and commercial artefacts is blindingly obvious. It is because the vast majority of human beings alive today deal almost entirely with artefacts far removed from any claim to be natural substances. So the material processes we have to understand and whose qualities and consequences we document involve the life histories of not wood and stone but mobile phones, washing machines, tractors and sushi. I have just published (Horst and Miller 2006) a book about the impact of mobile phones on low-income Jamaicans. I am concerned with material properties, but these are the properties of plastics, not stone. For Ingold to make his materials critical to understanding humanity we would have to return to a stone age – that is, a time defined by the profundity of our relationship with stone and its transformations, which is why he now seems to prefer writings by archaeologists talking about the Neolithic to those of contemporary ethnographers.

In the world we actually live in, materials are just as dynamic as he wants them to be. Sculptors may be entranced by the qualities of wood and stone, but they are just as entranced by the qualities of plastic. A mobile phone is just as obvious a subject for art as is water. Furthermore, texting and indeed phone conversation is just as much a technology, a skill, recourse for poetry and love, as is a daisy or a mountain. I write books about the sari, not the silkworm, but even if I were studying the silkworm, I would do so in the same manner as Simon Charsley's very helpful book *Culture and sericulture* (1982). It would have to include the impact of the life cycle of this worm on the political economy of silk production, because surely Ingold would concede that the silkworm only interests us more than any other worm because of the silk industry and the rich consumption of silk in cloth such as the sari.

This is why, when reading this paper by Ingold, you find the text is replete with references to art, design and philosophy but not to ethnography. Most of those working in material-culture studies, including almost everyone I work with at UCL, come from a tradition more aligned with the ethnographic study of practice – that is, the actual use of materials by people – but above all study of the way the specific character of people emerges from their interaction with the material world through practice. Yes, several of us study consumption, but often as technology, because today most people engage in technology largely through their involvement in consumption, whether cooking or DIY. Consumption constantly engages with these bundled material propensities of objects, though mostly sullied artefacts, industrially produced goods, not natural bundles of innocent properties.

The same people are concerned with and do write about materials and objects, and were indeed taught from textbooks such as that of Hodges. To

work on the material propensity of plastic is not to repudiate a concern with the quality of stone. On the contrary, I believe that what we have done is to try and absorb the sensitivity to the flow of material qualities that Ingold addresses with respect to stone, and insist, contrary to most others, that this also needs to be applied to the way people come to understand, appreciate and work with plastic.

Ingold wants us to contemplate the stone in its environment, but he seems to want this to be a natural, not a human, environment. Another paper in the materiality volume, by Engelke (2005), rests largely on the way an apostolic group in Zimbabwe understand the material propensities of honey as against pebbles from a stream. So it is not that I would not want to respect Ingold's ideals. I do not want us to lose touch either with the contemplation of the natural or with the immediacy of our encounters with the world. There is a sense of beauty that Ingold touches upon that I have no desire to detract from. But, for all that, our profession demands an encounter with the world as we find it. My heart is in contemporary ethnography, and I do not feel the need to apologize for a material culture that has changed in recent decades largely because today it is, while a few decades ago it manifestly was not, central to this contemporary ethnography. In the end I guess I just do not understand why Ingold seems to want to privilege a stone in his eloquent discussion of the nature of material over a mobile phone and plastic. Because doing so threatens to disenfranchise most of the peoples of the contemporary world and their experiences, and I would wish to see them as just as authentic and potentially just as profound as any historical encounters of people with materials.

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An archaeology of material stories. Dioramas as illustration and the desire of a thingless archaeology *Björn Nilsson*

No matter what kind of archaeologist you think you are, Ingold's text evokes emotional and intellectual reactions concerning a core of archaeology: how to deal scientifically with the material world. It pinpoints some serious problems within today's archaeology, not least field archaeology. Given this, I will try to comment on Ingold's text from a practical archaeological point of view. Before I turn to the tangible fields of sand, clay, stone fragments and almost vanished materials, I will take the opportunity to associate Ingold's point of view with a well-known geographical tradition, since some concepts appear to be quite similar.

As a doctoral student at the University of Lund I had a room with a nice view. Twice, maybe three times, I recognized the geographer Torsten Hägerstrand passing by on his bike beneath my window. From his writings one could draw the conclusion that the bicycle played an important role in his life as geographer. Hägerstrand was often pictured with his bike. For him the

two-wheeled vehicle served as a means to come closer to the reality of space. As with his time geography, the bike was a statement of a life philosophy that studied, stressed and acknowledged the human rights to plan, decide and follow one's own paths in the world. At the beginning of his academic career he had an interest in population geography and migrations. He studied the Swedish emigration to America from a local perspective. He and his wife spent several summers in the church archives of a certain parish in the centre of Sweden, where they tried to follow the biographies of all individuals during a hundred years. The involvement with this project made Hägerstrand change his geographical perspective. He got to know the past places and people of the study area in such detail that he developed a contextual and biographical approach to geography. Accordingly Hägerstrand became attracted to the concept of the *diorama* (Sollbe 1991, 217–19). Dioramas, which had become fashionable by the end of the 19th century, functioned as a kind of display, frequently of zoological sceneries which pictured animals in their proper natural context – often a bit dramatic. Even cultural-historical phenomena were pedagogically explained through the medium of the diorama: at open-air museums one could, and still can, visit frozen scenes of the local blacksmith, the school, the village general store and so on. Later, however, cultural historians judged the diorama an unscientific form of display. They detached the blacksmith's tools from their original context and placed them on the museum's walls, in 'correct' order.

Hägerstrand's geographical dioramas – no matter what the scale – could be seen as a snapshot of a world in full motion with ever-changing relations of material positions. Thus Hägerstrand's world is seen as 'things beyond things' and 'events beyond events' (Hägerstrand 1991, 134–35). Hägerstrand concentrated on the contacts between matter – living as well as dead – and described it as a world of *granular structure*, where the grains (be they a human, a piece of rock, a chair or a cloud) attract and influence each other. The spatio-temporal life paths of a particular grain are delimited but also reinforced by other grains in the world. The grains are under the constant influence of their environment. Additionally, grains mix with or attach to one another, and create more complex levels of grains – with different abilities and conditions to endure and last in the world. Grains form populations that are ordered in different manners; sometimes grains are so densely packed that one could no longer speak of single grains. Therefore Hägerstrand completed his granular theory with two specific principles of grain-packing: *substrates* and *media*. The latter ideas were taken, and developed, from the well-known Finnish geographer Johannes Gabriel Granö, whose writings had a great influence on Hägerstrand. Granö published his theories in the dissertation *Reine Geographie* in the late 1920s (Granö 1929). Eventually, in 1997, the book was translated into English, entitled *Pure geography* (Granö 1997). It is fascinating reading, and bearing Granö's scientific context in mind, some of his geographical intentions were a good 50 years ahead of their times. Quite pioneering, and as a methodological phenomenologist, Granö explored a human-centred landscape. In order to map profoundly the perceived landscape, he focused on proximities. Proximity, he argued, 'is that part of the environment that is perceivable with all the senses and is situated

between the observer and the landscape' (Granö 1997, 108). Granö divided proximities into three main parts (ibid.):

1. *Proximate field of vision* – the complex of visible phenomena and objects in the proximity.
2. *Medium* – the tactile, auditory and olfactory phenomena of the surrounding or adjacent elements.
3. *Substrate* – tactile phenomena on the ground.

Proximities, Granö suggested, are to be studied by a branch of geography designated *proximics*. Proximics examines the human space where landscape turns into materials and things, and where our material life is as engaging and intimate as it gets. It might be possible that a revitalized and updated proximics, together with Hägerstrand's dioramic and granular material perspective, would add methodological and thus empirical fuel to the Gibsonian approach Ingold searches for. I am not sure. At least it might simplify archaeological application (Nilsson 2003, 85–89).

Some archaeologists never remove the soil beneath their nails, and they cover their desktops with artefacts. As with the geographer's bicycle, their statement is clear: archaeology is physical, material and for real. Fair enough. From a material-culture studies perspective, Ingold demonstrates that there is a division between theories of the materiality of objects, and theories of the properties of materials. However, a great problem for archaeology is its obsession with things. The stones on the desk are neither material objects nor objects of materiality. They are archaeological artefacts. Not even things from the past. For many archaeologists that is how it should be. Following the path of Ingold, one would soon find that archaeological artefacts are obstacles. I will try to express the dilemma from a prehistoric field-archaeological point of view. Such a departure makes everything more evident.

Being prejudiced, one could claim that while most academics have poor knowledge of – and interest in – how matters in the world really work, archaeologists are familiar with the material context of excavations. But material archaeological knowledge is based on the remains of material culture from the past, rather than on knowledge of vivid technologies in the present. From this starting point archaeology has produced its own material ordering and material ontology. Needless to say, the material system in archaeology is convenient, but still – it is a product of both wise and stupid archaeological tradition. One problem is that the archaeological material world is a world of hard, inorganic and durable materials such as stones, metals, burnt clay and so on. Since we know that soft materials play an outstanding role in arts and crafts, we completely lose certain material expressions. Every time we get a glimpse into the world of prehistoric objects of wood, antler, textiles and so on we are astonished. Ötzi, the Iceman, is a recent example. In order to follow Ingold, it is clear that field archaeology has to continue and advance postprocessual and contextual archaeology. To an extent this fits well with the aims of the so-called 'reflexive field archaeology' (cf. Berggren and Burström 2002). This means that we have to learn more about archaeology's internal material and technological hierarchies – before we can study past cultures' material stories, we have to know our own. In order to do this, this field

archaeology has to shift focus: from the artefactual–chronological to the more structural–material. A simple example: Swedish contract archaeology orders some hundred C14 analyses every year. For financial reasons the submitted organic materials are simply used for radiocarbon dating, but from a material point of view, information on the variety of tree species, connected to different use and technological contexts, might be more interesting than the chronological data. However, the determination of species is considered secondary information, and is rarely used. Many times I have heard myself complain about a lack of certain archaeological data. Often the only thing that is really lacking is scientific creativity. How, for example, are materials presented in field archaeological reports? Following an almost testamentary disposition, most excavation reports' find-lists lack any trace of past material biographical relations. On the top are hot and hard artefacts, in the middle is the usual stuff and far down are mass materials and scientific samples. Imagine a cookery book with no other information than a lists of ingredients, in alphabetical order or, even worse, in order of price per kilo at the local supermarket.

It is evident that archaeologists ought to be more imaginative and interested when it comes to material properties and their possible use and combination. As Ingold demonstrates, ordinary technological situations yield utterly complex material stories – the anthropologist's dream and the archaeologist's nightmare.

The perspective Ingold is advocating is challenging and doubtlessly could contribute to a revitalization of environmental and ecological archaeology. Elsewhere I have tried to locate some areas where archaeology could contribute to general environmental debate. One conclusion aligns well with Ingold's text, and contains a task I would dearly return to:

Long-term archaeology studies both past and current categorisations of physical materials. Historical research on the extraction, use, reuse, treatment, circulation, etc, of different categories of materials – from an ideological and society-based perspective – should provide a perspective on today's resource situation. Long-term histories of the use of, for example, lead, glacial boulder ridges, platinum, peat or copper sulphates, would result in varying and – I believe – quite special images of man's interaction with nature and material history. I believe that archaeology is one of few disciplines capable of conducting such a broad spatial, technological and temporal study (Nilsson 2003, 344).

In order to capture the long-term narratives of materials, archaeology might return to the human–material diorama – literally and metaphorically. The diorama forces us to think and act relationally, and to construct material contexts that consist of more than archaeological things connected to archaeological features.

More often, and especially since I started to work in contract archaeology, I have begun to see archaeological artefacts as hindrances, rather than interpretative vehicles. Perhaps it is like in music. Many expressive pieces have no words. While a wise material archaeology must perhaps discard things, in some sense, this does not imply that we have to clear our desks of stones.

Writing texts, reading materials. A response to my critics*Tim Ingold*

I would like to thank all four of my interlocutors for taking the trouble to comment on my text, and for the clarity and cogency of their contributions. They have forced me to think long and hard, and indeed to question my own conclusions. For me at least, and I hope also for readers of *Archaeological dialogues*, this has been a debate worth having, and it has been going on as much in my own mind as between myself and my critics. From the comments I picked up seven lines of criticism to which I would like to offer some response. They are: (i) that I have left the people out; (ii) that without a concept of materiality one cannot address the social and historical significance of things in people's lives; (iii) that I am on the run from the contemporary world of industrial artefacts and their consumers; (iv) that this escape is driven by nostalgic yearning for the direct perception of an unsullied nature; (v) that my depiction of material-culture studies is a caricature, in so far as such studies have long recognized the entanglement of objects in networks of relations; (vi) that my argument goes against the thinking of people in many parts of the world who are preoccupied with materiality and the possibilities of its transcendence; and (vii) that to emphasize materials in and of themselves is a retrograde step that threatens to take us back to the tedious enumeration of different kinds of stuff without regard to their meanings or contexts of use. In what follows I shall tackle each of these criticisms in turn.

To the first, I would respond that far from being absent from my account, people are at the heart of it. They are there, carving wood and knapping stone, making felt or spinning hair for tents, building and plastering houses, preparing ink and parchment for writing, and so on. They are present, however, in the same way that all living organisms are, as complex bundles constituted by the flows and transformations of materials across the interface between their bodily substances and the media that surround them. So when Chris Tilley complains of the 'virtual absence' (p. 19) of people from my discussion, or when Carl Knappett remarks that they 'seem to take a back seat' (p. 23), it must be because they are looking for some superorganic dimension by which the life of people exceeds their organic life. In classical theory, of course, this dimension has been denoted by the word 'social'. And, sure enough, it is people's social relations that are perceived to be missing. To touch the stone on your desk as you sit alone in your study is, says Knappett, 'a rather asocial, solitary experiment' (p. 21). By the same token, presumably, touching another person would be deemed deeply social. Many people would probably say the same about stroking their cat. But I am not going to speculate on where to draw the line between a social relation with another person and an asocial relation with a thing, because I do not believe there is a line to be crossed. As I have argued elsewhere (Ingold 1997, 238), the 'webs of significance' in which persons are commonly said to be enmeshed are

not suspended above the paths they tread in their material lives but comprise these very paths.

My critics are absolutely right to observe that the fate of the concept of materiality is bound up with that of the social, and that by downplaying the one – or even seeking its elimination – the other is also imperilled. Indeed the habit of placing the word ‘social’ before ‘context’ entails a certain redundancy, as does that of placing the word ‘material’ before ‘world’. Are there contexts that are *not* social, or worlds that are *not* material? I was once discussing the argument of this paper with a graduate student in archaeology who was interested in the use of mud as a building material in ancient Egypt. ‘So’, I said, ‘you are working on mud-bricks’. ‘No’, she responded very firmly, ‘I am working on the *materiality* of brick’. Having read Tilley’s comment, I now realize that in her response ‘the materiality of brick’ was actually a kind of shorthand for ‘understanding brick in the social and historical context of the use of mud by humans’. Just as the concept of the social is supposed to take us beyond the existence and interactions of human beings as mere organisms, so we need the concept of materiality, according to Tilley, in order to go beyond ‘brute’ materials and their properties. Paradoxically, this leads him simultaneously to advance and to counterpose two concepts of materiality: the first referring to the physical world as it is given quite independently of the presence, activities and purposes of humans; the second to the world as it is caught up in these activities and lent significance by these purposes. ‘The concept of materiality’, says Tilley, ‘is required because it tries to consider and embrace subject–object relations going beyond the brute materiality of stones’ (p. 17). Notice how, in this passage, the word ‘materiality’ appears twice, with each of these contradictory meanings.

This argument reminds me of much older debates for and against the ‘*human* nature of human nature’, which likewise oscillated between a notion of brute animality common to all creatures and one of an essential humanity by which the social life of persons was thought to be raised onto a plane of being over and above the purely biophysical (Eisenberg 1972; Ingold 1994, 19–25). In speaking of the world of materials rather than the material world, my intent has been precisely to escape from this oscillation, both by returning persons to where they belong, within the continuum of organic life, and by recognizing that this life itself undergoes continual generation in currents of materials. For Tilley, a stone can be treated as a lump of matter and analysed for its physical properties, as by the geologist in his example, but it has meaning and significance only in the context of human affairs. In the world of materials, however, humans figure as much within the context for stones as do stones within the context for humans. And these contexts, far from lying on disparate levels of being, respectively social and natural, are established as overlapping regions of the same world. It is not as though this world were one of brute physicality, of mere matter, until people appeared on the scene to give it meaning. Stones, too, have histories, forged in ongoing relations with surroundings that may or may not include human beings and much else besides. It is all very well to place stones within the context of human social life and history, but within what context do we place this social life and history if not the ever-unfolding world of materials in which the very

being of humans, along with that of the non-humans they encounter, is bound up?

To escape from the oscillation between the two materialities – the ‘brute’ materiality of non-human nature and the materiality that things acquire from their insertion into the domain of human society – is not, then, to regress from the latter to the former. Indeed Daniel Miller’s comment that my argument reveals a streak of primitivism, or a yearning for a world in which people would engage directly with ‘virgin materials’ as yet unsullied by any processes of human industry (p. 26), perfectly exemplifies the illusion, at the heart of material-culture studies, by which materials are contrived to vanish, swallowed up by the objects made from them. The illusion tricks us into thinking that materials can only exist in a raw, untransformed state, since as soon as they are worked into artefacts they cannot be materials any more. Most human beings alive today, Miller insists, ‘deal almost entirely with artefacts far removed from any claim to be natural substances’ (p. 26). Thus we have to be concerned with the life histories not of wood and stone, but of mobile phones, washing machines, tractors and so on. Yet as I have pointed out, the naturalness or artificiality of things can never be unequivocally determined, and in any case has not the slightest bearing on the fact that these things are still made of materials. It is a matter of opinion whether a child’s toy made of plastic is more ‘artificial’, on that account, than one made of wood (Ingold 2000, 53). Plastic is a material as much as stone is, and I could have exemplified my argument as well with the one as with the other. This argument, to repeat, is that even when materials are consolidated into the forms of artefacts, they are still there, and continue to be caught up, along with their users, in the fluxes of the medium.

It may be ‘blindingly obvious’ (p. 26), to Miller as to other students of material culture, that in today’s world people deal with artefacts to an extent that would have been unimaginable to our prehistoric forebears. But this seems to have blinded them to what is equally obvious to people themselves, namely that even as they go about their artefact-assisted lives they have to contend with the elements. The householder worries about a leaky roof, rot in his floorboards or the roots of trees threatening his foundations. The weather forecast, broadcast on television, warns the motorist to beware of heavy rain, fog or icy patches on roads. The holidaymaker purchases sunglasses and lotion to protect her eyes and body from intense radiation. Is it primitivist to acknowledge that we inhabit a world of earth, sky, wind and weather, in which the sun shines, rain falls, trees grow and water can turn to ice? Life as we know it depends on all these things. Throughout our lives we breathe the air, more or less as we find it. I am not worried that it would be somehow inauthentic if we ceased to do so. I am worried that we would all be dead. The quality of the air is a matter of great concern to many people, especially as industrial pollution tends to increase the incidence of respiratory disease. It is something we have to deal with. Moreover, the more we deal with artefacts, the more we have to contend with their wear and tear, brought about through the reaction of the stuff they are made of with the materials with which they come into contact. Thus the water pumped through a washing machine can

eventually cause the metal to rust, and the abrasion of earth and stones wears down the hard rubber tyres of the tractor.

Once the maintenance and repair of artefacts becomes more trouble than it is worth they are generally discarded, leaving a residue of materials that we have still to deal with. I have no idea whether a hundred years from now humans will still be using mobile phones. Perhaps by then they will have been replaced by some other device, or perhaps we will have found ways to live that do not depend on such a massive volume of remote communication. What is certain, however, is that the heaps of plastic waste from millions of discarded phones, contaminated by large concentrations of heavy metal, will continue to blight the landscape in some parts of the world, posing a lasting threat to human health. Compared to the duration of these heaps, the time span of mobile phone communication will probably seem like a mere blip. To make materials critical to understanding humanity, Miller claims, I would have to return to the age of stone. I could, however, just as well travel to the future, and imagine a world of materials left over after all the manufactured artefacts of today have been thrown away. In short, to put materials first is not to privilege the distant past over the immediate present, but to adopt the perspective of the very long term. I entirely agree, with Björn Nilsson, that more than any other discipline, archaeology can offer such a perspective, and for that reason I believe that archaeologists have a unique contribution to make to understanding the world of materials. But I do not believe, as Miller seems to, that ethnography is – by contrast to archaeology – tied to the present. Ethnography is tied to people's lives, and in life the past is continually active in the present as it presses into the future.

If it is the perspective of the long term that brings materials and their properties to light, so conversely a focus on the present, to the exclusion of past and future, makes them disappear. In the extreme case such a focus yields a snapshot of people 'caught in the act', as portrayed in the dioramas of open-air museums. Nilsson tells us that the celebrated Swedish geographer Torsten Hägerstrand favoured the diorama as a way of capturing a world full of movement. Rather than being lined up in sequence on museum walls, in the diorama artefacts could be placed in contexts of human use. The waxwork blacksmith, for example, could be poised ready to strike with his hammer at the forge. Yet in truth nothing in the diorama moves or breathes. We see artefacts-in-context, a network of relations between a person – in the figure of the blacksmith – and the things he uses. Such network images have become commonplace in studies of material culture, and are nicely epitomized by the logo for *Material world*, the new weblog for material- and visual-culture studies (see www.materialworldblog.com), which shows a number of medallions depicting commonplace objects (a book, a bicycle, a bag, a boot, a bracelet and so on) connected up in a web of straight lines. 'Network thinking', as Knappett suggests, 'encourages a focus not only on entities but also on connections', making possible a 'relational perspective' (p. 22). Miller, for his part, claims to have adopted a relational perspective all along, and cannot see how the approach I advocate differs from, or adds anything to, what he and his students have long been doing already.

Here is the difference. In place of the image of the network I suggest that of a *meshwork* (Ingold 2006, 13–14). The meshwork consists not of interconnected points but of interwoven lines. Every line is a relation, but the relation is not *between* one thing and another – between, say, an artefact here and a person there, or between one person or artefact and another. Rather, the relation is a line *along* which materials flow, mix and mutate. Persons and things, then, are formed in the meshwork as knots or bundles of such relations. It is not, then, that things are entangled in relations; rather every thing is itself an entanglement, and is thus linked to other things by way of the flows of materials that make it up. So while the material world might be depicted as it is in the weblog logo, as a network of interconnected objects, the world of materials would be better described as a meshwork of interwoven substances. This is what I had in mind when I wrote, for example, of the multiple trails of growth and transformation that converge in the page of a manuscript. And it is this meshwork that is covered up as soon as we treat that manuscript page as a finished object in relation to other objects, rather than as a bundle of materials whose constituent strands may be tied up with other materials, in other bundles.

What of the criticism, then, that my thinking ignores ethnographic realities? In ethnography, Miller writes, ‘one constantly comes across people who do see the world in terms of immateriality and degrees of materiality’ (p. 25). Such views are central to Hinduism and Buddhism, for example. I can claim no expertise in the field of South Asian religion, and am therefore not qualified to comment on whether ‘materiality’ has quite the same meaning in the context of Hindu or Buddhist worship as it does in the anthropological or archaeological study of material culture. I suspect not. Be that as it may, I doubt whether even Miller would subscribe to such a thoroughgoing theoretical relativism as would justify the use of any concept under the sun on the grounds that it is an accepted part of the world view of the people studied. My complaint, however, is that students of material culture have never come clean about what *they* mean by materiality. Instead, they are tying themselves up in semantic knots of the kind to which I have already drawn attention in Tilley’s comment. But as scholars and academics, are we not all caught up in semantics? This seems to be Miller’s point. My paper, he observes, ‘is actually not a stone but a text’ (p. 25). As such it seeks to convey something about the world by means of the written word. In writing the text I have therefore had to confront the same issues of representation that other students of material culture, whose stance I criticize, have had to grapple with. Perhaps, then, we have more to say to one another than I let on.

Of course it is true that no academic writer can escape these issues. However, my purpose in introducing the stone was not merely to offer apt illustration of an argument that could have fared equally well without it. It was rather part of a wider project, which presently guides my teaching as well as my writing, to re-embed the practices of reading and writing, and above all of thinking, within our observational engagements with the world around us. I teach my students not only to think and write about what they have observed, but also to observe thoughtfully and (particularly through experiments in handwriting and drawing) to make the graphic act itself a

practice of observation. Thoughtful, writerly observation seems to me to lie at the heart of good ethnography. Thus in my paper I wanted to demonstrate that the world of materials is not only a world we can think *about* but one that we can think *with*, or reciprocally, that is with us in our thoughts. I began the paper with a reference to Henry Hodges's *Artefacts*. Tilley recalls how, as an undergraduate, having to read this book and others of its kind almost led him to abandon the study of anthropology and archaeology. Why did he find books like this so tedious? Because they were concerned only with the properties of materials, in and for themselves. Lacking any concept of materiality, they could not even begin to consider the meaning and significance of these properties in the social and historical contexts of human lives. Having no contexts in which to place his observations, Hodges's book reads like a compendium of pointless and irrelevant information. Is that really a beacon for where I want anthropology and archaeology to go?

Of course not. But I would venture to suggest that if carpenters, metalworkers and potters were required, as part of their training, to read works in the tradition of material-culture studies, they would find them just as tedious and irrelevant as Tilley found *Artefacts* to be to his training in an academic discipline. Why? Because the interpretations they offer, of the social meanings of things, are divorced from any practically grounded understanding of materials and their properties. It is the same with a cookbook that – with its endless lists of ingredients and quantities – would look dull and boring on the scholar's shelf, but in the kitchen could be a source of inspiration and insight. Now I am not suggesting that we should all stop writing academic texts and start producing the equivalent of cookbooks instead. I am rather trying to find a way of moving beyond what I, and I think most students, find to be a stifling division between academic study and observational practice. I want to bring the two back together. Hence the stone. Miller is wrong to assert that my paper – if by that is meant what I offer the reader – is not a stone but a text. It is a stone *with* a text. The one is as much a part of it as the other. Beginning and ending with the stone, the reading of the text is deliberately framed within an observational practice. For, when all is said and done, I believe our aim should be to read the world, not the texts that have been written about it, and the purpose of written texts should be to enrich our reading so that we might be better advised by, and responsive to, what is going on there.

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