
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 stucco 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