

What we Touch, Touches Us: Materials, Affects and Affordances.

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Biography

Tom Fisher has been a senior lecturer in Design at Sheffield Hallam University since 1991 and currently runs their MA course in Research in Art and Design. A Fine Art graduate, he worked for some years as a designer and maker of furniture. His research interests derive from this experience, in that no body of knowledge of plastics exists that matches the knowledge of 'traditional' materials that he gained experientially through craftwork and interaction with clients.

He is the author of 'Exploring Carved Wood' UK Crafts Council 1993, 'The Designer's Self Identity - Myths of creativity and the Management of Teams' *Journal of Creativity Management*, April 1997, 'Creativity and the Computer Nerd: An Exploration of Attitudes' *Digital Creativity* Vol 8, No's 3/4, 1997, pp 97-105 (with Gill Chapman, Paula Reavey and Peter Ashworth)

He considers the research described below to open up a new field of enquiry that has particular relevance in the context of a user-centred design ethic which aspires to give Designers insights into consumption. This field of study is most closely related to work in the field of Material Culture studies.

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Introduction

To elucidate the 'fine grain' of consumers' relationships with the material world, this article considers users' perceptions of plastics. For some writers plastic signifies modern supremacy over nature and for others a fugitive and protean post-modernity, however this article suggests that consumer perceptions of plastics are more physical and affective.

While consumers *do* sometimes appreciate plastics' potential for technical mastery, there are very strong indications that this 'theoretical' or 'cultural' knowledge is always accompanied by knowledge of materials gained by direct physical interaction with them. This direct interaction in turn has affective consequences, which may be expressed in terms of a strong liking for or dislike of a material. At the extreme it may be integrated into an individual's psyche in the form of sexual fetishism.

This article builds on social-historical studies of plastics and studies in the sociology of technology and in the history of design and it draws on studies of consumption in sociology and anthropology. It draws most specifically on the work of James Jerome Gibson and others, to integrate these cultural, sensorial and explorative aspects of our relationship to materials. Such an integrated view sheds light on our relationship to the materiality of new plastic objects, as well as identifying particular elements of our relationship to plastics during the life of objects that are implicated in their disacquisition and disposal.

Used plastic

If someone who has had a computer for some time looks closely at the keyboard they will see a craftily shaped collection of plastic components that approximately fit the requirements of their hands as they type. Some of the surfaces on the keyboard will be shinier than are others. Here, where the fingers touch most often, the subtle matte texture designed into the keys wears away, creating another set of surfaces defined by use

not design. This pattern is idiosyncratic - its presence relies on the user's presence and it reflects the exact ways in which they have used their computer. On a keyboard used to type in English, the E key will be shinier than the others. A poor typist, like this writer, will see that the backspace key is shinier than the others are.

It is perhaps of fleeting interest to remark that these two 'conditioning factors', one cultural, one individual, produce patterns of wear on this plastic object. However, coincident with the creation of these wear-patterns another thing happens to computer keyboards as they are used - they collect dirt. The research that is reported here shows that, in combination with patterns of wear, the particular character of this dirt on a plastic surface is likely to be of more than fleeting interest to a user, once they notice it.

Over the several years of a computer keyboard's useful life this build up of dirt can be quite extreme. It forms dark shadows round the areas that the ends of the typist's fingers have made shiny. In the most frequently used areas it builds up into ridges that one can feel. It has the vague silver-grey sheen of mud on a winter evening or the collar of a dirty white shirt. It is not dust - it won't blow or brush away. This dirt is firmly stuck to the plastic surfaces of the keys near to where we touch them. It is embedded in their texture and draws attention to it.



This research suggests that the consequences of reading such indexical signs of use ¹ are highly significant to consumers' experience of plastic materials. The research has focussed on plastic materials particularly but the insight it provides may help us to understand the 'fine grain' of our relationship to all objects.

Literature and methods

Though some research in the social study of technology ² has considered plastics, it has done so as an example of generic processes of technological development rather than to explore their meaning for users. However, its aspiration to account for the network of 'actors' that constitute technologies ³ offers useful models for exploring multi-determined phenomena such as attitudes to plastics.

A broadly social perspective on the history of plastics is particularly relevant to this subject. Meikle's *American Plastics* ⁴ is the most notable and compendious of such works. Other recent work on the subject by Clarke, Fenichell, Friedel, Rapping and Schneider is more limited ⁵. Earlier publications by Yarsley and Couzens and 'Plastes' are

¹ In the terminology of Peircean semiotics, the pattern of wear and dirt are indexical signs of the use of a keyboard. Charles Sanders Peirce, collected papers in Terence Hawkes, *Structuralism and Semiotics*, (London: Methuen, 1977, p129)

² Wiebe B Bijker, *Of Bicycles, Bakelites and Bulbs*, (London: MIT Press, 1995)

³ Michael Callon, 'Society in the Making: the study of technology as a tool for sociological analysis', in Wiebe B. Bijker, Thomas P. Hughes and Trevor J. Pinch (eds) *The Social Construction of Technological Systems: new directions in the sociology and history of technology*, (London: MIT Press, 1995)

Bruno Latour, 'The Berlin Key: or how to do words with things', in P. M. Graves-Brown (ed) *Matter Materiality and Modern Culture*, (London: Routledge 2000 pp 10-21)

⁴ Jeffrey L. Meikle, *American Plastic: a cultural history*, (New Brunswick: Rutgers University Press 1995)

⁵ Alison J. Clarke, *Tupperware : the promise of plastic in 1950s America*, (Smithsonian Institution Press 1999)

Stephen Fenichell, *Plastic: The making of a synthetic century*, (Harpur Collins 1996)

Elaine Rapping, 'Tupperware and women', *Radical America*, V14 no 6 (1980)

Jane Schneider, 'In and out of polyester' *Anthropology Today*, V10 No4, (1995): 2-10

'boosterising' in tone ⁶. The former note, and the latter promote, plastics' identity as characteristically modern materials.

Over the last fifteen years, some writers have taken recent formulations and uses of plastic to be symptomatic of 'postmodern' times. This literature takes its cue from the work of Jean Baudrillard, especially his 'System of Objects', and the work of postmodern philosophers such as Jean-Francois Lyotard ⁷. Here the key authors are Ezio Manzini and Penny Sparke though Meikle also reviews the relationship between these ideas and the recent history of plastics. ⁸

Neither of these bodies of literature takes more than a glance at the object of study of this research because it is not possible to engage with the fine grain of users' relationships to materials using historical sources or from reading meaning out of objects. Some work in material culture studies does connect with the motives of this research, seeking to describe consumers' relationships to materials. Gay Hawkins uses plastic bags as a metaphoric marker in her discussion of the ethics of recycling and composting, and Gavin Lucas takes an archaeological approach to waste more generally in his discussion of the cultural categories that have determined our attitudes to the disacquisition of objects. ⁹

Consumers' perceptions of and attitudes to materials are the subject of extensive commercial research but only tantalising glimpses of this are available in the public

⁶ Yarsley, V. E. and E. G. Couzens *Plastics*, (Harmondsworth: Penguin Books 1942)

'Plastes' *Plastics in Industry*, (London: Chapman Hall 1941)

⁷ Jean-Francois Lyotard, *The postmodern condition* (Manchester: MUP, 1984)

⁸ Ezio Manzini, 'And of Plastics', *Domus* 666 Nov (1985)

Ezio Manzini, *The Material of Invention*, (London: Design Council 1989)

Ezio Manzini, 'Objects and their skin' in Penny Sparke (ed) *The plastics age, from modernity to post-modernity*, (London: Victoria and Albert Museum 1990)

Penny Sparke, *The plastics age, from modernity to postmodernity*, (London: Victoria and Albert Museum 1990)

⁹ Gavin Lucas 'Disposability and dispossession in the twentieth century', *Journal of material culture*, 7, 1 (2002): 5-22

Gay Hawkins, 'Plastic Bags: living with rubbish' *International Journal of Cultural Studies*, 4, 1 (2001): 5-23

domain. An example is Noreaux's description of aspects of the research that the Peugeot company has carried out into the response of users to different materials, plastics particularly, in the context of cars.¹⁰ The work on which this article is based has sought to some extent to re-create the spirit of this commercial research work using methods that allow access to consumers' attitudes. These included a Kelly's grid exercise, semi-structured interviews with 21 British consumers using a vignette technique and object prompts, and an email survey of a globally distributed group of specialist users of plastics. It also involved observation and introspective reflection on the part of the author, such as that which starts this article.

Data

The data demonstrates that in their evaluation of materials, British consumers are significantly influenced by the folk knowledge that exists about the plastics from which the accoutrements of contemporary life are frequently made. Some of the ideas about plastics that the participants expressed mirrored the ideas about plastics that have developed in Western culture in the process of their becoming ubiquitous and which appear in the literature. However the participants drew on another, experience based 'stratum' of knowledge, which appears also to some extent to generate folk knowledge about plastics.

At the outset, it seemed that the distinctive contribution of this work would be to systematically review the discourses that have grown up around plastics, and note how contemporary consumers deploy them in particular circumstances. This has indeed been one of the outcomes of the research. It is possible to identify moments when the

¹⁰ Jean-Emmanuel Noreaux and Sylvain Jeannin 'Sensory Aspects of Plastic Materials' *Proceedings of the Society of Plastics Engineers ANTEC conference, San Francisco California*, 3 (2002): 3682-3686
Society for the Plastics Industry 'Nonreturnables Face Legislative Ban in Madison Wisconsin' *Plastics and the Environment*, April 3rd 1970: 2-4, Hagley Archive, accession 1929, Box 19.

participants employ three discursive 'clusters' which refer to modernity/ progress, authenticity /imitation and health/ hygiene. The subjects use these cultural concepts - these ideas about plastics - in combination with other more generalised concepts, which derive from taste formations and ideas about the characteristics of the different stages of life.

Taste

Here for example, one of the participants in a group interview, a 20 year old female, speaks about when and where it would be appropriate to use plastic cutlery:

"...people don't tend to want to eat off plastic too much cos it, it's got the feeling like (some people think) you might ... feels a bit tacky or something, or just not designed for that sort of purpose cos it's not usually used, plastic..."

She uses "tacky" to denote the transgression of taste standards implied by using a plastic object in that situation. Her use of this word is very significant for the discussion that follows, as it points from the cultural to another, physical, 'stratum' of knowledge.

While this participant apparently meant 'tacky' to indicate 'in bad taste', other participants used the same word to indicate the inadequacy of the mechanical qualities of the objects they discussed, physically manipulating them as they spoke. They interacted with them sensually, they touched them and explored them with their fingers and they made reference to their characteristic sounds and smells.

The senses

The usage of the word 'tacky'¹¹ allows us to explore this sensorial dimension to judgements of instrumental fitness. A literal - physical - meaning of 'tacky' is 'sticky' - a surface coated with something to which other things will stick. If the surface is deliberately coated, say with glue, the tackiness is useful and presumably welcome. Speaking about plastics, these interviewees used 'tacky' exclusively as a negative term. This negativity is telling. Physical tackiness is likely to be unwelcome and to elicit disgust in a civilised individual; a negative affect. The power to elicit disgust is common to a large number of different stimuli, many of which have in common the power to remind us of our animal nature, of our 'mushy insides' as Paul Rozin puts it.¹² Stickiness, caused by sweat, blood and other body fluids is a clear example of a potential disgust elicitor of this sort.

In many formulations and uses, plastics seem to remind us of this bodily, tackiness. The interviewees mentioned a characteristically 'sticky' quality of plastics in objects as diverse as a synthetic teddy bear and plastic tool handles. Plastics seem to have a built-in potential to be associated with physically tacky experiences and our experiences with this potential appears to mean we associate plastics with a negative, possibly disgusting, sensorial experience which is invoked in the use of 'tacky' in all its senses; cultural and structural and sensorial.

¹¹ The etymology of 'tacky' is quite complex. Collins (1979) suggests four definitions for 'tacky', from two different roots.

1. A state of varnish and paint between wet and dry, which derives from 'tack' to denote the property of stickiness in the same circumstances.
2. Shabby or shoddy
3. Ostentatious and vulgar
4. Eccentric or crazy (of a person)

Senses 2-4 derive from C19 dialect for an inferior horse. Senses 1-3 are applicable in the interviewees' use of the word.

¹² Paul Rozin 'Food is Fundamental, Fun, Frightening and Far Reaching', *Social Research*, 66, 1 (1999): 9-30

This discussion is not just word play as this usage indicates the complexity of consumers' relationships to materials, and to the objects they comprise. Cultural and sensorial elements mix in this relationship. The interviews and other data contain many instances where cultural and sensorial aspects of plastics coexist.

Gibsonian affordances - exploration

JJ Gibson's concept of the 'affordance' offers a framework through which to understand how these different registers of meaning can co-exist in our perception of objects and their materials.¹³ Gibson suggests that we do not perceive the function of things in the abstract by itemising their particular qualities, but we perceive their affordance - what they allow *us particularly* to do. His idea is powerful for a number of reasons, not least because it is fundamentally *relational*, and therefore it helps to resolve the tension between the cultural and the physical in our interaction with objects.¹⁴

What a thing means to a user, what it is useful for, is simultaneously a consequence of the expectations the user brings to the interaction with the thing and its objective, "invariant" properties. As Gibson puts it, an affordance cuts across the objective nor subjective dichotomy. It is:

*'... not what we call a "subjective" quality of a thing. But neither is it what we call an "objective" property of a thing if by that we mean that a physical object that has no reference to an animal.'*¹⁵

¹³ The same concept is used by Donald Norman in his *Psychology of Everyday Things*, (Harpur Collins, 1988), though there it helps him to demonstrate users relationship to aspects of products over which designers can exercise control. The instances of consumers perceiving the affordances of materials discussed here are beyond the control of designers.

¹⁴ James Jerome Gibson, 'The theory of affordances' in Robert Shaw & John Bransford (eds.) *Perceiving, acting and knowing: towards an ecological psychology*, London: (John Wiley 1977)

¹⁵ Gibson 69-70

Although Gibson illustrates his ideas by references to our interactions with the given physical environment, the invariant qualities of man-made objects also constitute affordances. Therefore his model applies also to manufactured artefacts.

Gibson is explicit about the need to see our world as whole and to avoid false distinctions between the natural and the man made:

"It is a mistake to separate the natural from the artificial [...] artefacts have to be manufactured from natural substances. It is also a mistake to separate the cultural environment from the natural environment, as if there were a world of mental products distinct from the world of material products. There is only one world, however diverse, and all animals live in it, although we human animals have altered it to suit ourselves." ¹⁶

Costall elaborates Gibson's point, stressing that this 'humanised nature' includes artefacts and that the world we inhabit is "already 'transformed by the activity of generations'".

Gibson also makes it clear that we "were created by the world we live in" ¹⁷ and suggests that the mechanism by which this 'creation' of our selves takes place is the *sensual exploration* of the physical world that he sees as the basis of all human perception. He emphasises that the act of perception is active and embodied and it positions the perceiver such that knowledge of the world is knowledge of the self. As he puts it:

'...perception of the environment is inseparable from proprioception of one's own body - [...] egoreception and extoreception are reciprocal.' ¹⁸

This implies that we learn about ourselves through exploring the humanised nature that we inhabit, as well as learning about the affordances in our world through this 'perceptual learning'. What we can be is the result of our reciprocal relationship with our world.

¹⁶ Gibson cited in Alan Costall, 'Socialising Affordances', *Theory & Psychology*, 5, 4 (1995): 471)

¹⁷ Gibson: 71

This study contains striking evidence for the sensorial exploration of plastic materials early in life. A young woman spoke about her early exploration of and fascination with the expanded polystyrene packaging that she explored using her mouth. Asked what this was like, she itemised the qualities she discovered. It was

“Weird. Not - not that nice, you know, like I say it’s that kind of squeakiness that it’s got in your hand but against your teeth, it’s not quite so nice, really. It sort of did make my teeth feel a bit funny...”

From a Gibsonian perspective, this sort of physical exploration early in life furnishes us with our repertoire for understanding the physical qualities of objects and their materials. The interviewees demonstrated that this sensorial exploration of the material environment continues into adult life - they actively explored the objects they were given as prompts by tapping them and scraping their fingernails against them.

Because of the economic importance of innovation to capitalism, design continually presents us with new materials in new circumstances. It follows that we must explore the affordances of these materials if we are to make use of them, to understand them and fit them into our existing scheme. Contrary to the impression that Manzini gives, and which from the perspective of design it is tempting to believe, affordances can not be simply ‘built into’ or ‘read out of’ artefacts, but are discovered by users through interaction with them.

As adults we may do this in a different register of intensity - more discreetly, perhaps stroking and touching objects rather than mouthing them as we did as infants. Or we may do it more often in combination with explicit rationalisation. As Heft puts it, analysing

¹⁸ Gibson 79

Gibson's ideas in the light of Merleau Ponty's *Phenomenology of Perception*, as adults we explore the world with 'cultured bodies' with which we play out en-cultured intentions.¹⁹

The group of 'specialist' users of plastic referred to at the start of this article are individuals who get a sexual charge from plastic mackintoshes – fetishists in other words. They provided some specific and detailed descriptions of the physical properties of plastics as well as some insights into the relevance of these properties for their special interest. Although their perspective on plastics made their testimony appear rather different from that provided by the interviewees, Gibson's ideas about the sensual exploration of the physical world helps in its interpretation.

Although fetishists appreciate plastic surfaces in a non-mainstream context, they still do so through the exploration of the affordances of the materials and since the 'invariant' properties of the materials are identical in both settings, the physical characteristics that the fetishists describe may be relevant to the character of plastics in mainstream consumption.

Reviewing Gibson's work to bring out its social dimension Alan Costall suggests that objects are "a 'crystallisation' of human activities". They...

*"invite and constrain us to use them in certain ways, even if this use does not correspond to their intended function. The affordances of artefacts are [...] a focus of enduring, and cumulative, social influence."*²⁰

Referring also to Gibson's assertion that "...affordances do not cause behaviour, but constrain or control it,"²¹ Costall stresses that the origin of an affordance may therefore be any salient aspect of the social situation in which an individual develops. So the affordance of an artefact - or material - means we use it to suit our physical and *psychic*

¹⁹ Harry Heft, 'Affordances and the body: an intentional analysis of Gibson's ecological approach to visual perception', *Journal for the theory of social behaviour*, 19, 1 (1989): 1-29

²⁰ Costall: 471

needs, both because of its physical properties and because of the 'heritage' that is associated with it. That heritage may be defined by a psycho-social entity like plastic mackintosh fetishists, or by a geographical/ cultural grouping - like 'Western consumers' or 'UK teen-agers'.

Fetishists' perception of plastic's objective properties

The differences between fetishistic and everyday practices with plastics therefore is not a barrier to using the testimony of fetishists to contribute to our understanding of how plastics 'work' in everyday consumption. It matters not that a fetishist's *use* of plastics is unusual. Because of the similarities in *structure* between the affordance of sexual gratification and plastic's more quotidian affordances it is possible to use the fetishists' testimony about the qualities of plastics that are relevant to them to inform our understanding of the materials in mainstream settings.

For example, the fetishists used a particularly telling group of words to describe the surface quality of PVC.²² Along with '*glossy*' they used '*oily*', '*fatty*', '*buttery-smooth*', '*slick*' and '*sticky*'. All these relate to bodily experiences with the material - they have a sensual dimension. 'Sticky' describes the sensation of touching a very shiny, but quite soft and flexible surface like PVC. Shiny PVC fabric also does not slide across itself; it 'sticks' to itself and it has a physically 'tacky' quality under the fingers. To call a surface 'Oily', 'buttery' and 'fatty' relates it to a class of substances that have in common a sort of oozing stickiness, an unstable, indeterminate quality. Jean-Paul Sartre uses this type of substance to illustrate his discussion of the phenomenon of viscosity that he calls 'the slimy'.²³

²¹ Gibson in Costall: 411)

²² The fetishist participants were referring to PVC as used in plastic mackintoshes, where a quite soft formulation of the polymer tends to be given a high gloss.

²³ John-Paul Sartre, *Being and nothingness: an essay on phenomenological ontology*, (London: Methuen 1957 [1943])

It was clear that for some the most enjoyable quality of plastic film when wearing it is precisely the sweaty stickiness that results from its imperviousness. One respondent said that they

"...like the heat and if the garment doesn't admit much fresh air, like the moisture and seeing them steam up."

Sweat and stickiness: to a sense of dubious margins

It is common to dislike the sweat that some plastics make evident, and by association to dislike the plastic. However as William Miller notes, ²⁴ of all the oozing body substances, sweat is relatively low in the scale of disgust, so it is quite easy to imagine that with quite a small force of sexual gravity disgust with sweat and the sticky, 'tacky', plastics that produces becomes delight.

In both the fetishistic and mainstream settings the impermeability of plastics makes us aware of the margins of our bodies. ²⁵ It destabilises our sense of those margins with affective consequences, positive in one setting and negative in the other. There is something unstable and destabilising about this tackiness which demonstrates to us an uncomfortable ambiguity in the margin between our body surface and the outside world by making us produce disorderly sweat.

This characteristically *plastic-y* stickiness is enjoyed by a fetishist, or dreaded by someone for whom cleanliness/ hygiene is emotionally charged. In a design context this 'making an issue of our margins' can be positive - 'high touch' plastics for control surfaces; negative - sticky 'tackiness'; or ironic - the gratuitous use of rubber in fashion. But all rely on the same objective properties of the materials.

²⁴ William I. Miller, *The anatomy of disgust*, (Cambridge Mass: Harvard University Press 1997: 88ff)

²⁵ In Gibson's terminology, this is an 'invariant' in our environment.

An awareness of the margins of plastic materials themselves, as well as of our bodies, is evident in other interactions with plastic objects. Discussing food containers, one of the interview participants said that she would not use a Tupperware box to carry sandwiches without wrapping the sandwiches first, suggesting that

"The plastic would affect the taste of the sandwich for me"

For her the surfaces of the box itself seemed to have ambiguous margins. Although it would be physically feasible to put sandwiches directly into the box, for her this would transgress the right ordering of materials in such a context. She implies there is something disorderly about the polyethylene of Tupperware when it comes into contact with food - some unknown component of the plastic could get into the sandwiches. This, by Mary Douglas' definition of dirt as 'matter out of place', makes Tupperware unhygienic.

26

The smell of plastic can also be an index of its disorderly margins. This was a positive feature for the plastic mackintosh fetishists who clearly enjoyed the chemical smell of new plastics. On the other hand plastic-related smells seemed to denote the possibility of contamination for some of the interview participants. As one of them put it:

"I think Tupperware tends to be a bit smelly. [...] I think it retains its smell after you take the stuff out."

Here, smell indicates the instability of the surface. That the surface would absorb smells was reason enough for this individual to avoid using it, smell serving as evidence of its ambiguity and its consequent untrustworthiness. Rozin and Nemeroff's work on fear of contagion reinforces the idea that smell is significant to consumers' relationship to the

²⁶ Mary Douglas, *Purity and Danger: an analysis of the concepts of pollution and taboo*, (London: Routledge 1966)

materials.²⁷ In their work on the natural magic principle of contagion-by-essences they suggest that:

*"...odor [is] a special case of essence.. [it] shares many properties with essence, and my be, at some level in development or cultural evolution, the origin of ideas of contagion. "*²⁸

More often however, consumers detect that a plastic object is potentially contaminating through visible evidence – it ceases to be pristine. A comment by another of the interview participants implies that the effect of substances on plastics as they depart from their pristine new state indicates their microscopic structure.

" when you store things [...] in plastic containers sometimes, in the fridge [...] plastic takes the colour. You know if you store something like tomatoes in a plastic container, you often see, particularly tomato soup, that's an awful thing."

This participant learnt that plastic surfaces can absorb 'foreign' matter because dirt stains them and sticks to their textures – it can't be cleaned. The fact that the superb even surfaces of new plastic objects become visually tacky appears to coincide with them being potentially disgusting, which may lead to them being disposed of.

The disacquisition of degraded plastic objects

Although it is clear from this research that no-longer-pristine plastic objects can appear contaminating, further work would be needed to find out how this works in a range of situations. This study implies that this potential for contamination can relate to the human body and our sense of its margins or to the chemical nature of the material.

²⁷ Paul Rozin, & Carol Nemeroff 'The borders of the self: contamination sensitivity and potency of the body apertures and other body parts', *Journal of Research in Personality*, 29(1995): 318-340
They note that we are particularly sensitive to the possibility of contagion via our bodily orifices, including the nose.

²⁸ Paul Rozin, & Carol Nemeroff 'The Laws of Sympathetic Magic: a Psychological Analysis of Similarity and Contagion' , in Stigler, J. W. *Cultural Psychology*, (Cambridge: CUP 1990)

“Something” can leach out of the plastic, which is perhaps betrayed by the characteristic plastic smell that the interviewees reported.²⁹

An obvious consequence of a negative reaction to plastic objects that are read as potentially contaminating is that they are re-classified as waste. This research has not concentrated on the moment of reclassification, but because others’ feelings are in principle inaccessible to direct enquiry, introspection has been used to explore the disgust reaction mentioned above. This elucidated the relationship of the disgust emotion to properties of materials once they are reclassified as rubbish.³⁰

This introspectively generated data compared the experience of wooden detritus and scraps of plastic materials centred on a British beach. The remarkable qualities of the latter were starkly presented because they were not part of undifferentiated ‘waste’ but were seen in isolation on the beach, in ‘nature’.

“...a pink bottle that perhaps once contained something for the bathroom, shampoo perhaps, is split along one edge and gapes and oozes at me when I squeeze it with my foot. I leave it where it is. [...] a piece of opaque white material that must have once been a container [...] is so battered it is no longer possible to tell what shape it originally was, or what it was for. It is reduced to a piece of almost nothing, folded in on itself, frayed along the edges, slightly yellowed. It is a piece of material, no longer an object ... it is disgusting.”

²⁹ The long standing debate about the safety of the plasticisers that leach out of PVC is evidence of concern about such contamination.

³⁰ Lucas 2002 explores the categorisation of objects in the process of dispossession. He discusses the history of the idea of disposability and its interaction with concepts of hygiene and the design and use of spaces within the home from the perspective of archaeology.

Summary and conclusions

This research has shown that materials in themselves are significant for consumers' reception of objects and can be the focus of quite strong feelings ³¹ and that consumers relate particular ideas to plastics, which are implicated in their attitudes to plastic objects. Factors that determine attitudes to plastics appear to include the culturally derived ideas that a consumer brings to an encounter with a material, as well as the material's objective properties. The apparent opposition between these types of factors can be resolved using a framework from Gibsonian ecological psychology. This suggests that it is the *relationship* between these factors that is made through an individual's exploration of the material world that determines what a particular object *is* in a particular situation for that individual; whether it 'works' or not.

Considering degraded plastic objects helps us see beyond the peerless plastic surfaces of new and fashionable goods. Degraded objects demonstrate that to say that plastics are evaluated positively as the vehicles for the fulfilment of consumerist desire, or negatively when they become waste, or as an aesthetic affront when we 'wouldn't be seen dead' with them are over-simplifications. Similarly, instead of the wipe clean utopia of the modernists, or the post-modernists' de-materialised para-world of Baudrillardian 'atmospheres', consumers apparently perceive a dubious side to plastics as often as its peerless glorious novelty. This dubious nature is evident in the disgust for degraded, evidently used, worn, no longer pristine plastic items that may stimulate disacquisition. Plastic objects that start their lives delighting us begin after a short time to disgust us. With the passage of more time a moment arrives when we must void such objects from our 'spatial body'.

³¹ The stress in this paper on plastics' potential as an elicitor of disgust than of other emotions is likely due to two factors. Disgust is particularly visible in the attenuated communication of an interview and the interviews concentrated on the use of goods use after acquisition not on moments up to their acquisition.

Particular 'invariant' properties of plastics seem to be significant in reactions to them. Plastics have a 'fleshy' quality, shared by no other material - they can be 'skin-like' and because of their mode of production they are often seamless. They are warm to the touch and 'trauma' to their surfaces is evident, but irrevocable. Their objective properties help us to conquer some aspects of our human nature and to defend ourselves from external nature. Plastics are part of a 'humanised' nature with which consumers are familiar through constant sensual exploration of objects.

Plastics cease to be pristine, become evidently worn, in a particular way. They do not patinate; they gather dirt rather than 'charm' and then may elicit feelings of disgust particularly strongly. When they are no longer an acceptable element in humanised nature, they are perhaps doubly *unnatural*. They are not trustworthy because they seem to make an issue of the margins of our bodies and the manner of their ageing draws our attention to their margins.

Whether as a result of this or not, consumers seem particularly sensitive to the characteristics of plastics' surfaces and to know that while they are generally impermeable their surface is often porous. Plastics therefore may be physically 'tacky' - and engender fear they will pollute with invisible chemical components and absorb disorderly matter. This pollution seem to operate according to the principles of contagion and essence found in natural magic, principles that also allow plastics to also be a vector for social or moral contagion.

As a result, moments when plastics elicit, or afford, disgust are also telling of their social significance, as this emotion marks both physical and social barriers. We generally wish to preserve our physical selves from threats to our margins from foul substances and smells and to preserve our sense of the integrity of the margins of our skin by avoiding the 'slimy' substances that challenge it. Our knowledge of plastics' objective properties seems to contribute to negative feelings about them of this sort. The nature of the disgust emotion

means that we locate ourselves socially and culturally through the taste judgements that it polices.

Our exploration of the affordances of the material world resolves the objective and cultural aspects of our relationship to materials. When these two dimensions cease to be adequately resolved this is evident in disgust reactions. These disgust reactions in turn point up this mechanism of resolution, by which in normal use plastics provide us with useful and acceptable affordances.