End of Award Report
March 2007

Designing and Consuming
objects, practices and processes

Elizabeth Shove
Matt Watson
Jack Ingram

Background

Of all the aspects routinely absent from consumption studies, perhaps the most startling is the 'stuff' itself. This is especially striking given the energy invested in understanding the development and use of tools, artefacts and services in other fields of social enquiry, including design research and science and technology studies. This project was designed to extend and enrich the theoretical range of research on consumption by tackling questions left in the shadows of contemporary scholarly preoccupations.

We organised our research around three partially or substantially 'missing' debates relating to the objects (Woolgar 1991; Akrich 1992; Lie and Sorensen 1996), practices (Schatzki 1996; Reckwitz 2002; Warde 2005) and processes of design and consumption (Silverstone 1993; Julier 2000; Shove and Southerton 2000; Molotch 2002; Nieminen-Sundell and Pantzar 2003). In addressing these gaps, we sought to go beyond the study of things as carriers of semiotic meaning (Miller 1998; Buchli 2002), to think about the agency not only of individual artefacts but of interrelated complexes of stuff, and to conceptualise both the materials of material culture and the ways in which objects and practices co-evolve. In engaging with these themes, and in investigating the relation between a range of everyday artefacts and the practices of those who use them, we sought to open up new intellectual ground between consumption studies, design research and the field of material culture.

We organised this exercise in reinstating 'the missing masses' (Latour 1992) of consumption with reference to three linked research questions.

- What is the relation between the material world and the accomplishment of everyday life? – what is consumption for and what competences and practices are thereby required, permitted or sustained?

- How do suites of things and complexes of practice interact in different contexts and sites and what do these interactions mean for change and innovation?

- How do designers, consumers and other agencies add value to products and artefacts and what does the construction and appropriation of different types of value involve?

Objectives

We had three broad objectives, each of which has been met as described below.

1. *To redress gaps in contemporary theories of consumption through a programme of focussed case studies and the systematic cross fertilisation of concepts from the sociology of consumption, design research, and from science and technology studies.*

    Individually and in combination, our four case studies generated empirical material in relation to which we developed, tested and refined a series of specific theoretical propositions, for example, about the relation between products, distributions of competence and the formation of consumer projects (through our study of DIY); about how new technologies are configured not only by individual users but also by existing practices (digital photography); about the inter-relation between material artefacts and the substances of which they are made (plastic) and about how designers' 'working' theories of things and people co-evolve. We outline these studies and our integrative theoretical work in the results section of this report.

2. *To better understand relations between the objects, practices and processes of ordinary consumption and to show what these mean for innovation and change and for the construction and appropriation of different types of value.*

    In synthesising insights from each of the four studies, and in doing so with reference to contemporary theories of consumption, material culture and product design we produced a book-length discussion of the role of consumer goods in the design of everyday life (Shove, E, M Watson, M Hand and J Ingram, forthcoming 2007 The Design of Everyday Life, Oxford: Berg.)

    Note: Martin Hand contributed to the one chapter in this book which is not directly related to the

3. *To build an interdisciplinary and international network of scholars interested in developing theoretical and empirical research at the intersection of design, technology studies, material culture and consumption.*

    We ran a series of five workshops involving participants from 10 disciplines and from countries including Denmark, Finland, the Netherlands, Belgium, France, Australia and the US. These workshops, which included a combination of presentations and practical exercises, were well attended and well received, as reflected in many positive comments, including one from Dr Tom Fisher, Reader in Design at Sheffield Hallam who thanks us "for an excellent finale – the whole series has been fantastic; profoundly influential on me personally, and I suspect this effect will be felt on design more generally".

    During the period of the award, we gave a total of 35 conference, workshop or seminar papers to audiences from a range of disciplines and countries, also running one additional workshop and contributed to another, in order to present our work to non-academic audiences. Through these efforts we have fostered an enduring interdisciplinary network of individuals from design and social science interested in and now familiar with each other's work.

Methods

The project consisted of a combination of empirical research and theoretical development.

1   Integrating ideas

We reviewed and compared literature dealing with the role and status of material artefacts in consumption, practice and the conduct of daily life. In parallel, we undertook a systematic study of representations of 'the user', and of designers' understandings of the social world as exemplified in a longitudinal analysis of the journal Design Studies and in a sample of other design journals.

Rather than presenting the first of these exercises in the form of a stand alone report we folded the results of this work into an article 'Products and practices', to be published in Design Issues in Spring 2007; into the structure of our workshops and background materials, and into the text of our book. In addition, an article based on the analysis of Design Studies is in preparation (Annable and Ingram).

2   Analysing objects, practices and processes

Our empirical case studies focused on DIY, digital photography, product design and the development of plastic. Methods included observation, focus groups, interviews, systematic analysis of magazine advertisements and of historical and documentary material and visits to trade fairs and retail outlets.

a) DIY

As planned, fourteen DIY practitioners were interviewed in-depth about the projects they had undertaken, the tools they owned, and their 'careers', ambitions and frustrations in doing DIY.   We also interviewed representatives of companies involved in designing, manufacturing and selling DIY tools and materials and with a couple of professional builders/decorators (five in total).

b) Digital photography

We planned to conduct repeat interviews with ten new users of digital photographic equipment. In the event, it took longer to set these interviews up than at first anticipated. In addition, most of those we interviewed had already adjusted to the switch from film to digital. For both reasons it made little sense to return to these individuals and interview them again. Instead, we expanded the range of our enquiry and set up focus groups and a workshop with teenagers new to the practice itself. We also decided to concentrate on the variety of consumer experience, rather than on retailers. This part of the research involved nine one to one interviews with a selection of amateur photographers; repeated visits and group discussions with members of a local camera club; a focus group with four seventeen year olds and a workshop exercise with eighteen fourteen to sixteen year olds.

c) Product designers

We interviewed ten product designers working in a range of contexts, some based in new and others in more established consultancies. For reasons that are themselves interesting, we were denied access to the larger and better known companies (e.g. IDEO) that had established links with (some) social science and felt no need of more. We made use of web-sites and of other materials published by these organisations. In addition, we ran two focus groups with MA students in product design (Birmingham and Glasgow) to see how new recruits to the profession conceptualised their role in adding value to consumer goods.

d) The material and culture of plastic

We originally intended to investigate the design of furniture destined for commercial and/or home markets. The case for attending to non-domestic consumption remains but we decided to pull back from this line of enquiry for two reasons. As the theoretical focus of our project became clearer, it was apparent that contributing to debate about non-domestic consumption represented something of a distraction. Our work on DIY had alerted us to the day-to-day importance of materials and we therefore chose to pay more explicit attention to the relation between objects and the materials of which they are made. We organised our thinking and writing about these matters around a discussion of the material and symbolic history of plastic and its use in the design and production of selected items for the home. This change, agreed with the programme director, meant that we analysed home magazines from the 1950s (Good Housekeeping and Ideal Home), visited contemporary plastics trade fairs and collected other secondary data.

3 Interdisciplinary network building and non-academic interaction

We ran four academic and one non-academic workshops and played a key role in another non-academic 'breakfast meeting', organised around our work (in Helsinki). These events were important in promoting interdisciplinary debate and in allowing us to present and evaluate ideas generated in the course of our theoretical and empirical research.

Results

In this section we highlight key findings from the case studies and explain how we used these to address our central theoretical objectives.

1   Product, project, practice and competence.

We began by studying forms of consumption involved in DIY home improvement projects. Our respondents told us about the dynamic relation between things, skills and ambitions. Their consumption of tools and materials was inextricably related to the iterative formulation and accomplishment of projects and plans. Projects were in turn important for the accumulation and distribution of competence, confidence and disillusionment. Patterns of consumption changed as new products (intelligent paint, push fit plumbing, etc) were developed and as people acquired experience through doing, and through failing to do, specific tasks. We developed concepts of human–non-human hybridity in order to understand the complex distributions of competence between people, and between people and things. Taking this analysis further, we demonstrated that individual consumer products and more complex collections of tools and materials are themselves instrumental in moving the boundary between what people are and are not willing to do for themselves. This is of immediate significance for related patterns of consumption.

One of our respondents describes just such a situation. Will wanted to turn an attic space into a room for his two young children but was initially thwarted by the layout and by the need to move an existing radiator a metre or so to the left. He had no experience of plumbing and the whole project would have been abandoned had he not learned about Speedfit, a relatively new product range based on plastic push–fit connections. These products extended the scope of Will's DIY practice and allowed him to conceptualise and complete what was in fact a more complicated project of which the radiator move was just one part.

Technologies such as Speedfit, or quick drying non–drip varnish, extend the range of jobs tackled by those who lack traditional skills. As this case illustrates, consumption, competence and confidence are intimately and cumulatively related in ways that have potentially important implications for divisions of amateur and professional labour in society.

Analysis of DIY projects allowed us to identify a provisional chain of relationships through which consumer goods are linked to competence; competence to practice and practice to the consumption of consumer goods. We analysed the dynamic relation between products and practices in greater depth through our study of digital photography.

2   Innovations in practice: making configurations that work

Digital cameras have unsettled amateur photography. New techniques are required, new possibilities arise and new routines have to be established. We used the arrival of digital technology as a means of analyzing both the 'careers' of amateur photographers and their cumulative consequences for the field as a whole. We observed patterns of radical transformation – in how images are managed, manipulated and shared – and of remarkable stability, for example, in norms and definitions of photogenic subjects and situations.

Donald's collection of digital photographic images exemplifies these trends. Amongst the many pictures he has on file, one is an especially striking shot of Durham cathedral taken in the first light of dawn. As he explained, the challenging lighting would have prevented him from risking frames of film and in any event, he wouldn't normally have been out taking pictures on a freezing early spring morning. Donald's classically atmospheric image was only possible because digital photography had become so embedded in his life that he now carried the camera with him as a matter of course. His picture was the outcome of a conjunction between digital technology, a re-defined habit, a re-interpretation of risk and already established aesthetic conventions.

Other respondents provided detailed accounts of how digital cameras had entered their lives and how photographic practices had changed as a result. While concepts like those of 'domestication' are relevant (Silverstone and Hirsch 1992) more was required to capture the ways in which digital technologies were drawn into a framework of expectation and convention defined by incumbent genres of popular film photography and by parallel familiarity with computers and data management. In addressing this issue, we argued for a more macro-level understanding of how practices 'configure' each other and how competences circulate between them.

In addition, we showed how the careers of individual practitioners intersect with the trajectories of the practices they carry (Becker 1963), and how new recruits get drawn into the habits of taking, storing and managing pictures. Our work on DIY and on digital photography, demonstrated the importance of the hardware of consumer culture and of practical and not only symbolic aspects of materiality. We pursued our study of the 'materials' of material culture through an analysis of the relation between plastic as a substance, and a selection of plastic artefacts.

3   The materials of material culture

Sociological and anthropological studies of material culture generally focus on things, not on the 'materials' of which they are made. We examined the relation between the history of plastic (as a substance) and plastic objects – plates, washing up bowls and laminates – combining insights from science and technology studies and research on innovation with more anthropological literature on material culture to develop a social scientific analysis of materials (rather than artefacts).

In writing about colourful melamine tea sets, their ability to resist breaking, chipping and cracking and their positioning with respect to 'ordinary' crockery, we connected generic accounts of technological innovation with more culturally oriented analyses of individual artefacts. We concentrated on admittedly simple cases, most of which were made of just one material. This strategy allowed us to consider substances as 'vectors' capable of carrying cross cutting trends, for instance in the use of colour in the home.

Our analysis of representations of plastic products (mostly from the 1950s) and of more generic developments in the proliferation of complex polymeric materials showed how stories of promise and potential travel between the conventionally separate worlds of production and consumption. This led us to identify specific forms of cultural–material circuitry through which plastic 'makes' plastic products and through which plastic products 'make' plastic.

Our discussion of plastic highlighted the role of 'design' in mediating relations between artefacts and the materials of which they are made. We explored this theme in greater depth in our final case study of how contemporary industrial product designers conceptualise consumption, value, design and use.

4   Product design

Designers and clients have their own ideas about the relation between people and things. In reviewing these we isolated two analytically distinct positions. The first most widespread view was that value resides in the object itself. This dominant paradigm was associated with a product–centered approach to design. Other respondents concluded that value was defined by the relation between consumers and the things they use. This led them to adopt a range of methods and user–centered approaches to design, most of which focus on consumers' reactions to individual products. Inspired by our work on digital photography and DIY, and by sociological theories of practice, we developed a

*remodelling the manifesto at workshop 4*

third possibility which we termed practice–oriented product design, or POPD. POPD recognizes the active, cumulative and sometimes generative part things play in the reproduction and transformation of everyday life and acknowledges that objects are consumed and appropriated in the course of the effective accomplishment of social practices.

Rather than focusing on the necessarily limited and partial relation between individual objects and individual users/consumers/practitioners, POPD's working hypothesis is that the object–practice relation is of central significance for consumption and so for design, manufacturing and innovation. This line of reasoning takes us beyond user–centred design in that it suggests that consumer 'needs' arise from practice and that things are implicated in making the very 'doings' of which they are a part.

These arguments suggest that innovators and producers would do well to follow and focus on the practices in which their products are integrated and in which they intervene. This is an unusual idea and one that challenges the intellectual foundationsof research and advertising rooted in conservatively product–centric theories of markets and in correspondingly individualistic concepts of consumer choice.

We developed and tested the practical relevance of POPD through a deliberately provocative manifesto in three workshops, two of which were designed for non–academic participants. The results were very positive, as indicated by the enthusiastic responses of those involved (see comments on impacts, below).

8
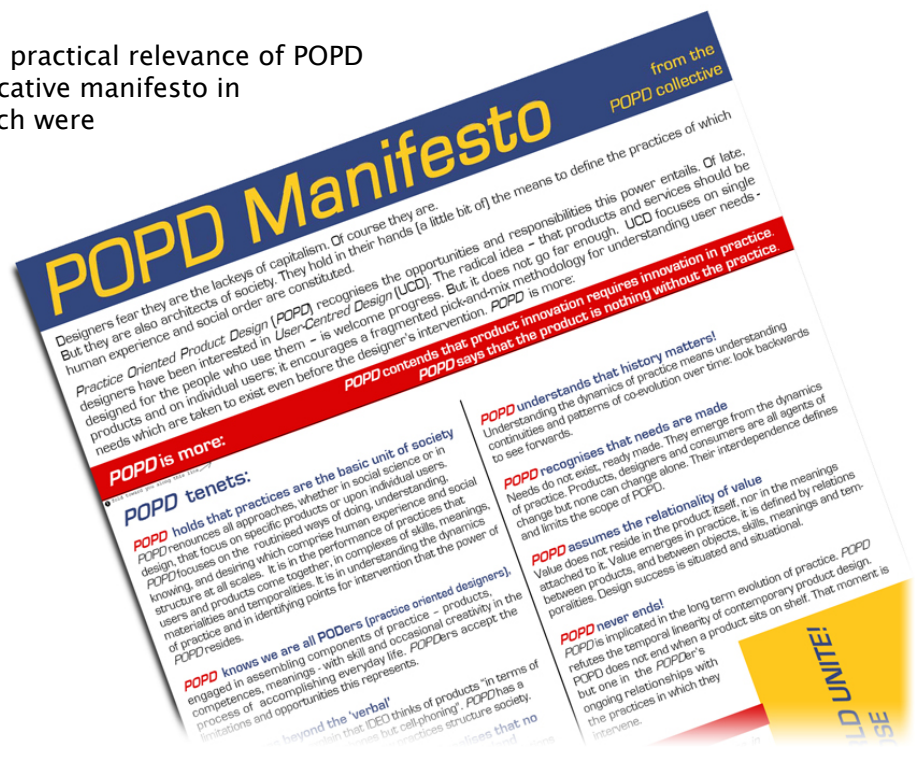
5 The design of everyday life

Our four case studies were selected and carried out in pursuit of a set of related theoretical ambitions. In drawing our findings together we highlight the following key points. First, *the accomplishment of everyday life involves the active integration of meanings, competences and complex suites of material objects. To elaborate, doing things like DIY or digital photography involves configuring and co-relating multiple artefacts in quite specific ways.* Each moment of integration is, in turn, important for the constitution and reproduction of the practice in question. In taking this step we provide a way of materialising otherwise 'social' concepts of practice, and of linking the theoretical contributions of Latour (1992) and Giddens (1984).

Second, we conclude that *the competences required to accomplish specific tasks are often distributed between persons and things; that these distributions matter for relations between people (for divisions of labour), and for the formulation of consumer projects and practices.*

In making the point that things are not innocent elements in the social organisation of doing we make new theoretical connections, this time between Latour (1992) and Durkheim (1964 [1893]). Suchman's definition of technologies as 'configurations that work' (Suchman et al. 1999) can and arguably should be taken account of in more managerially oriented theories of product design and innovation. How do configurations come to work, and how are such arrangements transformed? Our study of the dynamic relation between new and existing configurations, like those that constitute film based and digital forms of amateur photography, leads us to argue, third, that: *product innovations depend upon innovations in practice, but not in ways that are easy to anticipate or to control.*

One reason why they are not easy to anticipate or control is that, fourth: *consumers' projects and practices have emergent consequences for the 'careers' and experiences of those involved. These are cumulatively and collectively important for the development of future projects and practices.* This was most obviously demonstrated in our study of DIY. DIY projects were multiply transformative: changing the confidence and skills of those who do them; requiring tools and materials to be combined in new configurations; and having lasting effect on the fabric of the home itself.

Our fifth, but related point, builds on these ideas and on our study of plastic. From this we contend that *objects and the materials of which they are made are locked into relations of mutual influence and that concepts from science and technology studies and material culture can be combined in analysing the changing 'materials' of everyday life.* This conclusion suggests that there is scope for careful social scientific analysis of the substances of material culture. We have barely scratched the surface here but this possibility opens the way for new forms of engagement between the natural and social sciences. Our sixth and final observation is also of practical significance. We argue that *designers, manufacturers and policy makers could benefit from moving away from dominant product or user-centred paradigms and from recognising the inseparability of innovations in product and in practice.*

Understanding the role of goods in making, shaping and reproducing practices is arguably as significant for the public sector as it is for private companies, designers and manufacturers. As well as identifying the potential for 'practice oriented product design', our analysis has implications for debate and policy in the area of sustainable consumption. In particular, it suggests that public sector organizations should pay less attention to the ebb and flow of individual belief and commitment and concentrate instead on basic questions about how more and less sustainable ways of life are reproduced and materialized and how complexes of practice emerge and disappear.

Activities

We played a very active part in the life of the cultures of consumption programme, contributing to eight programme-related conferences and workshops and co-organising a further four such events for the programme.

In addition, and as part of our own project, we organised a series of four international and interdisciplinary workshops. A total of 59 individuals took part in the series as a whole. In effect, this sequence constituted a mini-seminar series in which ideas and contacts developed between one meeting and the next, and in which participants returned to engage in ongoing discussion.

participants' 'fossils', workshop 1

participants presenting, workshop 4

Our method of carefully structuring participatory exercises allowed us to develop and debate new topics and issues in ways that used but were not constrained by differences of background, theory and method. Comments and reactions from those involved demonstrate that we were especially effective in meeting our objective of building interdisciplinary debate between people from social science and design and from academic and non-academic backgrounds.

"Meeting people with such different backgrounds was really interesting for me, and I think that the mix between social sciences and design people has been a real success."
(Claire Leymonerie, University of Caen, France, workshop 4)

"These emails are getting a bit like an acceptance speech at the BAFTAs...but I'd also like to thank all of you for a really stimulating afternoon"
(Sharon Brunt, Osborne Pike consultancy, London meeting)

"a fascinating and fun couple of days"
(Simon Blyth, Unilever, workshop 4)

groupwork, workshop 4, July 2006

We have presented aspects of our work at conferences in design and social science in UK and Europe, and have been invited to talk about the project at a number of departmental seminars and workshops. To date we have given 35 presentations, as detailed below.

2005		
April	University of Surrey, Sociology departmental seminar	Designing and Consuming
April	University of Sheffield, Geography departmental seminar	Consumers as producers: DIY, technology and competence
May	Technology: Between Enthusiasm and Resistance TEER 2005 International Conference, University of Jyvaskyla, Finland	Reconfiguring configuration
May	Nordic Design Research Conference In the Making, Copenhagen, Denmark	Products and practices: selected concepts from Science and Technology Studies and from social theories of technology and practice
July	Project workshop Designing and consuming: exploring ideas of objects, practices and processes, Durham University	Objects, practices, processes'
		Perspectives on practice in designing and consuming
		Objects and agency
Sept	ESA 7th annual conference, Torun, Poland	Doing it yourself? Products, competence and meaning in the practices of DIY'
Sept	Joining Forces international design conference, Helsinki	The value of design and the design of value
Oct	STS and Housing Research, Durham University	DIY and household consumption: how well does STS fit into the house?
Oct	4S conference, Pasadena USA.	The choreography of everyday life: towards a materialised theory of practice
Nov	Invited presentation, University of Twente, the Netherlands	The choreography of everyday life: towards a materialised theory of practice
Nov	Cultures of Consumption programme, Restless Interiors, V&A Museum, London	DIY and the restlessness of domestic interiors
Nov	'Managing Stuff' seminar series, Management School/Department of Sociology, University of Lancaster	Missing cultural processes: Fossilisation studies
Dec	Sustainable Consumption and the Home, Durham University	Consumption practices, choice and sustainability

2006		
Jan	Project workshop Designing and consuming: objects, practices and processes, Durham University	Design theory and concepts of the consumer–user
		Stuff, image and skill: towards an integrative theory of practice
		The domestication of digital photography: technology and the dynamics of practice
Jan	Project workshop Design and consumption: ideas at the interface, Durham University	Concepts and design practice, words and objects
		The value of design and the design of value
		DIY projects: active consumers, tools and materials
Jan	Durham University, Geography, Lived and Material Culture seminar	Consumption, practice and materiality
April	University of Surrey, Sociology, Departmental Seminar	Transformation, reproduction and recruitment, the case of digital photography
April	BSA annual conference, Harrogate	The uneven re–ordering of amateur photography
May	University of Edinburgh, ISSTI, Departmental Seminar	The Science and Culture of Plastic
Aug	EASST, Lausanne	Know–how. Re–distributing competence between humans, technologies and materials
Aug	ESA, Durham	Digital cameras and the dynamics of consumer practices
Oct	Procter and Gamble/Saatchi and Saatchi, London	Invited presentation on practice oriented product design and everyday life
Oct	'Material Narratives' workshop, University of Twente, The Netherlands	Material narratives of plastic
Nov	University College London, Departmental seminar, Anthropology	The materials of material culture
Dec	Helsinki University of Art and Design, Finland, visiting lecture	Practice Oriented Product Design
Dec	Vectia Foresight Forum: Bringing customer practices into focus, Helsinki, Finland	Practices and Consumption
2007		
Feb	Banking on housing, Durham University	DIY: fun, frustration and a bit of finance
Feb	Building Event III, MATERIAL BODY TECHNOLOGY, University of Edinburgh	DIY – product, project and practice
Mar	University of Birmingham, Departmental Seminar, Sociology	The materials of material culture

Outputs

We completed the manuscript of our book, The Design of Everyday Life, within the period of the project award. This has been very well received by the publisher's reviewer who writes as follows:

> "This book uses the everyday artefact to break new intellectual ground for consumption studies, design analysis, and the field of material culture. Based on close empirical observation of social practice, it helps bring a new sociology of the artefact into being. It is creative, fresh, and original."

The book will be published by Berg in December 2007.

A paper, 'Products and practices: selected concepts from science and technology studies and from social theories of consumption and practice' (Ingram, Shove and Watson) will appear in Design Issues in Spring 2007. Another, 'Product, competence, project and practice: DIY and the dynamics of craft consumption' (Watson and Shove) has been submitted as part of a proposed special issue Materiality, Design and Consumption, of the Journal of Consumer Culture. Matt Watson is editor of the issue, which also includes articles by Harvey Molotch (New York University), Tim Dant (UEA) and Claire Leymonerie (University of Caen, Basse-Normandie).

Two further papers are in preparation, one for Design Studies by Annable and Ingram, and one for the Journal of Material Culture, by Watson and Shove.

Impacts

Our project has had and is likely to have considerable theoretical influence across a range of disciplines. According to the reviewer of The Design of Everyday Life, our work will interest and challenge readers from sociology, design, anthropology and science studies because it "connects dots ordinarily left on their own. It combines methods (e.g. focus groups and interviews on materiality-sites …with theoretical stances (e.g. Latour) that do not often appear together." Our article for Design Issues, has a similarly interdisciplinary orientation and when published, the special issue of the Journal of Consumer Culture will bring matters of design and materiality to the attention of scholars concerned with consumption and culture.

Our workshops clearly had an impact on those who took part. Gordon Hush, programme leader in product design at Glasgow School of Art, provides further evidence that they fulfilled their objective of creating interdisciplinary links.

> "as a 'networking' exercise the seminar series has been exceptionally useful. Nina Wakeford is going to be an external examiner here at GSA, Michele Chang and Nina have invited me down to Incite, and Ilpo [Koskinen from UIAH, Helsinki] and I are talking about forming a European network of sociologists who work with designers."

Though primarily aimed at academics from design and social science, the workshops also attracted representatives of major corporations including Intel and Unilever, as well as independent design consultants. The links created here resulted in two commercially oriented workshops, in London and Helsinki, and the

appearance of our research in blogs and in industry research papers is evidence of its broader diffusion. (see for example: cogsys.blogspot.com/2007/02/discussion-around-practice-theory-and.html www-edc.eng.cam.ac.uk/~jag76/hci_workshop06/prendergast_et_al.pdf practicedesign.blogspot.com). Possibilities for future collaborations including studentships are under discussion.

Our impact on issues and institutions of public policy is less immediately apparent. Building on our success with the commercial sector, one of our next steps is to establish the potential for a practice oriented approach to policy design. As described below, this is an integral part of a current large grant proposal to the ESRC.

Future Research Priorities

In this project we considered the relation between consumer goods and practices within relatively bounded settings like those of DIY or amateur photography as reproduced by a handful of practitioners in the UK today. We bracketed out what now seem to be important and interesting questions about how the elements of practice (including material goods) circulate and how technically identical artefacts are integrated in and therefore part of substantially different 'working configurations'.

The idea of paying attention to connections between coexisting artefacts (and between new and existing technologies) points to the possibility of a more explicitly relational theory of the pre- and co-requisite elements of everyday practice. There is more to be done to understand how complexes and repertoires of material cultural forms take shape, and there is unrealised potential to apply these ideas to existing debates and discussions of local and global consumption and practice, something we will begin to address through our ongoing programme of publications.

A current ESRC large grant application, Practices, Systems and Sustainability (PS2), which involves Shove (principal investigator), Watson and other colleagues at Lancaster, engages with fundamental questions about how complex systems of practice develop and change. Taking concepts developed in Designing and Consuming forward, PS2 is designed to generate conceptual and practical tools capable of engaging effectively with urgent, systemic and socially embedded processes and problems of sustainability. As such it explores the policy implications of our materialised account of consumption and practice.

Our formulation of practice-oriented product design has yet to be fully tested in a real commercial or policy based environment. What kinds of research and social scientific intelligence would be required to influence and inform POPD? How might the methods of POPD differ from those product or user-centred paradigms? These are questions still to be addressed in collaboration with commercial or public institutions.

References

Akrich, M. (1992). The De-Scription of Technical Objects. Shaping Technology/ Building Society: Studies in Sociotechnical Change. W. Bijker, Wiebe and J. Law. Cambridge Mass, MIT Press: 205-224.

Becker, H. (1963). Outsiders. New York, Free Press.

Buchli, V., Ed. (2002). The Material Culture Reader. Oxford, Berg.

Durkheim, E. (1964 [1893]). The Division of Labour in Society. Glencoe Ill, Free Press.

Giddens, A. (1984). The Constitution of Society. Cambridge, Polity Press.

Julier, G. (2000). The Culture of Design. London, Sage.

Latour, B. (1992). Where are the Missing Masses? A Sociology of a Few Mundane Artefacts'. Shaping Technology/Building Society. W. E. Bijker and J. Law. Cambridge Mass, MIT Press: 225-258.

Lie, M. and K. Sorensen (1996). Making Technology Our Own? Domesticating Technology into Everyday Life. Oslo, Scandinavian University Press.

Miller, D. (1998). Material cultures: why some things matter. London, UCL Press.

Molotch, H. (2002). Where Stuff Comes From: How Toasters, Toilets, Cars, Computers and Many Other Things Come to Be as They Are, Taylor and Francis.

Nieminen-Sundell, R. and M. Pantzar (2003). Towards an ecology of goods: symbiosis and competition between material household commodities. Empathic Design. I. Koskinen. Helsinki, IT Press.

Reckwitz, A. (2002). "Towards a Theory of Social Practices: A development in culturalist theorizing." European Journal of Social Theory 5(2): 243-63.

Schatzki, T. (1996). Social Practices: a Wittgensteinian approach to human activity and the social. Cambridge, Cambridge University Press.

Shove, E. and D. Southerton (2000). "Defrosting the freezer: From novelty to convenience – A narrative of normalization." Journal of Material Culture 5(3): 301-319.

Silverstone, R. (1993). "Time, information and communication technologies in the household." Time and Society 2(3): 283-311.

Silverstone, R. and E. Hirsch, Eds. (1992). Consuming Technologies. London, Routledge.

Suchman, L., J. Blomberg, et al. (1999). "Reconstructing Technologies as Social Practice." American Behavioural Scientist 43(3): 392-408.

Warde, A. (2005). "Consumption and Theories of Practice." Journal of Consumer Culture 5(2): 131-153.

Woolgar, S. (1991). Configuring the User: The Case of Usability Trials. A Sociology of Monsters: Essays on Power, Technology and Domination. J. Law. London, Routledge.