

Products and practices. Selected concepts from science and technology studies and from social theories of consumption and practice

ABSTRACT

Design researchers and practitioners are increasingly interested in how designed artefacts shape and are shaped by the contexts in which they are used. Despite a long if selective history of theoretical engagement between design and social science, there has yet to be an effective exchange of ideas on this subject in particular. In this paper, we present a selection of concepts drawn from recent debates in science and technology studies and consumption theory. We introduce notions of acquisition; scripting; appropriation; assembly; normalisation and practice with the aim of initiating an interdisciplinary conversation about how designed artefacts are configured and appropriated and about how they structure the social practices and situations of which they are a part

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INTRODUCTION

Design research and practice has often been influenced by concepts and methods borrowed from the social sciences. Developments in psychology and semiotics have, for example, made their mark in human factors research, in applied ergonomics and in newly developing areas like product semantics and emotional design. Techniques of user-centred design frequently include aspects of anthropological method and there have been important moments of exchange, particularly in the area of human-computer interaction. Recently, perspectives from science and technology studies (STS) have begun to ingress to design research, applied to exploring the broader social embeddedness and responsibilities of the design process [1, 2]. In this paper we explore possibilities for further cross-fertilisation, this time between design, STS and also sociological theories of consumption and practice, which can contribute to better understanding of how designed artefacts shape and are shaped by the contexts in which they are used. Margolin (2002) concludes that 'we have no theory of social action that incorporates a relation to products, not do we have many studies of how people acquire and organize the aggregates of products with which they live their lives' (52). It is true that sociologists have had more to say about consumption than use [3: 52], however, this is not the whole story. As hinted at in the examples we refer to below, many have also been concerned, sometimes centrally so, with the relation between things, people and social practices. The challenge is to relate this rich seam of conceptual resources to design research [3, 4].¹

Partly because theirs is a practical discipline, designers work with varied but usually tacit understandings of consumption, use and material

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culture. Recent efforts to make these more explicit indicate increasing interest in product systems and in the social contexts and conditions of use [5-7]. Our aim is to contribute to debate of the relations between things, people and social practices by offering a digest of concepts that have the potential to bridge between social theory and design. In what follows, we engage in a process of rather violent abstraction, ripping ideas out of the debates from which they have evolved. We undertake this somewhat brutal exercise in summary and simplification in the hope that it might inspire further interdisciplinary exploration.

Whilst it is beyond the scope of this paper to demonstrate how concepts from STS can aid the linkage between design theory and design practice (a topic to be addressed later in the project), reference to models of design process can locate the concepts in the larger processes of designing and consuming. The two processes can be seen to be sequential. For things to be consumed they need to have been designed: product launch into the marketplace is where models of new product development end, and the marketplace is where consumption begins. However, the reverse sequence is equally valid: consumption practices, and their component materials, symbols and procedures develop over time, generating new product opportunities to feed the practice [8, 9]. These perceived opportunities stimulate design activity: the identification of design opportunity increasingly defines the start of design process, rather than the definition of a 'problem'. Joining these two sequences together produces a representation of designing and consuming that resonates with some models of design process, showing how consumer practices stimulate design, and new products stimulate new practices.

The six themes on which we focus (acquisition; scripting; appropriation; assembly; normalisation; and practice) have been selected because each sheds light on the relation between products and practices, between the physical product and the images and symbols it embodies, and between the symbolism and procedures of practice. Although presented one after the other, the sub-sections of the paper do not fit together to form a seamless theoretical whole. As we explain, each concept has its own intellectual ancestry. Even so, there is some logic to the sequence that we follow. We begin by reviewing a range of sociological explanations as to why people acquire consumer goods. Grouped together under the heading of 'acquisition' these ideas represent different ways of thinking about what things are for, how they fit into, and how they extend, existing regimes of *meaning* and significance.

The concept of scripting takes us into new territory for it suggests that products and objects have a measure of agency. Depending upon how they are designed, things permit and prevent certain courses of action. To use the sociological jargon, they 'configure' their users. In this analysis, objects are addressed as material rather than symbolic entities: what matters is the relation between things, on the one hand, and the *actions* of their users and

consumers on the other. In writing about 'appropriation' we explore the other side of this coin. The literature that we draw together under this heading recognises the situated nature of consumption and makes much of the point that attributions of meaning and purpose are culturally and situationally specific.

Terms like scripting and appropriation are generally used to describe the relation between people and discrete objects be they computers, bottle banks, or fridge-freezers. By contrast, the rather less developed notion of 'assembly' relates to the ways in which suites or complexes of artefacts relate to each other sometimes in design but more commonly in use. Under this heading we reflect on how systems of material inter-dependence develop and on the processes involved in 'orchestrating' materials in domains like the kitchen or the home.

We then turn our attention to the *dynamic* nature of the relation between product and practice. As many scholars have recognised, there is a difference between invention and innovation. We use the term 'normalisation' to refer to processes through which new objects and arrangements become established and through which new meanings, expectations and forms of competence emerge. In the final more speculative part of the paper, we comment on the potential for further theoretical development with respect to the material foundation of social practice.

ACQUISITION

Why do people acquire new consumer goods? This is an important question for product designers for whom achievement is at least partly measured in terms of retail success. Sociologists of consumption are also interested in moments of, and motivations for, acquisition but for rather different reasons. In this field the challenge of understanding the 'desire for the new' [10] relates to the more general task of analysing and comprehending escalating (and environmentally unsustainable) patterns of demand in contemporary society. The idea that consumers' pursuit of novelty goes hand in hand with producers' requirement for innovation constitutes one popular explanation. Touching upon similar themes, design researchers frequently wonder about their role in fuelling these processes of product variation and specialisation. There are, however, other more sociological accounts of what drives people to acquire novel products and technologies. In reviewing some of this literature, Shove and Warde [11] isolate a number of generic mechanisms held to support escalating levels of consumption. Put really very briefly, these include:

social comparison.

The core proposition here is that lower social classes seek to imitate higher status groups. By implication, demand will not cease until the lower classes have the same possessions as their superiors. Meanwhile, the higher classes constantly seek new items through which to maintain a measure of social distinction. The popular notion of 'keeping up with the Joneses' is one very simple formulation of what has become a much more elaborated set of

arguments about the part objects play in signalling status and identity.

the creation of self identity

In selecting goods and services, people transmit messages to others – they manipulate and manage appearances and thereby create a ‘self identity’. Objects, and the meanings associated with them, constitute resources used in the definition of self.

mental stimulation and novelty

Social-psychological accounts of consumption suggest that the experience of novelty has attractions of its own: trying out new items and learning new tastes are ways of averting boredom, hence there is an infinite demand for novelty.

matching or the Diderot effect

Diderot was given a new red dressing gown as a present. Because it made other items his study look shabby, he progressively replaced his desk, curtains and carpet so that they went with his new robe. McCracken [12] uses this story to identify a process of ratcheting in which replacement of one element or item sets off a further round of acquisition.

specialization

As the range of activities in which one might participate increases, so does the range of specialised products each targeted at a specific group of practitioners. The separation of once similar activities into increasingly specialised fields fosters the production and consumption of ever more precisely differentiated goods and services.

Individually and in combination such mechanisms may well increase the level and volume of consumption in society. It is, however, important to notice that as explanations of change these arguments focus on the acquisition of conspicuous and tangible objects rather than on practicalities of use. We return to this point later. For now it is enough to notice that much of the extensive literature on consumption and material culture emphasises the symbolic dimensions of acquisition and ownership: things are routinely addressed as carriers of meaning, distinction and value. As already mentioned, one consequence is that practical questions of action and utility tend to take second place. By contrast, these are central themes for those who work in science and technology studies. Again this is a huge field. In picking our way through it and in picking out concepts specifically relevant for understanding the relation between practices and products, we begin with the concept of ‘scripting’.

SCRIPTING

Script writers in drama, film and television define the actions and practices of human actors who follow their lines. The idea that designers have a similar role in scripting the actions and practices of those who use and consume the products they make has become common currency in social studies of science and technology. The notion of *scripting* refers to the means by which a technology constitutes or ‘configures its user’ [13]. As Madeleine Akrich puts it, technical objects ‘define a framework of action together with the actors and the

space in which they are supposed to act’ [14]. Whether intentionally or not, the design of a technology embeds particular expectations of purpose, context, practice and use. Scripts can be intentional (on the part of the designer) or not, they can be material or semiotic, and they can be relatively open (flexible) or closed (prescriptive).

Scripting is most obvious when objects are designed to configure the user in specific and practical ways. For example, Latour [15] analyses hotel key fobs which are bulky enough to be an encumbrance. Simply being the size they are is enough to ‘tell’ guests to return them to the desk. In this case the message ‘leave me at the desk’ is *inscribed* in the key itself. Another example can be found in the toilets of *Voyager* trains on the UK rail network. Above the toilet fixture is a sign indicating that the flush button is located behind the lifted toilet seat. To carry out the thoroughly embedded practice of flushing the toilet, the user is obliged to adopt the less universal practice of putting the toilet seat down after use.

This example illustrates the difference between *open* and *closed* scripts. Given the assumption that most users will flush the toilet after use, putting the button behind the toilet seat materially disciplines the user. If they are to flush at all, they have no option but to lower the seat. However, the degree to which this script is in fact ‘closed’ depends upon contextually specific cultural norms. Given a user less accustomed to flushing the toilet or actively resistant to being ordered to do so by a bathroom fixture, the script re-opens as the user rejects the action-narrative inscribed in the flush button.

In this example, the openness of the script is binary: it is a matter of whether to comply or not. But scripts can also be open in the sense that a technology affords multiple uses, meanings or practices. In addition, scripts may be less practically purposive but nonetheless play an important semiotic role by encoding meanings and understandings, for example relating to concepts of cleanliness or to notions of what makes a coherent lifestyle.

The concept of scripting highlights the range of contextual, practical, material and semiotic factors that need to be taken into account when considering whether and how a designer’s inscription will in fact define the details of use. Scripting is a concept born of reflexive sensitivity to the contextuality of everyday life. Claims about the technological determination of practices are (or should be) correspondingly modest. The scripts of even the most prescribed artifacts remain open to resistance (or *anti-programmes*) when exposed to the contextual realities of use and practice. While certain artefacts undoubtedly script and configure their users’ practices, there is also no doubt that consumers appropriate and themselves configure objects in all manner of situationally specific ways.

APPROPRIATION

Discussions about the appropriation, or domestication, of technologies and commodities have their origins in different intellectual traditions.

While some of this literature springs from debates about the concept of scripting, much also comes from cultural and consumer studies. Whatever their lineage, analyses of appropriation and domestication highlight the active part that users play in fitting technologies and commodities into existing ways of life, frameworks of meaning and contexts of practice.

In relation to discussions about scripting, appropriation can be understood as a corrective to the technologically deterministic optimism of would-be script writers. In practice, few commentators speak of scripting without recognising it as but one aspect of the process through which objects and users configure each another. Even so, it is sometimes useful to oppose scripting and appropriation if only as a means of describing the otherwise seamless process of co-determination.

In extreme cases, users actively develop and implement 'anti-programmes' [16] in response or resistance to those inscribed in the objects themselves. This kind of appropriation may take the form of direct technical intervention. However, appropriation is more often a matter of finding alternative scripts, or affordances, as technologies and products are assimilated into peoples' lives and as they take their part alongside or within existing assemblages of possessions and routine practices.

These processes are similar to those that have interested authors coming to appropriation from the direction of consumption and cultural studies. For example, Silverstone, Hirsch and Morley [17] explore the dynamics of appropriation through an analysis of the 'domestication' of communication, information and media technologies, showing how videos and computers are accommodated within the home. Focusing on practices that involve more mundane technologies, Kaufmann offers a detailed analysis of laundry routines. His study examines the relation between these ordinary habits and the delicate (but often unspoken) negotiations that go on when two people construct a joint identity as a 'couple'. Kaufmann's work gives a sense of the dense and subtle network of relationships into which an appliance like a washing machine is inserted and through which it is defined and given meaning [18]. Discussions of appropriation also find expression in anthropological analyses of how national cultures appropriate potentially 'imperialistic' global commodities. Miller's [19] work on the appropriation of the archetypal global brand, Coca-cola, as an ethnically differentiated national drink of Trinidad exemplifies this approach.

Appropriation and domestication are closely allied concepts used to describe the processes through which standardised technologies and commodities are embraced, subverted or resisted in everyday life. In understanding the details of assimilation, it is crucial to consider the dynamic interaction of products between and within assemblages of artefacts and practices. The concept of assembly is useful in analysing and understanding these relations.

ASSEMBLY

Having established that products and technologies are incorporated into existing regimes and ways of life, the next question is how? What are the conventions and 'rules' of appropriation and what is it that is achieved and maintained as a result. Although relatively little has been written about this as an issue in its own right a number of authors have made relevant observations about modes of integration and the work involved in assembling the material and symbolic ingredients of daily life [20].

In writing about how households use domestic appliances, Silverstone [21] refers to styles of 'clocking', that is to the rhythms and routines of family life into which things like televisions and answerphones are incorporated and which they thereby change. His analysis suggests the existence of a 'higher' level temporal order – a time-style - part public, part private, that families reproduce through a distinctive piecing together of tools, technologies and practices. The idea here is that things are appropriated in a manner that is consistent with a 'higher' level image of how family life should be organised. Similar arguments can be made about how more encompassing understandings of health, hygiene and well being orchestrate practice [8].

Macro-level, orchestrating concepts of normal practice are important forces for co-ordination but there are others. The notion of a 'lifestyle' - though contested - points to other conventions of order. Various authors have argued that things are, for example, acquired and combined to form complete lifestyle packages: hence it would be strange if someone rich enough to own a large house and several cars did not also have an adequate heating system. Notions of symbolic coherence are equally important, driving sequences of 'upgrading' - as when the acquisition of a new carpet prompts the purchase of a new sofa or a round of re-decoration. In addition, what goes with what may be determined by questions of technical interoperability. Many products and technologies are designed to be compatible with others, thereby creating systems or networks of interdependence, for example, between computers, printers and digital cameras; or between textiles, washing machines and detergents.

Service oriented, symbolic, and material forms of integration obviously co-exist. Understanding how these modes operate together, and how sociotechnical 'regimes' emerge as a result remains an important challenge especially since there are multiple contexts or sites of assembly. In some situations consumers do much of the integrative work themselves, selecting from a repertoire of consumer goods (for example, shirts, socks, shoes, jackets, coats, handbags, etc.) in constructing what is for them a coherent whole. In other cases, designers and manufacturers produce what are in effect pre-assembled bundles of products and technologies.

We have not yet commented on the temporal aspect of the relation between people, products and

practices but this is an important and well-documented theme.

NORMALISATION

Sociologists of consumption and of technology use different theories and models in explaining how novel arrangements become normal. Some concentrate on the 'diffusion' of new products, arguing that these percolate through the strata of society and that fashions develop as people (and social groups) emulate each other. Although Rogers [22] does not relate the propensity for risk taking to social class or status, his suggestion that the practices of 'early adopters' are in time taken up by more cautious members of society and finally by reluctant 'laggards' invokes a similarly infectious theory of social change. These accounts take the status of the new product for granted: all that matters is how it is introduced and disseminated.

By contrast, other writers focus on the changing *relation* between artefacts and their environments. Studies of innovation have, for example, shown that new technologies often develop within protected 'niches', safe from the rigours of established markets. The process of moving from the 'nursery' to the wider world is described as one of making alliances and forging new relations between things and people along the way [23]. In this account, artefacts and technological systems are constantly re-defined during the course of a 'journey' that never really ends. The concept of 'innofusion', that is of innovation and diffusion combined, captures the idea that for all intents and purposes, things change as their status and positioning within the wider environment (or market) evolves, and as they become normal [24]. This is a dynamic enterprise and one in which new products also have consequences for the environments into which they are introduced. In becoming normal, certain 'radical' innovations disrupt and challenge previously established skills, institutional arrangements, expectations and conventions [25].

In an article explicitly linking analyses of innovation with theories of consumer behaviour, Mika Pantzar [26] pays serious attention to the evolving character of meaning as novel technologies become normal. Tracking the symbolic trajectories of a range of commodities (the telephone, the computer, the car, the television), he suggests that such items go through distinctive phases of redefinition. Starting their collective career as fashionable objects of desire, the next stage is one in which acquisition is legitimized in rational or functional terms. According to Pantzar, this is followed by a period of routinisation. By this point, the items in question have become so ordinary that their acquisition needs no justification at all.

What is distinctive about this analysis is the proposition that the (re)attribution of meaning is itself part of the dynamic of innovation *and* of normalization. Even when artefacts appear stable, that is, when their design is 'fixed', their acquisition and appropriation remains a process of invention for their 'purpose' and social significance is always on the move [8, 24, 27].

PRACTICE

The simple observation that consumer goods are important not for their own sake but for the practices they make possible has potentially far reaching implications for our discussion. Such an observation prompts us to think again about the tools, toys, equipment and resources required to accomplish what people take to be normal, ordinary and acceptable ways of life. This is not a one-way relationship. As indicated above, artefacts and practices co-evolve. As we have seen, different fields of scholarship have paid more and less attention to the human and to the non-human [15] aspects of this dynamic. In this final section we comment briefly on the conceptual implications of shifting ground and of putting the emergent 'doing', that is the practice itself, centre stage.

For Reckwitz [28] and for Schatzki [29], practices emerge from, constitute and make sense of "forms of bodily activity, forms of mental activity, things and their use, background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge" [28: 249]. In the view of these authors, practice cannot be reduced to any one of these elements alone. This is in contrast to those who take the individual or the artefact as the unit of analysis and enquiry. From a practice theoretic perspective, the alternative is to conceptualise people and things as the 'carriers' of practice (and of many different practices that are not necessarily co-ordinated with one another) and therefore the carriers of certain routinised ways of doing, understanding, knowing how and desiring. These aspects are necessary attributes of practices in which individuals participate and which are in part shaped by the material world - but they are *not* qualities of human or of non-human actors. Building on these ideas requires a subtle but significant shift of orientation. Amongst other things, it suggests that we could and should consider how practices are sustained by provisional networks of practical knowledge, including that which is embedded in material objects. In pursuing this way of thinking, Preda views objects as 'knots of socially sanctioned knowledge' [30: 347], and as entities that 'bind human actors and participate in developing specific forms of social order because they allow for common practices to develop.' [30: 351]. There is much more that could be said, but for the time being it is enough to notice that there is a useful and relevant body of social scientific literature that deals with the role of objects as constituents of practice and as entities through which knowledge and social order are carried and reproduced.

OPENING CONVERSATION

The selection of ideas sketched above gives an indication of the theoretical energy generated by the intersection of concepts developed within science and technology studies and social theories of practice and consumption. In setting out some of these resources we have begun what is so far only half a conversation. We have yet to formalise our understanding of where and how such concepts have active synergies with design research.

However, we can already identify what appear to be points of commonality though also of contention.

For example, acquisition clearly links with central understandings of how consumers relate to products in the market place, not least with themes of emotional design, of high added value and of the 'X factor'; as already discussed, the idea that objects can script user action and experience has clear resonances in design practice, including in interface design and as expressed in the objective of 'designing the user experience'; appropriation links with recognition within design that much design work goes on well beyond the reach of professional designers, not only by producers but also by ultimate users of products; at its most basic the concept of assembly is embedded in the coordinated design of product ranges and families; and normalisation has resonances with theories of product evolution. Indeed, one thread that links these concepts is a temporal dimension: in unpacking some of the ways that products and practices feed each other, a theme of evolutionary change is revealed. An acceptance of evolutionary forces in the shaping of consumer products is rarely voiced: design practice and design education alike champion a creationist approach in which the creativity of the designer is promoted as the major driving force in the forming of new products. The implications for professional design practice of notions of consumer-influenced product evolution have been recognised in some organisations. Intel Research, IDEO and Philips have been in the forefront of promoting new design methodologies based on approaches that these concepts articulate.

More interestingly, there are obvious opportunities for exchange between ergonomic research and the concepts of scripting and appropriation sketched above. For example, could the ambition of making things that are 'fit for purpose' be elaborated so as to take note of the point that things also make the purposes for which they are fit?

Similarly, discussions about the passive or sovereign status of the consumer appear in a rather different light when we acknowledge the part that consumers, designers and producers play in co-producing the practices through which objects and materialised forms of knowledge have meaning.

On this point, we might re-phrase Latour's observation that 'students of technology are never faced with people on the one hand and things on the other, they are faced with programs of action, sections of which are endowed to parts of humans, while other sections are entrusted to parts of nonhumans' [15: 254]. This observation works just as well if we put 'designers' or 'design researchers' in place of 'students of technology' and it is perhaps no surprise to find design practitioners expressing an apparently similar point of view. Although they use different terms, Kelley and Littmann explain that they 'think of products in terms of verbs, not nouns: not cell-phones but cell-phonings' [31: 47]. As Latour implies, practice oriented approaches to product design demand that attention be paid to the relation between human and non-human actors

(objects) jointly implicated in the process of 'doing' - whether that be doing cell-phonings, fishing or whatever.

As these brief examples illustrate, there are more extensive possibilities for cross-fertilisation between design and social science than might at first appear. Douglas and Isherwood's famous observation that goods are 'needed for making visible and stable the categories of culture' [32: 38] has tended to be interpreted as a statement about the significance of symbolic distinction, taste and the somewhat abstract role of artefacts as markers and carriers of meaning. It is, however, clear that social science has much to say about the pragmatic and practical role of goods, and about how objects stabilise culture through use, competence and know-how as well as through exchange and display. What is required and what we hope to have initiated is a considered interdisciplinary conversation about the relevance of these ideas for design and design research.

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