

Chapter 4

‘New’ Ethnography and Ubiquitous Computing

Abstract In this chapter we inspect how the movement of the computer away from the desktop and the workplace has led to calls for ‘new’ approaches to ethnography within systems design, with the accompanying suggestion that ethnography should now be used to provide an understanding (rather than an explication) of culture and the meaning that technology has for people in their everyday lives. What we see in these calls are some old social science arguments about the ‘macro’ and the ‘micro’ being dusted off and played out anew in design. More than this, we see old social science practices of description at work, which rip familiar everyday concepts out of everyday contexts of use and distort them to provide *generalised analytic accounts* of culture and the social order that have arisen as a consequence of ubiquitous computing. Something we especially see unravel for the reader here is the way in which, for all of their claimed purchase upon the social character of computing in the twenty-first century, the generalised analytic accounts provided by ‘new’ approaches to ethnography fail to give design any kind of *privileged* insight into the contemporary social world. The accounts they offer are of much the same order that any competent member of society might give, in so much as they are demonstrably rendered through *common-sense* practices of description.

4.1 Ethnography as Cultural Tourism

As noted at the beginning of the last chapter, computing in the twenty-first century is marked by the movement of the computer away from the desktop into the fabric of everyday life; a shift that is often characterised as ‘ubiquitous computing’. As also noted this shift has been accompanied by calls for ‘new’ approaches to ethnography within systems design, which differ from those that have been predominantly engaged with to date (Dourish and Bell 2011). The argument that underpins the call is that ethnography in design has until now had a utilitarian cast. As Plowman et al. (1995) had previously observed, ethnographies have often been undertaken and milked for ‘implications for design’, which are typically tagged on to a study in a section at the end to provide some relevance for design, either in terms of requirements for designing with ‘this setting in mind’ or to highlight particular issues of relevance for a specific kind of design solution. Consequently, ethnography in

design to date is largely construed of in such accounts as an 'under-labourer' approach with respect to the development of *requirements* for systems design (see Dourish 2006).

In distinction to this it is argued that ethnography can be used to provide an understanding of culture and the meaning that technology has for people in their everyday lives, in order for designers to reflect upon the kinds of interventions they are proposing or making when designing computer systems (ibid.). This pits what is called 'analytic' ethnography – i.e., ethnography that provides interpretive understandings of culture – against (merely) 'factual' ethnography developed in order to derive implications for design and requirements for particular systems.¹ The sorts of ethnomethodological studies done for the purposes of design that we have been associated with are by implication, though not actually referred to as such, contrasted with ethnographic studies undertaken for the purposes of understanding general cultural drivers such as power, value, and emotion. Analytic ethnography providing an understanding of cultures and societies at large is, then, juxtaposed against what is reconfigured as factual ethnography that focuses on the practices of situated action and interaction in context.

We have some sympathy with some of the points made by Dourish and Bell. Early on in the engagement of ethnography with design there were often pressures from funding agencies and journals to develop sections in applications or papers on the relevance of a study for systems design. We have all had reviewers specifically call for the inclusion of an 'implications for design' section. This often results in a generalised, broad-brush connection between studies and design interests. However, these initial and sometimes blundering attempts to connect the social with design should really be thought of as *first steps* in working out how two very different sets of disciplines could engage with one another, rather than as a defining feature of the relationship. While crude or gross connections may have been made between an ethnographic study conducted in some setting for systems to be placed therein, or critiques of existing systems, the real benefit of these sorts of investigations was the contribution they made to the developing appreciation amongst designers that the social really did and does need to be built into design.

The issue at hand now, as we argue throughout this volume, is to mature this understanding so that the social can be built into the design process in a methodical way, as opposed to (merely) drawing implications for design from a study. That is, we are here exploring the opportunity for building the social into design so that ethnography is used *within* the enterprise in a methodical way, rather than it being something that is done *for* design and drawn upon in an ad hoc manner. Dourish and Bell may denigrate developing implications for design from out of ethnography, but we find it difficult to see how a generalised understanding of culture and society is

¹Dourish's notion of 'analytic' ethnography, which emphasises the interpretive understanding of social matters by the social scientist, should not be confused with Button's use of the term (see Button 2000), where he was attempting to make a contrast between ethnography that produces descriptions of what anyone can see with ethnography that attempts to make visible *how* anyone can see what has been seen.

much different when push comes to shove or why building in the social should be disconnected from developing requirements for a system. In this respect, attempting to methodically address the social within design, although it may involve more than just pointing to social considerations, would (it seems to us at least) necessarily be part of building a system. If it is not, one might wonder what ethnography's role is *in* systems design?

A response to this kind of question, and the one offered by Dourish (2006), is that 'implications for design' are not the appropriate criteria by which ethnographic contributions should be judged.

In thinking about ethnography (or indeed any social science contribution), it is important to distinguish two levels and two sorts of contributions – the analytic and the empirical ... The call for 'implications for design', I would argue, drawing upon the notion of requirements in traditional software engineering, is a request for empiricism. It is a request that the ethnography provide 'facts' – when people work, how they talk to each other, what they do when they sit down at the computer, and so forth – which can be translated into technological constraints and opportunities ... What has traditionally been more complicated has been to establish a deeper, more foundational connection between ethnography and design – to look for a connection at an analytic level rather than simply an empirical one.

A demonstration of the point was actually provided some 10 years previously by Dourish in collaboration with one of the present authors (Dourish and Button 1998), where it was shown that taking foundational matters that have driven ethnomethodological studies, such as the *fact* (as noted in the last chapter) that social action is done so that it is accountable, can be used to problematise design principles and re-construct new ones: surfacing the underlying operations of a computer system to make its actions accountable to users enables interactants to do appropriate next actions, for example. This recognises that systems are often designed to bury what they are doing beneath the mechanisms that provide for interaction; with it the resource for how to respond appropriately to some process being done by the system is lost. Dourish's description of problems in the copying of files from remote sites (*ibid.*) aptly illustrates what might be meant by establishing 'a deeper, more foundational connection' between ethnography and design – e.g., of building foundational matters that the social character of interaction turns upon *into* design to shape the development of general design principles.

So while we have some sympathy regarding the issues with just drawing implications for design from ethnographic studies, construing ethnography to date, and for us, construing ethnomethodological studies of situated action and interaction, as contrastable with socio-cultural accounts misses key points of difference between the two. The difference between previous ethnomethodological studies and the 'new' ethnography promoted by Dourish and Bell does not revolve around how ethnography is used, either for or within design. The difference, and it is a very real and marked difference, resides in understanding how social science can proceed in the first place. On the basis of our arguments in the last chapter, the call for a 'new' approach to ethnography is really a call to revert back to the social sciences' traditional manner of proceeding, which is to provide interpretations of culture and society through professionally generated, and often contradictory, social theories. It

is then a call to repeat, all over again, the mistakes of anthropological and sociological theorising made in the social sciences in systems design. Thus our worry with the call for 'new' ethnographic approaches to support ubiquitous computing is that it is not really a call for new approaches at all. Rather it is bringing in very old and traditional, even 'classical', understandings of how to do social science into design; understandings which are problematic within the social sciences even if they represent the consensus view on how to do social science.² Indeed we see in Dourish and Bell's arguments the old problems that we have long had to contend with in social science now being played out in and for design.

In the process of advocating what is really a return to classical anthropological understandings of how to do social science, two further confusions are introduced. One is to provide a particular understanding of analysis. The other is to misunderstand what ethnography is in ethnomethodological studies of situated action, which have been lumped together with all sorts of ethnographies done for the purposes of developing design implications. Before moving onto ground what we are asserting it should be noted that we are *not* saying that designers should not look to traditional anthropological and sociological approaches, even 'new' approaches. Reading that people from one society may hide their emotions more than people from another (Dourish and Bell 2011), that some societies attach sacred meaning to certain kinds of site (Bell 2006), and that within some societies family living is more communal with less opportunity for privacy (Bell 2001), may well be of interest to designers. It may, for example, allow products to be more easily placed if they facilitate rather than cut across cultural concerns. It may provide for the broadening of 'the design space'. And it may flare the imagination.

In this respect it might seem that Dourish and Bell are proposing the ideal situation in their contrast between 'old' and 'new' ethnographic approaches in ubiquitous computing. On the one hand there are ethnographies that can support requirements capture because of their 'micro' concern with situated action and interaction, which are perhaps more suited to the constrained environs of workplace systems, and on the other there are ethnographies that can support the design of ubiquitous systems because of their 'macro' concern with culture and social structure, which transcend geographical and political boundaries. Such a distinction may well be welcome in design because it might appear that it can now draw from different ethnographic wells depending upon the particular undertaking: the development of situated workplace systems being supported by ethnomethodologically-driven studies of situated work practice, and ubiquitous computing by studies investigating cultural and societal structures.

²We will be told that anthropology and sociology have moved on from their classical foundations, which had a distinctly positivist caste, in addressing the idea of reflexivity, the body as a site of 'knowing', and the role of the ethnographer in the constitution of what they are observing. We take these issues up in the next chapter, where we will argue that although these are touted as new developments in social science they merely dress up old problems in new clothes and perpetuate classical problems involved in the description of social action.

While it would be absurd to try and legislate what designers may or may not find interesting it is, however, important to appreciate that traditional social science concerns, which put cultural interpretation at the heart of what are, as we say, ironically called ‘new’ approaches to ethnography, do not give design any kind of privileged insight into society and culture. Designers might find the journalist or tourist to be just as informative and fuel the imagination in equal measure. It may sound provocative to say this, and even unnecessarily confrontational, but we say it to underscore the fact that the account provided by the cultural interpreter is of the same *order* that a journalist or tourist and, indeed, just about any other member of society can give.

We are aware that this stark claim may sound strident, even absurd. How could the cultural observations of professional social science be categorised as being of the same *order* of description as that provided by the tourist? How could the interpretive descriptions of someone who has spent possibly years living in and observing another society be brought together with interpretive descriptions made by lay people? Standing behind this statement is the large and important question that the social sciences have contended with since their inception, which is the question of how social science can *warrant* its descriptions of social doings as standing over and above the descriptions that any competent member of society can give? This is a challenge that social science has attempted to address through its professional descriptive apparatus. One of sociology’s founding fathers, Emile Durkheim, attempted to provide for the superiority of social science description in crafting sociology as a seemingly ‘scientific’ endeavour akin to the natural sciences (Durkheim 1897). More recently, appeals to the ways that literary theory conducts itself have been made. However, Garfinkel’s concept of ‘member’, which has often be read as meaning ‘member of ...’, points to a feature of social science justifications that makes them problematic. As Garfinkel and Sacks (1970) explain, member refers to *a mastery of natural language*. Members in that mastery display held in common knowledge of social and cultural matters, their competency in which is visible in the things they do and the accounts they provide of those doings.

In the everyday use of natural language we display *common-sense knowledge* of social arrangements; common-sense understanding of and common-sense reasoning about social structure if you like. Take the simple answer, “I got married last month, we went to the Seychelles”, to the question “What have you been up to since I last saw you?” The intelligibility of this answer builds in a number of taken-for-granted, common-sensically known about features of social arrangements. Thus, amongst other things it requires knowledge of the institution of marriage; it invokes an understanding of legal arrangements in society; it trades on knowing about significant occasions in people’s lives; and to someone overhearing it displays that the questioner actually may not know the answerer very well since, as a big occasion in someone’s life it would be known about by friends and associates; it invokes an understanding of the fact that many people in the UK are having ‘exotic’ marriages abroad rather than run of the mill marriages at home; and other matters. Thus in intelligibly using natural language people in their descriptions inevitably *display* common-sense knowledge of social arrangements.

This is very far from saying that all descriptions are the same, that they are all equally correct. We have ways of contesting and verifying descriptions in law courts, for example, or through institutionalised procedures such as asking experts, or appealing to someone's status, or pointing to the eloquence of a description, etc. It is to say, however, and how could it be otherwise, that the use of natural language displays held-in-common knowledge of social structures, and that descriptions produced in natural language are therefore of the same essential *order* as each other. Here's the rub for social science: an obvious fact about social science description is that, inevitably, it has to use just the same tool that anyone has to use in describing social life, *natural language*. So it inevitably displays common-sense knowledge of social structure in its own descriptions. Take, for example, a social science description of marriage as, say, a subjugating institution in a patriarchally organised society. Here common-sense knowledge of the natural language expression 'marriage', held in common in society, is taken for granted, and traded on by the sociological description. Now 'marriage' can be interpreted in a multiplicity of ways. An alternative would be to view it not as a form of subjugation, but as a cohesive force in society and part of the glue that holds society together. Whatever the interpretation, it takes for granted that 'this' social arrangement is a 'marriage' and recognisable as such by any competent societal member.

This means, as Zimmerman and Pollner (1970) spell out, that social science descriptions and accounts of social matters, in as much as they use natural language, *build in* common-sense knowledge of social structure, and that common-sense knowledge is an unacknowledged *bedrock* and resource in social science description. Social science could contend that it takes, and indeed has to take, ordinary words as its resource but that it gives them special, rigorous meanings within the definitional framework of a social theory, and in that process cleanses them of common-sense knowledge, replacing them with disciplinarily sanctioned knowledge of social affairs. However, when the social science apparatus is then laid on top of the world it is all too plain to see that there is a *disjuncture* between the world commonly understood and accounted for by people in it, and the world as portrayed in the social science account, and inevitably, since there is no consensus in the social sciences, there are disjuncture's between social science accounts themselves. When used as a resource for sociological theorising common-sense terms such as 'emotion', 'sacred', 'privacy', etc. – categories which make perfect sense in ordinary accounts of the orderliness of action and events – are given generalised *explanatory* power across a whole range of situations where their familiar sense breaks down and the action and events to which they are being applied cannot be recovered from theoretical descriptions of them; this latter issue is a matter which begs serious questions as to their *veracity* as scientific descriptions (see Sacks 1963).

The assumption that because social science descriptions are discipline based, that because they are generated through the institutionalised methods and theories of recognised disciplines such as anthropology and sociology, they therefore stand

over and above common-sense knowledge of social arrangements is something that we have to let go of. Social science description is a fraught matter, which revolves around the inevitable building of common-sense understandings into social science understandings in unacknowledged ways. Ethnomethodology provides an alternative path for social science to follow, which is to respecify social science's task as one of making visible the ordered properties of common-sense knowledge of social affairs and how those ordered properties are used by people methodically in the course of conducting their social lives. A prosaic way of describing this turn, one used by Zimmerman and Pollner, is to treat common-sense as a *topic of*, rather than a *resource for*, social science description.

Again we return to the question of why design should care about this sort of issue, of why should designers care about the topic-resource distinction. The reason why is that they are being told that ethnography can be so much more than what it has been so far in the relationship between design and the social sciences, it can be more than an empirical resource for their design. Design is now being told that, for example, it can be a tool through which the meaning technology has in people's lives can be explored and that this in turn will enable designers to build over-arching, complex cultural matters, even cross-cultural matters, into design, and not just empirical facts about restricted situated activities. Heady stuff one might think. However, such cultural interpretation inevitably has to draw on common-sense methods or practices of reasoning; inevitably because cultural interpretation is rooted in natural language and thus builds-in common-sense knowledge of the world even if it is disavowed. In this respect then, if ethnography is an interpretive enterprise, its interpretations of culture and society do not, and cannot, stand over and above interpretations provided by other societal members and institutions that provide descriptions and commentaries on social life. Journalists' descriptions and interpretations would be just as much a resource, as indeed might tourist guides. The social scientist, the journalist, and the tourist all produce accounts through natural language and therefore build into their accounts common-sense knowledge of the things they account for – it could not be otherwise. Thus, despite their obvious differences, they all provide the same *order* of account.

Below we attempt to demonstrate this more concretely with respect to the way in which Dourish and Bell's exemplary classical accounts of social and cultural order in the twenty-first century are put together and made to work. The demonstration is intended to make it visible that 'new' approaches to ethnography are shot through with common-sense-knowledge, common-sense understandings, and common-sense methods of reasoning. We are not doing this to denigrate these accounts; they are produced through the established ways in which the social sciences conduct themselves and are in these terms good examples of social science practice. What we are trying to do in unpacking how classical accounts are made to work is to make visible to design what is being bought into if these calls for 'new' ethnography are taken up. To start to unpack these issues we first turn towards the idea of there being old and new visions for ubiquitous computing.

4.2 Old and New Visions for Ubiquitous Computing

The idea of 'ubiquitous computing' or 'ubicmp' is one that invites us to consider the development of technology that 'disappears' into the fabric of everyday life (Weiser 1991). At the time of its publication, the idea was a radical one that represented a step change in computing: moving it away from the desktop and virtual interaction to embed it in the physical world and embodied interaction (Dourish 2004). Dourish and Bell (2011) suggest that the vision of ubiquitous computing provided a unifying vision for computer science, a shared paradigm as it were, which is still invoked today to justify and legitimate the construction of a 'proximate future'. The problem with this ongoing invocation of the ubicmp vision is that it has "already come to pass" (ibid.). Today's technological landscape is radically different than that of the late 1980s when Weiser was outlining the ubicmp vision, so much so that what was once a matter of imagination and envisionment is now a commonplace feature of everyday life. Ubicmp already exists and permeates our lives, being embedded in the devices in our homes, our cars, our streets, and a host of other settings too. Given this, Dourish and Bell suggest that it might be fruitful to put the vision on hold and instead draw on two cross-cultural studies to elaborate 'the computer of now'. They turn to Singapore and South Korea in particular, both of which have advanced technological infrastructures, and cite a range of statistics and anecdotes to help designers see the present day anew.

... by looking outside of the research laboratory, we are looking at ubiquitous computing as it is currently developing rather than it might be imagined to look in the future. In these settings, we ... see that the ubiquitous computing agenda is one that is fundamentally tied to other important but neglected issues such as multi-generational living, high density housing, public transit, religious observance, the practicalities of calling a cab, the politics of domesticity and the spatialities of information access – the messiness of everyday practice. (Dourish and Bell 2011)

Orienting us to the computer of now and how it is being shaped by the 'messiness' of everyday practice undermines the continued invocation of the ubicmp vision and recasts it as being just as misguided as 1950s science fiction speculations. Dourish and Bell's invocation of a 'messy' social world in which ubiquitous computing is already embedded suggests an alternative domain of ubicmp research – a ubicmp not of the future but of the present. This present view on ubiquitous computing sees a world in which computing technology is already embedded within social and cultural settings; that ubicmp already has a life beyond the research lab and is entwined with and inseparable from the social structures it is situated within and the cultural meanings that people already attach to it. Dourish and Bell would also have us recognise that society and culture are themselves entwined and inseparable; that to speak of the social is to speak about the cultural and vice versa such that any principled separation is meaningless. The upshot is a view on society/culture as something that is generative or productive of everyday experience – something that shapes the ways in which people encounter the world. This in turn leads to the view that ubiquitous computing (and technology more

generally) is encountered in a very particular way; that we experience technology, as Dourish and Bell (2011) put it,

... through cultural lenses, which bring it into focus in particular ways while also rendering it meaningful and accountable to us. These lenses frame what we see, and how we see and understand it.

Dourish and Bell's ubicomp of the present elaborates a view on technology that renders it inseparable from the socio-cultural lens through which it is encountered in everyday practice. The question is, *what does that lens look like?*

Rather than turn to everyday practice, Dourish and Bell turn to cultural studies by way of providing us with an opening answer. They turn in particular to studies underpinned by Critical Theory (Adorno and Hockheimer 1944) and contemporary ethnographies informed by Science and Technology Studies (STS) (Latour 1991). These studies locate technology in the cultural meanings created by consumers and the ways in which technology provides a means of enacting culture. In turn, the authors suggest that Critical Theory and STS provide alternative ways for us to think about the relationship between technology and culture and in so doing they prompt us to consider what a cultural account of technology might amount to. With this, the question of how technology is socially and culturally apprehended in everyday practice becomes a question of what a *socio-cultural analysis* of technology might look like and be about. In other words, it becomes a question of how the socio-cultural lens should be *configured*. This, for Dourish and Bell, is a methodological matter. A matter not only of method but of the epistemological foundations upon which the use of methods stands – foundations which would have us recognise that observation is 'always theory laden' and that ethnography is, therefore, 'inherently interpretive'. Configuring the socio-cultural lens is, then, a matter of adopting an *appropriate interpretive framework* for analysing culture.

One of the more significant transformations of contemporary anthropological ethnography has been the concept of multi-sited ethnography, as developed particularly by George Marcus. Whereas traditional ethnographies since Malinowski have focused on a geographically bounded field site, Marcus observes that in the context of globalisation, culture can no longer be adequately circumscribed in such a manner. The Trobriand Islands can no longer (if they ever could) be approached as a 'realm apart', but must be understood within a broader web of relationships to other parts of the world and other forms of cultural practice ... Contemporary ethnography must concern itself instead with transnational flows of people, capital, and culture. This is perhaps especially relevant when considering information technologies – technologies that are both means and embodiments of these globalised practices. (Dourish and Bell 2011)

The question of what constitutes an appropriate socio-cultural analysis is a radical one, at least in terms of what ethnography is currently understood to consist of and provide in a systems development context, and becomes a matter of *reframing* the analytic orientation that has largely driven ethnography in design to date from a focus on situated action and work practice to 'a broader web of relationships' and 'other forms of cultural practice'. The reframing is part of a broader move in anthropology that goes beyond standard concerns with observation and interpretation to the 'politics of knowledge'. As Marcus (1999) puts it,

Under the labels of postmodernism and then cultural studies, a bracing critical self-examination was initiated by many practicing scholars in the social sciences and humanities. This examination of their own habits of thought and work involved reconsiderations of the nature of representation, description, subjectivity, and objectivity, reconsiderations even of the notions of 'society' and 'culture' themselves ...

Dourish and Bell's work stands testimony to the fact that the politics of knowledge are not confined to the social sciences and humanities. They are now playing out in systems development. Nurtured by Dourish and Bell, a new breed of design ethnographers cum social analysts are trying to position the critical sensibilities occasioned by anthropology's 'bracing' examination of itself within systems design. Much of this positioning is being done under the auspices of HCI4D and Postcolonial Computing (Irani et al. 2010), which focus on technology development in and for the so-called Global South. In this context, culture is particularly prominent in the visible differences between Africa or India, for example, and the Western way of life lived by a great many IT researchers and system developers. Culture thus becomes a special topic, something to sensitise developers to, and treating the exotic, the anthropological 'other', becomes a vehicle to open it up.

The multi-sited lens on culture seeks to map out what Marcus (1995) describes as brave new worlds in which the traditional macro-micro distinctions of social science collapse into one another. While invoked by design-oriented researchers in the context of HCI4D, the methodological precepts of multi-sited ethnography apply transnationally: to 'us' as much as 'them'. Multi-sited research reconfigures the ethnographic field site, transforming it from a particular bounded setting into an indefinitely connected array or network of local sites across which 'world systems' or social structures operate and are manifest. This reframes the ethnographer's task, making it a matter of following and tracking connections across local sites as a means of elaborating the relationship between the micro and macro. The multi-sited research lens thus seeks to make top down views on culture into an integral part of local situations rather than something monolithic and external to them. It might otherwise be said that multi-sited ethnography *contextualises* situated action (Falzon 2009), locating it 'within the larger framework of people's lives', integrating it 'with more inclusive social forms', and elaborating the various ways in which world systems are 'detectably' played out within it.

... the crucial issue concerns the detectable system-awareness in the everyday consciousness and actions of subjects' lives ... getting at the 'white noise' in any setting ... sorting out the relationships of the local to the global ...

... this kind of ethnography maps a new object of study in which previous situating narratives ... become qualified by expanding what is ethnographically 'in the picture' of research ... (Marcus 1995)

So what is the 'white noise' (what should we be hearing) and what is 'in the picture' (what should we be seeing)? How should we configure the ethnographic lens and bring the social into view through 'new' kinds of cultural analysis?

A number of ethnographic studies have emerged in the HCI4D arena that provide us with the necessary instruction. Williams et al. (2008) undertook a multi-sited ethnographic study of a group of 'transnationals', people who travel between

Thailand and the US at regular intervals. Their findings report the results of 19 semi-structured interviews that elaborate a set of thematics, including what the authors describe as spatial, temporal and infrastructural ‘anchorings’ and how these are implicated in the production of domestic structures that span ‘spatial locales’.

I interview Nok and Kung at their home in Chantaburi province. Both were from that region originally, and their house, built in the last year and a half, was located on Kung’s family’s land. His brother lives close by, and there are plans for other siblings to build homes nearby in the future. They currently stay at this house for two to three months twice a year. Both have cell phones, on extended loan from a cousin, but the house currently lacks hot water, a land-line, and internet. When they settle there permanently (‘someday’) they will set those things up. For the time being, Nok checks email at her brother-in-law’s house or at an internet café in town. Their orchard will soon produce an excess of bananas to share with relatives or sell at the local market. Over the course of a day, Kung’s older brother visits to help in the garden, and we in turn use his house in town as our base of operations while visiting the afternoon market. His wife provides us with a spicy crab dip. We also run into Kung’s younger brother at the morning market; later that afternoon he and his wife stop by with green mangoes and coconut. Kung’s nephew comes and goes on his motorbike several times during the day, bringing materials for the garden. They normally spend most of their time in Thailand in Chantaburi, but on this trip Kung’s sister is in the hospital in Bangkok and they are helping to take care of her. ‘We take turns’, says Nok. When we return to Bangkok at the end of the weekend, Kung’s older brother will come with us.

‘Ae’ and ‘Tui’ live in Nonthaburi, just north of Bangkok, and maintain a home in Staten Island. They bought two halves of a duplex with their friends ‘Ning’ and ‘Neung’. Ae and Tui’s daughter ‘Tina’ looks after the house on occasion; their other daughter ‘Helen’ and her husband lived there for a while as well, in their absence. Ning also makes sure all was well, and maintains their shared backyard. Ae and Tui moved to their neighborhood in Nonthaburi largely to be near Ae’s sister, who will look after that house when they are in the US. Tina had spent a year in Thailand recently, and they kept her old cell phone to lend out after she returned to the US. They will have to buy themselves another set of phones when they return to the US in April to do their taxes, for use there.

Stories such as this are cited to elaborate ‘the production of domestic order’ through the enactment of kinship practices, and how the home is spread across local, national and even transnational sites through mundane kinship-bonding practices. They are drawn on to identify a set of design implications to support social infrastructures and mobility across them in a global world.

Irani et al. (2010) report observations from a 7-week ethnographic study of mundane tool use in an Indian design firm and how these elaborate an ‘intercultural infrastructure’ that ‘shapes’ design work.

At a brainstorm at the Bangalore office, Banita, Kurosh, Denis, and the field researcher gathered to generate e- classroom ideas. Lacking post-its, they began writing ideas on slips of white paper and sticking the slips to the wall with bits of blue adhesive tack. After some time, they decided that jury-rigging these sticky notes undesirably broke the flow of brainstorming. Banita, a senior member of the team, sent less senior Denis to Staples – the one place on that side of the city selling post-its – to purchase the notes before continuing the brainstorm. Brainstorms then resumed, now mediated by post-its. The post-its subtly changed the form of contributions from more graphical, narrative ideas to ideas expressible in short phrases. The group generated post-it contributions at a faster clip than with the previous slips and tack. In the above example, the materiality of available tools shaped the flow of interaction. Importantly, however, it also broke the flow of a kind of *broadly shared*,

symbolic *convention of practice*: brainstorming. To brainstorm with post-its is not only to functionally generate ideas at a fast clip. It is to talk and act like a designer, and to interact as a design team. In performing these recognisable innovation practices, designers leverage these practices' legitimacy. The post-its are an infrastructure *embedded* in other infrastructures. Selling 3Ms slips of papers in India relies on global distribution infrastructures, infrastructures of global finance, and in this case, a Staples chain store. Broadly, these are the infrastructures of 1990s Indian economic reforms inviting foreign companies into what had been a more planned, nationally-bounded economy.

Another tool, AutoCAD, was similarly central as an infrastructure of professional, collaborative practice. AutoCAD is a widely used software tool for 2-D and 3-D design. It is also a tool that costs approximately one third of a designer's annual salary at D-Design. Despite the cost, however, Rita, a junior designer, explained its importance in allowing the studio to engage in professional design-for-manufacture: "We should ideally use AutoCAD when we are, say, manufacturing the product 'cause it's much more accurate and standardised ... in the same way manufacturers and engineers use standardised industry processes ... Moreover, it's just a way of simplified presentation and communication to different parties involved in the product development process." The materiality of the tools – the features and computational capabilities – enabled them to produce distinct kinds of design forms. Because these tools were de facto standards *built on an installed base*, designers were able to access knowledge and support from internet sites and from the professional partners and manufacturers with whom they worked. Even more explicitly than post-its, AutoCAD is a work tool that embodies a very expensive, transnational, professional standard.

These and other observations are drawn upon to elaborate a transnational intercultural infrastructure that links designers in specific locales to broader communities of professional practice, and how designers are 'forced to shape' their work around that infrastructure to make what they do professionally recognisable. In analysing the typically 'invisible' or taken for granted, material and symbolic character of intercultural infrastructures the authors suggest that they are not unique to design work or India but implicated in the social order more generally, 'producing broader forms of social life beyond work'.

Williams and Irani (2010) send us 'postcards from the field' to elaborate their ethnographic studies in Thailand and India.

Williams conducted a long-term ethnographic engagement with a charitable organisation in Bangkok, Thailand focusing largely on their use of digital imagery and media in configuring local and trans-national networks of financial support. Much of the field work took place on site over the course of several months: visiting the arts and crafts space, hanging out with the children who lived and attended school there, designing the organisation's website and annual report, and providing various computer support as needed. While the participants in this study would not have characterised themselves as professional designers, or even as particularly tech savvy, much of the everyday work at the field site consisted of various forms of design, creation, and critique. To leave Bangkok for North America, however, was not to leave the field site. The activities around which Williams designed the website continued in her absence, requiring her to intervene in and maintain the site. Feedback from supporters, breakdowns in webhosting, and donation processing problems all informed Williams' understanding of the field as a site for design. The time interacting with the organisation from across the world offered crucial insights into technology, social order, and meaning in the organisation.

Irani spent several weeks as part of a team designing water filters for village households in Andhra Pradesh, India. Using ethnographic approaches, the team sought to understand the role of water in everyday family life to inform filter design. Researchers planned to screen participants, and to engage with the household through observations and one-on-one interviews. These plans were quickly revised, however, when the team arrived to see not a household but a loose union of homes and water infrastructure shared among extended families. Their first participant slept under his aunt's roof while he built a neighboring home for his mother and sister. As researchers began a planned one-on-one collage exercise meant to provoke discussion of health and lifestyle issues, more and more neighbors gathered round, drawn by the unusual encounter. Rather than attempt to single people out for individual exercises in which the participant might feel self-conscious, researchers decided to change the exercise into a cooperative group activity, reasoning that their underlying goal had been to understand shared (rather than individual) hopes, ideas, and meanings. The improvisation did, they reasoned, not undermine the research goals.

In place of a particular set of findings about transnational, intercultural practice and social order in Thailand or India, Williams and Irani instead offer a series of methodological reflections that 're-present' the user and 'relocate' fieldwork, culminating in the re-specification of 'criteria for ethnographic rigor'. These criteria seek to cement 'reflexive accounts generated by the body as an instrument of knowing' into the epistemological foundations of ethnographic research. In more prosaic terms, multi-sited ethnography would have us recognise that the user and field site are not natural facts but *discursive constructs* made by the ethnographer as he or she follows connections, selects topics of interest, and puts boundaries around fieldwork. This in turn, means that rigor (on this view) should be located in the ethnographer's account of how he or she constructs an understanding of 'the field', rather than in 'unbiased' or objective measures (e.g., duration of fieldwork, frequency of observations, sample size, etc.).

Dourish and Bell's critique of the dominant ubicomp vision is fostering 'new' ethnographic approaches in an effort to (re)configure the socio-cultural lens. In place of ethnomethodologically-informed ethnography and the focus on situated action and work practice, a multi-sited approach that seeks to elaborate a broader web of relationships and other forms of cultural practice is being imported into design from contemporary anthropology. The multi-sited research lens focuses on following connections between sites to bring into view the social, intercultural, and transnational infrastructures and practices that 'shape' (generate and produce) social order both locally and globally. Technology is embedded in those infrastructures and practices and multi-sited ethnography is therefore seen by Dourish and Bell, et al., to provide design with an appropriate lens for observing, interpreting and understanding technology in the twenty-first century – a century in which technological infrastructures are globally distributed. In short, the suggestion is that multi-sited ethnography reflects the connected world in which we live today, and the substitution of objective measures for reflexive accounts generated through the ethnographer's movement across connected sites ensures trustworthy insights into the orderliness of a massively networked, mobile, global world.

4.3 Messiness and Infrastructure

Dourish and Bell (2011) put a lot of analytic weight on the concepts of 'messiness' and 'infrastructure' in their socio-cultural analysis of technology in the twenty-first century. The starting point in their critique of ubicomp is sound and we do not take issue with it. Clearly we already live in a world in which ubiquitous computing resides. We are sympathetic, too, to the idea that technology, society and culture are inextricably entwined and that the entwining is provided for through the ordering of real world activities. As Harvey Sacks put it decades before with reference to the telephone, for example,

Here's an object introduced into a world around 75 years ago. And it's a technical thing which has a variety of aspects to it ... Now what happens is, like any other natural object, a culture secretes itself onto it in its well-shaped ways. It turns this technical apparatus which allows for conversation, into something in which the ways that conversation works are more or less brought to bear This technical apparatus is, then, being made at home with the rest of our world. And that's a thing that's routinely being done, and it's the source for the failures of technocratic dreams that if only we introduced some fantastic new communication machine the world will be transformed. Where what happens is that the object is made at home in the world that has whatever organisation it already has. (Sacks 1992)

Sacks' point is that we need to be wary about seeing technology as radically transforming the social world. The invention of nuclear power did not transform the world; rather it was subjugated to the already organised affairs of the world. It became a device through which to threaten or retaliate against other nation states. Certainly one state could now annihilate more people, if not the entire world, in one go, but it was brought into the world as part of the existing military and political organisation of social life. It also became a device through which power could be generated, but it was built into existing infrastructures and economies of power production and consumption. The telephone, mobile phones, and mobile computing certainly provide for people to do certain things in different contexts to those they may have previously been done, but they are brought into the social world as ways of doing the same old things, such as engaging in leisure pursuits or personal communication. A seventeenth century writer of love letters with a quill pen might not understand the medium of the iPad and its accompanying enabling technology, but they would recognise what someone was doing in expressing their ardour for a loved one through its use.

In short, Dourish and Bell along with Sacks and whole schools of sociological thought before them recognise that socio-cultural and technical matters are irretrievably entwined with social action. However, although we share these sympathies we are concerned about the way in which concepts such as 'messiness' and 'infrastructure' are used to understand this entwining; not because we have a problem with the concepts of 'messiness' and 'infrastructure' per se, but because of the consequence that the appropriation of these everyday terms from the everyday world in which they are sensibly used has for understanding the orderliness of contemporary life. Ripped out of everyday contexts of use, these concepts are distorted and

transformed (Ryle 1949, Wittgenstein 1992) in order to provide a *generalised analytic account* of social order in the twenty-first century.

The concept of ‘messiness’ enters into Dourish and Bell’s socio-cultural analysis and shapes the ethnographic studies of their students because the networked world in which we live is seen to be heterogeneous in nature and this makes it difficult to apprehend. ‘Messiness’ is, then, a defining feature of the contemporary socio-technical landscape and from this it follows that we need approaches that are capable of handling this ‘messiness’ on a global scale if we are to get a handle on the orderliness of a massively networked world. It is for this reason that multi-sited research commends itself, enabling ethnographers to track salient connections across sites and tease out the underlying orderliness of an inherently ‘messy’ world. Another way of putting it is that in contextualising situated action multi-sited ethnography enables the socio-cultural analyst to develop a *holistic* view that extends what anyone can see in the use of AutoCAD in an Indian design firm, for example, to the global connections and web of relationships that reach out beyond it. Thus, the warrant for ethnography turns upon its ability to *generalise* from specific circumstances (from just this use of AutoCAD in just this design firm in just this location) to society at large and the socio-cultural nature of technology within a globalised world.

The notion of ‘mess’ then is being used to perform an analytic task: it is being used to enable the socio-cultural analyst to *make generalisations* about the world, and to clear up that mess by enabling us to see its ordered character. However, ‘mess’ is a term that is taken from the everyday world. In contrast to the use it is put to by Dourish and Bell as part of their analytic apparatus, in the everyday world it is not a description that is *omni-relevant*. Rather, its use in everyday life is occasioned and it is employed in ordinary ways. For example, on entering a child’s room we might see and comment on the mess it’s in, where we mean it is untidy. We might recount a story about a colleague who works in a mess, where we mean he works chaotically. An old friend might tell us that he is in a mess because his wife has left him, where he means that he is distraught. In everyday life ‘mess’ is used by members to provide a description of certain states of affairs and its use is occasioned: by entering a child’s room, for example, or tittle tattling about colleagues, or catching up with an old friend. We do not mean that all children’s rooms are untidy; we do not mean that all offices are chaotic, or that all people whose wives leave them are in a mess. ‘Mess’ is not used as an *omni-relevant* description in everyday life. Its applicability is provided for through the situated occasion of its use.

It is often the case when we describe something as a ‘mess’ that we are being pejorative. Our children can be sanctioned because their rooms are a mess, our colleague is not efficient because he works in a mess, our friend’s wife caused his state when she left him and is to blame, etc. ‘Mess’, then, is used in our everyday lives not only to render situated descriptions but also to hold others to account. However, our children may not care that their room is a mess; our colleague is able to put his hand on any document he needs amidst the chaos; and our friend’s wife left him because he was already messed up with drink. Thus to describe something as a ‘mess’ is to make a contestable statement: my room is not messy, it is cosy and lived

in; I know where everything is in my office; I'm not a drunk, I just drink a bit more than she does. 'Mess' then is not a given feature of a scene, it is an *achieved feature* of action and interaction produced through occasioned practices of description which hold people, situations, and events to account and which are subject to dispute. Using the term 'mess' in everyday life is to provide an occasioned description which involves pointing out certain observable matters in order to substantiate them and ignoring others, which in their turn can be pointed to in order to contest and undermine the description.

We do not just use the term 'mess' to refer to local matters such as messy rooms, offices and marriages. We also use them to describe systems, technological, social, political and economic. We can perfectly well understand what someone means when they say there is messiness in the world, that they are saying that nothing is really cut and dried, there are grey areas, things are put on hold and the like. However, when we make these global descriptions they share the same characteristics as the description of local scenes. They are contestable: the opposition described the UK economy as being in a mess, for example, whereas the Government described it as promoting prosperity. Again such descriptions involve pointing to certain features and ignoring others. Descriptions of 'messiness' are then *occasioned descriptions* used to do *particular actions* such as chide, rebuke, denigrate, or provide for a social science enterprise to bring order to the mess, and the like, and they are, by virtue of them being achieved descriptions for an occasion, always contestable.

However, to use 'messiness' as a generalised analytic category of description is to *reify* the concept and transform its intelligibility in everyday use. It is to take a concept, the intelligibility and applicability of which resides in everyday contexts of use, and make it into an omni-relevant, *situation and cohort independent* description. In its reified state it is applied to the world in order to make sense of it, and inevitably there is a gap between its analytic and ordinary use. The analytic use configures the socio-cultural lens and inevitably *distorts* that which it brings into view, turning an occasioned, situated description done for particular purposes into a generalised form of account. This practice of generalised description consequently leads us to view the social world in terms of the analytic *workings of the generalisation*, rather than in terms of the ordinary workings of culture and society. If we look at the world through another lens, conspiracy, for example, then the world is not a messy place but one that is ordered unbeknown to us for the purposes of a coherent ruling elite whose presence is everywhere but rarely seen. Juxtaposed against the messiness of the social world, the social world is, instead a regulated, regimented one in which there is the illusion of the messiness of freedom, for example. It is not then just that messiness is a distorting lens (conspiracy theory is just as distorting, for example), but that distortion is an inevitable feature of this fundamental social science descriptive practice; i.e., ripping everyday language out of the occasioned contexts of its ordinary use and repurposing it to furnish generalised accounts. So, then, if faced with two different cultural interpretations of the meaning things have in the world, and we do not mean this should be taken cavalierly, just take your pick, because for every example of messiness that can be given to substantiate its legitimacy as a cultural lens, an alternative example undermining it *can* be given.

The concept of ‘infrastructure’ is also put to work by Dourish and Bell alongside multi-sited ethnography to enable them to ‘sort out the relationships of the local to the global’ (Marcus 1995). The concept itself is not drawn from Marcus’s writings but Susan Leigh Star’s ‘call to study boring things’ (Star 1999). One such thing is ‘infrastructure’, which Star suggests is implicitly involved in many ethnographic studies of computing systems and whose explication is seen to be directly relevant by Dourish and Bell to developing our understanding of social order in today’s massively networked world (though why infrastructure is boring misses us).

People commonly envision infrastructure as a system of substrates – railroad lines, pipes and plumbing, electrical power plants, and wires. It is by definition invisible, part of the background for other kinds of work. It is ready-to-hand. This image holds up well enough for many purposes – turn on the faucet for a drink of water and you use a vast infrastructure of plumbing and water regulation without usually thinking much about it. (Star 1999)

Infrastructure is just about *everywhere* and thus a phenomenon we can tap into just about *anywhere*. While unequally distributed it is nonetheless pervasive and consists not only of technological characteristics (reservoirs, filtration plants, pipes, faucets, etc.) but also social and cultural characteristics (washing clothes, bathing, cleaning vegetables, etc.) which embed the technology in everyday life. Infrastructure cannot therefore be reduced to technological characteristics; it is not just electrical power, hardware platforms, software architectures, etc. It consists of technological characteristics *and* socio-cultural characteristics. Indeed infrastructure is analytically, for Star and others drawing on her work, the *relationship* between technological and socio-cultural characteristics.

Star’s reflections on infrastructure construe it as an inseparable part of human relationships and their organisation, possessed of a number of distinctive properties. Infrastructure is ‘embedded’ within other structures, social arrangements, and technologies. It is ‘transparent’ or invisible in use. It has ‘reach or scope’, which is to say that it extends beyond a single site. It is ‘learned as a part of membership’ and is, as such, taken for granted by the people whose lives are enmeshed with it. It ‘links with conventions of practice’, i.e., it is enmeshed in everyday life through a community of practice. It ‘embodies standards’ and thus plugs into other infrastructures in a standardised fashion. It is ‘built on an installed base’ and thus predicated on legacy systems. It becomes ‘visible on breakdown’ and it is ‘fixed in modular increments’, which is to say that while potentially global it is configured and reconfigured locally. Elaboration of these properties through multi-sited ethnography enables the analyst to contextualise situated action. To see and point out, as Dourish and Bell (2011) put it, the infrastructures that ‘lie below or beneath the surface’ of human interaction and technology use: how post-its in an Indian design firm are not just bits of paper but ‘an infrastructure embedded in other infrastructures’ (particularly ‘distribution infrastructures’ and ‘infrastructures of global finance’), for example, or how the adoption and use of AutoCAD by Indian designers turns upon ‘a built on installed base’ that lends professional credence to their work even though it comes at great expense (Irani et al. 2010).

Dourish and Bell, et al., put Star's notion of 'infrastructure' to work to sort out the 'messiness' of a globally connected world and the relationships between people, places and technology made visible through multi-sited ethnography. However, just as we have attempted to describe with respect to the concept of 'messiness', there is an issue that needs to be made visible with respect to the kind of descriptive practice this appeal to 'infrastructure' is wrapped up in. There is an old social science 'two step' going on between the particular and the general here. It involves the move that we saw with regard to Malinowski's ethnography, made visible by Geertz, with the particular being used as a site for viewing the general. That is, the particular is taken as the product of the operation of the general. Put another way the 'macro structure' is providing for the 'micro instance'. In this respect the particular is taken as evidence for the general, it provides data that indicates the existence of the general structure. It is a step made widely by social scientists, but the point of note about this descriptive practice is that it is also widely used across society at large. It is not a social science method per se, but a method of *common-sense reasoning* broadly employed in society by all manner of people to understand the orderliness of social affairs, social scientists included. It was first described by Karl Mannheim (1952) and subsequently elaborated by Garfinkel and is called '*the documentary method of interpretation*'. Garfinkel (1967) tells us that it,

... consists of treating an actual appearance as 'the document of', as 'pointing to', as 'standing on behalf of' a presupposed underlying pattern. Not only is the underlying pattern derived from its individual documentary evidences, but the individual documentary evidences, in their turn, are interpreted on the basis of 'what is known' about the underlying pattern. Each is used to elaborate the other.

We are all familiar with this method of accounting for occurrences in the everyday world. For example, racially prejudiced descriptions are often done by accounting for the actions of an individual by invoking their race as underlying their behaviour: 'he is doing that (the particular) because that is what people-like-him (the underlying structure) do'. In accounting for the particular through invoking an underlying structure we make visible the imputed structure, and provide yet another example that can be drawn on to elaborate the structure. Of course it is not just racist accounts of behaviour that can be put together in this way, the method is employed ubiquitously, but when it is used to construct social science accounts do not be blinded to it because of the seeming import of the thing it accounts for; look through the substantive argument and it is possible to see the account is put together *in the same way* in which common-sense descriptions of the world are put together.

A perspicuous example of the use of the documentary method of interpretation at work in social science is provided by Philips et al. (2012) in their postcolonial elaboration of the MIT Media Lab project 'One Laptop Per Child' (OLPC) and development of the XO or \$100 computer. As part of their elaboration two photographs are juxtaposed: one (placed on the left) showing two girls using XO computers, the other (placed on the right) showing the XO assembly line. The authors ask,

What are the conditions of possibility of this moment? The OLPC came to these two girls in part through the much publicised efforts of Nicholas Negroponte [Media Lab founder]

and open source coders, through the navigation of media and social networks, through sometimes antagonistic negotiations with software and hardware producers, and a dense assemblage of other forces and actors. In the second image, we see a rarer peek into the assembly lines of computing in a photo that stages the celebration of the XO's departure from design phases into manufacture and deployment ... The photo on the right is the indication of the standing reserves of feminised Asian labour that manufactures the XO laptop, like many of the world's computers. The women's labours are part of the conditions of possibility of the girls' use of the XO. Such labours are hardly attended to in ICT4D or HCI. Infrastructured, the women's labour recedes into the background of consciousness to be taken for granted in use.

Thus an actual appearance – the two girls using XO computers – is treated as ‘the document of’, as ‘pointing to’, as ‘standing on behalf of’ a presupposed underlying pattern – *infrastructure* – which is itself interpreted on the basis of ‘what is known’ about the underlying pattern: that standing reserves of feminised Asian labour make the world's computers and this is taken for granted or ‘learned as part of membership’ in Star's terms. In other settings, we see other underlying properties of the pattern – e.g., the ‘embeddedness’ of post-its or ‘built on installed base’ that design work in India trades upon. We see, in other words, large scale if not global infrastructure at work *in* situated action.

Philips et al. elaborate ‘tactics’ for observing and analysing infrastructure and ‘tracing the long networks’ that enable the technological formations that today furnish the conditions of situated action's very possibility. These tactics are part of an array of contextualising practices that social scientists exploit to make the documentary method of interpretation work. However, when the documentary method of interpretation is appropriated by social science from the everyday world in which it is used as a mundane way of accounting for the structure of social action, there are problematic consequences with respect to its deployment.

The documentary method of interpretation is a convenient gloss ... The gloss is convenient and somehow convincing. It is also very powerful in its coverage; too powerful. It gets everything in the world for ... analysts. Its shortcomings are notorious: in any actual case it is indiscriminating and just in any actual case it is absurdly wrong in any case where [it is] administered as prescribed codes the result can be lucid, perfectly clear analytic ethnographic description, but the description will have missed the subject matter, its probity, and the point of the description, with no accompanying sign that [it is] misunderstood. (Garfinkel 2002)

Garfinkel is describing how the documentary method of interpretation inevitably loses the details of the particular situation it is accounting for and thus fails to describe social order *in any actual case* even though that is its intention. This gloss is the result of ‘prescribed codes’, whether they are codes that the analyst develops from the ground up (Glaser and Strauss 1967) or pre-existing codes, such as those furnished by, in Dourish and Bells' case, Star (‘learned as part of membership’, ‘embeddedness’, ‘built on an installed base’, etc.). These codes or categories are analytic devices that the sociological researcher uses to grab onto little bits of the real world in an attempt to make the analytic category or construct out to be an actual ‘real-worldly’ phenomenon that anyone can now see even though it usually ‘lays beneath’ everyday experience.

The documentary method of interpretation thus enables the socio-cultural researcher to make something that is imputed to be 'there', but which is said to be usually unobservable, visible and plain to see. It is used to provide empirical demonstrations of social structures posited by *the social scientist*. The demonstration turns upon the display of observable features of the world within an analytic account (e.g., the 'embedded' character of post-its in an Indian design firm) as indicators of the underlying construct (e.g., 'infrastructure'). Thus, the underlying construct (what lies beneath situated action) is made visible through the act of *sociological indication*; its visibility is made possible by treating, for example, the post-it note as data for the demonstrable existence of infrastructure. The post-it note is then turned into something other than what it is to those who produced it (for whom it is, after all, just a post-it); it is turned by the anthropologist or sociologist into an *indicator* of an underlying social structure.

Sociological indication can be done in wide variety of ways, even statistically, but in the case of ethnography it is done through 'examplifying practices' (observations, anecdotes, postcards from the field, juxtaposition of photographs, etc.). Examplifying practices indicate, point to, the underlying construct – e.g., infrastructure. It makes out that the underlying structure that is pointed to is 'really there'. However, as Bacus (1986) reminds us,

... indicators ... are indicative of the construct *but are not equivalent to it* ... What relation, then, does the construct have to real-worldly phenomena, to real-world events? It has none ... [the] analytic ... construct has a relation only to the data providing its empirically demonstrable existence as world sensible, as real worldly but that data is *not* the world's events ... (our emphasis)

In other words, in Dourish and Bell and the work of others we have referred to, we see the underlying socio-technical *construct* of infrastructure – which is essentially a theoretical construct in their discourse – being made 'real worldly', or more accurately being made out to be 'real worldly', made out to be 'really there' in the ways that the social scientist says it is.

The achievement of this kind of 'constructive analysis' is to *make social theorising real worldly*, that is, to make out that what essentially exists only in theory is a real feature of the world. This achievement is done through sociological indication, accomplished through common-sense practices of examplifying, which provide for the visibility of underlying analytic constructs such as infrastructure:

The constructive analytic theoretician's real accomplishment is not finding indicators to reference an unobservable but is the establishment of that unobservable and those indicators as 'real' objects in the world. (ibid.)

Sociological indication is a constituent feature of the documentary method of interpretation. It allows the sociological researcher to treat actual appearances as 'the document of', as 'pointing to', as 'standing on behalf of' a presupposed underlying pattern (e.g., infrastructure) and to render that pattern as if it was a feature of the real world: each is used to elaborate the other and to make underlying theoretic constructs into visibly 'real' objects in the world.

It is for this reason that Garfinkel tells us that the documentary method can and does produce ‘powerful, lucid, clear, and convincing’ descriptions of society and social order, which are, however, ‘absurdly wrong’ (Garfinkel 2002). Accounts of social order developed through the documentary method of interpretation stand on sociological indication and the problem with that, as Baccus points out, is that indication *does not* have a relationship to the real world; it only has a relationship to the construct it props up and makes world sensible. What of the examples – the ‘data’ – that make the underlying construct visible? Surely they are real? Surely they provide an empirical relationship between the construct and the world? No, for again as Baccus makes clear, such data *is not* the world’s events. What she means here is that, for example, the post-it note that is treated as data pointing to the underlying concept of infrastructure is *not* data, not something that points to infrastructure *in itself*; in itself it is just a post-it. Treating it as data indicating the existence of an infrastructure is to ignore what it is in the world: a summary of an idea, a reminder of a job to do, a memo to self, etc. To ignore this is to ignore the social thing that produced it: the brainstorming session, for instance. Where is the orderliness of *that* work? In its place stand the constitutive concepts of infrastructure: ‘builds on an installed base’, ‘learned as a part of membership’, ‘links with conventions of practice’, etc. In this and the other infrastructure examples we have considered, the real world, real time orderliness of action and interaction is *glossed over*, with the particular things that people do and the organised ways in which they do them being selectively treated to *prop up* generic social science descriptions of the social order.

The consequences, then, of using the documentary method of interpretation for doing social science is that ordinary, perfectly understandable actions in the everyday world, such as sticking a post-it note on a board as part of a design brainstorming session, are turned into ethnographic ‘data’ to fuel the job of sociological indication. These common-sense practices gloss over and ignore the lived details and interactionally embodied organisation of the situated action being studied. Instead *remnants* of situated action are drawn upon methodically to breathe life into abstract social structures that would not exist without the act of sociological indication and the interpretation of patterns. Multi-sited ethnography thus has to be questioned as a solution to the problem of getting to grips with the socio-cultural character of technology in a massively networked world. Not only is it shot through with and trades upon common-sense practices of reasoning and accounting for social order, it reinstates the traditional role of anthropology and sociology as providing top-down structural accounts of social order, and in doing this reifies and distorts the orderliness of actual occasions and events.

The reification and distortion turns upon continued misunderstanding in the social sciences about the relationship between agency and structure, the relationship between culture and society and individual action and interaction, and the relationship between the macro and the micro. Hence the idea, for example, that multi-sited ethnography will bridge the gap between micro matters found in a single locality and macro matters found across localities. We have argued that this divide between structure and agency – between world systems and situated action – has been greatly

exaggerated in the social sciences, mainly because the agency side has been misrepresented. It is *within* people's everyday lives and everyday interactions that so called 'macro' matters – such as 'society', 'culture', 'infrastructure' and the like – are brought about. The social order is an observable feature of situated action, it is part and parcel of social action, not something that 'lays beneath' it and that requires contextualisation by the socio-cultural interpreter to make it visible. The agency side of the argument does not ignore macro issues then, but understands them as situated achievements rather than matters that lie underneath interaction and shape it. Treated essentially as exercising external 'constraint' on situated action, the macro is misconceived by proponents of the structure side of the divide, in that they see social structure as an omni-relevant matter rather than a situationally occasioned and produced one (Coulter 1982).

These are complex issues and even in book format they are difficult to deal with, as they should perhaps be dealt with in their own right, not invoked as we are doing here to discuss ethnography in design. However, we are trying to balance a description of the problematics of social science description with the concerns of design. While the problems of social science description are not problems of design per se, we are trying to make it visible to systems designers who take the social seriously that what it is being offered by the call for 'new' ethnographies to advance ubiquitous computing is deeply problematic, and for a number of reasons: (1) 'New' design ethnographies are not new at all, but a call for design to pick up on traditional ways of doing social science description; (2) Traditional ways of doing social science description are problematic because despite their seemingly lofty appeals and worthy subject matters they are of the *same* order of account that *anyone* can give; (3) Like lay descriptions of social order they are built upon common-sense methods of reasoning and account; (4) As a resource for design they stand alongside other common-sense ways of interpreting culture and society, which means that if a designer wants to understand such matters as the meaning that technology has in society, or how technology is embedded into different cultural milieus, they do *not* particularly need ethnography and its paraphernalia to tell them; (5) In ignoring common-sense methods of reasoning and account, while actually using them in unacknowledged ways, 'new' ethnographies consequently miss how social life is actually ordered by those who are party to it; (6) It follows that any design enterprise based on such descriptions will miss out on the real world, real time orderliness of action and interaction too.

In making this argument we will inevitably be accused of not understanding ethnography; of failing to appreciate that it is essentially a theory-laden and interpretive business and that it cannot be otherwise. Concomitant to this we will undoubtedly be charged with peddling our own theory of the social, and that this theory is a realist, even a *naïvely* realist, one that ignorantly emphasises the empirical while ignoring the reflexive constitution of the ethnographer's observational practices and their impact on that which is observed. In short, we will be charged with peddling an outmoded version of ethnography that is not only unsuitable for studying contemporary life, but shows an unpalatable ignorance of contemporary

ethnographic practice within the social sciences and its salience to systems design. We turn next to address these matters, particularly towards the ways in which they are *irrelevant* for ethnomethodological studies of the everyday world and irrelevant *for systems design*.

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