4 A Role for Ethnography: Methodology and Theory

It is in understanding what ethnography is, or more exactly what doing ethnography is, that a start can be made toward grasping what anthropological analysis amounts to as a form of knowledge. This, it must immediately be said, is not a matter of methods. From one point of view, that of the textbook, doing ethnography is establishing rapport, selecting informants, transcribing texts, taking genealogies, mapping fields, keeping a diary, and so on. But it is not these things, techniques and received procedures that define the enterprise. What defines it is the kind of intellectual effort it is: an elaborate venture in, to borrow a notion from Gilbert Ryle, "thick description."

—Clifford Geertz, The Interpretations of Cultures

As should be increasingly clear by now, ubicomp is unusual among technological research arenas. Most areas of computer science research—such as programming language implementation, distributed operating system design, or denotational semantics—are defined largely by technical problems and driven by building on and elaborating a body of past results. Ubicomp, by contrast, encompasses a wide range of disparate technological areas brought together by a common vision of computational resources deployed in real-time, real-world environments.

Realizing, or at least moving toward, this common vision has necessitated a blending of disciplinary approaches from computer science and engineering with some social science perspectives and practices. As we laid out in chapter 2, this mix could hardly be described as seamless. Indeed, given that ubicomp agendas have been pursued in industrial, academic, and governmental settings across a number of national arenas, a unified framework has never emerged. That is not to say that ubicomp lacks a point of view or clear directionality. The examination of recent publications, talks, grant proposals, and current research we referenced in the second chapter affirms that there are agreed-on as well as intellectually/

institutionally sanctioned areas of study and impact; if you are in ubicomp, it seems, you are doing systems, sensors, or users. Despite the emergence of a certain kind of canonical thinking within ubicomp, the doing of systems, sensors, or users has been characterized by an eclectic approach to methodology and theory.

In this chapter, we use the term "methodology" formally, to encompass not just the craft methods and techniques that a discipline employs to do its work—no matter how emblematic or charismatic they become—but also the epistemological foundations of the discipline, and the ways in which methods feature as part of a broader set of conversations about forms of knowledge production along with the kinds of objects that disciplines examine and create. Surveys, for example, are not simply a convenient way of sampling large populations; they are also reflections of a set of underlying commitments to topics of statistical relevance, objective measurement, generality rather than specificity, population comparisons, and the power of numbers to talk about people. Prototyping approaches similarly reflect a particular philosophical position on technologies and their portability, and the relationships between contexts, technologies, and practices. In this chapter, we wish to reconnect the ways we approach research questions (i.e., methodologies) with the ways in which such questions might be framed, articulated, and addressed (i.e., theory).[1]

This broader view of methodology and theory implies that there is more to the eclecticism of ubicomp research design practice than simply a "mix-and-match" approach that borrows techniques from different places. A concern with methodology and theory rather than method alone means that we need to understand the commitments involved in the various techniques that we employ, and the consequences of their combination. Brian Cantwell Smith (1996) uses the metaphor of commercial exchange to describe this caution to methodological syncretism: when you use an idea from somewhere else, he suggests, you need to be able to say what you paid for it, how you brought it home, and what kinds of damage it suffered along the way. Accordingly, it is appropriate that the happy eclecticism of a domain such as ubicomp be accompanied by some reflection on just what the nature and perhaps even histories of our methodologies might be, and what theoretical frameworks they imply or recall.

In this chapter, we explore this broader view of methodology and theory, using ethnography and its relationships to ubicomp as a starting

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1. Here we want to distinguish between methods—the pragmatic tools of our trade—and methodologies—the framing conceptualizations of those selfsame tools.

point. This is hardly a new proposition. As we discussed in chapter 3, ethnography found its way into ubicomp early on. Weiser and his Xerox PARC interlocutors were influenced, accordingly to their own re-retellings (Weiser, Gold, and Brown 1999), by the likes of Suchman and her Work Practice and Technology Group. These early encounters help shape a ubicomp charter that, rhetorically at least, valued human relationships, social context, and what Weiser referred to as "the real world"—all theoretical and methodological concerns which with ethnographers, and indeed other social scientists, are familiar.

Within ubicomp, the adoption of ethnographic techniques has been associated with two trends. The first is the emergence of computer-supported cooperative work (CSCW) as an area of inquiry, which in turn placed an increasing emphasis on the social organization of activity, and hence on methodological approaches by which that social organization might be understood. (It was arguably through CSCW research that Weiser was first exposed to ethnographic methods and perspectives.) The second was the participatory design movement, arising especially in Scandinavia but with global influence. Politically, participatory design was strongly concerned with issues of workplace democracy and participatory involvement in the changes in working conditions implied by computerization; methodologically, it sought approaches in which member's perspectives were valued. For participatory design, ethnography may have been an expedient tool rather than an intellectually motivated approach, and indeed it has always stressed a pragmatic, multimethod approach. Nonetheless, through participatory design, CSCW, and allied perspectives, the use of ethnographic methods became more familiar to ubicomp researchers. They seemed to offer a means by which the complexity of real-world settings could be apprehended and a toolbox of techniques for studying technology "in the wild" (Grudin 1990).

Over the last twenty years or so, many researchers and practitioners in ubicomp have turned toward a broad array of social sciences and social science toolboxes,to find ways to understand this real world as well as the social contexts in which both users and technologies might be embedded. Social scientists have remained present in many centers of ubicomp inquiry: Intel, Xerox PARC, Georgia Tech, the Massachusetts Institute of Technology, the University of California, Lancaster University, the University of Nottingham, and Nokia, to name just a few. Ethnographic approaches are increasingly prominent as the means by which this might be accomplished. However, a wide range of forms of social investigation travel under the ethnography banner in ubicomp, suggesting that there is still

considerable debate over what ethnography is and how it can best be employed in research, design, and deployment contexts. For the most part, ethnography has come to be regarded as a toolbox of methods, divorced from a larger set of theoretical and methodological concerns that give it form and rigor. Ethnography is too often seen as an approach to field investigation that simply generates requirements for systems development by providing a clear sense of "what users want." This is perhaps ironic given that most ethnographers cringe at the very notion of users—indeed, a great deal of ethnographic work in the last fifty-plus years has argued against this conception of the user (Sharp 1952; Pelto 1973; de Laet and Mol 2000).

As mentioned in chapter 3, ethnography has had its own histories and canons, and it is located within the broader trajectories and debates of the social sciences. To understand the ways in which ethnography figures within and without ubicomp is to understand not just its methods but also its methodologies and larger epistemological concerns with questions of reflexivity, voice, stance, and standpoint—most of which are largely absent from ubicomp practice. It is valuable to step back and consider what happens when two disciplinary, conceptual, and methodological approaches come together, and how the relationship between them could be articulated. Thus, in this chapter we explore the relationships between ethnography and ubicomp, beginning with a critique of how ethnographic accounts function within ubicomp. Here, again echoing our earlier work, we look to the "implications for design" practices as the signal manifestation of ethnographic knowledge within ubicomp.

Throughout this chapter, we argue that by relegating ethnographic knowledge to implications for technological design, ubicomp practitioners fail to capture the value of ethnographic investigations, insights, and knowledge. Yet it does function as a useful avenue to open up a larger conversation about not only how ethnography is currently prefigured in ubicomp but how it could be powerfully reimagined, too. We are particularly interested in how ethnographic theory can help reposition research questions and directions without a reliance on fieldwork. This chapter thus illustrates the implications for design that might be derived from classical ethnographic material, and it shows that these may not be in the form that ubicomp research normally imagines or expects.

Ethnography as Implications for Technological Design

As intellectual disciplines develop, genre conventions emerge, shaping their research designs and outputs. In interdisciplinary areas such as

ubicomp, early work in the field tends to be highly divergent in method and approach, as practitioners—individually and collectively as a field—attempt to find ways to combine perspectives, conceptual frameworks, and methods. Finding an appropriate balance between theory and practice, determining broadly agreed-on metrics for success, and developing common vocabularies for the problems and phenomena of study are all means by which, over time, common consensus about research is developed. Scientific disciplines are normative enterprises, where the process of peer review tends to encourage conformity to a core set of values and approaches (Campbell 1969).

This process can be seen in the research papers produced in a field. Charles Bazerman (1988) has detailed the ways in which transformations in the structure and tone of scientific publishing accompanied the transformation of the conduct of science itself, reflecting its increasing professionalization; the process of ensuring conformity to documentary standards is part of the "boundary work" by which disciplinary limits are maintained and the boundary between "science" and "nonscience" is sustained (Geiryn 1983). Case studies illustrate how these conventions shape the development of scientific arguments and publications (Frost and Stablein 1992). Unsurprisingly, then, as ubicomp has matured and developed a sense of its own disciplinary identity, conventions have arisen regarding how we conduct and describe our research.

Here we want to focus on one of these genre considerations: the notion of implications for technological or information systems design, known in shorthand as "implications for design." We are interested in this notion as a matter of both research presentation and research construction. There is a great deal of tacit pressure on ethnographers and other social scientists working within the ubicomp context to generate implications for design. Indeed, any canonical paper reporting ethnographic field results in the ubicomp context will close with a section titled "Implications for Design." This section may be long or short, comprising discursive prose or brief, bulleted items, but it nonetheless figures as a stable feature of ethnographic reports. Informal evidence seems to suggest that the absence of this section tends to be correlated with negative reviews and rankings of the paper. A common lament to be found in reviews of ethnographic work is "Yes, it's all very interesting, but I don't understand its implications for design" or, somewhat more subtly (and intriguingly), "This paper does not seem to be addressed toward the ubicomp audience." The pressure to generate implications for design happens in both academic and industry contexts.

Two things are clear to us. First, the focus on implications for techno-logical design is misplaced, misconstruing the nature of the ethnographic enterprise. Second, given this, it misses where ethnographic inquiry can provide major insight and benefit for ubicomp research. We are interested here in the politics and consequences of the manner in which the implications for design arise as a primary mechanism of ethnographic research. In framing it as a problem, we want to explore how implications for design may underestimate, misstate, or misconstrue the goals and mechanisms of ethnographic investigation.

Charting a New Relationship between Ethnography and Ubicomp

In what follows, we examine these questions by dealing in turn with four issues that arise around the problem of implications for design: the marginalization of theory, power relations between disciplines, a restricted model of the relationship between technology and practice, and the problems of representation and interaction. Some of these concerns could be classified broadly as "the politics of representation," while others could be categorized as "the politics of design." Certainly, the considerations are political in a number of ways, and we return to some overtly political issues at the end.

In particular, we argue against the idea that ethnography is undertaken in order to uncover such implications, in the narrow sense that requirements capture. That position is based on a view of ethnographic work as purely empirical, as a process of going out and finding facts lying around in the world, dusting them off, and bringing them home to inform, educate, and delight. We suggest that there are four considerations that get lost if we concentrate purely on ethnographic research-generating implications for design. First, we must recognize the theoretical work of ethnography, or the fact that ethnography is an interpretative, analytic practice. Ethnography's commitment to the production of social facts in culturally organized settings in fact requires this, and it also necessitates that the work of the ethnographer is more than simply collection. Second, there are disciplinary power relations at stake, by which ethnography is here placed in a service relationship—just the sort of relationship that designers have been careful to avoid in their own work, and for good reasons—and this relationship also implies a specific and problematic location for agency within design. Third, to the extent that ethnographic work centers on the ways in which people produce as well as enact social and cultural settings, the implications-for-design model inappropriately emphasizes technology over practice as we set about understanding the interplay

between the social and technical. Fourth, it is important to pay attention to how ethnography in ubicomp can be used to limit, rather than expand, the engagement of users in design practice, arguably recapitulating some of ethnography's history in colonial state enterprises (as we discussed in chapter 3) and so prompting a good deal of resistance from practitioners grounded in anthropology's disciplinary history or concerned with the politics of representation.

We draw on three insightful explorations of the problems of ethnography and design in different contexts: Robert Anderson's examination of the issue of ethnography and requirements (1994), Mark Ackerman's reflections on the social-technical gap (2000), and Graham Button's comparison between different models for ethnographic analysis (2002). They help to illuminate a complex and intricate set of disciplinary relationships, which will be addressed here through the four interrelated topics, starting with the question of the marginalization of theory.

The Marginalization of Theory

As outlined above, ethnographic methods were originally brought into ubicomp research in response to the perceived problems of moving from laboratory studies to broader understandings of the social organization of settings of technology use. It might be more accurate to say that in ubicomp research, ethnographers were adopted rather than ethnography itself. That is, a number of social scientists making use of ethnographic approaches turned their attention to questions about the interactive technologies community and found a positive reception for aspects of their work (Nardi 1993; Suchman 2007; Sproull and Kiesler 1991). This distinction is important because as ethnographic approaches have gained more visibility and currency within ubicomp, some problems have attended the ways in which ethnography has been understood.

In particular, the dominant view of ethnography is that it provides a corpus of field techniques to ubicomp researchers for collecting and organizing data. The term "ethnography" indeed is often used as shorthand for investigations that are to some extent in situ, qualitative, or open-ended. We have both read and reviewed papers where "ethnography" was used to mean that the researcher had spoken to a test subject outside the context of a usability lab. Similarly, the term is frequently used to encompass specific formulations of qualitative research methods such as contextual inquiry (Beyer and Holtzblatt 1997). So here, the defining characteristic of ethnographic investigation is taken to be its spatiotemporal organization—the ethnographer goes somewhere, observes, returns, and reports—or what Button refers to as "scenic fieldwork" (2000, 330).

Perhaps unsurprisingly, this reading of ethnography has often been aligned with the requirements-gathering phase of a traditional software development model. Laboratory methods can provide certain kinds of answers to certain kinds of questions that can shape the design of a software system. By analogy, ethnography is usually conceptualized as a set of field techniques that can supply different sorts of answers to different sorts of questions—especially questions about technology in everyday settings—that nevertheless will stand in much the same kinds of relation to design exercises. The same empirical urge can be seen in the adoption of other approaches such as cultural probes and related approaches, even though probes were not designed as data collection instruments (Gaver, Dunne, and Pacenti 1999; Hutchinson et al. 2003; Boehner et al. 2007).

This view of ethnography as purely methodological and instrumental supports the idea that implications for technological or information systems design are the primary or even sole output of ethnographic investigation. From this perspective, the reason to adopt ethnographic methods is not that it will generate quite different kinds of understandings from laboratory investigations but rather that laboratory approaches are methodologically unsuited to the target domain.

In reducing ethnography to a toolbox of methods for extracting data from settings, however, the methodological view marginalizes or obscures the theoretical and analytic components of ethnographic study. Ethnography is concerned with the member's perspective and experience, but it does not simply report what members say they experience. Even in ethnomethodological ethnography, which rejects sociological theorizing in favor of explicating observable practice, ethnography makes conceptual claims; it theorizes its subjects, even if the theories presented are the subjects' own (Button 2000). To the degree that ethnography presents not simply observations but also relationships between observations, it is inherently interpretive. Indeed, ethnography's outputs are frequently not analytic statements purely about members' experiences but instead about how members' experiences can be understood in terms of the interplay between members and the ethnographer.

Anderson (1994) insightfully explores the relationship between ethnography and requirements, paying particular heed to the way in which what we have called the "methodological approach" consistently marginalizes or obscures the analytic component of ethnography—and, importantly, how in doing so it both underestimates ethnography and fails to realize its potential. Anderson draws attention to three considerations.

First, he notes that ethnography must be seen primarily as a form of reportage. It is after all ethno*graphy*—a form of writing and a way in which a cultural understanding is inscribed as a literary form. Writing, then, is central and the ethnography is not itself the project; the written form is its final outcome. Consequently, we must pay considerable attention to its rhetorical form and construction. Much contemporary debate around ethnography has been animated by a close look at ethnographies as texts, to how they implicitly or explicitly construct the roles of author and reader as well as the object of inquiry (Clifford 1983; Clifford and Marcus 1986; Geertz 1988). Ethnographies are not mere acts of writing up "user reactions" or focus group discussions, or transcribing interviews; they are instead representations of the world that the ethnographer encounters.

Second, Anderson observes the role of particular rhetorical strategies, not least the juxtaposition of strategically chosen exemplars, such as, in one of Anderson's examples, patterns of sharing customizable software as explored by Wendy Mackay (1990) and the marriage practices of the Bororo as detailed by Claude Lévi-Strauss (1969). Despite a certain ethnographic tendency to operate as "merchants of astonishment" (Geertz 2000), the goal of such juxtapositions is not merely to dazzle and surprise; rather, it is to reveal certain underlying logics of social practice. Once more, this is fundamentally an analytic move. What is revealed is the conceptual organization of cultural settings, and while the goal is to reveal and explicate as opposed to create, the ethnographer is far from a passive agent in the production of this organization as a research outcome. However, creating moments of surprise or astonishment in which the audience/readers are forced to challenge their current framing of a situation does not always sit comfortably within a research structure that favors stable questions and research problems. Questions are answered and problems are solved or addressed. The notion that it might be the wrong question or an inappropriate problem statement seems to fit poorly within the ubicomp tradition.

Third, Anderson emphasizes the reflexive character of ethnographic analysis. This means that ethnography is not only about the culture under study but equally, implicitly or explicitly, about the cultural perspective from which it is written and that of the audience to whom it is presented. By telling an ethnographic story about some Other, the ethnographer also tells a story about ourselves (Marcus and Fischer 1986). How many ubicomp papers or presentations account for the author's stance? Such moves, when they do happen, are greeted with skepticism and even moments of hostility. Yet the question of subject position is important here. Ethnographic

data are not unproblematically extracted from a setting but rather gener-
ated through an encounter between that setting and the ethnographer.
Students learning ethnographic methods for the first time, especially those
from positivistic scientific traditions, frequently express the concern that
the ethnographer, as an instrument, must inevitably distort the data and
introduce an element of uncontrolled subjectivity in contrast to alternative
approaches. Paradoxically, the situation is in fact reversed. Quantitative
and survey techniques depend on subjective judgments about the catego-
ries of observations that remain implicit in the data (Becker 1993; Garfinkel
1967), but by contrast ethnographic methods explicitly require that the
ethnographer incorporate the context of the social relationship between
ethnographer and subject or setting. So, for example, ethnographic under-
standing depends critically on recognizing that the view of the setting (or
the interview responses) that one gains is inevitably shaped by ones'
subject position—ethnic, sexual, or class markers; access to resources and
power; introduction and social position; and so on. One way in which the
methodological view of ethnography practiced in ubicomp often marginal-
izes or obscures the analytic component of ethnographic investigations is
to cast the ethnographer as a channel for the relatively straightforward
movement of data from the field to the design studio. As Diana Forsythe
(1989) tellingly comments, an ethnographer is not a tape recorder.

Power Relations
The second consideration illuminated by the problem of implications for
design is a more broadly political one, concerning the relationship between
the constituent disciplines in ubicomp.[2] The particular issue we explore is
how the idea that the goal of ethnography is to generate implications for
design construes the disciplinary relationship. There are three concerns
here. First, the implications-for-design model postulates design as the
natural end point of research inquiry and, therefore, designers as the

2. It is hard to deny the power differential between engineering sciences and social
sciences in terms of academic and funding structures; a brief perusal of the relative
size of research grants will demonstrate that amply. This disparity has consequences
both large and small. At a large scale, it creates a status hierarchy in which engi-
neering demands tend to override social ones; at a small scale, it results in an
imbalance in participation in scientific meetings (since social scientists are rarely
in a position, for instance, to fund their own travel to program committee meet-
ings and conferences, as venues like the annual conferences for ubicomp and HCI
normally demand). Despite these huge practical obstacles, we focus here on some
more conceptual concerns.

gatekeepers for that research. Second, in doing so it places ethnography outside the design process itself. Third, it places those whom ethnographers study outside the design process too. The third consideration is one that we will examine later, but the first two are more immediate topics.

The question at stake here underlies *any* interdisciplinary effort: the difficulty of achieving a true synthesis or mutually constituted discursive arena, rather than degenerating to a case in which one discipline is essentially in service to the other. Certainly this is commonly understood in computer science; as computation has become an increasingly critical element of other scientific enterprises, computer scientists are wary of becoming programmers in service to other disciplines.[3]

Clearly, in this case the issue is that technological or information systems design is the tail that wags the dog. The distinction to be drawn is perhaps that between user interface design and HCI as domains of study. If the interaction between people and computers—or between people through computers—is itself a domain of inquiry, then the call for ethnographic studies to deliver implications for design is somewhat disingenuous, especially perhaps at conferences with titles like Human Factors in Computing Systems (as the CHI conference is more formally named), or Ubiquitous Computing rather than Human Experiences of Computing Systems or Designing for Ubiquitous Computing. It instead suggests that ethnographic investigations (indeed, ubicomp research studies) are relevant only inasmuch as they support technological design (and not simply in terms of helping to understand HCI). While it is obviously important, in a design- and technology-oriented field, to be concerned with highlighting and correcting problems in current technologies, for a range of reasons ethnography is not necessarily best oriented toward the creation of new sorts of technological or consumer artifacts. Sometimes, after all, the most effective outcome of a study might be to recommend what should *not* be built. More to the point, an analysis of the cultural and social organization of some specific setting or occasion is often best articulated independently of *specific* systems, technologies, or design opportunities.

Returning for a moment to Miller and Slater's study of the Internet in Trinidad (2000), the power of their analysis does not lie in specific recommendations about the ways in which technology might be best designed

3. At a recent meeting of the recipients of a particular program of interdisciplinary research grants, this was a major source of tension and frustration. The fascinating solution was to advocate what was called "vertical interdisciplinarity"—interdisciplinary engagements between computer scientists of different stripes.

to fit into a Trinidadian context; it lies in their critique of the ways in which the domains of "natural" and "virtual" worlds are conceived as well as argued through information technology. Miller and Slater demonstrate how the technology does not create a place outside everyday life but rather provides a new platform on which everyday cultural experiences can be performed. They show how the Internet supplies Trinidadians with another way of "being Trini"—indeed, ways of being Trini that the practical realities of daily life may imperil. What Miller and Slater question is the conventional separation between virtual and real domains; the Trini experience of the Internet, though, is one that is coextensive with, and indeed grows out of, Trini experiences of everyday life.

This calls into question a number of the assumptions that lie behind the notion of implications for design from ethnographic work. First, who is doing the technological or information systems design in these scenarios? There are at least three potential design actors here: the ethnographers, the technologists, and the people themselves. A particular set of relationships between these constituencies is postulated by the traditional focus on implications for design (especially that a designated and demarcated group of designers are empowered to perform design, of which others are passive consumers). Second and perhaps more problematically, it causes us to reconsider just what design looks like—the technology itself, or the form of its local adaptations and appropriations in particular social and cultural contexts. Third, by focusing on specific designs as the point at which ethnographic and technological considerations meet, are we doing justice to the ethnographic perspective, and are we getting the best technological outcomes? At what point can ethnographic contributions have their greatest impact on technology development and deployment? Kjeld Schmidt (2000) claims that the most influential workplace studies in CSCW have been ones that did not harness themselves to specific design efforts or limit their discussion of implications to then-available design opportunities. Fourth, and consequently, is the success or value of an ethnographic investigation best determined by what design decisions it can support or by what forms of learning it might enable. Or to put it another way, what forms of knowledge can ethnographic studies generate?

Technology and Practice
Following from some of these questions, we examine the relationship between technology and practice postulated by the implications-for-design approach. In particular, as discussed above, we highlight two assumptions implicit in this approach. First, it constructs ethnography as a point of

mediation between, on the one hand, a domain of everyday practice and, on the other, a domain of technological design. Second, it implies that people will encounter technology as something just as it was designed and, hence, is appropriated or incorporated into practice. Each of these assumptions is problematic from the ethnographic perspective.

Ackerman (2000) provides the metaphor of the "social-technical gap"—essentially the gap between our technological reach in the design process and the realities of technologies in practice. In drawing attention to this, he spotlights the notion of design as a bridge. This shows how through a range of methodological innovations (such as, perhaps, the incorporation of ethnographic methods alongside controlled laboratory studies), ubicomp has sought to narrow the gap or to bridge it. Ackerman critiques the intuition that people appropriate and adapt technologies because the technologies are poorly designed and that better-designed technologies would obviate the need for such adaptation and appropriation.

By contrast, ethnographic approaches yield a different perspective on the creative processes by which people put technology into practice and meaning. These are seen as consequences of everyday action, not as a problem to be eliminated. Technology here is a site for social and cultural production; it provides occasions for enacting cultural and social meaning and, as with technology, so also with space, gender, family, time, animals, food, death, emotion, and everything else. Seeking to close the gap through the application of ethnographic methods is a contradiction in terms; the gap is where all the interesting stuff happens, as a natural consequence of human experience. The gap between what people say they are doing or will do in the future and the actions they are currently undertaking is fertile ground for ethnographic inquiry. Design is critical, but designs must always be put to work in particular contexts, adopted and adapted by people in the course of practice.

In this way, the domain of technology and that of everyday experience cannot be separated from each other; they are mutually constitutive. The role of ethnography, then, cannot be to mediate between these two domains because ethnography does not accept their conceptual separation in the first place. By introducing and focusing on the notion of the gap, Ackerman suggests not that it is the fundamental problem to be solved but rather that it is the fundamental phenomenon to be understood.

It is lived and embodied practice—the articulation of aspirations and cultural ideals along with all the spaces in between—that gives form and meaning to technology. The focus of ethnography is the ways in which these bring technology into being. From this perspective, and drawing

again on the notions of reflexivity raised earlier, we might suggest that
what ethnography problematizes is not the setting of everyday practice but
instead the practice of design.

Certainly, though, it refigures users not as passive recipients of pre-
defined technologies but rather as actors who collectively create the cir-
cumstances, contexts, and consequences of technology use. Ubicomp
research has long had an interest in aspects of how people might configure,
adapt, and customize technologies (e.g., Dourish and Button 1998;
MacLean et al. 1990; Nardi 1993; Bell 2006a). Still, this ethnographic view
does not simply focus on how people explicitly transform or program
interactive technologies; it looks at how those technologies take on specific
social meanings through their embedding within systems of practice—
systems of practice that might encompass more forms of technological
engagement than a traditional focus on use provides (Satchell and Dourish
2009). As a focus of attention on ubicomp research, design in this sense
goes beyond giving form to technologies to encompass appropriation—the
active process of incorporation along with the coevolution of technologies,
practices, and settings.

Broadening the Scope of Ethnographic Impact in Ubicomp

As the previous sections suggest, ethnography's analytic contributions do
indeed have profound implications for design, but these implications go
beyond the laundry list of features and considerations that are often
requested. Our resistance to a bulleted list of requirements comes partly
from the fact that they underplay the more radical implications that may
be caught up in ethnographic work; if the ethnographer returns from the
field with little more than the lesson that the object in question should be
green, fit in a handbag, and run for at least three weeks on two AA batter-
ies, then we might venture that there is not much to the ethnography.

Far more ethnographic work is potentially relevant for design, whether
or not it was conducted in a design context or in relation to new informa-
tion, communication, and entertainment technologies, or even if it lacks
an implications-for-design section somewhere in its closing pages. Yet we
would argue that such ethnographic inquiry can be extremely influential
for design without requiring the conventional implications-for-design
section. In fact, implications for design that emerge at the time of the
ethnographic inquiry have inherently short shelf lives and so may obscure
more lasting contributions (Dourish 2007). Perhaps the most useful strat-
egy when engaging with ethnographic work is to "read for theory" as much

as for empirical evidence, since in the end these may be where the truly significant implications lie.

In what remains of this chapter, we illustrate two recent areas of design-oriented research and the ethnographic work that could inspire and shape them. The two are already areas of current research and design attention within ubicomp: affective computing and mobile computing. The ethnographic work on which we want to draw, though, was conducted well outside the technology domain, and much of it more than two decades ago. What we want to illustrate are the profound implications they hold for technological and information systems design.

Affect

The traditional focus of both ubicomp and HCI on the cognitive aspects of interaction design has recently been supplemented by a range of new perspectives that look beyond the purely instrumental aspects of interaction. One of these perspectives has centered on emotion and affect, as developed most particularly by Rosalind Picard (1997) and Don Norman (2004). Both of these authors argue that the traditional focus on task performance has been overly reductive, modeling people in purely computational terms and neglecting other important aspects of experience. Cognition is not disembodied and disconnected from other elements of human experience; a significant body of work highlights the role that emotion plays in decision making and other areas of cognitive activity. Accordingly, research in affective computing has begun to investigate the possible relationship between ubicomp and HCI analytic-and-design practice and the affective aspects of interaction. Among other topics, affective computing researchers are investigating whether we are able to build systems that model and respond to a user's emotional state and then to be able to craft responses and design interactions that take that state into account—for instance, by attempting to recognize and defuse stress. This work places the emotional aspect of interaction alongside the more traditional cognitive and analytic elements.

As we have contended elsewhere (Boehner et al. 2005), there is a curious irony at work in this research. On the one hand, affect is rhetorically figured as an alternative or supplement to cognition; the claim is that we have placed all our attention on one element of human experience at the expense of others and so we need to redress the balance. On the other hand, at the same time as this opposition is presented, affect is figured as a concern of the same order or type as cognition. Like cognition, affect frequently appears in this research as a private experience,

as something individual that is internal and closed off from the world. Affect is something that lies, both temporally and spatially, between perception and action. While turns to affect as an important interaction modality attempt to throw off the shackles of pure cognitivism, they seem to carry a significant amount of that legacy with them anyway.

Ethnographic studies of emotion can provide an alternative account that is useful in two ways. First, it shifts us toward a different way of imagining the relationship between information technology and affect, providing a different set of design strategies. Second, it highlights the cultural specificities of this parallelism between emotion and cognition.

Here, we use two ethnographic accounts of emotion: Catherine Lutz's study (1986, 1988) of everyday emotion in Micronesia, and Lila Abu-Lughod's study (1986) of emotional expression among the Bedouin. Other studies—such as Fred Myers's work (1979, 1986) among the Pintupi in Australia or Michelle Rosaldo's work (1983) among the Ilongot—are also relevant, but we will limit our discussion here to these two.

Abu-Lughod (1986) offers a detailed ethnographic account of honor and modesty among the Alwad 'Ali, a group of Bedouin tribes of Egypt's Western Desert. Much of her exploration turns around questions of gender and kinship, and the code of honor as it is entwined with these. What is most relevant here is the issue of emotional performance. Modesty and emotional reserve are hallmarks of conversation and interaction among the Bedouin, for whom a code of modesty results in an outward stoicism. What intrigues Abu-Lughod, however, is the distinction between the reserve of everyday speech and the emotion expressed in short fragments of poetry that the Bedouin might mutter, sing to themselves, or casually drop into conversation in the course of daily life. These brief, haiku-like fragments of poetry are often laden with joy, sadness, and longing, even as the people who utter them remain stoic and passive. What is more, these fragments are seen by the Bedouin as a truer window into the soul than everyday deportment. Emotional performance is thus a way in which the code of modesty is maintained and enacted—a code that is itself strongly oriented toward gender performance and relations, being connected to the code of honor by which masculinity is defined and tested.

In Abu-Lughod's account, emotion is not treated as a thing apart from other aspects of social life, a purely private experience on which sociality is layered, but rather as a fundamental element of social and cultural reality. It is a way in which this social and cultural reality is performed and enacted, brought into being and maintained through specific emotional

performances. The emotion is not a precursor to action; emotion, as a cultural object, is produced through concerted action.

Lutz (1986, 1988) is also concerned with emotion as a cultural category, which she unpacks using material from her time on Ifaluk. Her concern in the field materials is not simply with a different set of emotions that are expressed in other places but instead with a different way of thinking about emotion as a cultural category, a different role for emotion, and a different evaluation of its meaning. One of Lutz's extended examples is the concept of *song* (justifiable anger) among the people of Ifaluk. While Western societies frequently class anger as antisocial, *song* plays a distinctively prosocial role on Ifaluk; the danger of invoking *song* in others might be used to caution children to play quietly and not disturb their elders, or it might otherwise curb those behaviors that upset the balance of everyday life. The conditions for bringing out *song* in others are those that reflect cultural practice—so noisy play might certainly provoke *song*, but so might actions that display an inappropriate disregard for familial or ritual responsibilities, such as how food should be shared. To be able to identify and respond to one's experience as anger (rather than, say, other emotions or pains, such as an upset stomach), then one must be able to understand the world as offering the conditions for anger—conditions that are themselves cultural. *Song*, as a personal experience, is nonetheless a cultural product; cultural meaning generates the landscape of emotional experience.

In reading Lutz's account, it is critical to recall again two potential readings of the word "cultural" that we flagged in chapter 3: the taxonomic and the generative. The taxonomic reading is one that seeks to classify and categorize people as well as their attitudes according to cultural (frequently ethnic or national) traits, habits, or inclinations. As we argue in the previous chapter, it is this taxonomic reading of culture that is invoked when people attend to the different positive or negative associations that people from different parts of the world might have toward colors, or when they account for differences in technology use according to whether people come from individualistic or communitarian backgrounds. If we were to read Lutz's concerns in light of the taxonomic view of culture, then we would take it to say that people experience and express different emotions depending on their cultural background, or that the categorization and evaluation of different emotions is one that varies with culture. This may be true, but it does not take us very far and, what is more, it rests on a definition of culture that raises more questions than it answers (Dourish 2006b; Ortner 1984; Yengoyan 1986).

Lutz's account instead draws on a generative account of culture—where we see cultural understandings as lenses through which everyday life is experienced and interpreted. By this view, emotional experience is a consequence of cultural embeddings. Biophysiological events are interpreted according to cultural scripts. Whether I can make sense of my experience as that of anger relies on an existing set of cultural understandings—an interpretation of the events around me as those to which an angry response might be justified. Culture is what helps me tell the difference between anger and indigestion; it is generative of the experience. Critically, then, such putatively private aspects of experience such as emotion are always already cultural; cultural aspects of interaction are prior, not consequent, to perception and action.

In this we see the link back to Abu-Lughod's attention to the performative aspects of emotion and the ways that emotion is a site at which cultural realities are enacted. Further, Lutz argues that emotion is a key master category in Western thought—one that lines up with and is linked to other critical distinctions around which our thinking is organized, particularly in its distinction to cognition and rationality. So rationality is of the head, but emotion is of the body; rationality is controlled, but emotion is uncontrolled; rationality is cold, but emotion is hot; rationality is male, but emotion is female.

Neither of these studies were written in a technological context or for a technological audience, and neither provides a series of implications for design.[4] That is not to say that they do not have implications for technological design or that they do not indeed raise profound questions for how emotion is figured as a facet of technological interventions. These accounts demonstrate a nonessentialist characterization of emotion, in which the shaping of an emotional "landscape" is culturally determined. They also depict emotionality as an outcome of engaged cultural practice rather than as a precursor to action. Emotion is produced and enacted in socially and culturally organized occasions. Note that this is not simply an argument that emotion is playacting or pretense. To observe that a setting is culturally organized is not to suggest that it is false; nor are moments of solitude any less culturally organized than those of intense social interaction. Throughout these studies, enactment—the continual

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4. Given that the studies were both published in 1986, any attempt to distill technological implications, if those had even been a topic, might seem absurdly dated in the context of contemporary computational developments. The temporalities of social and technical phenomena are important considerations in general when thinking about disciplinary relationships.

and ongoing production and reproduction of aspects of social reality—is a fundamental consideration.

Furthermore, these accounts suggest that emotional expression is a point at which cultural values are expressed and performed. Rather than thinking of emotionality as being shaped by cultural variables, they hold that emotional performance is itself a site of cultural production. They help to account for the ironic relationship between cognition and emotion in ubicomp and HCI discourse by demonstrating how these are aligned within broader category systems. This allows us to think past the representationalist point of view.

Emotion is therefore interactional as opposed to representational. This conclusion does not simply *raise* implications for design; it *is* an implication for design. Kirsten Boehner and her colleagues (2005) show the ways that this implication was worked through in the design of a system called Affector, which tackles the opportunities around affective computing from a nonrepresentationalist stance—one that supports the enactment of emotional sociality rather than attempting to uncover the parameters of an emotional model that underlies and shapes human action. Affector is a video communication system in which image-processing techniques are used expressively to transform real-time video images in line with affective states but without any representational substructure. Much as in Karl Weick's (1995) exploration of the aphorism "How can I know what I think until I see what I say?," Affector encourages participants to play until they "see how they feel." The system's display is not a presentation of an emotional state; it is directly a performance of one. If we think of emotion in terms of performativity, enactment, and cultural production, we are lead to a radically different way to conceive of affect in interaction.

Mobility

A second domain of recent interest in interactive system design is mobile technologies. Accompanying the increasing prominence of mobile telephones as interactive and computational platforms as well as the spread of wireless networks enabling mobile access to information, ubicomp has increasingly addressed problems of information access "on the move." Some of the problems here are simply the constraints that might be imposed in these settings—limitations on input devices, output devices, and computational power. Some are those that speak directly to the relationship between devices and the contexts in which they are deployed, focusing on the contextually appropriate delivery of services or information. Others are concerned with the settings through which mobile devices

might move and how these spaces and spatialized resources might be made navigable and accessible to the users of mobile devices.

While the first category of applications is concerned largely with devices and their affordances, the latter two are concerned instead with the nature of location, movement, and spatiality—how it is that people orient, individually and collectively, toward the spaces we inhabit. One of the central concerns, then, is what locations mean from a human-centered perspective. The traditional approach is a cartographic, Cartesian one in which space is understood as a manifold that can be indexed by a coordinate system, even though that coordinate system might be hidden behind a more human-oriented system of labels (allowing people to navigate via terms like "home," "office," and "store" rather than opaque latitude and longitude).

Again, we might turn to ethnographic investigations to gain a different view of space—one that focuses on an understanding of space as it arises from within particular cultural practices, looking at topics such as migration, nomadism, tourism, or globalization. Each of these topics is clearly founded on some perspective on space and its meaning and, again, they provide us with a different lens through which to examine questions of people and movement.

One piece that exemplifies this approach is Nancy Munn's ethnographic work (1996) among the Warlpiri peoples of the central and western Australian desert. The relationship between people and the land in this particular Australian Aboriginal belief system is a complex one. The form of the contemporary landscape is the result of mythical creatures' actions in the "Dreamtime," a mythical period after the creation of the world but before the arrival of people.[5] Since these creatures stand in totemic relationships to tribes and clans of the contemporary peoples, the activities that can be "read off" the landscape also result in a series of ritual responsibilities and relationships to parts of the land according to patterns of kinship and lineage. The relationship is more than simply one of environmental stewardship; the landscape is the source of Warlpiri identity and law.

Furthermore, this binding of people to landscape is a continual one, maintained and renewed through the ongoing relationship of Dreaming (see also chapter 5). One's responsibility is to Dream the land into

5. The notion of the "Dreamtime" that figures in many accounts of Australian aboriginal culture and social systems is a contested one. Patrick Wolfe (1991) offers a layered analysis of the origins of that term, the ways in which it is variously deployed and resisted, and its hegemonic effect—suggesting a universality of experience rarely found in other accounts of Aboriginal Australia.

existence; it is through this Dreaming that the connection between people and the world is maintained and honored. This ongoing link is reinforced by the land also being seen to carry the resonances of human activities and events there as well as mythical events. So patterns of habitation and settlement, migrations, meetings, battles, and births and deaths also leave their impact on the land. The Warlpiri experience of the landscape is thus a cultural one. The topography of the land is, at the same time, encountered as physical, mythical, and historical.

Munn is especially concerned with spatial interdictions—the circumstances and conditions under which people are ritually excluded from spaces. For instance, the separation between women's and men's ritual practices (or "business") is based not simply on events but also on spaces; one will avoid being in the places where one might see or accidentally encounter the ritual events from which one is tabooed. Similarly, spatial taboos may exist between classificatory groups. One example is that between mothers-in-law and sons-in-law—not only those who are actually related by marriage but rather those who are the members of subsections for whom kinship rules dictate the potential to stand in this relationship. So as a practical matter, a spatial interdiction exists relating to the parts of town where the people from the relevant subsection cluster (Bell 1983).

These interdictions are manifest in various ways, most particularly in the detours that characterize much Aboriginal navigation, as people move through the landscape in ways that respond to the various characters of the topography. Munn (1996, 449) is concerned with "spatial prohibitions as a mode of boundary making"—that is, with how the forms of prohibition to which one is subject, and one's orientation toward them, are means by which the environment's organization is not just marked but produced as well. Sacred sites, with their historical and mythical resonances, are a source of these prohibitions, as specific ritual sites, events, and seasons. A further complication lies in the fact that spatial prohibitions may be tied to events and actors that are themselves mobile. Rituals move; people move; as they do, the locales from which one might be excluded move too.

Munn underscores the fact that these spatial exclusions are not marked by boundaries in the ways that we might imagine Western land claims to be defended or regions protected. The spatial model here is one of centers of ritual potency that resonate out into the environment. As she notes, the radius of power is not clearly delineable. Moving too close may bring bad luck, illness, or death, but "too close" is relative; it may be linked to seniority or kinship. One's knowledge of and relation to these centers of potency

is culturally embedded. Added to this is a further complication—knowledge of country, sacred sites, and spatial exclusions is not universally shared by all Warlpiri. It is revealed only if and when it is necessary to do so. Even Warlpiri "maps" of Warlpiri country, when they are drawn, are always partial, contextual, and transitory. This is not cartography as we would recognize it in the Western tradition. The model of place at work here is cultural and relational.

Indeed, one of the reasons that the Warlpiri case is such an interesting one is the fact that in Australia, two completely different systems of spatial knowledge production rub up against each other in troublesome ways. Debates over the protection of sacred sites and Aboriginal land rights have been so bitter and so prolonged, not least because of the fundamentally different systems of spatial knowledge and reasoning at work (Turnbull 2000; Verran 1998), and the legal and legislative outcomes concerning native titles reflect some of the inherent contradictions of reconciling the incommensurable (Hill 1995).

A second ethnographic example—Liisa Malkki's work (1992, 1995) on national identity among refugees in Tanzania—reveals a different set of cultural concerns over movement and mobility. Malkki's fundamental concern here is "rootedness." In the context of globalization, large-scale transnational migration, and interconnected labor markets, anthropologists have long recognized that the objects and topics of their inquiry are not fixed in specific places but rather move around and take their shape within the world system, and that ethnography therefore needs to be multi-sited itself and to engage with multi-sited phenomena (Marcus 1995). These issues, however, are more directly present in Malkki's work, which looks at the ways in which national identity and rootedness manifest themselves for transnational migrants and refugees. She argues that the very figuring of rootedness and the authenticity of the indigenous reflects what she calls a "sedentarist metaphysics"—a notion that staying put is a natural state so deeply ingrained in historical and national narratives that it is taken for granted and invisible. Here the concern is with the way in which rootedness and movement have moral force.

Malkki's fieldwork among Hutu refugees in Tanzania documents these processes at work. She draws attention to how the transnational displacements undergone by these refugees is incorporated into or enables a series of narratives about nationality and identity. While one might expect that refugee status is, in Erving Goffman's terms (1963), a case of "spoiled identity," she finds that it is rather a source of categorical purity; being a Hutu refugee in Tanzania marks one as more distinctly Hutu, given both a

disconnection from Burundi and one's inherently temporary status in Tanzania. Where Hutu ethnic identity had previously sat awkwardly along-side Burundi nationality, now it could be more vigorously and unproblem-atically asserted. As she notes, Burundi was a "mere state" whereas the imagined Hutu nation is a "moral community" formed in exile. Neverthe-less, this vigorous assertion of pure Hutu identity is largely a feature of those she studied living in refugee camps as opposed to those who have settled in towns in Tanzania, whose status in Tanzania is no longer so temporary and who do not live liminally disconnected from Burundi and Tanzania. This is not to imply that they do not anticipate a return "home" and did not think of themselves as different from the Tanzanians among whom they lived. Rather, their imagination of their position is more cosmopolitan than nationalized, and they talk of their status and home in spatial rather than moral terms.

Like Munn, Malkki points to the ways in which spatial arrangements, presence, movement, and habitation have moral and cultural significance. These authors' focus is on the (user) experience of space. Space emerges as a relational, cultural object, and much of this cultural meaning—rooted-ness, morality, kinship, and responsibility—cannot be reduced to Cartesian coordinates or global positioning system (GPS) references.

This implies that technologies that seek to enhance, incorporate, or respond to the user experience of space may be limited by the represen-tational schemes by which we are used to operationalizing it. If the user experience of space is cultural rather than cartographic, then an alterna-tive foundation for design presents itself. This is a connection to design practice that goes beyond the traditional formulation of requirements but that can be entirely actionable. For example, these kinds of considerations led us to reconsider the role of spatial experience in the design of the Undersound System. Undersound focuses on the collective production of spatial experience through the patterns of movement and migration that people engage in daily (Brewer et al. 2007). It allows riders of a public transit system, particularly the London Underground, to share music via mobile phones. Music is tagged according to the places it has been, where it has entered the system, and where it has traveled. With an emphasis on locally produced music, the system strives to reflect the ethnic, demo-graphic, and social diversity of the regions covered by the underground system in the music that flows through, providing a link between the underground and the surface, but also supplying a means by which the pattern of flows and movements of people through the space can be uncovered. Spatial structure in Undersound is an emergent property arising

out of the interactions of people and objects. It is diverse, relational, actively produced, collective, dynamic, and non-Cartesian. At the same time, it is rooted in an experience of space that is fundamentally aesthetic rather than instrumental (Brewer, Mainwaring, and Dourish 2008). The system's goal is to reflect exactly this contingent and collective experience of space—one that shapes as well as is shaped by senses of collective identity and participation in ways significantly inflected by the ethnographic work such as that discussed above. What other technological and information systems could be designed within this set of frameworks, or others suggested by Munn and Malkki?

Toward a Generative Account of Ubicomp

As ethnographic accounts produced outside the domain of technology development, the work of Abu-Lughod, Lutz, Munn, and Malkki certainly does not present implications for design in the form in which they are often requested within ubicomp research contexts—a delimited set of short-term requirements or constraints on the design of contemporary or shortly anticipated technologies. As detailed and rich accounts of aspects of human experience that reach well beyond the specific sites at which research engagements typically take place, they certainly *do* present implications for design in the form of consequential, profound, and direct guidance for how to think about the issues in projects such as Undersound. Information technology and interactive systems are not in evidence in any of their studies; (user) experience, however, is front and center. This (user) experience is their topic, and to the extent that what they attend to is the role of emotion and mobility in (user) experience, their implications for the design of technologies in these areas are legion.

As we have argued throughout this chapter, the implications for technological design found in these ethnographic accounts are not of the requirements-capture variety. They set constraints on design, certainly, but not in terms of operationalizable parameters or specific design-space guidance. They may speak more to the way that information technologies and digital media take their place among the other "mediascapes" that shape cultural experience (Appadurai 1996). This is not a move away from design, however. What these studies in fact tend to do is open up the design space rather than close it down, talking more to the *role* of design and technology than to its shape. Implications for design encompass not only specific technological imperatives but also implications for how we go about design in the first place, what it might do, how it can be carried out, and what import it holds.

Importantly, these ethnographic understandings are derived not from the empirical aspects of ethnographic work; they come from its analytic aspects. That is, the ethnographic engagement is not one that figures people as potential users of technology and looks to uncover facts about them that might be useful to technologists (or marketers). Ethnographic engagements with topics, people, and field sites instead are used to understand phenomena of significance to design, and the implications arise out of the analysis of these materials. This goes again to the marginalization of theory that we discussed earlier in this chapter, in which the very fact that ethnography is conducted under particular analytic auspices is neglected or ignored.

It is also worth noting the temporal context and lifetime of ethnographic accounts, which can remain relevant far beyond their moment of writing. The studies we have cited were published between the late 1980s and 2000. We have cited others of relevance from earlier decades. Even if these studies had been conducted under technological auspices and had addressed design considerations, one has to ask what the implications for design would have been in 1995, 1985, or 1975, and what they would mean today. We have a feeling that they would tell us little about iPods, mobile phones, or blogs. Yet the theoretical contributions that the studies provide have a considerably longer shelf life and a relevance that transcends specific technological moments.

Our assertion is certainly not that design recommendations are poor things to include in ethnographies. Tight couplings of ethnographic materials and design practice have been both successful in design terms and productive for the research community—for instance, the Lancaster work on air traffic control (Hughes, Randall, and Shapiro 1993). The presence or import of implications for design, however, are not the only appropriate criteria by which ethnographic contributions can be judged. In fact, even in cases where such recommendations can be concisely and effectively formulated, to focus on those as the outcomes of ethnography at best distracts from, and often completely obscures, the analytic and conceptual work that lies behind them, which is frequently where the substantive intellectual achievement is to be found. What matters is not simply what those implications are; what matters is *why*, how they were arrived at, what kinds of intellectual (as well as moral and political) commitments they embody, and what kinds of models they reflect (Flyvbjerg 2001).

In thinking about ethnography (or indeed any social science contribution), it is crucial to distinguish two levels and two sorts of contributions: the empirical and the analytic. The empirical materials make up the

fundamental observational material—the "this is what happens" detail of ethnography. The analytic materials comprise the ways in which these data are theorized, understood, organized, juxtaposed, interpreted, and presented in order to make an argument that reveals something about the setting under investigation. Observations are always theory laden, and any encounter between ethnographer and field involves a whole host of analytic positions, so a hard-and-fast separation would be impossible. But at least as far as ubicomp is concerned, we can distinguish between these two as ways in which an ethnography make a contribution—in terms of what it says happens and the ideas it offers for thinking about social life.

We would argue that the call for implications for design, drawing on 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. Certainly, many ethnographic studies can offer such things (although it is important not to ignore the role of the ethnographer as interpreter and framer of these "facts," rather than as a passive mirror of the site).

What has traditionally been more complicated has been to establish a deeper, more foundational connection between ethnography and design—to look for a link at an analytic level versus simply an empirical one (Dourish and Button 1998). The analytic contributions tend not to be seen as holding implications in the same way.

It is not that these do not have profound implications for design, because as we have seen, they do—indeed, often more profound than a laundry list of facts and features. Their impact, though, is frequently more diffuse. They provide us with new ways of imagining the relationship between people and technology. They give us ways of approaching design. Still, they typically go beyond specific instances of design. More to the point, they draw in general on the fundamental repudiation of a traditional separation between designer and user, between technology and practice. To the extent that these implications are not formulated as implications for design, it is because the categories of design, user, and designer are themselves in question.

Is it a cop-out to say that what these studies offer is a new framing for the questions rather than a specific set of design guidelines? Hardly. One obvious point to maintain about these reframings is that they have both a broader scope and longer-term impact than a simple series of requirements. They reach beyond the level of specific investigations. Is it

a lack of imagination to fail to discuss technical matters? Again, hardly. What we have presented here are in fact acts of reimagining. In the cases that we have provided, technology was simply never in question in the first place, so naturally it did not feature as part of the discussion. But more generally, we are arguing that the movement from ethnographic engagement to design practice is inherently a conceptual and imaginative move, not a rote translation of empirical evidence into designed fact. Is it a lack of courage to claim that ethnographers need not provide implications for design? Yet again, hardly. If the push back is anything to go by, it takes considerably more fortitude to argue against the hegemony of design practice rather than to submit to it.

Perhaps it is a question of modesty. The engagement between ethnography and design must be just that—an engagement. Ethnography and ethnographic results are part of that engagement. The scope of the project of ethnographically grounded design goes beyond either ethnographic inquiry or design practice. Attempts to use ethnographic inquiry as a simple substitute for engagement with users, supplying a convenient summary of people's needs, goals, and meanings, are attempts to decouple design practice from its consumers and users. It is precisely these engagements that ethnographers seek to stage and frame in ubicomp and beyond.

The question is likewise one of responsibilities. We can ask this question in two ways. Whose responsibility is it to connect ethnographic results to design practice? According to the implications-for-design position, it is the ethnographers' responsibility. If the technological design implications are not clear, it is from the ethnographer's failure in meeting responsibilities. Certainly much could be said about the ways in which ethnographers need to frame results for broader publics (a concern that ethnography has long recognized), but we would contend that it is no more the ethnographer's responsibility to speak to design within the context of each specific publication than it is the designer's responsibility to speak likewise to ethnography. Rather, the responsibility for ethnographically grounded design results is a collective one.

The other way to ask this question is, To whom do ethnographers owe their responsibilities? Again, based on the implications-for-design position, ethnographers own their responsibilities to the design subcommunity. The alternative is that ethnographers owe their responsibility to their participants and informants, to the people with whom they have engaged, whom they represent, and for whom they speak (Rogers 1997). At times, that responsibility may be best served by engaging in technological or

information systems design. At other times, it may be best served by heading off fruitless design activities, and, at still other times, it may be best served by reframing the questions. If the role of the ethnographer in ubicomp is to stage encounters between sites and technologies, then the forms that will take may vary considerably.

Perhaps one way of reconsidering the role of ethnography in ubicomp design is to question the concept of the ethnographic site. One of the more significant transformations of contemporary anthropological ethnography has been the concept of multi-sited ethnography, as developed particularly by George Marcus (1995). Whereas traditional ethnographies since Malinowski have focused on a geographically bounded field site, Marcus observes that in the context of globalization, 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, including, for example, their connection to international academic anthropology and the cultural settings in which ethnographic results are presented (Marcus and Fischer 1986). 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 globalized practices. Miller and Slater's Trinidadian Internet, for instance, is a means by which cultural practice operates within a globalized economy. When we attempt to discharge the mythology of the field as part of a professional rite of passage, we are forced to consider the concept more critically (Gupta and Ferguson 1997).

What might happen if we started to think more critically about the site of ethnographic studies in ubicomp and HCI? In what ways can we separate the technical practices of one organization or set of users from those others with whom they interact, from whom they learn, and with whom they exchange information, artifacts, and people? We might, say, reconfigure the ethnographic project in ubicomp by thinking of studies not as independent investigations but rather as contributions to a broader ethnography corpus whose site is not a particular office, campus, or city within which technology is used, but rather it is the global technology culture itself, or the intersection between cultures of technology production and consumption. Certainly, this suggests that we might need some very different criteria for assessing the role and contributions of ethnographic studies within ubicomp.

In this chapter and throughout this section, we have articulated a different kind of ubicomp—one that is a form of social and cultural production as much as a scientific research trajectory. We have been particularly interested in mapping out a new set of relationships between ethnography and ubicomp that move beyond formulaic implications for design to something considerably more generative and inviting. In the next chapter, we take this one step further and offer a critical interrogation of contemporary ubicomp preoccupations.