7 Ethnographic Field Methods and Their Relation to Design

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In this chapter we explore the relationship between developing a descriptive understanding of human behavior and designing artifacts which ostensibly support the activities described. Although there is growing recognition that an understanding of users' current work practices would be useful in the design of new technologies, the debate about what it would mean to acquire such understanding and to link it with design is only beginning. What are the implications of developing ways of representing the views and activities of communities of practice outside one's own such that the knowledge would be useful in design?

The ethnographic approach, with its emphasis on "natives' point-of-view," holism, and natural settings, provides a unique perspective to bring to bear on understanding users' work activities. However, anthropology is mute when it comes to ways of integrating such an understanding with design. The languages of design and of ethnography evolved in quite different contexts and in relation to different concerns. While the ethnographer is interested in *understanding* human behavior as it is reflected in the lifeways of diverse communities of people, the designer is interested in *designing* artifacts that will support the activities of these communities. The current challenge is to develop ways of linking these two undertakings.

As practiced by most ethnographers, developing an understanding of human behavior requires a period of field work where the ethnographer becomes immersed in the activities of the people studied. Typically, field work involves some combination of observation, informal interviewing, and participation in the ongoing events of the community. Through extensive contact with the people studied ethnographers develop a descriptive understanding of the observed behaviors.

Designers, on the other hand, are interested in understanding human behavior insofar as it enables them to *design* artifacts better suited to the needs of the users. Designers, therefore, spend more time testing and evaluating their designs in relation to users' needs and abilities and less on understanding the supported behavior per se. When designers do attempt to gain a clearer view of the users for whom they design technologies, they traditionally have been limited in the ways such a view is acquired (see section on Traditional Approaches, pp. 143–147). Ethnography provides an alternative methodology for designers to use, which gives them access to people's *everyday practices* as members of social groups.

MOTIVATION FOR USING AN ETHNOGRAPHIC APPROACH

In the 1980s there was a refocusing of interest on the part of systems designers away from the view that technology supported individual tasks and toward the view that human activities were in large part carried out in cooperation with others. Therefore new technologies should be designed to support the cooperative nature of most human activities. A new field evolved called CSCW (computer support for cooperative work), which was concerned with the design of computer tools for the support of group work (Greif, 1988). As a consequence of this shift in focus, there was a realization that the methods most often used to analyze users' needs and activities, and to evaluate designs, were not suited to this changed focus. Looking at individual psychological and cognitive processes and evaluating the fit between isolated tasks, users, and technologies would not provide the perspective needed to design and evaluate technologies for group work. Interest in exploring the possible applicability of ethnographic methods for understanding group work practices and for linking this understanding to design coincided with, and may have been motivated by, this refocusing of interest.

THE ETHNOGRAPHIC APPROACH

There is considerable debate in anthropology about what it means to be "doing" ethnography. At a minimum, most would agree that ethnography requires a period of field work where the ethnographer becomes involved in the everyday

activities of the people studied. While ethnography often includes a description of the activities and practices of those studied, it is more importantly an attempt to interpret and give meaning to those activities. This interpretation most often takes its final form as a text written in a somewhat stylized format (see Van Mannen 1988, for a discussion of various ethnographic forms). Although many books have been written about ethnography and ethnographic field methods, there is no agreed upon set of principles that guide anthropological field work, nor is there a cookbook of methods and techniques applicable in all situations. We offer here some general guidelines for those interested in exploring the usefulness of an ethnographic approach for the design of new technologies and present a brief description of some commonly employed research methods. However, we would falsely portray the field if we left the impression that what we write here is either complete or without challenge. We have chosen not to dwell on the controversies that exist concerning what constitutes an adequate ethnography to avoid complicating the discussion. Those interested in delving further into the controversies should consult Agar (1980, 1986), Clifford (1988), Clifford and Marcus (1986), Geertz (1973, 1983), Harris (1979), Naroll and Cohen (1970), Pelto (1970), Tyler (1979), and Van Mannen (1988), among others.

Guiding Principles of Ethnography

At the risk of overly simplifying the ethnographic endeavor, we begin by describing four main principles that guide much ethnographic work.

Natural Settings

Ethnography is grounded in field work. By this we mean that there is a commitment to study the activities of people in their everyday settings. This requires that the research be conducted in a field setting as opposed to a laboratory or experimental setting (see Fig. 7.1). The underlying assumption here is that to learn about a world you don't understand you must encounter it firsthand.

Holism

This emphasis on natural settings derives in part from a belief that particular behaviors can only be understood in the everyday *context* in which they occur. To remove a behavior from the larger social context is to change it in important, nontrivial ways. This concern with how particular behaviors fit into the larger whole is often referred to as holism (see Fig. 7.1).
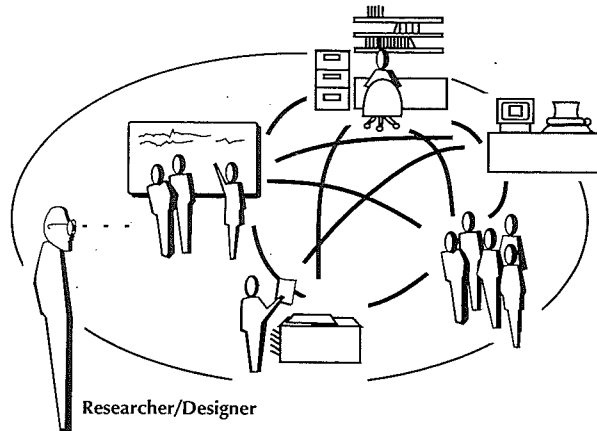
Descriptive

Based on field work ethnographers develop a *descriptive* understanding of the lifeways of the group studied. Ethnographers describe how people *actually* behave, not how they *ought* to behave. This distinction is similar to one made in

HOLISTIC

Particular behaviors understood in relation to how they are embedded in the social and historical fabric of everyday life.

Focus on relationship between the parts

Researcher/Designer

Learn about a world you don't understand by encountering it first hand. Focus on naturally occurring, everyday talk and action.

NATURAL LABORATORY
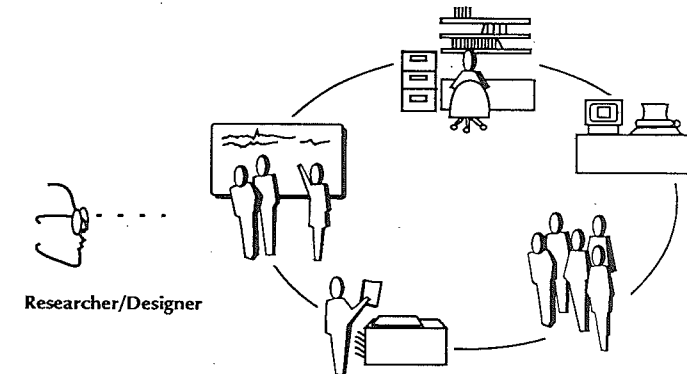
FIG. 7.1.   Two principles of ethnograpy.

DESCRIPTIVE

Judgements of the efficacy of behaviors observed are withheld

Researcher/Designer

DESCRIPTIVE — *Instead of* PRESCRIPTIVE —	
"Several people handle the document before it is completed. All involved discover problems and are asked to account for changes to the document."	"They're still manually processing these "routine" documents. Passing hardcopy from person to person is such an inefficient way to update documents. An electronic mail system linked to an intelligent database could really improve their process."

FIG. 7.2.   Contrast between descriptive and prescriptive characterizations of activity.

linguistics between descriptive linguists (how people speak) and prescriptive linguistics (how people ought to speak). The orientation toward the descriptive leads ethnographers to assume a nonjudgemental stance with respect to the behaviors they study. Maintaining such a nonjudgemental stance is sometimes referred to as cultural relativism, the notion that other people's behaviors should not be judged by the standards of some other group (see Fig. 7.2 for an illustration of how descriptive and prescriptive characterizations contrast.)

Members' Point-of-View

Ethnography involves understanding the world from the point-of-view of those studied. Anthropologists attempt to understand how people organize their behavior and make sense of the world around them. With the realization that one can never truly get inside the head of another or see the world exactly as another does, research methods are aimed at getting as close to an insider's view of the situation as possible. With such an orientation, ethnographers are concerned with

describing behavior in terms relevant and meaningful to study participants. This contrasts with the requirements of survey research where relevant categories must be known before the study begins and must not vary across participant communities. As such, the terms in which behavior is characterized often are those of the researcher, not the study participants (see Figs. 7.3a and 7.3b for an illustration of this principle).

In general then, ethnography is concerned with understanding other people's
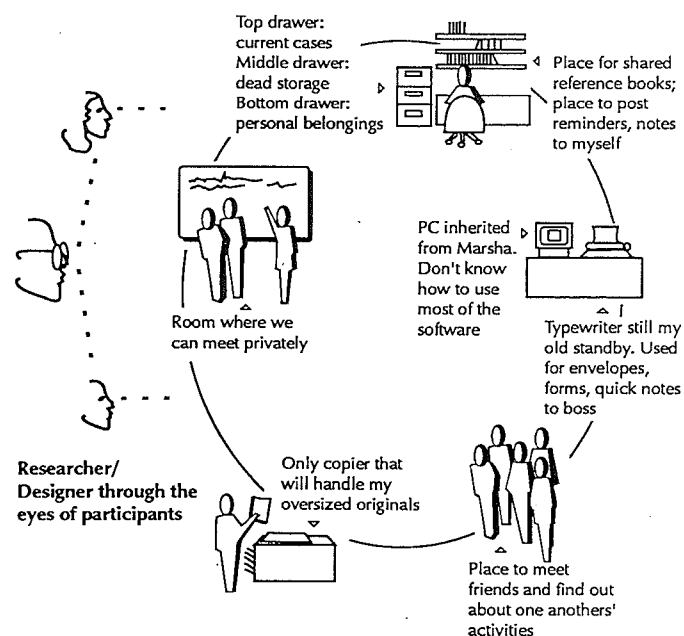

FIG. 7.3a.   Descriptive categories of the study participants as contrasted with those of the researcher (Fig. 7.3b).
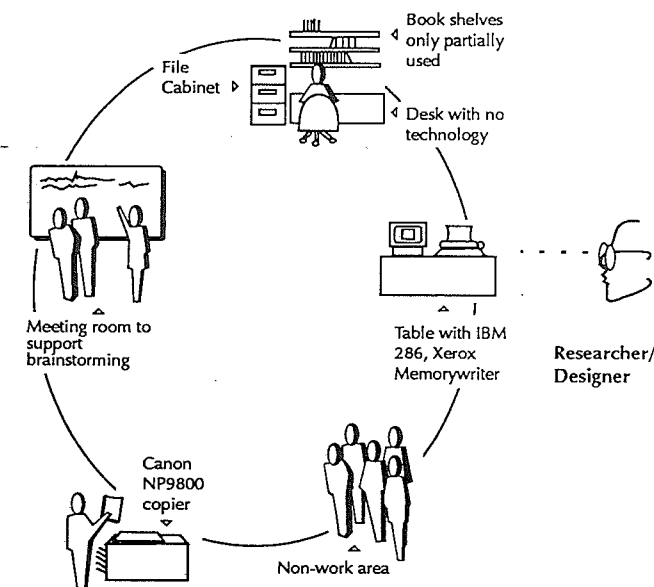
FIG. 7.3b.   Descriptive categories of the researcher as contrasted with those of the study participants (Fig. 7.3a).

behavior in the context in which it occurs and from the point-of-view of the people studied.

ETHNOGRAPHIC FIELD METHODS

Ethnographic field work requires the personal involvement of the investigator, a willingness to be in situations out of one's control and as such an abandonment of strict "scientific control." It also involves an iterative, improvizational approach

to understanding, wherein partial and tentative formulations are revised as new observations challenge the old, and where adjustments in research strategy are made as more is learned about the particular situation at hand.

Although ethnography cannot be reduced to a set of methods or techniques, but must be understood in relation to the above principles, we discuss a few commonly employed field techniques that have proven useful to anthropologists in the field.

Observation

Because ethnographers are interested in understanding human activity in the everyday settings in which it occurs, most ethnographic investigations involve some period of observation. The ability to observe and record ongoing activities becomes critical to the success of the endeavor.

Why Observe?

There is a well-known axiom in anthropology that what people say and what they do are not the same. This is one of the principal motivations for including observations of ongoing activity in any study of human behavior. The distinction between what people say and what they do is related to the distinction between *ideal* and *manifest* behavior. Ideal behavior is what every "good" member of the community should do, whereas manifest behavior is what people actually do. Sometimes asking people about their behavior will yield responses closer to the ideal than the manifest. People may distort, either knowingly or unknowingly, accounts of their own behavior, often simply providing an approximation constructed either for the questioner's benefit or to match cultural expectations. With regard to this latter point, Whiting and Whiting (1970) give examples from studies of child rearing where women's descriptions of their child rearing practices were at odds with their observed practices. Women in the United States reported that their children could dress and toilet themselves earlier than they actually could. Whiting and Whiting assert that this supported the value these mothers placed on independence.

The distinction between what people do and what they say is also related to the fact that people often don't have access to the inarticulated, tacit knowledge associated with certain activities. There are many activities that are so much a part of our everyday lives that we are unable to provide accurate accounts even when asked to reflect upon these activities. In some cases, we may not have the vocabulary to talk about them.

Observational Role

There are many ways to conduct observations. At one extreme one may attempt to become the proverbial "fly on the wall," in which case the field worker tries to be as *unobtrusive* as possible. Maintaining the strictly observer role is difficult and frequently requires being given some culturally appropriate role that allows the observer to "hang around" and observe.[2] Some have characterized this role as that of the *observer participant*, where the participant component is simply the culturally appropriate status given to the ethnographer.

At the other extreme is the *participant observer*. In this case the field worker becomes a full participant in the activities studied[3] and has the opportunity to be an observer as well. There are both advantages and liabilities in attempting to be both observer and participant. One major advantage is that the field worker has firsthand experience of the events under study due to the fact of active participation. In some settings the only way of gaining access to the activities of the community is by assuming an active role; simply being an observer to events is not acceptable (Kluckhohn, 1940).

On the other hand, the liabilities of being both observer and participant are many. Logistics alone can be overwhelming if one is trying to participate and take field notes at the same time. It often becomes necessary to write-up field notes as after the fact recollections of events participated in. Because the ethnographer is often new to the activities participated in, a great deal of energy can be expended simply figuring out what a next appropriate action might be. Under these conditions participating at the same time you are trying to make sense of the totality of events as they unfold may be impossible.

As a participant one has both the advantage and disadvantage of having a view of the activities from a particular vantage point, one's participatory role. Participating in a different capacity would provide a somewhat different perspective on the events. While this may seem like a problem, every account provides a view from somewhere, if not from a participant's standpoint, then from the outside and some particular outside at that. There are always multiple vantage points from which to gain an understanding of the activities of a community and each will enlighten in different ways.

The unobtrusive and participant observer roles are two extremes along some continuum. Most often one moves back and forth between participation and observation, variously wearing the hat of the insider and outsider. Different studies and observational episodes within the same study provide different opportunities to either take an unobtrusive observer role or to participate in the ongoing activities of the community. One should not feel bound to choose among these observational extremes.

Observations of whatever variety require that the field worker maintain good

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[2]While unobtrusive observation may be desirable, there are ethical issues that surround observing or videotaping people for study without their awareness. To the greatest extent possible, study participants should be informed about observations or videotaping of their activities.

[3]Full participation in the activities of the community under study has some advantages. However, anthropologists have cautioned fieldworkers that "going native" might have negative consequence both for the research project and for the well being of the investigator. This is a greater problem when field work is conducted far from home, among markedly different cultural groups.

relations with the people observed. The field worker must be socially skilled and aware of the sensitivities of those whose activities are being observed. Jeopardizing one's position in the community by insisting on observing or participating in an activity, when doing so is deemed inappropriate by the community, could easily spell disaster for the project. It is more advantageous to proceed slowly, gaining trust before insisting on access to certain events, people, and activities. Often patience and greater familiarity with local custom will pay off. What was off limits initially may become open in time.

Focus of Observation

Once the decision to observe is made, there are still many questions to answer. One must decide what to observe, when to observe, where to observe, and when you've observed enough (Whiting & Whiting, 1970). Answers to these and other questions will depend on research direction. One might decide to observe meetings (event focus), or individuals as they go through their daily routine (person focus), or the activities at and around a receptionist's desk (place focus), or the life history of a document as it moves from office to office and person to person (object focus) (see Suchman & Trigg, 1991, for a slight variation). Choices like these become necessary because of the impossibility of taking in all that is going on in a particular setting and because different research questions require different observational strategies.

Although there is no fixed rule concerning when one has observed enough, a general principle is that when you're no longer surprised by what you're observing, you've probably seen enough. In other words, when you can *predict* what will occur during some period and these predictions are consistently born out by repeated observation, you can be secure in believing that a range of behaviors and activities have been adequately sampled. However, this confidence depends on appropriate sampling strategies for the observational periods. For example, if one's interest is in the activities at or around a particular location, it is important to observe those activities at various times of the day. The morning activities around a receptionist's desk may differ significantly from those at the close of the day. The issue of sampling strategy is important no matter what the focus of observation (person, event, place, or object).

Note Taking

Note taking is a very individual activity, but it is one of the important links between the field experience and how one later interprets that experience (Jackson, 1990). Although field notes are never a complete record of the experiences and observations of the field worker, they are often used to evoke memories of experienced events. As such, field notes are most useful to the original field worker.

There are many strategies that have been developed for taking field notes.

Different situations and different observational roles will influence the possibilities for taking field notes. As mentioned earlier, the full participant role may make it impossible to take notes while events are unfolding. Some situations may dictate that only sketchy, temporary notes can be taken at the time of observation, the intent being to expand the notes soon after the event is over. Other situations may allow taking very extensive notes which might include verbatim transcripts, paraphrases of things said, interpretations of activities observed, as well as descriptions, maps, or diagrams of the setting or the movements of people and artifacts within the setting. When field notes include different types of information, it is often important to indicate the status of the information. Is it a verbatim transcript or simply a rough paraphrase; is it a member's stated motivation for participating in the event or a conjecture on the part of the ethnographer? While these distinctions may seem clear enough at the time the notes are taken, one must remember that field notes may be referenced months or years after they were taken. In this light it is critical that field notes include at a minimum a date, time, place, and listing of the persons present.

Videotaped Records as Notes

Video cameras have come to play an increasingly important role in ethnographic studies (see section on Video Analysis). They are sometimes used as a supplement or even substitute to field notes. When memory fails or field notes are inadequate, the videotape may be able to provide some of the missing information. However, caution needs to be exercised when relying on the video record for a complete record of observed events. Viewing a videotape at a later date and experiencing an event firsthand provide the researcher with different kinds of access to the activities in question. While the camera records those activities within its field of view, participating in the activity allows one to absorb the "taste, smell, and feel" of the activity, and to refocus attention in response to unfolding events. A videotape cannot capture the ways the event is experienced by the observer/participant.

Supplementing videotaped records with field notes also can help with later analysis of the videotapes. Anyone who has recorded hours of videotape knows how laborious it is log the tapes for content. Careful, painstaking analysis often is conducted on only a very small portion of the available videotape. Field notes can be a great help in selecting segments of the tape for more focused analysis.

Observations Coupled With Interviews

Observations seldom stand alone and are frequently coupled with interviews and informal discussions. Because ethnographers make no assumption that appropriate questions or ways of asking them are known in advance, observations provide ethnographers with one way to learn how to ask appropriate questions from the point-of-view of the members of the community under study. Observa-

tions and informal discussions also follow interviews providing the opportunity to observe behaviors previously described by interview respondents.

Interviewing

Informal interviewing is a part of most ethnographic research. Early in field work these interviews are intentionally unstructured and open-ended to allow the participants to help shape the discourse, the topics to be discussed, and the relevant ways of talking about them. There are few assumptions going in about what questions to ask or how best to ask them.[4] The ethnographer may have general areas of interest to explore, but if the discussion moves away from these areas to issues more "relevant" to the respondent, this is likely to be viewed as an opportunity to learn about the community rather than a situation to be avoided lest field work proceed too slowly. Through participation in community activities and through informal interviews the ethnographer begins to learn enough about the community to conduct more structured, systematic interviews. The motivation to begin with informal interviews, as opposed to structured ones, derives from a belief that asking highly constrained questions before enough is understood about the situation likely will produce poor quality answers. In such a situation questions may be understood in unknown ways or may be irrelevant to the respondent, in which case the researcher might get a mistaken sense of the relationship between the questions asked and the responses given.

It also should be noted that interviewing, whether formal or informal, is not a simple way of recording objective fact (Mishler, 1986). As mentioned in the preceding section on observation, what people say and what they do are not the same thing. Asking people to describe some activity in which they engage will not produce the same insights as one would gain by observing people engaged in the activity. In the same way asking people about their beliefs will not tell you about how those beliefs are manifest in their everyday activities. If we simply relied on the interview as our window to some objective reality, we might come to some very erroneous conclusion about the lifeways of the communities we study.

If instead we view the interview (following Briggs, 1986) as a communicative event, we must know something of the interactional dynamics that shaped the interview to make sense of the discourse (the questions and responses). As Briggs (1986) states, "Like speech events in general, it (the social situation created by the interview) shapes the form and content of what is said" (p. 22). The implica-

tions of this are twofold. First, the context[5] in which the interview takes place is not neutral with respect to the discourse that ensues. Second, to make sense of what is said during an interview one needs to examine the social construction of the questions and responses in relation to the social situation created by the interview itself (Suchman & Jordan, 1990).

Interview Location

Because ethnography is field-work based, interviews most often occur in the local setting. There are advantages to interviewing in the respondent's environment. Not only are the respondents more likely to feel comfortable in familiar surroundings, but they have access to people and objects that may figure into the talk as it unfolds. If a respondent is trying to describe an activity in which he participates, having available the artifacts, physical surroundings, and people that typically help shape the activity can be a resource for the talk. This said one must also be aware of situations where the respondent's environment does *not* provide the privacy needed to talk about some subjects. If other members of the community can overhear, respondents may restrict what they are willing to talk about. The point here is that the setting for the interview is never neutral with respect to how the interview unfolds and this must be taken into consideration in any subsequent analysis of the responses.

Contextual Interviewing

Interviewing can be combined with observation where the researcher interviews respondents while they are engaged in some activity. In this situation the researcher "interrupts" the observed activity to ask questions, motivated by the observations being made. However, there is a trade off here. By asking a question about some activity, in the context in which the activity is taking place, one will influence the course of the activity. Bearing this in mind, the contextual interview can provide access to information that observation alone might fail to uncover.

Who to Interview?

Because it often is impossible to interview all members of a community, decisions must be made concerning who to interview. These choices are influenced by the research questions being posed, the availability of respondents, the

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[4]When field work is conducted among people who speak a different language from the ethnographer, a point is made to learn their language so that questions can be asked in the language and vernacular of the study participants.

[5]The context is not simply the sum total of the physical and social characteristics of the situation. The context is continually being jointly produced by the participants and as such cannot be easily separated from the activities and talk in question. See Cicourel (1982) and Mehan (1979) for a discussion of these issues.

project time frame, and a concern with sampling the views and activities of a cross-section of the community. This issue of representativeness was not always a concern for ethnographers. Early ethnographers were not particularly concerned to find themselves in situations where they were relying on information elicited from one individual because they held the view that any member of a community could provide information about the beliefs, values, and customs of the entire community. However, as ethnographers began to question assumptions about cultural sharing, the practice of relying on a single informant (ethnographers' traditional term for respondent) all but disappeared. Ethnographers questioned whether the chosen informant (often a "westernized" or marginal member of the community or one who shared characteristics with the researcher) could adequately represent the beliefs and practices of all community members. Relying on a single informant became known in anthropological circles as the "well-informed informant problem."

Rules of Thumb in Interviewing

The ethnographic interview is not bound by explicit rules. To the contrary, a great deal of latitude is given to the interviewer to exploit the particulars of any given interview situation (see Suchman and Jordan, 1990 for a discussion of the pitfalls of rigid interviewer guidelines). Nevertheless, there are still a few basic rules, or what might be better described as interactional style considerations, that should be mentioned. First, it is important to allow respondents to help shape the content and character of the interaction. In keeping with this precept, it is generally not advisable to interrupt unnecessarily, to complete the respondents' utterances, or to answer your own questions. While the interviewer may be able to anticipate what a respondent is going to say, much more is learned by allowing the respondent to answer the question unaided by the interviewers' presuppositions. If the interviewer is mistaken about the answer contemplated by the respondent, there is the risk that the respondent will accept the interviewer's response, thinking it "sounds better" than the one contemplated or will not want to contradict the interviewer. In any event, an opportunity to learn more about the respondent's world will be lost.

A second guideline in ethnographic interviewing is that rapport with the respondent should not be sacrificed to obtain a response. The respondent may choose not to answer a question for any number of reasons (e.g., too personally revealing, concern that the information will get to other parties, inability to understand why the interviewer wants to know such information, etc.). Ethnographers rely on being able to find new, more appropriate ways of asking questions as they learn more about the setting and as the respondents become more familiar with them.

Third, it is important that the interviewer be willing to acknowledge knowing less than the respondent. After all, the point of the interview is to learn some-

thing about what the *respondent* knows or how the *respondent* sees the world. Although the interviewer may be more knowledgeable about some topic, the objective of the interview is *not* to produce the most accurate or complete understanding of the topic, but to gain a better understanding of what the respondent knows and thinks about the topic. The purpose of the interview may be defeated if the interviewer is more concerned with self-aggrandizement than listening to what the respondent has to say. A related problem when ethnography is part of a design project is the tendency of some designers, whose job after all is to solve problems, to come up with solutions to a respondent's expressed problem before taking the time to get an adequate understanding of the problem. The push to solve design problems may conflict with taking the time to fully appreciate the nature of the problem.

Video Analysis

The use of video cameras in ethnographic research is on the increase with the growing availability of inexpensive, small, portable equipment. There are a variety of ways ethnographers make use of video records of activity. For some they are a supplement to field notes, for others they are used in teaching and reporting situations, and for still others they are the primary data for analysis.[6] Space limitations preclude a detailed discussion of the techniques used in the analysis of video records, but we offer a few general arguments for bringing video cameras to the field.

Why Videotape?

One of the strongest arguments in favor of videotaping is that human activities unfold so fast that it is impossible to capture their complexity by observation alone (Jordan, Henderson, & Tatar, in preparation). Field notes are only a partial record of activities observed or participated in, and words are often inadequate to describe what is observed, including bodily movements relevant to the analysis. The videotape preserves these actions for careful viewing and analysis. Videotaped records also allow one to look at an activity from different perspectives from the one held at the time the video record was made.

As the field work progresses and the researcher develops new understandings of the activities, new perspectives can be brought to bear on the activities previously recorded. The ability to review videotapes also allows the researcher the opportunity to correct erroneous characterizations and interpretations (Suchman & Trigg, 1990). In this sense the researcher can corroborate the field record (notes) with the video record.

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[6]Many ethnographers employ analytic techniques developed in the areas of conversational and interactional analysis. Those interested in learning more about these techniques and the assumptions that underlie them should refer to Atkinson and Heritage (1984) and Goodwin and Heritage (1990).

Another advantage of having a video record is that it can be made available to people not present at the time the recording was made. Field notes, absent an accompanying elaboration by the person who took them, are of limited use to anyone but the original note taker. On the other hand, videotapes of activity can be viewed and analyzed by a wide range of people (other researchers, designers, product developers, etc.). The participation in the analysis by people involved in the original videotaping often can facilitate the analysis and contribute to what can be learned from the tape.

Videotaping ongoing activity also provides another example of *unobtrusive observation* since a camera can be set up and the researchers can leave the scene.[7] Despite the opportunity to observe without influencing the course of events, in some circumstances it may not be desirable for the researcher to leave the scene. There are times when the investigator's presence is appropriate; when the investigator wants to be a participant in the recorded activity or when the investigator wants to be present to ask for clarification and elaboration. The investigator's presence in the scene should not determine whether videotaping is appropriate, but an awareness of the possible influence of the investigator's presence on the activities should be taken into consideration in subsequent analysis.

Problems With Videotaping

Videotaping is not problem free. Because one can quickly generate large quantities of tape all of which cannot be analyzed in detail, the researcher faces the problem of identifying sections of the tapes for careful, painstaking analysis. This is facilitated by logging the tapes soon after they are made, annotating them with general descriptions of activities and highlighting places where particular research questions are addressed. Field notes can be useful in producing these content logs, but if one was not present when the tape was made, the content logging activity will require viewing the entire tape at least once to produce an adequate content log. This can amount to hours of work. Once the content log is completed, particular sections of the tape can be selected for later careful analysis.

Analyzing videotapes is a time-consuming activity that cannot be delegated to others. Unlike survey research where interviewing participants, coding responses, and conducting statistical analysis can be done by others, the job of analyzing videotapes by repeated viewing can be done only by those who will be engaged in interpretation. Insights come only through participating in careful analysis (Heritage & Atkinson, 1984; Suchman & Trigg, 1990).

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[7]While the influence of the camera's presence on behavior cannot be ruled out, in most cases the camera quickly becomes part of the background and only occasionally surfaces in the participants' awareness.

Another problem with the use of video cameras is that some human activities are difficult to record on videotape. There are times when a space may be too small to get an acceptable view with the camera, or when noise levels are not adequate for suitable audio recording. The spatial distribution of an activity may require multiple cameras to adequately record the activity and the changing location of an activity may require mobile cameras. Multiple (mobile) cameras are not possible in all settings and one may have to settle for recording only part of the activity. If it is possible to use more than one camera, new analytic challenges emerge. While the use of split screen images, time code to synchronize multiple recording, and computer controlled editing equipment makes such analysis possible, it is difficult nonetheless.

UNDERSTANDING HUMAN BEHAVIORS AS A MECHANISM FOR CHANGE

As mentioned, ethnography is a way of developing a descriptive understanding of human activities. Insofar as such an understanding can be brought to bear on designing new technologies, its role as a mechanism for change must be considered. To greater and lesser degrees new technologies always result in change for the communities into which they are introduced. As Ehn (1988) puts it, "What we design is not just artifacts but by intervention a changed or reformed practice" (p. 128). As such those involved in linking ethnography and design must be aware of their role as "change agents." This raises the question, as it does for anthropologists who act as change agents in more traditional settings; "In whose interest does one operate?" Does one serve the people for whom new technologies are designed (those whose activities are the subject of the inquiry) or does one serve the sponsors of the work? Arensberg and Niehoff (1971) contend the main concern of the anthropologist involved in promoting change ". . . must be with the people who he hopes will accept the new ideas" (p. 7). In many cases these are the end-users of the new technologies.

Because ethnography typically involves extensive contact with the people studied and an attempt to "see" the world through their eyes, ethnographers frequently identify with the interests of those studied regardless of research sponsorship. Van Mannen (1988) writes, ". . . the fieldworker not only represents but takes the side of the studied" (p. 42). This orientation toward the concerns of the people studied is a central characteristic of anthropology and has been codified in the "Principles of Professional Responsibility" adopted by the American Anthropological Association in 1971. The first principle states, "In research, an anthropologist's paramount responsibility is to those he studies. When there is a conflict of interest, these individuals must come first." (Ethics and Anthropology: Dilemmas in Field work, p. 183). As anthropologists become more involved in systems design and development, and as ethnographic field

methods become more widely used in such efforts, it is important for those involved in this work to reflect upon these ethical concerns. In particular, those whose work is supported by technology companies must ask if it is possible to be "both user advocates and purveyors of technology?" (Kathleen Carter, personal communication).

PARTICIPATION IN FORMULATING DESCRIPTIONS OF NATIVE PRACTICES

Little has been written about the role of those studied in formulating descriptions of their own practices. While the ethnographer may attempt to represent the experiences of those studied from the "natives' point-of-view," active participation of the studied in reviewing and analyzing the ethnographer's formulations is rare. At most, the studied may become involved in checking the "accuracy" of aspects of the ethnographers field notes. The ethnographer's accounts and representations of native practices often are developed far from the field where participation of those studied is rarely possible even if desirable. In defense of the practice of not involving the studied more directly, some have argued that those studied are not in a good position to reflect on their own behaviors and would most likely simply offer post hoc rationalizations or justifications for their behaviors if asked to participate in analysis.

Ethnographers become concerned with issues of participation when they become involved directly in making recommendations for changes to native practices. When they take the role of change agents and their formulations could have material effects on those studied, participation becomes an important issue. Niehoff (1966), writes in a casebook of social change,

> No project which will effect socioeconomic change can possibly succeed if the recipients do not participate. . . . It is surprising how frequently action agents have neglected to make sure they have committed participation on their projects. It appears that the principal reason why this primary ingredient has been overlooked so often is that many technical advisers have viewed their task as simply one of providing some kind of technical solution (p. 18).

Anthropologists often are brought into action-oriented projects when there is the realization that the change agents need a better understanding of the practices and beliefs of the "beneficiaries" of the project and that these individuals need to be involved in the specification and integration of the new practices and technologies. The anthropologist become a link to these indigenous communities.

In attempting to link ethnography to design, it is important that ways of involving those studied in the specification of the new technologies and practices be developed. This is needed for several reasons: First, by involving those studied it is possible to gain new understandings of the studied activities in relation to the evolving design. Second, insofar as researchers and designers operate as "change agents," they need to respect the interests of those studied in whatever technology solutions are developed. Third, in those cases where those studied will become the actual users of the new technology, their early involvement may aid in adoption later on.

EXPECTATIONS OF THOSE PARTICIPATING IN AN ETHNOGRAPHIC STUDY

Ethnographers typically promise little in return for the opportunity to study a community of people other than to avoid major disruptions in the community's activities and to look after the community's interests in subsequent interactions with outsiders (e.g., publications, presentations, discussions). The argument has been made that ethnography is exploitive to the degree that it is not concerned with the *use* of the knowledge gained to better the conditions of the study participants. Strathern (1987) writes that people may experience exploitation ". . . when [they] perceive that others have the power to turn data into materials whose value cannot be shared or yielded back to them in return (p. 20). Some have argued that one reason ethnographers often study the less advantaged is because these communities are not in a position to demand something in return for participation in the study. Nader (1974) states, "Anthropologists might indeed ask themselves whether the entirety of field work does not depend upon a certain power relationship in favor of the anthropologist, and whether indeed such dominant-subordinate relationships may not be affecting the kinds of theories we are weaving" (p. 289). Issues of access become salient as ethnographers attempt to study franchised and more powerful communities.

When ethnography is a part of a technology development effort issues of access and reciprocity must be confronted. In some situations members of franchised communities must be convinced to allow access to the settings in which they work, without the promise of providing them with a technology solution. This may be the case because the technology under development may never become commercially available or, if it does, it might be years before it is on the market. The ability to gain access to the communities of study and the promises that can be made about materially bettering the lot of those studied is directly linked to the type of technology development effort undertaken.

WHY IS ETHNOGRAPHY RELEVANT TO DESIGN?

Ethnography is relevant to design for several reasons. First, since designers often create artifacts for work settings they know little about, some understanding of those settings is needed so that the technologies suit the situations of their use.

Second, because technologies help shape the work practices of their users (Ehn, 1988; Blomberg, 1987, 1988a), it is important that the designers' world view not be imposed inappropriately on users. If designers have little information regarding the situations in which technologies are used, the best they can do is rely on their own experiences and imagination thus running the risk of designing technologies better suited to their needs than those of the actual users.

Third, there are situations where designers create technologies whose possible uses are unknown. Such situations might be described as technology in search of an application. Some understanding of the work in which potential users are engaged can help identify possible uses and refine the original technology design.

Fourth, since the user's experience of a technology is influenced by the context of its use (Blomberg, 1987, 1988a), gaining a broader perspective on technology use than that arrived at through traditional operability testing (with its focus on the human-machine dyad) is important (see section on Traditional Approaches, p. 144, for a description of operability tests).

Fifth, when designing radically new technologies, users often are unable to give meaningful responses to queries about how they might use such technologies. They need to be provided with a way of *envisioning* and experiencing the technology in the context of their own work practices before they can contribute to such a discussion. To create the context for such a discussion and to be useful partners in the joint exploration of the relation between work and technology, designers must have some understanding of the user's work (Blomberg & Henderson, 1990).

Finally, the single-task focus of some technology design efforts is ill-suited to the design of technologies that support task *integration*. Simply focusing on a single task or the tasks of the single user ignores how the work of one individual articulates with that of many others. For example, a print shop operator's work may rely on the work of document creators, word processing specialists, graphic artists, sales representatives and many others. Systems that support the print shop operator's work should be designed with some larger understanding of how the work of these others impinges upon the work of the print shop operator.

LINKING ETHNOGRAPHY AND DESIGN

There are various ways one might imagine acquiring, representing, and transferring the knowledge gained from an ethnographic analysis of user work practices in the context of technology design. We will mention only a few of them. First, a trained ethnographer might be asked to study the work practices of some group. The insights from this study might then be transferred to designers through written reports and oral presentations. The *designers* would then have the task of identifying the relevant aspects of the reports for their particular design efforts.

Because of differences between the languages and perspectives of ethnography and design and because the ethnographer is likely to have little knowledge or appreciation for the immediate concerns of the designers, this is not a simple task. Making the findings of an ethnographic study useful for day-to-day design concerns becomes a major undertaking.

Second, an ethnographic study might be undertaken by a team of investigators consisting of ethnographers and designers. In this case the insights and understandings, in part, would be embodied in the experiences of the *designers* who were firsthand participants in the study. As Penniman (1974) observed, experience underlies all understanding of social life. Active involvement by designers in the field work and in constructing interpretations of the work activities at the study site also would help focus the ethnographic study on issues more central to the design task and would make the interpretations more relevant to the design.

Third, a project could be undertaken by a team of ethnographers, designers, and *users*. The understandings and insights derived from the study would not necessarily be represented in a written report, but instead would be reflected in a codesigned artifact. User partnership in developing and evaluating the technology in relation to current and imagined work activities would be aided by designer participation since designers would bring knowledge of technology constraints and opportunities to the collaboration. The success of the project would be evaluated on the basis of how well the technology supported the work activities.[8] In this last situation the ethnographer would adopt, in part, the designer's orientation of seeking to understand human behavior insofar at it enabled the design of artifacts better suited to the needs of the users.

TRADITIONAL APPROACHES

To put the preceding discussion of ethnographic field methods in perspective, it is useful to describe some traditional approaches used to provide designers with some understanding of user needs and behaviors. Following these descriptions we discuss differences between these approaches and ethnography.

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[8]Wolcott (1990) questions whether such an undertaking should be considered ethnography at all since, ". . . the research process deserves the label ethnography only when the intended product is ethnography (e.g., some written account or cultural interpretation)" (p. 47). Van Mannen (1988) makes a similar point in distinguishing between doing ethnographic field work and producing an ethnography: "Ethnography as a written product, then has a degree of independence (how culture is portrayed) from the field work on which it is based (how culture is known)" (p. 4). In situations where there never was the intention of developing a written account of the practices studied other than as required by the design effort, can we truly consider such activity ethnography? If not, how is the field work that accompanies such a technology development effort different from more traditional ethnographic studies?

Customer Surveys

Customer surveys involve administering a standard questionnaire to customers about potential, or existing, products with the intention of determining customer preferences for certain technologies and technology features. These surveys attempt to provide information about the nature of the customers' work in relation to the technology in question. For example, customers may be questioned about such things as the technologies currently in use, the frequency with which they use them, the type of tasks they perform on them, and how they view new features or technologies. Customer surveys typically are conducted by market researchers either at the very early or late stages of product development. The stated advantage of customer surveys is that they provide responses from a large, representative sample of customers in a short amount of time. Typically, the design community receives a tally of responses and a summary statement outlining the results of the survey.

Operability Assessments

This approach involves asking potential users of a product to perform several tasks or operations using a simulator or working prototype. Users are asked to perform tasks designed to test features of the user interface. Measurements are taken to record the amount of time required to complete a task, the frequency with which tasks were successfully completed, etc. Problem areas are identified and highlighted as the test proceeds. Designers not involved in the operability test are given user performance statistics, short descriptions of problems encountered, and potential solutions to identified problems. Operability assessments are usually conducted in a laboratory setting by members of the design community, most frequently at very late stages of product development.[9]

Focus Groups

Focus groups bring together individuals from a cross-section of the customer base to evaluate products and product concepts in a discussion group format. Market researchers work with designers to obtain a description or characterization of the product or concept under review. While designers may provide input on topics to be covered in the focus group, they rarely participate directly. Focus group discussions usually include some consideration of the participants' work activities, environment, and future needs. Although the unedited focus group videotapes sometimes can be obtained for independent analysis, most frequently

[9]Blomberg (1988b) notes, "While [operability tests] may reveal some problems with the user interface design or with the functionality provided by the technology, they fail to recognize that the laboratory environment has distinct characteristics which differ in significant ways from the environments in which the technology will be used on a day-to-day basis. . . . . in the laboratory setting the user has none of the social resources that are available in most work environments."

designers are given videotaped summary documents which highlight significant issues talked about during the focus groups.

Designers and market researchers recently have been exploring the use of storyboards, scenarios of use, mock-ups, models, and concept videotapes to elicit comments from focus group participants about the relevance of new technology concepts to their work. Customers are asked to react to these representations of technology concepts from the standpoint of the ways in which these technologies might support current work or might enable them to accomplish work in the future. The use of such representations addresses the problem of how to provide adequate verbal descriptions of a technology concept such that focus group participants might imagine uses for the technology.

Field Trips

Field trips provide designers with one of their only opportunities to observe and interact directly with users in the users' workplace. Field trips typically are of two kinds; field visits and field tests.

1. Field Visits. Field visits are intended to familiarize product developers with customers and the use of products within particular market segments. These visits, typically lasting no longer than two hours at each of several customer sites, take place anytime during the design cycle. The product development teams help set up the visits but, once on site, designers and other team members interact on their own with customers. Questionnaires, interviews, and brief observations are used to obtain information about the use of current products at the site, as well as possible future customer requirements.

2. Field Tests. Field tests usually take place following the placement of a new product in the customer's work place and are used to gauge the success of a product as well as to identify opportunities for its improvement. Such tests are conducted by the organizations responsible for product sales and installation, with support from the product development teams. Questionnaires and informal interviews are used to obtain users' views on product performance. The results of the tests are made available to the product development teams.

Each of the traditional approaches sketched above has strengths and weaknesses. Some are more appropriate in the early phases of the design cycle, when knowledge about the customer and potential uses of a product can be used to shape the characteristics and definition of the product. Often in later stages of the cycle, the designer can do little more than verify that the design is acceptable to users or make minor changes to those aspects of the product with which the users are most uncomfortable. Issues of cost, impending design schedule, and the

availability of key people all are important factors that can influence the selection of one approach over another.

Contrasts Between Traditional and Ethnographic Approaches

Traditionally, the user interface designer's role has been limited to making the functionality of the technology available to the end-user. Ideally, designers might be considered user-advocates in that they represent users as the human element in the system by articulating their needs and requirements in negotiations about design solutions with the development team. All too often, however, the only contact designers have with users is in laboratory operability tests or after a product is placed in the user's environment. Since the user is out of the loop during critical phases of design, the designer must represent the user based on experience and imagination, creating a sort of "virtual" user.

By contrast ethnography provides for an ongoing relationship with users based on designers' firsthand knowledge of the users' work setting. The following are some of the ways traditional approaches to understanding users and ethnography differ.

The Context of the Designer-User Interaction

All of the approaches listed earlier, except field trips, are conducted *outside* the users' work place. Product concepts, prototypes or early engineering models are viewed and evaluated in an imagined setting, often utilizing hypothetical tasks. The quality of the information is limited by the designer's ability to represent the concept in relation to some imagined workplace and the users' ability to envision themselves using the product.

The Focus is on the Technology, not the Work

Traditional approaches to understanding user needs are largely technology driven. The focus is on obtaining answers to specific questions about the acceptability of a particular technology concept, prototype or product, rather than on understanding the relationship between the technology and the work it is designed to support. Technology-focused techniques provide little opportunity for designers to learn about the everyday work practices of potential users.

Users are not Collaborators in the Technology Development

Traditional approaches provide little room for collaboration between designers and users over the evolving design, but instead rely on the users' ability to verbalize their needs or to expose inadequacies of the design in isolated *tests*

which take place on single occasions (e.g., in focus group discussion or operability tests).

Ethnography on the other hand has the potential of providing a context wherein mutual understanding between users and designers can evolve. Armed with knowledge of user work practices gained through direct observation of users at work, designers are in a much better position to accurately, and more fully, incorporate users' perspectives in the design, with the potential of improving existing products as well as identifying opportunities for new products. However, incorporating the ethnographic approach into design and product development efforts requires some reorientation. Designers must develop skills in interviewing, observation, analysis, and interpretation, while development teams must be willing to shift their emphasis to support early and continued user involvement. These are considerable investments, but the potential benefits also are high.

A PROJECT TO LINK ETHNOGRAPHY AND DESIGN

Researchers at the Palo Alto Research Center (PARC) and designers in the Industrial Design/Human Interface (ID/HI) department at Xerox recently began collaborating to explore new ways of directly linking ethnography and design. This project, the Participatory Design (PD) Project, brings together individuals with backgrounds in anthropology, graphic design, human factors, and industrial design. Together with users from selected field sites, they form the Participatory Design team.

Goals of the Project

The PD project has multiple, interrelated goals which involve understanding user work practices, developing new ways of incorporating such an understanding into everyday design practice, and integrating the lessons learned from this project into Xerox product development.

Characterizing User Work Practices

The PD project is concerned with giving designers new and better ways of gaining an understanding of users' everyday work practices, with a focus on the relation between technology and human activity. Of particular concern are the ways current technologies support work activities and how work practices integrate a collection of technologies into a system of activity. The application of ethnographic field methods is the vehicle by which such an understanding is being developed.

Developing New Design Practices

The PD project also is aimed at changing current design practices to allow for user participation from the beginning of product design. The use of ethnographic-style field work places designers in the users' work setting which provides an opportunity for continued involvement of users in the design process and for design iteration in relation to actual situations of use.

Integration With Product Development

The PD project also is focused on building on the experiences of this project to help shape new, more participatory product development processes throughout the company. The strategy is to introduce the benefits of a participatory approach to product design by example and by involving individuals from other organizations (Marketing and Product Planning) in some of the work.

New Ways of Working

The PD project has required that designers learn new skills for acquiring an understanding of users' work practices and that anthropologists learn new, non-text based, ways of representing the insights gained from an ethnographic study. Because most traditional approaches to understanding users are not field work based, designers involved in the project wanted some grounding in ethnographic field methods before they embarked on this project. Two workshops were held on the topics of Ethnographic Field Methods and Qualitative Data Analysis. The first workshop provided designers with a perspective on ethnography, as well as practical skills related to observing work practices, conducting open-ended interviews, and making audio and video recordings in the field (see Appendix 1 for field exercises used in this workshop). The second workshop focused on ways of analyzing and interpreting the information acquired from interviews, observations, and video recordings.

Scope of the Project

The PD team has worked primarily with one user community that was selected because (a) a broad range of technologies (fax, computers, printers, typewriters, etc.) were in use at the site, (b) the work was shaped by a rich array of documents (both paper and electronic), (c) groups were linked through a variety of media, and (d) people at the site were eager to take part in the project. This combination of characteristics enabled the team to explore how information was organized and disseminated, how various activities were coordinated, how documents helped structure activities, and how work practices integrated stand-alone office technologies into a coherent system. These were all important issues for the kinds of technologies members of the PD team were being asked to design.

VIDEO ANALYSIS "WALL"

Layered documentation of ideas, issues and opportunities for change resulting from video analysis
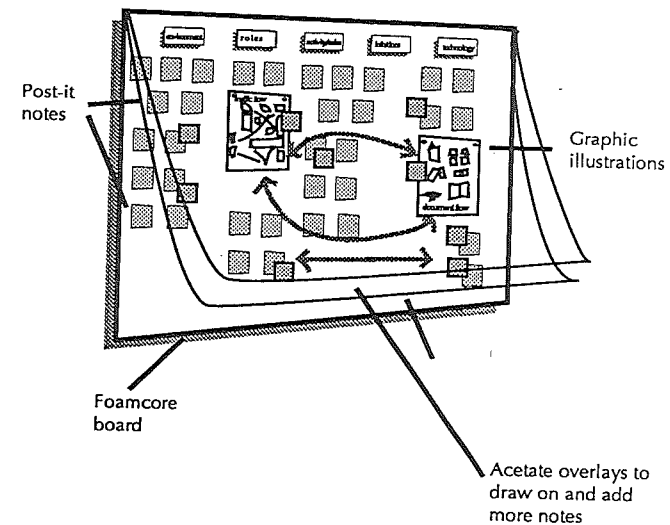

FIG. 7.4.   One of the techniques developed by designers to aid in video analysis.

The team began its field work by interviewing users. These open-ended interviews served as introductions to people, activities, and technologies. During these interviews users were asked to give a guided tour or walk through of their offices, which included a description of the artifacts they used, the people with whom they interacted, and the activities in which they engaged. The interviews were videotaped and were the basis upon which the team chose one group to observe more closely and involve in the actual codesign effort.

THE "ENVISIONER"

**A 3 dimensional representation
of an office layout**

Magnetic
base

Foamcore
pieces

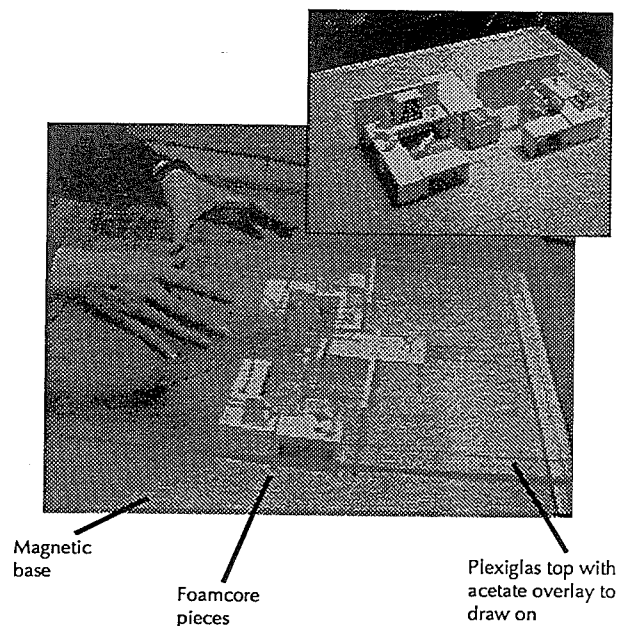Plexiglas top with
acetate overlay to
draw on

FIG. 7.5.   Photograph of industrial design techniques adapted to work
practice analysis.

The activities of the group selected were observed and videotaped over several weeks. By jointly analyzing both the interview and observational videotapes, the PD team began to build a shared understanding of the work at these sites. Drawing on skills in graphic and industrial design, the team began to construct a collage of ideas, issues, and opportunities for change that surfaced during the joint video analysis (see Fig. 7.4). The collage helped the designers articulate and translate what they were learning into possible design concepts.

At the same time the team was developing new ways of representing both the work at the sites and possible new technologies to support it. They explored the use of concept videotapes, 3-D representations, graphical depictions, story-boards, and scenarios of use to represent possible relationships between work and emerging technology concepts. These representations aided communication among team members and between them and users. One such representation tool developed by the team was the Envisioner, which allowed a 3-D scaled (¼ scale and ½ scale to show different levels of detail) model of the studied work settings to be constructed (see Fig. 7.5). The layout of particular offices and the equipment and other artifacts used were depicted with foam core pieces which had magnetic bases that sat on a magnetic grid and could be easily moved and rearranged. A sheet of acetate sat on top of a Plexiglass roof so designers could make annotations, draw connections between objects, people, technologies, and explore design ideas. The Envisioner supported looking beyond the design of a particular technology by making the relationship between work, people and technology the focus of the representation.

The Participatory Design project continues at the time of this writing with user co-design sessions being the current focus of activity. The team has agreed on a technology design direction and is now exploring possible design solutions with users. Concurrent with this activity members of the team are becoming involved as work practice analysts and participatory design experts in some mainstream Xerox product development projects. With little time to reflect on their recent experiences, project members are being asked to adapt their new participatory design skills and practices to the requirements of product development. While the value of closer, more extended contact with users is beginning to be understood outside the small participatory design project described here, how successful we will be in migrating the approach into Xerox product development projects remains to be seen.

CONCLUSION

Linking ethnographic field methods and design has the potential both to provide designers with new ways of gaining a deeper understanding of user work practices and to provide a context for designers to collaborate with users over the design of new technologies. However, realizing the benefits of a link between ethnography and design presents many challenges including learning how to translate the insights from an ethnographic study into terms relevant to design, providing designers with the skills necessary to be reasonably accomplished field workers, and altering the mind set of product planners and developers so that extensive, in-depth user involvement is viewed as necessary throughout the design and development process. It is our hope that this paper, and the PD project

reported upon here, will help move us closer to a successful linkage between the two undertakings.

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APPENDIX 1: FIELD EXERCISES

The following is a list of field exercises developed for a workshop on Ethnographic Field Methods. Although these exercises are most profitably employed in conjunction with a general discussion of ethnography and ethnographic field methods, they are presented here to provide some ideas for practical activities in which people interested in developing skills in ethnography might engage (from Blomberg, 1989: adapted from Crane & Angrosino (1974) and Jordan (1987).

1. Through observation and careful note taking investigate how space is employed in some area of this building. Explore the extent to which the area you

study and the furniture within it tend to keep people apart or to draw them together. How does the arrangement of walls, doorways, hallways, furniture, machines, etc. effect the patterns of interaction you observe?

2. Construct a map of an office area. Your map should show where people sit, their relationship to one another, the activities that go on at various locations, where "significant" objects are located. Describe how you gathered the information represented on your map (through observation, interview, available documents, etc). You'll probably want to include a key or legend to help others interpret your map.

3. Find a specialist (accountant, machine operator, drafts person, etc.) who would be willing to talk to you about the work they do. Ask them to show you how they accomplish some aspect of their work (complete a transfer of funds, prepare and distribute a memo for a group meeting, create a drawing). On the basis of your observations and questioning of the specialist, prepare a description of how the activity is accomplished, the materials used, the people consulted, etc. so that someone who is completely unfamiliar with the activity would be able to get a good idea of what's involved. The object of this exercise is to sharpen your powers of observation and description, and to develop your ability to ask more and more precise questions of your subject. Audio record the interaction.

4. Collect the work life history of someone working in your organization. Collecting life histories requires that the interviewer be as nondirective as possible, interrupting as little as possible, and allowing the person providing the information to decide what's important to tell. You might want to start by asking a nondirective question like, "Tell me about the jobs you've had?" If the conversation falters, you might ask about specific jobs, what was involved in each, why they moved on, what they learned at each position, what they hope to be doing in the future etc. Audio record the interaction so that you are able maintain an appropriate interactional relationship with the subject.

5. Do a semantic analysis of the kinds of documents found in someone's office, or the kinds of telephone calls they make or receive. Ask them to give you the name of each type of document found in their office or the calls they make or receive. If they don't have a name for some category of documents or calls, just include a description of the category. Be careful not to impose you're own categories and names. Ask if there are sub categories within particular classes (personal call of less than 2 minutes, routine requests, etc.) Ask them the characteristics of each document or call included in a particular category and ask them to explain how these characteristics are used to distinguish one type of document from another. If possible, locate actual documents or inquire about actual calls made or received while you were present and ask which category each falls into and why. Their idealized classification system may need to be adjusted to accommodate actual instances. If you have time you might want to repeat the procedure with another informant and then compare their classification systems.

6. This exercise should be coordinated with exercise 7. Locate a public area where a video camera can be set up. Decide on the best location for the camera. Make note of the issues you considered when deciding where to locate the camera (facial expressions captured, lighting, movement in and out of the space, close-up shots of buttons pushed etc.). Record no more than 30 minutes of the activity at the chosen location. While the camera is running, observe what's going and take notes, paying particular attention to things the camera is unable to record.

7. In the same location selected for exercise 6, take 10 photographs. Choose the shots so that they are representative of the activities and the physical arrangement of objects relative to one another. Attempt to capture interaction and the physical and social context of the activity. Describe each photograph (when it was taken, what it represents, its relationship to the other photographs, etc.). Together with the person doing exercise 6, compare what you were able to capture with the video camera, your observations, and the still photos.

8. Locate an area where you can unobtrusively observe some activity. Observe the activity for 30 minutes or so. Take detailed notes of the what's going on, including a sketch of the area, time of day, movement in and out of the scene, participants' relation to one another. You might want to develop a table to facilitate recording your observations. Review your notes and prepare a description of what you observed.

9. Interview someone with the goal of developing a description of their "social network." Describe the working relationship (lines of authority, relationship between tasks each engages in, etc.) that exists among co-workers. Represent this information in an "organization chart" where the nature of the relationship between co-workers is represented.

10. Go to a public area where people meet (cafeteria, coffee room, etc.). Select a small group of people to observe (2–6). Based only on your powers of observation try and determine who these people are (age, occupation, education, etc.), their relationship to one another, what they're talking about, etc. After observing them for a few minutes and writing down your hunches, interview them and find out to what extent your impressions were related to what you learned from interviewing. Reflect on how you misread certain cues, the information unobtainable through observation alone, etc.

11. Interview someone about the "life history" of some small collection of documents (i.e., the ones currently on their desk or in their "in" basket). Talk with other people involved in creating, processing, or acting upon the documents. Prepare a description of each document's life history.