Ethnography, theory and systems design: from intuition to insight

CATRIONA MACAULAY, DAVID BENYON AND ALISON CRERAR
School of Computing, Napier University, 219 Colinton Road, Edinburgh EH14 1DJ, Scotland. email: {c.macauley; d.benyon; a.crerar}@dcs.napier.ac.uk

The idea for this paper came from a debate at the 1998 ISCRAT conference in Denmark on cultural-historical activity theory (CHAT). A leading activist in the movement to bring CHAT into systems design, Bonnie Nardi, asked the question; would design not benefit more from training better ethnographers than from burdening them with such a complex set of theoretical concepts and debates as CHAT? This paper seeks to answer that question on the basis of our experiences applying CHAT concepts in a long-term design ethnography at a UK newspaper. It examines the history of the often controversial triadic relationship between ethnography, theory and systems design and argues that the CHAT framework provided us with the opportunity to move from ethnographic intuition to design insight, and that therefore the answer to Nardi’s question is no—simply training good ethnographers is unlikely to be enough for a number of reasons (not least of which is the problem of how inexperienced fieldworkers become design ethnographers). The explicit use of theoretical frameworks, at least those such as CHAT which are particularly suited to design issues, discourages the tendency for ethnographers to see themselves as “proxy users” by encouraging greater reflexivity about the researcher’s role in constructing the object of study. At a more pragmatic level, it helps the fieldworker navigate the apparently never-ending mass of “potentially interesting material” any field experience throws up.

© 2000 Academic Press

1. Introduction

Software design is a particularly difficult enterprise because many systems designers will never engage in the activities for which they are designing. Whereas designers of cars will in all likelihood drive cars themselves and architects will invariably be “users” of buildings, the software designer will probably not be an expert in the application domain. As Suchman (1995) points out, systems designers are disadvantaged as a result of the distance between them and the subjects/objects of their design. The recent emergence of a number of forms of work practice studies (Hughes, King, Rodden & Anderson, 1995; Plowman, Rogers & Ramage, 1995; Bly, 1997) demonstrates one way of addressing this issue, enabling designers themselves, directly or indirectly through the work of others, to acquire information about the work sites and practices their products are intended for. Of course, systems design has always sought information from the “client”, or the “work site”—a task usually assigned to “systems analysts”. However, systems analysis was traditionally predicated on simple models of work and human–systems interaction, the emphasis being on individuals engaged in tasks. Where workplace studies differ is in the
commitment to understanding the social, situated nature of work (Button & Harper, 1996).

Although work practice studies vary in scope, approach, outcomes and reporting formats, they are typically empirically grounded in ethnographic research methods. In this paper we look at how social theories—and in particular CHAT—can be used effectively in work practice (or design) ethnography. We discuss the importance of ethnography as a contributor to systems development and through an empirical study of information gathering at a national newspaper, demonstrate its effectiveness in “uncovering” artefacts that might otherwise have been overlooked. Moreover, we show how the application of social theories within an ethnographic approach can reveal new insights into the nature of the artefacts and activities in a domain with which the investigator is initially unfamiliar. Of course there can be no proof in some Realist sense that the insights we report are the outcome of the ethnographic and theoretical approach taken, but we maintain that the richness of the concepts “uncovered” provides strong evidence that this was, indeed, the case.

The idea for this paper came from a debate at the 1998 ISCRAT conference on cultural-historical CHAT (CHAT) in Denmark. A leading activist in the movement to bring CHAT into systems design, Bonnie Nardi, asked the question; would design not benefit more from training better ethnographers than from burdening them with such a complex set of theoretical concepts and debates as CHAT? This paper seeks to answer that question on the basis of our experiences applying CHAT concepts in a long-term design ethnography at a UK newspaper. The paper is structured as follows. First we examine the history of “design ethnography” and trace it to a more general concern with moves towards contextualizing design. Following that, some consideration is given to the nature of ethnography generally. This leads to an examination of some of the issues that arise (from both an ethnographic and a design perspective) when ethnography is applied in design settings. Section 3 delves into the problematic triadic relationship between ethnography, theory and design. It is argued that theoretical frameworks do have a role to play in design ethnography, particularly in helping ethnographers avoid the temptation to see themselves as proxy users, and in aiding inexperienced ethnographers make the transition from intuition to design insight. Section 3 also provides a brief introduction to the CHAT framework. Section 4 reports on our experiences in applying CHAT and Section 5 presents two specific cases from our work to argue that the CHAT framework provided us with the opportunity to move from intuition to insight. We conclude by summarizing our arguments for our answer to Nardi’s question.

2. Concerning “context” and design

Widening the research focus from “users” in labs to real-world practice brings us face-to-face with the unruly and apparently un-abstractable world of “situated” human behaviour—the “situation” being typically conceptualized as some context of future use. A growing literature is concerned with understanding “context-of-use” as a way of informing the design of information systems (Wixon, Holtblatt & Knox, 1990; Anderson & Alty, 1995; Cockton, Clarke & Gray, 1995). The phrase “context of use” is generally used to refer to both the material and the ideal conditions of use; the many environmental, social, cultural, individual and historical factors which affect how people manage
their practice. Driving this interest in gathering contextual information are two interrelated moves within the field of systems design. On the one hand, there is mounting unease with the dominance of cognitivism as a conceptual framework for both design theory and practice (Draper, 1996; Green, Davies & Gilmore, 1996; Carroll, 1997). On the other, the move from an engineering to a user-centred approach to design practice is beginning to extend the requirements gathering focus of design projects to “social users” and not just “individual users” (Berg, 1998).

2.1. CONTEXT: TOPIC OR RESOURCE?
It is believed that design which allows for context-of-use will be intrinsically “better” than design which focuses only on cognitive issues, managerial requirements or inspired guesswork (Berg, 1998). However, opinion in much of the literature seems to be divided as to where the primary challenge in dealing with context lies; is it at the level of developing an understanding of what context is (in either a specific or abstract sense), or is it simply in knowing what to do with such an understanding once it has been developed? Clearly for some, the problems associated with integrating notions of context into systems design are primarily pragmatic: how should contextual material (which it is held can be easily gathered; Cockton, Clarke, Gray & Johnson, 1996) be used? A typical response to this practical issue has been the development of tools to help incorporate contextual information into the design process, for example, the literate development environment (Clarke, 1997), rich pictures (Monk & Howard, 1998) and the exploratory sequential data analysis technique (Lewis, Mateas, Palmiter & Lynch, 1996).

Cockton et al. are by no means unique in their assertion that contextual data are easily gathered. Discussing scenarios, Nardi (1995) comments that many of the papers in this area often regard the gathering of “baseline” data as unproblematic, and yet without grounding scenarios in appropriately detailed ethnographic descriptions, they are unlikely to be of much use. For others, though, the “how, what, why and when” of developing and incorporating understandings of context are far less easily resolved. To put it in ethnomethodological terms, the issue here is not so much “context as resource” but “context as topic”; should we focus on how to use contextual information or on what we mean by contextual information?!

2.2. ETHNOGRAPHY: ON NOT LOOKING FOR THE “CONTINENT OF MEANING”
Ethnography is one of the methods that human-computer interaction (HCI), information systems (IS) and particularly computer-supported cooperative work (CSCW) researchers have turned to for insight into context and situated practice. Interest in the use of ethnographic techniques in IS research has often been attributed to the impact of Lucy Suchman’s book Plans and Situated Action (Button & Harper, 1996). Suchman proposed that since tools reify underlying models of the activity they are designed to support, developing an underlying conception is a crucial part of design (Suchman, 1987). The central theme in her work is that in order for designs to be “realistic”, designers must find ways of understanding work in practice (Suchman, 1995). Suchman’s work draws on ethnomethodology, and as such emphasizes attempting to understand human behaviour
through observation, using techniques like conversation analysis, for which ethnography is a key empirical data-gathering technique.

However, despite the large number of studies and design projects that claim to have involved an element of ethnography, there is no agreed single approach to its use in systems design and evaluation contexts, and consequently its application has been controversial (Harper, 1998). This situation in many ways reflects a more widespread confusion about what ethnography is and to what ends it is or ought to be oriented. What is generally agreed is that ethnography is a set of methods, and not a theory (Hammersley & Atkinson, 1995). These methods may typically include, amongst other things: participant observation, interviews, materials gathering and desk research. Although not all methods require the ethnographer to leave their home-base, all ethnography requires some, usually extended, contact with a “setting”. Since neither the methods nor a commitment to fieldwork are unique to ethnography, we are still left unclear about what makes an ethnography an ethnography. For some, distinguishing an ethnographic study from, for example, a qualitative study that uses participant observation, is so difficult that appeals to “ethnography is an attitude” are required (Wolcott, 1995). For further illumination, we can turn to any number of statements about ethnography from a range of professed ethnographers. For example: consider the following.

- Ethnography is a kind of “storytelling” enterprise and ethnographers a kind of “supertourist”, the authority of whose holiday stories rests in their direct personal contact with the “others” they visited (Van Maanen, 1995).
- Ethnography is an attempt to understand what everyday life is like for those being studied (Lareau & Shultz, 1996).
- Ethnography is the gathering and reporting of observations for the purposes of cultural analysis, which “is (or should be) guessing at meanings, assessing the guesses and drawing explanatory conclusions from the better guesses, not discovering the continent of meaning and mapping out its bodiless landscape” (Geertz, 1993).

However, these are not attempts to formulate a definition of ethnography, since as Van Maanen (1995) points out, it is unlikely that there was much agreement on what being an ethnographer meant, even in the pioneering days of ethnographers such as Malinowski. Rather, each of the above statements is embedded within a discourse about what does and does not fall under the aegis of ethnography. Often such discourses revolve around attempts to distinguish ethnography from other forms of reportage, particularly journalism. The key is often said to be a commitment to notions of culture, and to interpretation. For example, Sanjek (1990a) proposes that what sets an ethnographic account apart from a journalistic one is the appeal to theory—that ethnographers do not simply “report” what they see but interpret it as well.† Wolcott (1995), discussing ethnographic writing conventions, notes that for an ethnography to be taken seriously it would probably need to be of monograph length.

† Of course many observers of journalism, ourselves included, would dispute this distinction, arguing that journalists do not simply “report” news but “make” it (e.g. Hall, Chritcher, Jefferson, Clarke & Roberts, 1982; Rock, 1982). What is perhaps really at stake is the level of transparency of the interpretative activities adopted. Much journalistic work practice aims to hide these strategies (Tuchman, 1979); recent ethnographic practice seeks to expose them.
As the use of ethnography in other domains (for example in medical anthropology, sociology and systems design) has grown, the answers to many of these questions have had to accommodate more than just the sometimes rather prosaic concerns of its parent field, anthropology.

2.3. APPLYING ETHNOGRAPHY

Clearly, a tension arises between the “traditional” ethnographer, whose object is simply to describe and interpret cultures, and the design ethnographer whose aim is to describe and interpret cultures for the purposes of designing a future tool which will change the culture studied (Mantovani, 1996). As Berg (1998) observes, design ethnographers have often been reluctant to comment on design issues, preferring instead to restrict their input to critiques of existing designs. He suggests that this may be due to a tendency amongst design ethnographers to adopt either a dystopian technological-determinist “worldview” in which technologies are seen as fundamentally harmful because of the anti-democratic structural conditions within which they are developed, or a humanist-determinist worldview in which the only good technology is that which supports small-scale interventions in human action and which remains firmly in the control of the humans in question. As noted above however, these tensions are not unique to design ethnography. Within anthropology also debates rage about the “uses” of ethnography, about analytical frameworks and about the impact, intentional and unintentional, of ethnographers on the field (Bruner, 1984; Marcus, 1986).

Just as ethnographers have expressed concerns about their involvement in design, designers have expressed concerns about the “benefits” of ethnography for design. Interest in ethnographic techniques can be traced to a growing concern about the gap between users and design, and the perceived relationship between this gap and systems failures (Berg, 1998). However, for many, the introduction of social theory and its associated debates and disagreements serves only to undermine ethnographers’ claims to help in closing this gap (Button & Dourish, 1996). Lurking within the discourse about the user/designer gap however is the shadow of the “proxy user”—the idea that an ethnographer can serve the design team by acting as a spokesperson or representative of the user. The suitability of ethnographers to act as proxy users has only occasionally been questioned within design circles—Kyng (1995) is a notable exception—although within anthropology the politics of speaking for the other has been the subject of much attention (e.g. Said, 1979). Finally, as has been commented, systems designers are generally more interested in ways of finding out about, and “coping” with, the social and the contextual aspects of artefact design and use, than the particular techniques being adopted or the complexities of the theoretical debates the use of such techniques can engender in anthropological or sociological circles (e.g. Cockton et al., 1995).

2.4. THE DRAWBACKS: ATTITUDE, VALIDITY, PRACTICALITY

The relationship between ethnography and design can be conceptualized as an ongoing dialogue about, amongst other things, three particular issues: attitude, validity and practicality. One of the first issues to be tackled when considering using ethnographic techniques in an IS context is the attitude of the computing profession to sociological
methods. Qualitative methods are often considered “soft” by those working in a design environment steeped in traditional Western scientific methods (Mantovani, 1996). But such questions are not exclusive to what we might call “design ethnography”, anthropologists and sociologists have been dealing with them for years, as, of course, have human factors specialists. One way of addressing the attitude problem is to ensure that the work is undertaken in a rigorous manner, and that the fieldworker engages in a constant process of reflection about their activities, findings and biases (Wolcott, 1995). Furthermore, the adoption of rigour and reflection needs to be explicit in the reporting of the study (Harper, 1998).

The second problem is that of validity. To a culture immersed in experimental protocols and statistical analysis, the “subjective” techniques of ethnography seem suspect, and the language of ethnography alarmingly intimate. And of course the unrepeatability of the findings, a central theme in establishing the validity of experimental work, seems to render the whole enterprise thoroughly dubious. A first response to this line of thought is that validity depends on the use of an appropriate method for a given situation (Silverman, 1993). As Pickering & Chater (1995) have suggested, if we accept that information gathering is a complex, socially, culturally and historically embedded, knowledge rich behaviour, then clearly the cognitive approach to studying it is not, by itself at any rate, the right method. It has also been suggested that openness about the theoretical decisions made in the course of an ethnographic study, and the practical choices made in the field, is an additional means by which the validity of the work might be established (Sanjek, 1990a).

The third problem we shall consider here is that of practicality—the “you say potato dilemma”. Ethnographers tend to report their findings in lengthy monographs. Systems designers are thought to like diagrams with as little text as possible, although our own experiences have not entirely supported this presumption. Ethnographers, although reluctant to say exactly how long one ought to spend in the field (Wolcott, 1995), like to spend considerable time there, whereas designers want to, or have to, get down to the nitty gritty of building things as soon as possible. Additionally, traditional systems designers seek general “laws” upon which to base design decisions (hence the popularity of cognitivism with its search for general models of this and that behaviour) and ethnographies are almost always conducted in limited field settings from which it is difficult to warrant any generalizable conclusions. However, appealing to theory (Sanjek, 1990b) and the anticipation of a larger corpus of studies upon which meta-analyses might be conducted in the search for more generalizable principles, Harvey & Mysers (1995) have both been suggested as possible solutions to this dilemma.

A number of other possible solutions to these problems have been suggested from within the design community itself. Some have advocated a “quick and dirty” approach to ethnography, wherein matters such as length of time in the field are glossed over (Hughes et al., 1995). Others have suggested approaches to the analysis of ethnographic data which emphasize the importance of reducing wordy field reports to sets of statements which can be fed into the design process (Lewis et al., 1996). Nevertheless, many of these issues are often ignored in the literature. Curiously, published accounts of ethnographic studies rarely discuss the theoretical underpinnings of the work or report the conduct of the study in any detail (Harper, 1998), two key methods identified by ethnographers as important for establishing validity.
The difficulties are compounded by the range of ways in which ethnography might be used within a design context; from requirements gathering tied to a particular project to a kind of high-level, “in-and-of-itself-interesting” approach. Clearly addressing these questions requires an ongoing dialogue between designers and ethnographers. As we have seen, many of these issues have been addressed within the terms of reference of anthropology and sociology, but addressing them within a design context may require radically different solutions. For examples of how to stimulate and maintain such a dialogue, we can look to the experiences of institutions such as Lancaster University and Rank Xerox, where ethnographers, sociologists and designers have been engaged in long-term joint projects (e.g. Dourish, Bellotti, Mackay, & Ma, 1993; Hughes et al., 1995; Button & Dourish, 1996). Their experiences have led to a valuable body of work on the practice of incorporating ethnography—ethnomethodologically informed ethnography in particular—into design.

3. The trouble with theory

As mentioned earlier, systems design in recent years has been marked by two moves regarding context; one conceptual and one practical. Although the emergence of tools and methods such as scenarios, participatory design and contextual design has had a great impact on the practical issues, these developments do little to address the problem of how to conceptualize contexts (Kuutti, 1995). Nevertheless, concern with the conceptual and theoretical foundations of systems design is widespread both in HCI and CSCW. We have already noted that cognitivism has been under review for some time now; often as much from within its own ranks as from those with more sociological leanings.

Three perspectives have come to dominate the search for an appropriate theoretical foundation for design: CHAT, situated action and distributed cognition. CHAT is dealt with below. Whilst there is no space to describe these approaches here—for a useful comparison of them from an activity theorist’s point of view see Nardi (1996b)—the similarities between the three are perhaps as interesting as the differences. All three arise from attempts to re-join culture and psychology; to overcome the mind/world schism that characterized the Enlightenment period. There is however one theoretical approach within systems design which can be clearly distinguished, on methodological grounds at any rate—ethnomethodology. It poses many challenges to these positions, not least since it asks a rather fundamental question; should theory play any role in the first place?

Ethnomethodology has gained widespread attention within the CSCW community, indeed, as Shapiro (1994) has noted, ethnography and ethnomethodologically informed ethnography have often been collapsed. The radical break that ethnomethodologists claim to have made with the rest of sociology concerns the importance of description. Description is seen not as precursor to analysis, it is how the observer comes to “know”; to study social life the researcher must seek to accurately describe the details of the accounts of those being studied and not become caught up in trying to assess the value of the phenomena being studied (May, 1996). Ethnomethodologists seek to remain firmly rooted in the concrete lived experience of others, holding that analytical frameworks obscure rather than reveal this concrete lived experience. Clearly, ethnomethodology poses a significant challenge to those who draw on formal or semi-formal social theory in
design ethnography; however, we have space only to acknowledge the challenge and direct interested readers to those better placed to illuminate the debate, such as Shapiro (1994) and Sharrock (1989).

3.1. THEORY AND PRACTICE IN DESIGN

Button and Dourish (1996) identified three ways that the relationship between ethnomethodologically inspired ethnography and design might inform design. First, the ethnographers themselves become a link between the field setting (including would-be users) and designers. As Harper (1998) observed, this kind of approach can be particularly advantageous because it overcomes some of the problems associated with extricating insights from the ethnographic process in a time frame suitable for design activities. However, as Button and Dourish commented, the problem with this approach is identifying what ethnomethodology specifically contributes to the process. The second approach they considered was that of using ethnomethodologically informed accounts of work-practice as a resource for design. For a recent example of this see Brown (1998)—an ethnographic study of the use of Lotus Notes. However, as Button and Dourish pointed out, this seems to reintroduce the gap between designer and user, and involves designers in the consideration of sociological issues—at least insofar as will enable them to read the ethnographic account. This would seem to be a particular problem in cases where the ethnographer has not addressed the design implications of their work explicitly—without this the designer has no help in moving from the ethnography to design. Finally and, Button and Dourish admit, rarely, it is possible to use ethnomethodological theory as a way of informing design at a theoretical level. In this approach, the aim is to orient both design and ethnomethodology to the search not for the specifics of practice but the means by which practice develops. It has been proposed that ethnomethodology represents a particularly appropriate analytical framework for design ethnography since it seeks to uncover what people do, rather than interpreting what people do through the lens of social theory (Crabtree, Nichols, O’Brien, Rouncefield & Twidale, 1998). Such claims, as discussed above, have proved highly contentious in both mainstream sociology and design circles.

Following Button and Dourish, we might conceptualize the relationship between ethnography and design along a practice-theory continuum. At one end, the relationship is highly pragmatic in orientation and characterized by a dialogue between design practice and ethnographic practice. At the other, the relationship is more foundational and characterized by a dialogue between design theory and ethnographic theory. Midway between these positions, the relationship might be thought of as between design practice and ethnographic theory, with an orientation towards developing understandings of problem domains and the role that future artefacts might play in them.

3.2. THEORY AND ETHNOGRAPHY: PICKING UP ROCKS

Despite the saying, attributed by Michael Agar to William James, that as a researcher “you can’t pick up rocks in a field without a theory” (cited in Wolcott, 1995, p. 182), the relationship between theory and ethnography is as complex and occasionally heated as that between systems design and theory. In an excellent presentation of the “case for
theory, with extreme caution”, Wolcott (1995) suggests that while a theoretical orientation can mean many things, and is by no means necessary to the production of ethnography, it does have a number of advantages and that ultimately an atheoretical ethnography is simply not possible. He argues that theory can help “anchor” the descriptive work of ethnography, which might otherwise prove endless. He suggests that theory can provide assistance in efforts to generalize by providing a way of linking one’s research efforts with those of others. He also suggests that theory can provide a critical perspective by calling attention to problems previously identified as requiring further attention. Nevertheless, he cautions that theory can all too easily overwhelm fieldworkers, the lens of social theory becoming a blindfold. He also notes that the details of the actual role of theory in fieldwork are often obscured by the conventions of ethnographic writing. Explications of theoretical frameworks are typically presented in the opening parts of an account rather than in a manner which would reflect when they actually “came into play”.

For others, theory plays a less problematic role in ethnography. Robert Layton proposes that since we will inevitably notice some things and not others, the Realist quest for complete description is “impossible without some theory to guide our choice of events to describe, and the style by which we represent those events” (Layton, 1997, p. 215). Whether general or situated, ethnographers cannot avoid theorizing social life. Theory then is a tool, without which the ethnographic task would be impossible.

Often discussions of theory in relation to ethnography go hand in hand with discussion about the relative merits of a systematic, theory-directed approach to fieldwork. The key is perceived as maintaining a balance between the freedom to intuit, which Wolcott holds so highly, and the need for theoretical/conceptual scaffolding. Can theoretical scaffolding allow us the opportunity to make the leap from design ethnographies as opportunities for intuition (which is nebulous, difficult to teach and even harder to predict) to opportunities for insight (which is altogether less unpredictable, once the theoretical framework has been absorbed)? On the basis of our experiences we would argue yes. Openness to intuition is an important skill for a fieldworker, however it is not something that comes equally easily to all in all contexts. As Wolcott (1995) suggests, it is more akin to a black art than a craft skill. Whilst the use of theoretical frameworks to develop opportunities for insight is by no means easy, it is altogether more teachable; more craft than black art.

3.3. CHAT: A GOOD CANDIDATE FOR THEORETICAL SCAFFOLDING?

In a review of various debates about information systems research three key recurring challenges in the literature were identified: how to understand individuals in action, how to cope with change and how to handle multi-disciplinarity (Kuutti, 1999). For Kuutti, CHAT seemed a particularly relevant theory when addressing these issues. It is beyond the scope of this paper to present a detailed introduction to CHAT (for excellent overviews see Bannon & Bodker, 1991; Nardi, (1996a), however a few key points will usefully inform the rest of the paper.

‡ We borrow here from Erving Goffman (1990), who also noted that whilst scaffolding is a useful thing it is also something we always build with an eye to taking down again.
CHAT developed largely in the USSR and has its roots in cultural and developmental psychology (Vygotsky, Luria and Leontiev), philosophy (Hegel, Marx & Engels, Ilyenkov) and semiotics (Vygotsky, Bakhtin). Briefly, activity theorists understand human behaviour broadly in terms of Leontiev’s activity hierarchy, whereby activities are composed of actions, which are in turn composed of operations. An activity is usually undertaken by collaborating individuals, and is oriented towards some objectified motive. For example, a production team (the subjects) work together to create a film (the object) leading to some outcome (for example an award, further work, etc.). The relationship between subjects and objects is not a direct one, rather it is mediated by artefacts. In our cinematic example mediating artefacts might include cameras, lights, the rules of film grammar or the conventions of a particular genre, etc. As we can see in this example, artefacts within CHAT are not restricted to the physical domain—to what we might conventionally think of as “tools”. Anything that mediates an activity is an artefact. Actions are consciously carried out by individuals and have a goal. So, for example, the cameraperson will pan the camera slowly along a wall in order to film a scene in which the star runs alongside the wall. The goal might be to get the shot “in the can”, although as Engeström (1999a) points out goals do not explain actions as they are often only explicitly attached to actions after the fact.

Since CHAT takes activity, and not action, as the minimal unit of analysis, one must look beyond the acting individual to understand the acting individual. The cameraperson’s actions cannot be understood without reference, for example, to the star’s actions. We must also consider the history of the activity and not just isolated moments in its development. So, for example, the actions of the cameraperson and star are related to the previous actions of the director, who decided where the star should run and from where the cameraperson should film. Actions in turn consist of operations, which are unconscious and are oriented to the conditions in which they are undertaken. So an experienced cameraperson will not need to think consciously about using their arm to pull the camera around on its tripod, one of the operations required to perform a pan. However, if conditions change unexpectedly, for example because the star has missed a mark they should have hit, the operation will become a conscious action as the cameraperson attempts to compensate and keep the pan going. This example demonstrates why activity must be the smallest unit of analysis—without understanding the star’s actions and operations the breakdown and repair of the pan by the cameraperson makes no sense.

CHAT is rooted in the idea that all human behaviour is mediated by artefacts and that all artefacts have both material and conceptual aspects (Cole, 1996). Whilst in common-sense terms we might regard a pencil as a physical tool, its physical aspects are not its entire nature. A lump of wood with some lead through the middle is only a pencil if certain ideal properties, or “significances” (Bakhurst, 1997) are attached to it. Similarly, language would appear to be a conceptual artefact, but language must also have material form; sound waves, neuronal activity, ink marks on paper (Cole, 1996). In other words, we cannot understand how a pencil mediates the activity of writing through considering its material properties in isolation. Furthermore, “sociocultural context shapes the selection of cultural tools” (Wertsch, del Rio & Alvarez, 1995, p. 26). Therefore in order to

§ An interesting account of the development of the concept “activity” in Western philosophical and scientific thinking can be found in Lektorsky (1999).
understand how an artefact mediates action we must understand both its material and its ideal properties, which in turn reflect a certain historical development.

To summarize then, CHAT-oriented descriptions must take place on two levels; activity and mediational means (Tulviste, 1999). In the CHAT conceptualization we do not engage in activities, but are constituted by them—activity is the fundamental unit of analysis of life processes (Fichtner, 1999). Where CHAT differs substantially from the other “practice” or action-oriented approaches is in the focus on change and development. Activity is change from a CHAT perspective (Tobach, 1999). As Button and Dourish (1996) commented with respect to ethnomethodology, there is a paradox in the incorporation of an approach so focused on the details of existing social action, when the process of design itself changes those very details, through the introduction of new artefacts and practices. CHAT, on the other hand, grew out of a specific concern, originating in dialectical materialism, with processes of development and change in social life. The concern is not just with the details of work practices, but also with the details of the development of those practices. One of the potential benefits of CHAT therefore is that it, partially at least, explicitly addresses the paradox that Button and Dourish presented us with.

Of course such a brief account necessarily glosses over many contentious issues. For example, Leontiev’s development of Vygotsky’s work has been criticized for over-emphasis on individual rather than collective activity (Lektorsky, 1999), although collective activity is now the focus of much work in the area (e.g. Bardram, 1997). There is also a long-running debate about whether activity can be both object of study and explanatory principle (e.g. Kozulin, 1996; Engeström, 1999b). As we shall see later, the richness of CHAT is one of the barriers to its more widespread adoption by IS professionals and researchers. In the face of this, the temptation is to take existing conceptualizations of activity structure and apply them relatively unthinkingly to empirical data, (Engeström, 1999b). Indeed the use of tools intended to make CHAT more accessible, such as the Activity Checklist discussed below, could in fact facilitate just such a situation. Armed with a neat set of questions the ethnographer, or analyst or designer, sets off looking for activities/actions/operations, which of course they will inevitably find since they themselves will (co-)constitute them through the act of naming them, as the French sociologist Bourdieu (1977) has commented. The remainder of this paper will discuss why this did not happen (at least did not happen in an unremarked manner) in the study in question.

4. To the field

4.1. THE FIELDWORK PROGRAMME

We were interested in using ethnographic methods to reflexively develop an understanding of the concept of information gathering; to take our understanding of the concept and expose it to a field setting and in so doing develop a deeper sense of what information gathering might mean to a journalist—if anything. To this end, a one-year study was conducted at The Scotsman† a UK national daily newspaper based in Edinburgh,

† This is the actual name of the organization, used with permission, however names and identifying information of all individuals referenced have been changed to protect anonymity.
Scotland. The fieldwork spanned some 12 months (1997–1998), during which time approximately 47 days of participant observation and over 40 interviews were conducted. In addition, a range of materials (from records of librarian-mediated searches, to story schedules, to page design scribbles) was gathered, and extensive desk research carried out into the history of the organization and the history, philosophy and sociology of journalism. A typical pattern during much of this time was 1–2 days per week in the field doing participant observations and interviews, 1–2 days writing up field notes, arranging access (an ongoing problem) and undertaking desk research (and 1 day recovering). Prior to entering the field many relevant questions had been identified from a number of sources: a small pilot study carried out at a community organization in Edinburgh; a review of the literature around the design of information-gathering technologies and studies of work and of journalism, and from CHAT itself. These ranged from the apparently innocuous “what does information gathering mean to a journalist?”, to what is the relationship between “information” and “news”, “where, in space/time, does information gathering occur?” and “has the arrival of the Internet affected practice?”.

During a pilot study at a small community organization, undertaken principally to give Macaulay an opportunity to acquire some basic fieldworking experience she found, as others have suggested, that drawing on CHAT whilst actually conducting fieldwork is problematic. The broad scope of activity theoretical concepts and their unfamiliarity meant it was difficult to orient either observations or analyses towards them easily, and attempting to do this occupied a great deal of time. However, particularly in the early days of the field experience, time is a precious commodity and it disappears in a flurry of “what’s her name?”, “why is that there?”, and “where are the toilets again?”. Eventually, making best use of the field work opportunity had to take precedence and CHAT faded into the background of the pilot study.

4.2. USING THE ACTIVITY CHECKLIST

As we have already noted, in the pilot study the challenge of both entering the field and incorporating the rich principles of CHAT proved too much and CHAT concepts played little role in the fieldwork-analysis cycle. Conveniently enough though, Victor Kaptelinin and Bonnie Nardi had recently developed a tool that was to prove useful in overcoming some of these difficulties during the main study—the Activity Checklist. The Checklist (Kaptelinin, Nardi & Macaulay, 1999) is primarily intended for designers, as a way of helping them organize and use contextual information. Whilst the tool had not specifically been designed for use in long-term ethnographic work situations, its potential seemed obvious within a design ethnography. It allowed the fieldworker to maintain an awareness of CHAT concepts without overwhelming the initial, often confused and difficult, stages of the fieldwork.

The Checklist comes in paper form and distils out the key elements of CHAT (at least those the authors thought useful for design) into a number of tables of key points and sample questions—some oriented towards a design context and some towards an evaluation context. The key issues are organized into four sections. The first, Means/ends, explains and stimulates thinking about the hierarchical structure of activity, although the emphasis is heavily biased towards the action and operation levels. The
next section, Environment, addresses the object-oriented aspects of activity. The third section, Learning/cognition/articulation, brings centre stage the concepts of internalization and externalization—encouraging the Checklist user to investigate issues such as how collaborating groups come to know about each other’s actions, and how users are/can be helped to set and evaluate goals. The final section, Development, covers one of the potentially most useful aspects of CHAT for design contexts, the focus on activity transformations. So, for example, the Checklist encourages consideration, and preferably ongoing evaluation, of developments in activities resulting from the introduction of new artefacts. On the subject of artefact mediation, there is no separate section dealing with mediation since the concept is so fundamental that it arises naturally within each section. The Checklist is accompanied by an introduction to CHAT and some guidance as to its use. Kaptelinin and Nardi suggest that the Checklist is best used as a drilling down tool; at first it can help in identifying aspects of the context (activity) in question, and later can aid deeper consideration of each.

Rather than using the Checklist in any formal or structured way, it became an aide memoir when reviewing field materials or preparing for sessions—a kind of “neophyte fieldworker’s CHAT cheat sheet”. Of course use of the Checklist varied dramatically as the study took its inevitable twists, turns, dead ends and side streets. In the early stages of the study it helped when preparing for interviews, suggesting avenues for questioning and providing some helpful stand-by questions for use in interviews that were not going too well. A copy of the Checklist was kept in Macaulay’s fieldnote book and was often used to fill unfocused hours in the field that were otherwise spent scribbling anxious notes about the “meaning of life” or how uncomfortable it felt being there. It gave Macaulay some confidence that her work was addressing relevant issues—a common area of anxiety for fieldworkers in the early stages of a study when it often does not seem clear that anything interesting will ever come of it (Bateson, 1958). During the final stages of the study the Checklist became more of an aide to questioning what CHAT was adding to the study, rather than a way of asking whether the study was “activity theoretical” enough. It helped in the move out of the field and into analysis-writing stage of the study. However even at this stage the power of the field to captivate and direct the fieldworker’s attention was not diminished. During the first major attempt at organizing and analysing the field materials| towards the end of the study, the Checklist was abandoned completely in favour of a grounded approach to coding, only to resurface during the second cut as a way of thinking about a number of the themes which had arisen. But perhaps most importantly, the Checklist provided Macaulay with an opportunity to reflect on what she was doing and why, and on how, CHAT was informing the study.

4.3. THE FIELD SETTING

The majority of Scotsman staff worked at its offices in the group headquarters in Edinburgh (Scotsman Publications Ltd also publishes a Sunday, local evening and free papers). The main newsroom is home to the business, news, foreign and specialist teams, as well as the picture desk. Large and old-fashioned, the main newsroom contains

|| Informal, iterative, attempts at this had of course been ongoing throughout.
workstations for around fifty people. At the centre of the room is the “control” area (referred to by some informants as “the Bridge”) where section editors and sub-editors sit and direct their teams and discuss developing stories amongst themselves and with the editor. The newsroom is never still. People are constantly moving around. Piles of photographs, newspapers and documents are carried around the huge room in a constant stream. Well-trodden paths from area to area are smoothly traversed by staff seemingly well used to the minefield of cables, papers, books, chairs and sharp edges. Impromptu conversations occasioned by a meeting on one of these paths turn into heated debates as people sitting nearby chip in. Questions, thoughts, jokes and asides fly about. As the daily publication deadline approaches, the noise and movement levels increase: then, suddenly, a lull. The first edition has left the building. From a flurry of talking, moving around, searching text and picture databases, formal and informal meetings, visits to the library, shouting, phoning, typing, editing of photographs, and playing with layouts a newspaper has been born.

Journalists inhabit a huge, diverse, extremely dynamic information space with which they have an almost symbiotic relationship. The final stage of the journalistic process is not the production of a newspaper, it is the transformation of news into information both by the readers and by the media themselves. Pierre Bourdieu has referred to this process as the “circular circulation of information” (Bourdieu, 1998). As a senior member of the editorial team at The Scotsman rather more poetically expressed it, newspapers are like a palimpsest. Journalists take “information” and “stories” from the world outside the newsroom and turn them into “stories” and publish them, at which point these stories become “news” and, often, “information” again—a new layer is inscribed on the palimpsest. It is the impossibility of separating journalistic information gathering from information production that makes the newspaper industry such a fascinating object of study for those of us interested in exploring reflexively the concept of information gathering (and consequently of course, the concept of information).

5. From intuition to insight

In order to illustrate the role CHAT played in the transition from intuition to insight we shall provide two examples. The first example develops the theme of the transformation of information resources to information sources within journalistic praxis. CHAT concepts about the nature of mediating artefacts gave us some insight into the existence and nature of this transformative process. The second example considers problems in the co-ordination of collective activity, and in so doing allows us to illustrate the utility of CHAT’s conceptual framework for understanding collective activity and the role of artefacts within that. Inevitably, these accounts must be extremely brief in comparison with the body of work from which they have been extracted (a monograph is forthcoming). Nevertheless, we think they illustrate the value of the CHAT framework in supporting the transition from intuition to insight.

†† Section editors generate and assign stories, check that they are meeting expectations, negotiate with other section editors and the editors for the “rights” to a story, space in the paper, etc.
‡‡ Sub-editors check copy for accuracy, house style, spelling and grammar mistakes, write headlines and lay-up pages.
§§ A palimpsest is a medieval manuscript which was reused. Often previous layers would be just visible through the new.
5.1. THE (RE)SOURCES OF INFORMATION GATHERING

Macaulay started fieldwork at The Scotsman by looking for information, and the practices and technologies associated with it. But as many fieldworkers before have found, it is often not what one finds but what one does not find in the field that turns out to be the most interesting. In The Scotsman newsroom, she found a frequent disregard, sometimes verging on disrespect, for the technologies of information gathering. For example, computers were not the prized objects one finds in a computing research lab. They were dirty (in one case almost lost under the stains, dust and scribbles of years of neglect), pushed into corners, lost under blizzards of paper, and sworn at on a regular basis. Not only this, but journalists did not really seem interested in information itself! A cynic might interject that it is hardly news that journalists do not care about information. But it is not a disregard for the veracity of information that was noticed; simply that journalists rarely spent much time worrying about or even discussing the information they gathered in the way that might be anticipated from a review of the information-retrieval (IR) literature. In the information retrieval community, a great deal of attention has been paid to the concept of information relevance (Mizzaro, 1997). The assumption is that an indicator of how successful a retrieval attempt had been would be the degree of relevance the information returned had in relationship to some concept of information need. But at The Scotsman, this did not seem to be a great issue. Information gathering seemed a much more immediate, almost unconsidered activity. Information was needed, the journalist got it, end of story. Or as one informant put it, a lot of information gathering worked on the “that’ll do principle”; you search for so long and then the deadline approaches or something else comes up and “that’ll do”. Furthermore, the concept of information itself had limited utility when faced with the diversity of activity in the newsroom. Journalists talked in terms of needing news, stories, comment, pegs (brief concrete stories used to illustrate or introduce larger more abstract stories), photographs, phone numbers, lists, facts and so on. The evidence was so overwhelming that Macaulay could not fail to intuitively sense that there was something interesting in this apparent disinterest in information and its associated technologies from people so deeply embedded in the information world. The next step was to move from ethno-graphic intuition to design insight.

At this point, the Checklist came to the fore. Macaulay had found scanning the Checklist when preparing for interviews useful in developing lists of questions or issues to be probed. On this occasion one particular question in the Environment section stood out—it asked whether the concepts and vocabulary of the system matched those of the domain. Whilst there were obvious “information gathering resources” in the newsroom that attracted Macaulay’s attention quickly: free-text databases, on-line wire services, web search engines on the network, etc., journalists talk was of “sources”, and “sources” seemed to be an extremely wide category of entities. At various times people, the Library, web sites, organizations, newspapers, TV and radio programmes, press releases were all referred to. But not every newspaper or person or web site was a source for every journalist or department at the Scotsman. Indeed the type of sources used varied

Most UK newspapers subscribe to a number of these real-time feeds of breaking news items, often material from the wires is used directly—as when an item in the paper is identified as coming from “AP” or “Reuters”.

considerably between departments, for example whereas staff in the features department had been very quick to start using the web, staff on the news department were far more cautious about its potential as a source. Journalists spent a great deal of their time collecting sources, and the role of source as a kind of cultural “capital” (Bourdieu, 1977) was emphasized by the amount of observable source trading. Asking colleagues for sources, or source ideas, was a common sight in the newsroom—often the first thing a journalist would do when assigned a story was to ask around their colleagues for sources. Just as common a sight would be a journalist offering without being asked a source idea. Some trading even occurred with staff on other newspapers.

Although journalists at The Scotsman talked about a large number of things as sources, pre-eminent amongst them were people. One journalist, when asked how she used the Internet, responded:

“Well the way it usually happens is you’re thinking how am I going to get this and then, usually, I never think of the Internet right away, and then put in a few calls and then time’s getting on a wee bit and I check the library archive and you think yeah Internet, there might be something on the Internet you know."

Indeed in the sociology of journalism, and in journalism training courses, any talk about sources will almost certainly be referring to people. Human sources are traditionally categorized as being either primary or secondary (Keeble, 1998). A primary source is someone with a special authority to talk about something (e.g. an eye witness to an event) or someone who has been accorded a special authority to talk about something (e.g. the police). A secondary source is someone who provides information but has less authority with regard to the event or issue in question, for example an “expert” asked to comment on something. The use of the human source to ascribe information relevance has been exported to non-human sources, an illustration of the historical development of an activity. For example, on the foreign desk it was shared practice to ascribe greater relevance to information from one wire service source than another. If a story appeared on service A no action would be taken until it had appeared on service B. However, if the story appeared on service B first it would immediately be acted upon. The same information is judged more or less relevant to the need for new stories to fill the paper according to which service it appeared on first.

One way of approaching sources is to try and think about them as “information artefacts” (Green & Benyon, 1996) in terms of the information they hold, the ways they store information and the means by which that information can be accessed. The problem here is that the same information can be found from many sources, sources can store information in multiple formats and the same source can be accessed by multiple means, synchronously and/or asynchronously. Clearly, approaching sources just as “objective things” leaves many issues and questions unresolved. An alternative approach might be to approach sources as “things in use”, as artefacts in an activity-theoretical sense. In this way, we may be able to get a little analytical purchase on the relationship between both human and non-human sources.

Evvald Ilyenkov worked as a philosopher in Soviet Russia until his death in 1978. Ilyenkov and others in the CHAT tradition challenged the view that there is a dichotomy
between individual thinking beings and an external world. Briefly, their argument, from dialectical materialism, is that there can be no “logical independence” of “mind” from “world”. We can only understand the mind with reference to the interaction with the material world that produces the contents of the mind. In practice, our knowledge of the world can only ever be partial (we cannot “know everything”) and therefore our knowledge can only ever be relatively true (Bakhurst, 1991). In other words, we view the world from a particular social, cultural and historical position. Ilyenkov argued that naturally occurring phenomena, such as the heavens, became an object of human attention only when transformed into something other than their material nature through incorporation into human practice, “Even the starry heavens, in which human labour still could not really alter anything, became the object of man’s attention and contemplation when they were transformed by society into a means of orientation in time and space, into a “tool” of the life activity of the organism of social man, into an “organ” of his body, into his natural clock, compass and calendar.” (Ilyenkov, 1977, p. 256) In effect, through incorporation in human practice (i.e. navigation and time keeping, and presumably myth-making and ritual prior to that) “something” is added to the stars which makes them accessible to the human mind. In the same way, sources become an object of journalistic attention when transformed into a means of orienting the journalists to information needs and spaces. From a CHAT perspective, it seems that sources are vitally important mediating artefacts of information gathering in journalism.

Sources cannot be “made” except through their incorporation into the journalists’ praxis. Information resources are things existing in the world that contain information available for retrieval. Information resources are easily available to the observer. But neither the resources themselves, nor the information they contain, are useful enough to information gathering within newsroom constraints. Journalists through their information-gathering praxis create a new artefact, the source. Sources are how journalists orient themselves in information space. Of course following this line of thinking one might argue that the concept of a mediating artefact is meaningless since apparently anything can be a mediating artefact (the problem of categorizing sources is relevant here—although journalists talked about sources, to Macaulay it seemed that anything could be a source). Which is of course the case. What is of interest is the means by which something becomes a mediating artefact (i.e. the thing’s incorporation into human activity).

We are not proposing that the observation “sources are important in information gathering” is novel. Clearly within the Digital Libraries and Information Seeking in Context research traditions there is an evolving body of work which seeks to move beyond simplistic notions of information retrieval (Dourish et al., 1993; Ehrlich & Cash, 1994; Twidale & Nichols, 1997). What we think is novel however is the ability to trace the transformative process from resource to source. The role of the (re)sources of information has often been taken to be largely a matter of information provenance, for example in his study of the International Monetary Fund Richard Harper discusses the ways in which desk officers assign information to a “field of relevance” on the basis of their knowledge.

††† Although a resource may not become a source at the Scotsman it may in fact become a source in another setting—one person’s thing in the world being another person’s mediating artifact.
of where it came from. He concludes that “The medium of its delivery will make no
difference to their effective use of that information.” (Harper, 1999, p. 88) Our analysis of
journalists at the Scotsman suggests that in their case the medium/media of delivery
associated with a source made a great difference. The journalistic field of relevance is
situated within a highly time-dependent activity system and journalists often have
a range of sources from which it might be possible to acquire the same information. The
delivery medium is one factor in assessing “source juggling” strategies. In other words,
whereas at the IMF the focus is on assigning information to a field of relevance, at the
Scotsman the focus is on assigning information resources to a field of relevance. In so
doing the resource becomes a source.

The “implications for design” are that systems which aid journalists in placing
information in a field of relevance need to be supplemented by systems which support
them in placing (re)sources in a field of relevance; in other words, systems which make the
transformative process more available. Instead of ranking information by content, as in
a traditional IR approach, the implications for design are that sources need to be
ranked/retrieved by context, historical relevance and other attributes that journalists use
when deciding which source to use, or which source juggling strategy to employ. This is
particularly relevant in the modern journalistic era, which in the UK at any rate faces
many challenging problems as a result of changes in staffing practices. The UK has one
of the world’s most competitive newspaper industries. This and the eroding of the power
of the Unions, has meant that many more young, unqualified staff are being brought in
and many experienced staff are either moving on more frequently or are leaving the
industry all together. As long as source-handling skills remain largely transparent within
day-to-day working life the chances of new staff being able to pick up such skills quickly
and easily are greatly diminished.

CHAT had given us an opportunity to develop a potentially important intuition
regarding the nature of mediating artefacts into a design insight, we shall now look at an
example that highlights the relevance of CHAT when considering collective activity.

5.2. WHY THE TELEPHONE IS NOT A GOOD MEDIATING ARTIFACT FOR EMULATED
OUTLOUDS

“Outlouds” have been described in the context of City of London dealing by Heath,
Jirotka, Luff and Hindmarsh (1993), and have also been discussed in the context of air
traffic control rooms by Luff, Heath and Greatbatch (1992). Essentially, an “out loud”
happens when someone shouts a piece of information which is connected with work
being done in a given work-place. Outlouds are a way of economically giving informa-
tion to a large group of people and a way people maintain a peripheral awareness
of goings on (Heath et al., 1993). Outlouds, as defined above, are a common feature of life
in The Scotsman newsroom, as can be seen from the following revised fieldnote:

The editor sits in “the Bridge” (central area of the newsroom occupied by subs, section
editors and the editor himself) and asks “So what’s the story on X” (he’s not looking at the

Notes made in the field, in a series of fieldnote books, would be expanded and typed up after each visit. The extracts presented are from such edited/expanded notes.
person who answers). He listens to the response and then says “So the line is” and starts discussing whether that is the best line to take. Two other people in “the Bridge” join in and they take about five minutes to agree. Editor: “Right then, so we’ll just (give it the line).”

In this example we can see how outlouds are also useful as peripheral monitoring devices for others who may have a collaborative involvement (existing or potential) in an activity. The editor did not know who was responsible for the story so he simply announced his request to the people in the immediate vicinity. The response could be overhead by others, two of whom used this ‘peripheral information’ to join in the conversation. Such scenes are often observable in the newsroom, and as the day progresses seemingly impromptu “outloud-initiated” conversations arise with ever greater frequency.

On The Scotsman business desk, writers or sub-editors who wanted to discuss something with the Business Editor, James, generally went over to him. James described his role as “pulling everything together”. It was his job to ensure that there were enough stories to fill the business section, and that the stories all appeared in time to be printed. Consequently, James’ everyday working life consisted of a non-stop round of checking sources for stories ideas, briefing and checking up on journalists, reading finished stories as they came in and coping with inevitable problems like a story failing to “stand up” (turn out as hoped). Even the layout of the Business Desk supported the image of James as the centre of activity. When people did come to James he did not always immediately respond to their presence. He might wait until he had finished whatever he was doing. From this perspective we can see the co-present outloud offers James a great deal of control:

One of the reporters behind James shouts without turning round “Right you’ve got Widows” and James, without looking up/round, shouts “OK”.

Using outlouds to inform James of the availability of a story is highly efficient for both James and the sender. Neither need interrupt their current activity in order to achieve it. James can choose, as in this case, to offer some kind of verbal response. But since both sender and receiver are co-present this is not always necessary. The sender is aware of the intended recipient’s presence and activities, and can assume that no further action is necessary. In addition to choosing whether or not to respond with confirmation that he has received the message, James can choose whether or not to act. In this case he did not. Outlouds are here functioning as both an efficient way to communicate information (without interrupting either the sender’s or the receiver’s current activity) and a mediational means for achieving control over the activity space.

The outlouds described were so efficient because the sender and recipient(s) were co-present, but Macaulay also found this particular variety of outloud being emulated using the telephone. This insight only came to light when attempting to rethink the existing concept of outlouds, after they had been observed in the newsroom, in activity theoretical terms. The Business Desk was slightly unusual in that many of its writers were actually based at The Scotsman’s satellite offices in Glasgow and London. These writers also had to let James know when their stories had been sent for him to review. They typically did this by phoning him. The problem with the use of the phone as a mediating
artefact for outlouding was that it provided increased opportunity for the writers to try and satisfy one of their own goals—finding out what James thought of their story. A journalist cannot leave for the day until the person who assigned them the story or stories they had to write has said so. James might want to clarify some point or ask for a minor or major rewrite. Additionally, journalists do not like their stories being “spiked” (not used). Many of them are highly motivated simply by seeing their work in the paper the next day. There is a contradiction however between this goal, getting immediate feedback on a submitted story, and James’s goal of maintaining a high level of control over his activities. The period when James would generally be receiving and checking the majority of stories (around 5 p.m to 6 p.m.) was particularly hectic. Whilst he would often be seen engaged in quite lengthy conversation with writers earlier in the day, by 5 p.m. or so he was usually concentrating almost exclusively on his computer screen and conversations were usually brief requests for further information, or discussion of a particular point in a story with the writer or one of his other colleagues.

In an examination of the relationship between instrumental (subject–object) and communicative (subject–subject) aspects of collective work Engeström, Brown, Christopher and Gregory (1997) distinguish three levels; coordination, cooperation and communication. In coordination situations, the subjects are working towards their own objects within the overall activity system—if each succeeds and follows the “rules” the activity should develop without any problems. In cooperation the subjects share a common object. Communication refers to occasions when subjects interact to react on their coordination and cooperation. The problem with using the telephone to mediate outlouding within the activity “pulling it all together” is that it opens up an opportunity for a disturbance to the coordination aspects of pulling it all together—the journalist can deviate from the “script” and disrupt the normal flow of the business editor’s interactions. Of course what this also highlights is the issue of perspective. If we take “pulling it all together” as our activity focus then the use of the telephone to mediate virtual outlouds does lead to a coordination disturbance. However, if we were to consider the activity “writing a story” then the use of the telephone by a remote journalist provides an opportunity to move from the “waiting for feedback” to “acting on feedback” aspects of the activity. Going up an activity level to “getting the next day’s paper out on time” it is by no means clear which activity should take precedence. Whilst James needs a high level of personal control of the flow of interactions in order to pull the business section together, it may be that early feedback to the journalist is vital if additional work is required since as the day progresses the opportunity to access relevant human sources for any re-writing decreases (at least on stories with a UK focus). Designing a new system to support virtual outlouding would therefore need to address political questions of authority and power in the newsroom.

By applying an activity theoretical framework to an instance of a previously described phenomenon (the outloud) we gained further insight into the phenomenon as manifested in the particular setting of The Scotsman business desk. This insight then allowed us to see a variation on the outloud—the emulated outloud. CHAT’s focus on collective activity allowed us to understand the failure of the telephone to adequately mediate the emulated outloud in the context of the activity “pulling it all together” because of a disturbance in coordination interactions.
6. Conclusions

The theme of this paper has been; what role should theory play in design ethnography? In addressing it, we examined the growth of interest in contextualizing design, and the consequent rise of ethnographic methods within design. We considered the sometimes contentious relationship between social theory and design and observed parallels between these debates and those within the anthropology community about the role of theory in ethnographic practice. We then illustrated our consideration of the theme with an account of the use of one particular theoretical framework—CHAT—within a design-oriented ethnographic study of information gathering by a novice ethnographer.

In Section 3 we considered some of the doubts expressed about the role of theory in design ethnography, doubts arising from both pragmatic (theory getting in the way of the user–designer relationship) and philosophical grounds (ethnomethodological objections to all theory). To the pragmatists we would suggest that, perhaps paradoxically, theoretical frameworks can improve user–designer relationships by encouraging a strongly reflexive approach. Where CHAT moves beyond the concerns of some ethnographers to clearly differentiating emic and etic perspectives is in the recognition that there are no purely emic or etic accounts. Rather, both the ethnographer and the Other construct the object of study, the activity, through their collective activity—research. For inexperienced fieldworkers in particular, of whom there are surely many more now as variations on ethnographic techniques have become more widely adopted, this is an important point. There is a danger that we simply replace one dubious “authority speaking for the user” (e.g. the systems analyst, or the manager) with another (the ethnographer) in seeking to more fairly represent the user in the design process. Furthermore, the use of theoretical frameworks provides scaffolding for the ethnographer entering the field, alleviating some of the concerns about ethnography being a black art with little place in the hard-headed world of design. Finally, the use of activity theoretical concepts allows comparisons to be drawn between different studies, thereby providing an opportunity for a corpus of studies to be developed and meta-analyses of particular issues to be conducted.

Although cautious notes have been sounded about the use of formal conceptual frameworks in ethnography, our experience would indicate that the power of the fieldwork experience acts as a significant counterbalance to the danger of being overwhelmed by theory. When conflict arose it was inevitably to the swirls and eddies of the field that we were pulled. Of course the very fact that theory entered our study in such an explicit way gave us an opportunity to consciously reflect on the role it was playing. At this point we might also consider the usefulness of bricolage in design ethnography. Our emphasis on the use of CHAT might have given the impression that this is an activity theoretical study. We would characterize it rather as a CHAT-oriented ethnography,

---

\[\text{AAA}\]

The concepts of emic and etic description were introduced to try and distinguish between descriptions from the perspective of the analyst (etic) and of the people being studied (emic). Modern ethnography has concerned itself with the traditional privileging of etic accounts (Silverman, 1993), and with questioning the distinction itself from a Postmodernist position which does not allow for objective knowledge of another's perspective (Layton, 1997).

\[\text{BBB}\]

Levi-Strauss introduced the term to refer to the way in which people make use of a range of things at hand to achieve a particular end (Orr, 1996).
in the manner of Crabtree et al. (1998). In addition, CHAT represents not so much a strong theoretical framework as a collection of often still contested approaches to action which share a common heritage (Axel, 1997). Consequently, in keeping with the spirit of bricolage, indeed in the spirit of that early bricoleur Vygotsky, we adopted a wide range of sense-making tools in The Scotsman study; from cultural psychology, from anthropology and from sociology. CHAT's role might best be characterized as the centre around which this “tinkering” could be held. For example, when considering the role of the Scotsman library, Erving Goffman’s work on the dramaturgical motif, the idea of back and front stages, etc., provided a useful lens through which to consider the performative aspects of journalistic life (Goffman, 1990). Journalism is as much about story-telling in the newsroom as it is about story-writing. Journalists have to engage in all sorts of story-performances at all sorts of stages in the story-lifecycle. A less obvious function of the library is as a kind of backstage where journalists can rehearse their stories in a less “accountable” environment. This was not something CHAT particularly helped us think about, although it came to light as a result of our efforts to trace the levels of activity in which information gathering played a role.

As to the philosophical objection of the ethnomethodologists, that formal theory should play no role at all, this is beyond the scope of this paper. We can only echo Wolcott in suggesting that an atheroetical ethnography is an impossibility. By engaging reflexively with CHAT our inevitable theorizing of the field was made explicit and available to us as yet another resource for our sense-making activity. Whilst a good ethnographer’s intuitive sense of what is interesting may guide them in the field, even the inevitably overwhelmed novice ethnographer can gain from the opportunity to acquire insight through the application of activity theoretical concepts, if for no other reason than that in so doing the ethnographer is forced to actively reflect on their role in constituting the object of study. It is the reflection that makes the insight possible. Whether the insight is picked up by designers depends on their willingness to take part in the dialogue such reflection affords.

Our answer to Nardi’s question then, might it be better to just train people to be ethnographers rather than burden them with CHAT, is no. Whilst CHAT is by no means an easy set of (continually developing) concepts to come to terms with, we have argued that the benefits of so doing outweigh the effort involved. Also as more tools such as the Activity Checklist appear, the effort required may begin to decrease. However, it would be foolish to pretend that there are no dangers in such an approach. Part of the power of CHAT is the very unfamiliarity of the concepts, forcing the analyst to extend their thinking beyond the routine. But as the sociologist Zygmunt Bauman warns; “It seems a general rule that what was once a daring intellectual adventure turns into the thoughtless repetitiveness of routine” (Bauman, 1999, p. ix). CHAT should not be used to do away with the need for training good design ethnographers, rather it should play a role in helping the inexperienced fieldworker become a good design ethnographer.

The authors would like to thank everyone at The Scotsman for their patience. Also the members of Napier University HCI Group and our PERSONA project colleagues at the Swedish Institute of Computer Science, for their comments on some of the ideas presented. We would also like to thank Victor Kaptelinin and Bonnie Nardi for their supportive interest in our work, and Alan Munro and Bonnie Nardi for discussions about outlouds. Finally, this paper has benefited substantially from the detailed and constructive comments of two anonymous reviewers.
References


