Designing with Care:

Adapting Cultural Probes to Inform Design in Sensitive Settings

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Abstract

We report on the methodological process of developing computer support for former psychiatric patients living in residential care settings, for older members of the community, and disabled people living at home. Methods for identifying user needs in such sensitive settings are underdeveloped and the situation presents a very complex set of design challenges. In particular, the highly personal character of such settings presents conventional observational techniques, such as ethnography, with obdurate problems that make direct observation intrusive, disruptive and inappropriate on occasion. Direct observation requires supplementation in sensitive settings. Accordingly, we report on our experiences of adapting Cultural Probes to explore care settings, to develop a design dialogue with participants, and to gather information about their unique needs.

1. A New Challenge

> *Visions of what technology can do… are rarely based on any comprehensive understanding of needs.*
> (Tweed & Quigley 2000)

This paper reports on the adaptation of Cultural Probes (Gaver et al. 1999a) to facilitate research in the long-term and ongoing interdisciplinary research project, Digital Care. The project is concerned to develop 'enabling' or 'assistive' technologies for user groups with different support needs in a variety of residential care settings. Assistive and smart home technology has been shown to enable differently-abled people to lead a better quality of life and to augment the care process (Dewsbury 2001, Dewsbury and Edge 2001). However, many people do not receive appropriate support (Gottlieb and Caro 2000) and there is little evidence of

methodological guidance to facilitate the matching of technology to user needs (Doughty 2000, Curry et al. 2001). This paper is concerned to address the *methodological problems* that we have encountered in our research and to articulate the solutions we have devised for handling them by adapting Cultural Probes to include a range of unconventional end-users in a formative process of design.

The settings for our project include a hostel for former psychiatric patients, a number of elderly people living at home, and a stroke victim and her family. As a general and important principle, we take it that any technology introduced into sensitive settings such as these should seek to empower users rather than foster dependence on new technology. A technology that merely completes a task for users in care settings does little to promote their independence, but merely shifts reliance onto the technology. This goal raises the very real problem of identifying requirements in highly complex and unconventional domains.

Requirement elicitation in sensitive settings demands that we draw a line between the perceptions of designers - who are often seen to construct solutions and thereby design for people essentially like themselves - and the perceptions of 'the other', which in our case includes a wide range of people who are differently-abled and whose views are effectively excluded from design. As Clarkson and Keates (2001) put it,

> *It is known that many products are not accessible to large sections of the population. Designers instinctively design for able-bodied users and are either unaware of the needs of users with different capabilities, or do not know how to accommodate their needs into the design cycle.*

Consequently, the challenge as design broadens its horizons, moving out of the workplace and into everyday life more generally, is one of including and

providing support for a wide range of differently-abled users, rather than creating new technological forms of dependence predicated on remote and abstract philosophies of care.

Developing elicitation techniques that embed a responsive and responsible philosophy of care in the design process requires that we devise new methods for unearthing and accommodating the divergent needs of users with different capabilities. Naturally, this is not a straightforward project, even in light of the long history of participatory design methods developed in the HCI and CSCW communities.

If we take, for example, the hostel and supported housing service for former psychiatric patients and people with severe and enduring mental health problems. It is at one and the same time an organization governed by formal care procedures, a workplace for a company of staff who carry out duties of care, and a home for a heterogeneous collection of patients. It might be taken as a relatively straightforward matter to adopt an organizational perspective and conduct a range of ethnographic studies of staffs' cooperative work with patients in order to facilitate user-centred workshops identifying a host of user requirements informing the iterative development of prototypes (Greenbaum and Kyng 1991). However, staffs' cooperative work is work-with-psychiatric-patients, much as the work of carers for the elderly is work-with-the-elderly and the work of the stroke victim's family is work-with-a-stroke victim. In other words, when we start to investigate the cooperative work of care, we are inevitably and immediately confronted by people with a range of infirmities, disabilities, and impairments, who for variety of highly understandable reasons may be reticent to subject their lives to the inquisitive gaze of strangers and outsiders - and who can blame them?

The identification of requirements in care settings presents researchers with some obdurate and interesting problems of observation and inclusion, which existing participatory design methods developed in the *workplace* are ill suited to meet. Concerns with such phenomena as workflow, production and efficiency – albeit mediated through direct user participation - give us little purchase on user needs in care settings. Developing methods that are faithful to the *special and unique character* of care settings has long been a general problem for researchers studying differently-abled user groups and are still widely underdeveloped (Gearing and Dant 1990). The paucity of appropriate methods may be attributed to the development of theoretical concepts of need, which are typically abstract, decontextualised, or generic and largely derived from service providers' perspectives, in contrast to the point of view of recipients (ibid.).

Our own preference to the general problem of fidelity is to adopt an ethnographic approach in order that we might develop an appreciation of needs from the point of view of end-users (Crabtree 2003). However, we have found that like existing participatory design methods, the use of ethnographic methods developed in work environments can be problematic in care settings, particularly in the psychiatric hostel where 'observation' can have detrimental effects on the residents. Research in these contexts is often regarded as not merely difficult but often inappropriate and intrusive. The deeply personal, perhaps tragic, nature of such settings places constraints on what can be investigated, as well as how it can be investigated, and raises a very different set of methodological and design challenges as to those occasioned by workplace design. Gathering requirements in care settings demands that we respect the unique needs of end-users and their individual care regimes. Accordingly, we have developed a distinct methodology that combines tried and tested methods of ethnographic study and user-centred workshops with adapted Cultural Probes to explore the care settings and identify needs through the active participation of end-users.

2. Responding to the Challenge: Cultural Probes

They may seem whimsical, but it would be a mistake to dismiss them on that ground: for unless we start to respect the full range of values that make us human, the technologies we build are likely to be dull and uninteresting at best, and de-humanising at worst. (Gaver 2001)

Cultural Probes (Gaver et al. 1999a) have recently gained some prominence in interactive systems design, where they have been employed to explore the design space as computing moves out of the workplace. They were initially deployed in the Presence Project (Gaver et al. 1999b), which was dedicated to exploring the design space for the elderly. Gaver has subsequently argued that in moving out into everyday life more generally, design needs to move away from such concepts as production and efficiency and instead focus and develop support for 'ludic pursuits'. The concept is intended to draw attention to the 'playful' character of human life, which might best be understood in a post-modern sense. Accordingly, the notion of 'playfulness' is not restricted to whatever passes as entertainment, but is far more subtle and comprehensive, directing attention to the highly personal and diverse ways in which people "explore, wonder, love, worship, and waste time" together and in other ways engage in activities that are "meaningful and valuable" to them (Gaver 2001).

This emphasis on the ludic derives from the conceptual arts, particularly the influence of Situationist and Surrealist schools of thought (Gaver et al. 1999a). Cultural Probes draw on the conceptual arts to provoke or call forth the ludic and so illuminate the 'local culture' in which people are located and play out there lives. Cultural Probes are *not* analytic devices but

'reflect' the local culture of participants and are drawn upon to inspire design (ibid.). As Gaver puts it,

[Cultural Probes] offer fragmentary glimpses into the rich texture of people's lives. They allow us to build semi-factual narratives, from which design proposals emerge like props for a film. (Gaver 2002)

Recent work in the Interliving Project (Hutchinson et al. 2002) has seen the adaptation of Cultural Probes to Technology Probes to embed inspiration *in* the design process, in contrast to providing inspiration *for* design. Technology Probes situate existing technologies in users homes in order to inspire design by exposing users to new experiences. In this respect, technology is taken to 'act as catalysts for new design ideas' (ibid.). While this new participatory design method may be of broad benefit, we have to be very careful about introducing new technologies into sensitive care settings. There are number of reasons for exercising caution, ranging from moral concerns with unforeseeable and potentially disturbing disruptions to the fabric of the local culture, to practical concerns with the theft of expensive equipment - a very real concern in the hostel, for example, where residents were often attacked and robbed or might otherwise sell the equipment to get a little extra income. Whatever the reason, caution needs to be exercised where the introduction of technology into care settings is concerned - a situation that raises a distinct challenge for participatory design approaches, many of which are predicated on exploring the design space through direct technological intervention.

Wary of the potential risks of hasty technological intervention, we have elected to adapt Cultural Probes through the use of social research methods to sensitise design to participant's local cultures and so inform the elicitation exercise. We are particular concerned to understand the practical activities, practical circumstances, and practical reasoning 'at work' in our participant's local cultures in order that we might understand user needs within the context of their daily lives (Garfinkel 1967). We wish to adapt Cultural Probes, then, into devices with which we might pay the most commonplace activities of daily life the attention usually accorded extraordinary events and so come to learn of the needs of differently-abled users as phenomena in their own right. Combined with more traditional ethnographic methods, we see adapted Cultural Probes as vehicles enabling researchers working in sensitive settings to maintain fidelity to the phenomenon.

Developing an understanding of such phenomena as old age, disability and mental impairment from *within* the settings they inhabit, and from the point of view of people effected by them, is no easy matter since care environments in general tend to be much more private and personal places than work settings. Indeed, the presence of an ethnographer kitted out with standard research tools - tape recorders, videos, and notebooks –

may, on occasion, not only be unwelcomed and disconcerting, but also highly damaging: consider the potential effects of such an intrusion for somebody suffering from paranoid schizophrenia, for example. Adapting Cultural Probes allows researchers to *supplement* the understandings developed through ethnographic research in situations where intrusion and disruption are likely to arise. In the following section we report on the ways in which our adapted probes have served as provocative resources, calling forth and illuminating the rich textures of our participants everyday lives.

3. Adapting Cultural Probes: Moving From Inspiration to Information

For Gaver and the other members of the Presence Project, Cultural Probes inspire design by providing …

… a rich and varied set of materials that … let us ground [our designs] in the detailed textures of the local cultures. (Gaver et al. 1999a).

These materials are products of the probe packs, each consisting of a variety of artefacts including:

- Postcards with questions concerning participants' attitudes to their lives, cultural environment and technology.
- Maps asking participants to highlight important areas in their cultural environment.
- Cameras with instructions asking participants to photograph things of interest to them and things that bored them.
- Photo Albums asking participants to assemble a small montage telling a story about participant's lives.
- Media Diaries asking participants to record the various media they use, when, where and in whose company.

These artefacts provide a range of materials reflecting important aspects of the participant's local cultures and, on being returned to the investigators, these reflections inspire design.

Our own probe packs (Figure 1) consisted of a similar but more extensive array of devices, including:

- A set of postcards addressed to the researcher - for residents to write about their daily concerns, interests and ideas.
- A map of the local area - to provide some sense of geographical routine as well as areas residents felt unsafe.
- A polaroid camera - to take photos of their room, their friends and visitors, things that were important to them - that they could then put in the photo-album and annotate with post-it notes
- A disposable camera - to take more photos for the researcher to develop and provide a focus of interest for subsequent discussions and interviews
- A photo album

- A voice activated dictaphone - for residents to record a diary of their activities, ideas and thoughts
- A visitors book - to provide some sense of the rhythm of activities and visiting
- A scrapbook, 'post-it' notes, pens, pencils and crayons - to enable residents to draw diagrams of their homes and its layout, as well as present ideas in pictorial form.
- A personal diary to record the participant's daily activities.

These were handed out, much like a birthday or Christmas present, and their use was explained to the participants: "*These items are 'cultural probes' - but don't worry - they're just a way for us to find out more about you, your everyday life, what you think and feel. We'd like you to use them to tell us about yourself - and below are a few ideas you might want to think about. Ignore these if you like - nothing is compulsory - do as much or as little as you like. We hope its fun. I'll come back to collect them in about a week"*.

The probe packs also contained a set of instructions and some suggestions as to how the various devices in the probe pack might be used. For example,

Draw on the maps and use post-it notes to indicate where you feel safe or threatened, favourite places, or places you avoid.

The diary can be used to record daily events and activities as well as visitors that you get. You can write in it whatever you like and wish to tell the team.

In the case of the elderly, a booklet was provided rather than a set of instructions in order to provide a more enjoyable focus the activity and also to provide a gift that we could return as a reminder at the end of the project. The booklet asked elderly participants to describe which rooms were used most often, their favourite activities, activities they would like to do or missed being able to do, the various kinds of technology they used, and so on. The stroke victim and her husband also allowed a researcher to record parts of their daily household routines on video.

Figure 1. Informational Probes Pack

Our probes kits, whilst consisting of many of the same artefacts, perform a different function to Gaver's Cultural Probes. Where Gaver's probes are intended to reflect participant's local cultures in material detail and in that detail somehow - but *unaccountably* just how - inspire design, ours are intended to meet the more modest and traceable aim of supplying information to inform and shape design. While inspiration would undoubtedly be a bonus, our prime concern is informational – a matter of gaining insights into how people live their lives, their everyday circumstances, their routines and rhythms, their practical concerns, and so on. We have an analytic concern in our participant's lives – one that is concerned to explicate and make visible the *situated* character of old age, disability and mental impairment (Garfinkel 2002). The analytic contrasts with theoretical approaches, which seek to develop abstract, decontextualised, or general models of disability and provides the opportunity to develop technologies that are responsive to the real world, real time context of use.

In contrast to Gaver's approach, rather being treated as 'reflections' of participant's local cultures, the materials returned by our probes were instead treated as resources facilitating cooperative analysis using the materials to facilitate and focus various user workshops. These in turn supported the 'co-realization' of design solutions supporting and attuned to their needs (Hartswood et al. (to appear)) and reflecting some of the processes of 'domestication' and 'innofusion' (Fleck 1988, Williams et al 2000).

However, we would not like to make too many claims about the novelty of our methodological approach - though there is novelty in its application to these settings. Cooperative analysis of the material exploited several existing and related methods of social research, including biographical interviews (Gearing and Dant 1990), visual biographies (Prosser 1992, Harper 1996), and technology biographies (Blythe et al 2002). Technology biographies, for example, are designed to generate critical and creative responses to questions of home technology development, focusing on past developments and historical trends that are of personal importance to the respondent; current uses, problems and concerns. These methods also have some similarities with longstanding social science diary approaches that have also been employed in HCI research (Brown et al. 2000). Concentrating on the situated character of participant's local culture rather than their information-seeking activities, however, this combination of complementary methods enabled us to develop a more comprehensive understanding of the 'life-worlds' of our users.

We have found that these analytic methods enable potential users to participate in the design process in a readily accessible way and reflexively trigger a design

dialogue that is deeply attuned to their practical circumstances and needs. The probe materials on which the methods trade are resources of a kind that require, as Harrison (2002) puts it, the collaboration of the participant to 'translate' their meaning. Taken together, the various biographical approaches we have employed in our Informational Probes have encouraged participants to reflect upon and articulate important personal, social, and technological features of their everyday lives. These reflections, in turn, have enabled designers and participants to articulate and elaborate the role of design in the local cultures that make up our studies.

4. Informing Design: The Emergence of 'Abiding Concerns'

Tap into whomsoever, wheresoever and you get much the same thing. (Sacks 1984)

The probe returns – including photographs, maps, drawings, diaries, postcards and the rest - introduced the design team to salient issues in our participant's lives and provided a concrete and enjoyable focus for subsequent user workshops. Of particular interest, our ethnographic studies and Informational Probes have indicated some major preoccupations or 'abiding concerns' that occur across the different care settings we are studying, such as a preoccupation with *safety and security*.

At the hostel, for example, residents have been subjected to frequent physical and verbal attacks. This has resulted in the gates being locked at four o'clock each day - when the school day ends - and some residents will only travel outside the hostel by taxi. Consequently, residents are increasingly cut-off from the outside community and their friends. A concern with safety and security outside the home is also reflected in the diary entries of elderly people and is manifest in reduced social contact. These unfortunate circumstances pose fascinating, if distressing, problems for design, highlighting the importance of connections between the care environment and the outside world.

Managing medication appears to be another abiding concern. It is quite common amongst people with strokes, for example, for them to have other illnesses

Figure 2. Dorothy's Daily Medication

and attendant medical problems. In Dorothy's case she has, amongst other things, late onset diabetes, this complicates matters as far as her dietary and medical needs are concerned (Figure 2). The drugs prescribed to treat both her stroke and diabetes are, to a certain degree, mutually antagonistic and require constant monitoring.

Figure 3. Dorothy's Medication Chart

Her diet, meal times and exercise must be planned and monitored closely as together they not only affect her glucose levels and insulin intake, but also have some bearing on the efficacy of some of the other drugs she takes. In practical terms this means her body signs must be closely checked three times daily in order that future dosages of drugs can be calculated. In short, in light of Dorothy's past condition, decisions regarding the amounts of each drug that make up the ingredients of her medicinal cocktail - some 30 plus doses of 8 to 10 different drugs - must be made throughout the day. Monitoring this is an abiding daily concern, accomplished by family members who track Dorothy's medication through the use of a shared medication chart (Figure 3).

In the hostel, medication issues are similarly a focus of much concern. The medication regime plays a central role in the maintenance of 'normal daily life' for many persons suffering from psychiatric conditions. Many of

the residents are on daily medication regimes and expressed their concerns about the consequences of forgetting to take their medication. In the semi-independent living area residents are expected to manage their own medication and weekly supplies are provided by the pharmacy, packaged into individual doses within a plastic container. This arrangement often causes anxiety since residents, who have previously relied on the staff to provide their medication at the correct time, must now depend on themselves. These concerns are echoed in the returns from the probe packs - in the postcards, for example, which persistently focus on issues of illness and pain (Figure 4) and in such things as photographs of food cabinets, where a list is displayed of foods particular residents need to be wary of for medical reasons (Figure 5).
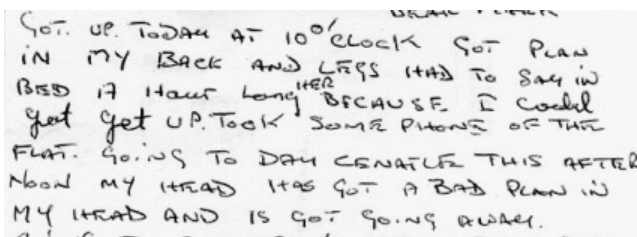

Figure 4. Postcard from a resident

The probes also provide us with insight into the daily routines that provide for the 'articulation' (Schmidt and Bannon 1992) or *coordination of activities* making up 'daily life' in particular settings. As Tolmie et al. (2002) suggest,

> There is a sense in which routines are the very glue of everyday life, encompassing innumerable things we take for granted such that each ordinary enterprise can be undertaken unhesitatingly. Routines help provide the grounds whereby the business of life gets done.

Routines reveal what Zerubavel (1985) regards as the 'temporal rhythms' of social life - a notion that provides a way for us to think about person's everyday activities: visiting people, going shopping, taking medication, etc., repeating activities over time until they get absorbed into and become part of the routines making up and articulating particular care settings. The notion helps us understand aspects of everyday life in these settings by highlighting its intrinsically temporal and cyclical nature.

Figure 5: Food Instructions - what to avoid

In the everyday life of the hostel residents, for example, a number of rhythms can be readily perceived - visiting rounds, movement of residents into, around and out of the site at various times of day, medication delivery, resident and staff meetings, and so on. Such rhythms were not only important to the staff for coordinating their work but also for the residents, serving both a communicative and a therapeutic function. Knowing that events should happen in some sort of regular and predictable order, what people were doing, and where they were from, was of value to both staff and residents. Amongst the elderly we have found that such rhythms played out in visits to the Church, the visits of friends and relatives and the 'pottering about' of daily routine that are documented in the diaries (Figures 6 and 7). The rhythms and modulations within the home produce differing messages as people age. While certain aspects of daily life appear characteristically standardized such as getting up after going to bed, having meals at certain times etc, the *detail* of such patterns change throughout the life cycle. Eating times and bedtimes, for example, change with age as do most activity patterns, for example, a doctor's appointment at 9.30am may require that an elderly person get up two hours earlier in order to get ready.

The rhythms of daily activity not only orient people to their present activities, but to their future activities and the requirements of those activities. Knowledge of the setting's daily routines allows them to plan their activities. Technology is required to fit into these temporal regularities or rhythms in order to provide some degree of predictability and, with that, stability to the inhabitant's life (Tanzi 2000, Edwards and Grinter 2001). The temporal rhythms within a setting are organizing rhythms and technology is obliged to support them if it is to be responsive to the subtle changes that occur throughout the participant's day.

Figure 6: Diary entry describing daily rhythms

Through the adaptation of Cultural Probes to Informational Probes we have been able to illuminate the rhythms of daily life at work in the various settings in our study as well as the possible problems and difficulties that individuals face therein. What has emerged from our investigations, even those as unconventional as community care settings, is that everyday life is made orderly by members through the accomplishment of routine activities that reflexively give rhythm to their lives. What transpires from the Informational Probes, what is made visible then, is the gross transparency of social order in each and every domain within which participant's lives are organized, both by themselves and in their interactions with others.

From our perspective, design interventions are unavoidably interventions into the orderliness of everyday life - an orderliness that is massively obvious in, for example, the diary entries. Design directly affects everyday activities in various ways by impacting on timeliness, reliability, dependability, safety or security, for example. Figure 7, for example illustrates the daily rhythms of a respondent who notes in her diary that her life is punctuated by periods of rest. Consequently any technology support must be sensitive to the times when she needs to rest and when she has the strength to continue.

Figure 7: Diary entry

By paying careful attention to the orderly features of participants daily lives in sensitive settings – by attending to the rhythms, routines, and abiding concerns manifest in participants daily lives – an appropriate philosophy of care might be developed and integrated into the design of technologies for sensitive settings in much the same way as other philosophies, such as the Scientific and the Modern, have already been incorporated.

Although our research is ongoing, following the issues raised through observation, interview and the items coming back from the cultural probes a number designs and prototypes have been developed and deployed. They focus on various forms of awareness to support a variety of abiding concerns and temporal rhythms, such as supporting the timely taking of medication. This includes the design of a GPS 'panic alarm' for residents; a prototype medication manager and the design and deployment of a messaging system. The medication manager, for example (reported in more detail in Kember et al 2002) was a product of staff and residents concern about the possible grave consequences of them forgetting to take their (often powerful doses of) medication. Observation and interview and the probes confirmed the important role of the medication regime in the maintenance of normal everyday life. The kinds of issues that emerged from the research included dosage, delivery, reminders and reassurance and were highlighted by some readily expressed and graphic fears and anxieties, from residents and staff, over the possible consequences of forgetting their medication or overdosing. Our prototype focused in particular on the residents in the semi-independent living site who have previously relied on the staff to provide their medication who must now - as part of the move to independent living - remember what to take and when. The paradox (at least for technology designers) was that the technology needed to fit in with the professed aims of the unit - moving towards developing independent living skills - to act as simple 'reminders' to residents to take their medication rather than shifting their dependence from the staff to the technology. Special consideration needed to be given to the design of the application, that took these factors into account as well as others such as the place for the artefact within the lifestyle and living space of the user (as revealed in the probes). As the focus of this paper is *methodological*, however, this technical work, and the precise ways in which the probes and ethnographic studies informed the designs, is reported elsewhere (Cheverst et al. 2001, 2003; Kember et al. 2002).

5. Problems with Probes

Despite our successes, the use of probes has not been entirely problem free. It is the analytic problems that we are primarily interested in, rather than what might be regarded as the apparent triviality of the returned probe material. (And it would be surprising if much of the material would seem, at least to an outsider, as trivial) With probes, Cultural and Informational alike, there

seems to be an inherent problem of confusing just what the data is and, with that, just what the focus of analysis is. It is *not* the material artefacts of the probes - the tapes, the photos, the booklets and diaries, etc. – but rather, the *situated character* of everyday life in various care settings as elaborated by *participant's accounts* of their daily rhythms, routines, and abiding concerns. Such accounts supplement and augment insights gained from direct observation and are generated through cooperative analysis of the returned probe material. Probe materials serve as triggers for analysis then and in asking people to administer them we transform participants into active enquirers into their everyday lives, rather than passive subjects of our research.

While we believe that overall the probes have proved successful as a means of including our unusual and often ignored groups of users in collaborative analysis of the design domain, and of elaborating that domain from within, we acknowledge the problems we have faced and recognise the need to think carefully about the claims and expectations for any method. So far it is undoubtedly the case that our respondents have enjoyed using - and misusing - the probe packs: one camera has been stolen and in another case the polaroid was used to take naked pictures (primarily of bottoms), for example. Nonetheless, and as Gaver puts it, the probes have …

… provoked the groups to think about the roles they play and the pleasures they experience, hinting to them that our designs might suggest new roles and new experiences. In the end, the probes helped establish a conversation with the groups, one that has continued throughout the project.

For our part we would add that they have also provided a great deal of information and insight into participant's daily lives in sensitive settings, which provides the basis for 'continuing conversation'. We would be wary, however, of making any grand claims for the methods we have presented – that it enables us to engage in some kind of emancipatory programme of reform, for example. Such things have always seemed to us to be an outcome rather than precursor to research. In a similar fashion, we would dispute any suggestion that in lacking the personal circumstances or disability of those we study, our accounts are biased and partial. Whilst we make no claims to be Geertz's (1973) chameleon fieldworkers - some 'walking miracle of empathy, tact, patience and cosmopolitanism' - nor will we confuse experience with understanding. Instead, we share Fennel et als. (1989) preference:

For studies which bring researchers into direct contact with their field, but the real criteria for research studies are that they should be systematic, open-minded and openly reported. If these criteria are met, readers can decide safely for themselves how to treat the results.

6. New Directions in Interaction Design

I can tell you something but you have to be careful what you make of it. (Sacks 1992)

"..it is now apparent that the 'universal types' of much 20th century design failed those on the margins of society - especially as assumptions about what is 'average' or 'normal' have been too often based on the stereotype of the young, fit, white, affluent male. " (Clarkson et al 2003)

It appears to us that there are interesting and challenging changes occurring in the design landscape and, as Clarkson et al (2003) suggest in their work on 'inclusive design', this challenge may well be "one of the defining business priorities of the age'. Of course, our interests lie in research rather than business but the messages that have emerged from investigating new and ubiquitous technologies in novel settings are compelling nevertheless as we look for resonance between design and the diverse needs of different groups, for applications and artefacts that are of inherent value rather than merely new. As Clarkson et al (2003) cogently put it:

' A growing interest in how people interact with products and services, especially in terms of emotional engagement, combined with a awareness of the breadth of individual capabilities across the life course and the cultural diversity of modern communities, has obliged designers to rethink assumptions about who their typical consumer is likely to be." (Clarkson et al (2003)

In moving out of the workplace towards design in sensitive settings - or 'design with care' as we have called it - we are required to make a perceptual shift in order to determine the needs of the differently-abled and to reflect these within the design process. Designing with care demands the development of inclusive strategies and elicitation methods. While there is great promise that technology will enable and assist users in care settings, it is of fundamental importance that designers recognise that solutions devised on the basis of inappropriate investigative strategies and methods can be debilitating, dis-empowering, and de-humanising.

When considering design for care environments, we have found that traditional technological approaches such as ethnography need to be supplemented. Informational Probes may prove a useful part of the researcher's repertoire, particularly where information and insight into the unique needs of novel domains is required. Our use of Informational Probes in a number of sensitive settings has led us to appreciate their value as an important first stage in the requirements gathering process. Promoting collaboration, they work to actively

involve users in the design process, rather than cast them as docile victims of research and passive recipients of design. It should be said, however, that these clear benefits aside, Informational Probes like Cultural Probes before them provide no 'silver bullet' for design: they do not tell designers what to build or provide a convenient recipe for translating fieldwork insights into technical applications. But then, as far as we are aware, neither does any approach to date and the problems of moving from study to practical design recommendations and applications remains as obdurate as ever. As we suggest, probes are, or can be, the first stage in an ongoing and difficult process of design but they at least provide some insights into user needs and perceptions as well as a method for ensuring the early, active, involvement of users in the whole design process.

We have long been strong supporters and practitioners of ethnographic research, and it is important to appreciate that many of the methods implicated in the administration of Cultural and Informational Probes are thoroughly ethnographic in character. Tied to an array of analytic methods, the use of diaries, notebooks, cameras, and the like has a long history in ethnographic research. As the ethnographic methods devised to support workplace design have 'grown up' and 'left home', being absorbed into the standard repertoire of design, we find these old practices returning to the fore, being appropriated by new disciplines, dressed in new clothes, and refined in order to address the research challenges that are emerging as design moves out of the workplace.

The challenges of contemporary research are both methodological - being concerned to move method on and develop it for new uses - and analytic - being concerned to provide new and useful insights into novel design domains. The need for new methods is a product of a changing technological landscape and priorities, which have prompted design to turn towards other disciplines, particular the Arts, to inspire design. While Cultural Probes may well inspire the development of radical technologies and adventurous views of the future, getting such imaginative visions to work generally means that they must, at some point in time, meet the real world and engage with new users if design is to be to sufficiently grounded. It is in this context that we believe Informational Probes have something to contribute to foundational research in contemporary design more generally.

7. Acknowledgement

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