

'Sore Legs and Naked Bottoms': Using Cultural Probes in Dependability Research

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Abstract: As digital technologies have matured, they have moved beyond the workplace to our everyday lives, presenting interesting methodological and research challenges. Attempting a useful input into dependability processes requires an understanding of how technologies are integrated into a range of social contexts. However, to usefully consider issues of dependability we may require significant shifts in investigative techniques to consider how technology relates to and offers support for everyday living. Our 'user groups' are former psychiatric patients and elderly and disabled people living at home. Methods for eliciting needs in 'care' settings are relatively under-developed and represent a complex set of design and methodological challenges. Research in such contexts is often difficult and inappropriate and their deeply personal nature presents conventional ethnographic methods with obdurate problems. This paper outlines one methodological approach - 'Cultural Probes' (Gaver 1999) - for supplementing ethnographic investigations, prompting responses to emotional and social values and opening a dialogue with users.

Keywords: Ethnography; User Studies and Fieldwork; Healthcare; Home; Disability Access; Empirical Methods, Qualitative

INTRODUCTION: UNDERSTANDING USER REQUIREMENTS FOR DEPENDABILITY

In recent years there has been a 'turn to the social' in system design, arising out of a dissatisfaction with existing, or orthodox, methods of informing system design, because they offered an overly abstract and simplistic analysis of any particular setting (highlighted by some sensational failures). The emphasis on the social and understanding the detail of social settings was intended to develop more appropriate methods of analysing activities and their settings as a means of informing design and thereby making end-use a much more prominent feature of system development. It was also argued that such methods needed to be more attuned to gathering relevant data in 'real world' environments; that is, settings in which systems were likely to be used rather than in laboratories or other artificial environments remote from contexts of actual system use. Systems need to be appropriate both for the application domain and potential users - and failures are often attributed to the inadequacy of existing methods of investigation and requirements elicitation. If design is more of an art than a science, dealing with messy indeterminate situations, before designers can solve a design problem they need to understand some basics - such as what they are designing, what it should do and who should use it. It consequently proposed a new emphasis on the user, and a new kind of end-user, namely, a living, breathing person who carries on their daily life within a 'real time, real world' setting not some abstract homunculi of structured method or cognitive theory who 'neither

laughs nor cries' (Williamson 1973). This also contrasts with the perception of designers as essentially designing for themselves - or people just like them - and effectively and inevitably excluding a whole range of people such as the disabled or those in various forms of care. As Clarkson and Keates (2001) state: "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".

With the advent of ubiquitous computing and the growing presence of computer systems in everyday domestic environments, the home has become a growing focus for research. However, it may be that we require significant shifts in our investigative techniques to consider how technology relates to such different settings and users. Despite 'hyped-up' visions of technology as a means of completely transforming home life, successful forms of domestic interactive technologies, no matter how radical, are successful precisely because, as Sacks (REF) suggests, they are quite routinely, 'made at home' with the social organisation of the domestic environment. Uncovering the detailed nature of the social organisation of domestic life is consequently essential. As designers increasingly turn away from quantitative methods as stimuli for design towards research methods that bring them closer to people's aspirations and their lives as really lived, so user-orientated qualitative investigative techniques have increasingly been deployed.

This paper reports on the methods adopted in a recently initiated interdisciplinary research project interested in developing enabling technologies to assist in care for user groups with different support needs. One objective of the project is to improve the quality of everyday life by building and adapting technologies for a range of user groups and application domains. Meeting this objective will require us to address fundamental and long-term research challenges in how computing technologies and concepts relate and adapt to a range of everyday domestic environments, including those characterised as 'care' settings. The project employs a multidisciplinary research team to facilitate the development of enabling technologies to assist care in the community for particular user groups with different support needs. The general aim is to examine how digital technology can be used to provide various kinds of support in care settings. Assistive and smart home technology has been shown to enable people to lead a better quality of life and augment the care process (Dewsbury 2001) and appropriate use of this technology can improve quality of life (Dewsbury and Edge 2001). However, such technologies have not been taken up to any great extent (Fisk 2001); many people do not receive the appropriate solution (Gottlieb and Caro 2000); and there is little evidence of usability trials or guidance that facilitates matching technology to user needs (Curry 2001; Doughty 2000). Assistive technology provides an interesting test-bed for many fundamental issues of design and dependability. Undoubtedly users of these technologies can be extraordinarily reliant on the service they deliver and issues of availability, reliability, confidentiality, integrity and maintainability can arise in different and intriguing forms. Similarly, whilst the means for ensuring dependability - fault tolerance, fault removal, fault forecasting - may appear familiar, precisely what these might amount to in any particular case can be problematic.

Some of these problems arise because of difficulties in obtaining useful access to user requirements with what can be very difficult user groups whereby many of the 'real world, real time' issues of dependability remain unexplored. Our 'user groups' are a hostel for former psychiatric patients and a number of elderly and disabled people living at home. Methods for eliciting needs in such complex settings are relatively under-developed. The extent to which established ethnographic methods used to understand work environments can simply be transposed to these settings is doubtful, and 'care' settings in particular represent a very different set of design and methodological challenges. Research in these contexts is often regarded as not merely difficult but often inappropriate and intrusive. The deeply personal, perhaps tragic, nature of the setting limits *what* can be investigated, as well as *how* it can be investigated, and reporting the interactional elements in a range of activities and contexts is often problematic. These and other delicate issues represent potentially obdurate problems and our methodological responses have taken a number of forms, including experimenting with combinations of ethnographic study, user-centred workshops and, the focus of this paper, the use of 'cultural probes'.

Assistive technology development in this area faces further problems in that, as Williams (REF) argues, there is no neutral language with which to begin the process of discussing care and mental or physical disability - "there is no language to talk about it that is untainted". The language and categories we use

influence both the definition of the problem and any putative 'solution'. "At the heart of the dispute ...lies a question of how one construes the relationship between the experience of impairment and the environment that constitutes the experience of disability" (Williams). So, for example, within rehabilitation the environment has been defined as a physical set of barriers; within disability theory the environment is regarded as an expression of power; whereas within sociology the environment is seen as arising out of the symbolic and social interaction. Each of these different approaches claim to provide a clearer understanding (often an 'explanation') of the situation or a problem. However, the dilemmas faced by all these approaches - in terms of influencing design or effecting any kind of change - arise out of this methodological choice to attempt to give *explanatory* accounts of social life. In so doing they are less involved with actually explaining anything than with *the form of explanation* related to *specifically sociological* concerns. Any claims to special insight are based upon categories and concepts that are often in direct contradiction to those used by people engaged in the course of their ordinary actions. Our solution to this is, of course to let people speak for themselves, to document their own experience, to tell their own stories and it is for this reason we have come to use ethnographic methods and cultural probes.

Our approach seeks " to treat practical activities, practical circumstances, and practical .. reasoning as topics of empirical study, and by paying to the most commonplace activities of daily life the attention usually accorded extraordinary events, seeks to learn about them as phenomena in their own right' (Garfinkel (1967). Disability or impairment is considered in relation to how individuals practically perceive and understand it, and how it practically effects their everyday life, not in terms of some explanatory or prescriptive model. We suggest that when it comes to mundane technological intervention in the everyday lives of the disabled what is needed is an alternate position from which to understand disability, which considers disability 'from within', attending to the members' perspectives, replacing political rhetoric with recommendations for design. In the DIRC and Digital Care projects we explore some of the methodological options open to those working in the domestic domain. In addition we highlight some of the moral and ethical components of the design enterprise. As Gitlin (1995) suggests technology can present dramatic compromises in social activities, role definition, and identity. Consequently, the challenge for the project is to provide *support* for individuals, rather than create new, technological, forms of dependence. Embodying a philosophy of care into design requires an ethical awareness and recognition of the various ways that technology can impinge on individual care pathways and a sensitivity towards the social implications of any technological intervention.

CULTURAL PROBES AND THE DOMESTIC

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

"In time the sluice gates of dammed up hurts and dreams were opened." (Terkel 1972: xxv)

The settings for our project include a hostel for former psychiatric patients; a stroke victim and her family and a number of elderly people living at home. The hostel is the first step for patients leaving the psychiatric wards of local hospitals that are currently being closed down. In the hostel residents are provided with a room and are monitored by staff. Residents may then move on to the other, semi-independent living site of sheltered housing consisting of a number of flats and bed-sits, prior to moving out to flats in the local area, or, if they are deemed to need further and continuing support, back to the hostel. The overall aim of these facilities is to develop independent living skills, to gradually introduce the patients back into the community and to allow them to support themselves. As a general, and important, principle any technology introduced into the setting should contribute to this goal in some way. A technology that merely completes a task for residents does little in promoting their independence but merely shifts reliance onto the technology. The stroke victim - Dorothy - lives at home. Since strokes can have potentially devastating effects, mediated by age, financial circumstances, living environment, family support, social position and a host of contingencies, the care setting is an important consideration when studying the everyday lives of the disabled and their carers. The majority people with physical disabilities and learning difficulties live in their own home or with family members. The impact of disabilities on peoples' lives extends beyond the sufferer and includes family members, friends and neighbours who provide informal care. These informal carers face the challenge of coping with the social, intellectual, emotional and physical demands of day-to-day support for the person with dementia.

The kinds of the research questions we are concerned with include general questions about the organisation and coordination of domestic spaces well as more specific issues to do with the availability and use of technologies and their affordances. We have been interested in how users organise their day, the kinds of things they do and how they go about doing them, their use of technology, the organisation of their personal space and so on. One way in which we have attempted to increase the repertoire of available techniques is through the employment and adaption of 'cultural probes'. 'Cultural Probes' (Gaver et al 1999), originated in the traditions of artist-designers and have been deployed in a number of innovative design projects (e.g. the Presence project) largely to provide *'inspiration'* for design activity. We use 'cultural probes' (cameras, diaries, maps, dictaphones, photo-albums, postcards etc), as a way of uncovering mundane *information* from a group that is difficult to research by other means and as a way of prompting responses to users emotional, aesthetic, and social values and habits. The probes furthermore provide an engaging and effective way to open an interesting dialogue with users. This paper documents how our probes have been provocative in eliciting some informative responses; enabling us to overcome some of the 'distance' between researchers and users, presenting us with a rich set of materials that grounds our designs in the detailed textures of everyday life. Cultural probes are one way in which we can attempt to meet what Edwards and Grinter regard as the challenge for designers:

"..to pay heed to the stable and compelling routines of the home, rather than external factors, including the abilities of the technology itself. These routines are subtle, complex, and ill-articulated, if they are articulated at all... Only by grounding our designs in such realities of the home will we have a better chance to minimize, or at least predict, the effects of our technologies". (Edwards & Grinter 2001)

Cultural Probes have recently gained some prominence as a means of 'inspiring' interactive systems design (Gaver et al. 1999). Within a domestic context, the approach is concerned to address what role technology might play in design for the home of the future and ubiquitous technologies for the home and, specifically, how it can support domestic values (Gaver 2001) and the motivations underpinning technology adoption and use. Gaver argues that domestic motivations are very different from those operating in the workplace and that in consequence we may well require different methods for 'requirements elicitation' in these settings: *"There is a danger that as technology moves from the office into our homes, it will bring along with it workplace values such as efficiency and productivity at the expense of other possibilities"*. (Gaver 2001) These "other possibilities" are characterized as *ludic pursuits* - a notion that is intended to convey and provided an orientation to the playful character of domestic life. By invoking playfulness in contrast to production and efficiency as a basic orientation to understanding interaction in the home, Gaver is not simply suggesting that we attend to whatever passes as 'entertainment'. The implications of playfulness are far more subtle and should direct our 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.

This emphasis on diversity and the personal betrays the influence of the conceptual arts on domestic probes, particular the Situationist and Surrealist schools of thought (Gaver et al. 1999). The conceptual arts are drawn upon to inform the development of probe artefacts that *provoke* and so hopefully reveal the motivational forces that shape an individual's home life. No doubt the artistic underpins the anti-scientific stance that many find appealing about the probes approach. Probes are about understanding people *in situ*, uniquely not abstractly *en masse*, and the results of the probe exercise are highly individual, emotive, idiosyncratic and revealing of participant's personal lives as these "fragmentary glimpses" of people's home lives are transformed into "semi-factual narratives" informing design. As Gaver puts it, domestic probes: *"offer fragmentary glimpses into the rich texture of people's home lives. They allow us to build semi-factual narratives, from which design proposals emerge like props for a film"*. (Equator Ref.#4)

Cultural probes: inspiration and information.

Sensitivity to the feelings of the participants who agreed to be part of our study necessarily involved the choice a range of 'sympathetic' data gathering techniques. Some agreed to keep personal diaries of their daily activities. All were also supplied with cameras and voice activated tape Dictaphone type devices in a 'cultural probe' pack. The cultural probes pack consisted of polaroid and disposable cameras and photo album, dictaphone, visitors book and scrapbook, post-it notes, pens, pencils and crayons, a set of postcards addressed to the researcher and a map. These were handed out, much like a birthday or Christmas present, and the use of the probes was explained. The probe packs also contained a set of instructions or, in the

case of the elderly, a booklet to be completed. The instructions said: "*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*". Further instructions included some suggestions as to how the various devices might be used: "*Draw on the maps, use post-it notes - indicate where you feel safe or threatened - favourite places - places you avoid*" or "*The diary can be used to record your daily events and actions as well as visitors that you get everyday. You can write in it whatever you like or wish to tell the team*". The stroke victim and her husband also allowed a researcher to record parts of the routine daily home life on digital video. Family histories and biographical background material was provided in the way of photograph albums and informal interviews. Copies of medical records and documents were also provided, all of which served to enrich the detail and scope of the ethnographic information gathered. The booklet for use by the elderly included reference to what rooms were used most often, favourite activities and activities they would like to do or miss being able to perform; the various kinds of technology in use and so on. The issues raised by an exploration of the role of the domestic environment as a technological environment resonate with many of HCI's longstanding concerns, and in particular engender an analysis of the specificities of the social organisation of the application domain [Hughes et al. 1998; O'Brien & Rodden, 1997].

Our probes, whilst apparently performing many of the same functions - photos, postcards, comments etc - were then very different from those of Gaver. Not only were they less obviously 'designed' or 'artistic' consisting of readily available commercial devices with relatively mundane instructions - no concern with lucid dreams here - but they were intended primarily as an informational input for design. For Gaver and the Presence project, cultural probes were a device for 'inspiring' design as, "*one of many influences on our design process. The cultural probes were successful for us in trying to familiarize ourselves with the sites in a way that would be appropriate. They provided us with a rich and varied set of materials that both inspired our designs and let us ground them in the detailed textures of the local cultures*". For us, while inspiration would be an added bonus, our prime concern was 'informational' - gaining some information on how these people lived their lives, their everyday circumstances, routines and rhythms, their concerns and everyday aesthetics and so on. The use of cultural probes to provide greater information about resident's everyday activities and concerns became one way of identifying and ultimately addressing some of the moral and ethical components of the design enterprise. One particular concern in these care settings is to carefully think through the complex issues of 'empowerment' and 'dependence' whilst providing support for individuals in various ways.



Photo 1: A 'probes pack'

Probing Abiding Concerns

Our fieldwork studies and the probes have indicated some major preoccupations in our different research settings such as an understandable 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 accommodation by taxi. Consequently residents are increasingly cut-off from the outside community and their friends. Amongst the elderly residents concerns about safety and travel outside the home are reflected in diary entries and are manifested in reduced social contact. These unfortunate circumstances pose fascinating, if distressing, problems for the design of domestic technologies, documenting the importance of connections between the home environment and the outside world.



Photo 2: Medication

DATE	GLUCOSE		URINALYSIS		BLOOD GLUCOSE		COMMENTS	SIGNATURE
	AM	PM	D	L	B	B		
3/20/01	145 mg/dl	120 mg/dl						9.00 C. Hopleus
3/21/01	200 mg/dl	150 mg/dl						17.00 C. Hopleus
3/22/01	145 mg/dl	120 mg/dl						8.55 C. Hopleus
3/23/01	145 mg/dl	120 mg/dl						19.00 C. Hopleus
3/24/01	145 mg/dl	120 mg/dl					Blood sugar levels not checked due to not eating breakfast	07.50 J. Hopleus
3/25/01	145 mg/dl	120 mg/dl						10.00 J. Hopleus
3/26/01	145 mg/dl	120 mg/dl						08.00 J. Hopleus
3/27/01	145 mg/dl	120 mg/dl						10.00 J. Hopleus
3/28/01	145 mg/dl	120 mg/dl						08.00 J. Hopleus
3/29/01	145 mg/dl	120 mg/dl						19.30 J. Hopleus
3/30/01	145 mg/dl	120 mg/dl						08.00 J. Hopleus
3/31/01	145 mg/dl	120 mg/dl						16.00 J. Hopleus
4/1/01	145 mg/dl	120 mg/dl						08.50 J. Hopleus
4/2/01	145 mg/dl	120 mg/dl						17.00 J. Hopleus
4/3/01	145 mg/dl	120 mg/dl						08.00 J. Hopleus
4/4/01	145 mg/dl	120 mg/dl						17.00 J. Hopleus
4/5/01	145 mg/dl	120 mg/dl						08.00 J. Hopleus
4/6/01	145 mg/dl	120 mg/dl						17.00 J. Hopleus
4/7/01	145 mg/dl	120 mg/dl						08.00 J. Hopleus
4/8/01	145 mg/dl	120 mg/dl						17.00 J. Hopleus
4/9/01	145 mg/dl	120 mg/dl						08.00 J. Hopleus
4/10/01	145 mg/dl	120 mg/dl						17.00 J. Hopleus

Photo 3: Medication Chart

Illness and medication appears another abiding interest. It is quite common amongst people with strokes for them to have other illness or associated 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. The drugs prescribed to treat both her stroke and diabetes are to certain degrees mutually antagonistic and require constant monitoring. 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 the 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 - see photo 2) must be made throughout the day and monitoring this is an everyday concern (photo 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 everyday life. Many of the residents are on daily medication regimes and expressed concern 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 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 probe packs, for example, in the postcards' persistent focus on issues of illness and pain (photo 4) and in the photo taken of the food cabinet where a list is displayed of foods the resident needs to be wary of (photo 5).

BEEN TO. MY MAM OVER THE WEEKEND
 -MY MAM WAS NOT WELL SO I STOP WISH
 HER FROM SATURDAY - MONDAY, I HAVE
 HAD SOUL-LESS FOR THE LAST FEW
 DAYS MY BROTHER IN LAW IS IN HOSPITAL
 AND IS VERY POOR, IN HOSPITAL MY FRIEND
 IS IN CARELTON CLINIC IN RAGWOOD
 I AM GOING TO SEE HIM TODAY AT
 3-30 PM GETTING THE BUS TO THE HOSPITAL
 I AM GOING TO BLACKPOOL ON WEDNESDAY
 TO SUNDAY. HAPPY TO SEE YOU SOON
 IN THE FLAT TOOK SOME PHOTOS OF THE
 FLAT.

DEAR MARK
 GOT UP TODAY AT 10 O'CLOCK GOT PAIN
 IN MY BACK AND LEGS HAD TO SAY IN
 BED A HOUR LONG BECAUSE I COULDN'T
 GET UP. TOOK SOME PHOTOS OF THE
 FLAT. GOING TO DAY CENTER THIS AFTER
 NOON MY HEAD HAS GOT A BAD PAIN IN
 MY HEAD AND IS GETTING WORSE.
 GOING TO BLACKPOOL FOR A FEW DAYS
 WITH THE PEOPLE I WENT TO LONDON
 WITH MY BROTHER IN LAW HAS GONE
 INTO HOSPITAL YESTERDAY AND IS GET
 VERY WELL SO I WILL BE GOING TO
 SEE HIM SOMETIME THIS WEEK
 FROM PETER 146



Photo 4: Postcards

Photo 5: Food Instructions

The probes also provide us with some notion of the mundane rhythms and coordination of everyday social life. The probes reveal what Zerubavel (1985) would view as the 'temporal rhythms' of social life; a notion that provides a method for us to think about activities - visiting people, going shopping, taking medication - repeating themselves over time as they get absorbed into the routine of everyday life in the domain. The notion helps us understand aspects of everyday life in these settings by highlighting its intrinsically temporal and cyclic nature. In the everyday life of the hostel residents a number of rhythms can be perceived - 'visiting' rounds, movement of residents into, around and out of the site, medication delivery, resident and staff meetings. Such rhythms were not only important to the staff for coordinating work but also for the residents, serving both a communicative and a therapeutic function. That events should happen in some sort of regular and predictable order; knowing what people were doing and where they were from the perceived orderliness of the day work was of value to both staff and residents. Amongst the elderly these 'rhythms' are detected and played out in the visits to the Church and the visits of friends and relatives that are documented in the diaries (photo 6). The rhythms of daily activity orient people to their present and future activities and requirements and such knowledge allows them to plan their activities accordingly. Current activities are crafted with an orientation towards expectations of future events - for example, knowing that a visit and talk, or a trip to the shops or the dentist etc will take place at a particular time.

Finally, what emerges from the probes is a confirmation of the home as a place that is tailored to the individual's needs, taste and aesthetic sensibility - whether this be modern art, 'chocolate-box' pictures of animals or the Royal Family. Whatever the setting what comes out of the probes is social order as massively apparent in every domain; as Sacks argues, "tap into whomsoever, wheresoever.. you get pretty much the same thing.." What has emerged from our ethnographic investigations even in a domestic setting as 'unconventional' as community care is of everyday domestic life - such as the routine taking of medication - as sets of activities made orderly. This orderliness is routinely, unproblematically, recognised and attended to in everyday life. From our perspective design is concerned with interventions into this orderliness - to supporting everyday activities in various ways by impacting on timeliness, reliability, dependability, safety or security. In this way a 'philosophy of care' can be integrated into the design of domestic environments and ubiquitous computing in much the same way as other philosophies, the 'scientific' and the 'modern' for example, have already been incorporated. Accordingly, while these are difficult challenges they should not be overestimated. Despite 'hyped-up' visions of technology as a means of completely transforming home life, successful forms of domestic interactive technologies, no matter how radical, are successful precisely because they are quite routinely, 'made at home' with the social

organisation of the domestic environment. *"The technical apparatus is then being made at home with the rest of our world. And that's a thing that's routinely being done, and it's the source of failures of technocratic dreams that if only we introduced some fantastic new communication machine the world will be transformed. What happens is that the object is made at home in the world that has whatever organisation it already has."* (Sacks) Uncovering the detailed nature of the social organisation of domestic life, is consequently, essential to both design and development and the 'probes' provide a way of getting at 'the machinery'.

Problems of probes: sore legs and naked bottoms

Of course the use of the probes has not been entirely problem free - so far one has been stolen and in another case the polaroid camera was used to take naked pictures - primarily bottoms - of the hostel residents - thereby providing, at the very least, an interesting analytic problem. It is the analytic problems that we are primarily interested in rather than the apparent 'triviality' of the data. Empirically sound investigations are very difficult, but it will be no surprise, and certainly no news, to ethnomethodology that its critics regard it as labouring over small amounts of inconsequential data and avoiding the 'big issues' - whatever they are. With probes there is, of course, a problem of confusing exactly what the data is - it is not merely the material artefacts of the probes - the tapes, the photos, the booklets and diaries - but the common sense understandings about the nature of the home and the things that are important in everyday of the people in the setting. The probes are ways in which can treat our respondents as active enquirers into everyday life as they go about the process of accomplishing it.

While we believe that overall the probes have proved successful we also recognise the need to think carefully about the claims and expectations for any method. So far, for example, it is undoubtedly the case that our respondents have enjoyed using - and misusing - the probe packs. As Gaver argues, *"They 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."* We would be wary, however, of making any claims to be engaged in 'emancipatory' research - which has always seemed to us to be an outcome rather than precursor of research. In a similar fashion, and in a response to the same critics, we would dispute any suggestion that 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 chameleon fieldworker *".. a walking miracle of empathy, tact, patience and cosmopolitanism.."* nor will we confuse experience with understanding.

CONCLUSIONS: DESIGN WITH CARE: MOVING TOWARDS APPROPRIATE DESIGN OR "NEVER MIND THE ETHNO" WHERE DO WE GO FROM HERE?

"I can tell you something but you have to be careful what you make of it." (Sacks LCI: 621)

In moving towards what might be termed 'appropriate design' - for 'design with care' - there is a perceptual shift that is required in order to determine the needs of the occupant(s) and reflect these needs within the overall design (Dewsbury 2001). In 'designing with care' inclusive design criteria are required and while viewing technology as enabling is central to the design process, it is important to recognise that inappropriate design can be debilitating and fundamentally dis-empowering. Both the overall design of the home and the embedding of 'intelligence' into a wide range of everyday appliances often appear to depend on particular, often unverified, models of the social and spatial organisation of the household and domestic activity. Understanding how technologies fit into daily routines is one aspect of design but designers also need to be aware of the broader social effects of technology. There are unforeseen and unpredictable social consequences that can arise when technology is placed into the domestic setting - and the home is perhaps an especially complex and volatile setting. When considering design for care environments, traditional technological approaches need to be supplemented by detailed investigations into everyday life and needs - and 'cultural probes may prove a useful part of the researcher's repertoire.

We have long been strong supporters and practitioners of ethnographic research - notably ethnomethodologically informed ethnographic methods. In particular we have been interested in the role of fieldwork methods in informing design; in answering those difficult questions of: *"..and so what?"* where the concern is with what the study says for design; *".. How did the study inform this.."* where the interest is in the link in a developed system; and *".. Is the application better because of the study?"* where the focus is on the justification and evaluation to emerge from the study. Today ethnographic methods and studies

are hardly new, indeed they have 'left home' and been absorbed, perhaps uncritically, into the standard repertoire of commercial consultancy and design. Today, however, there are new research challenges, and the challenge is both methodological, to move the method on, and analytic, to say something in general about design. The turn towards new methods and other disciplines to inspire and inform design is also a product of the changing technological landscape and priorities - from the workplace to the home from the desktop to ubiquitous computing and more radical technologies and adventurous visions of the future. But despite this imaginative view of future technologies, getting such dreams to 'work' generally means it must, at some point, meet the 'real world' and studies, and new engagements with users to sufficiently ground the design and it is in this context that 'cultural probes' may have something to contribute.

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