Entertaining situated messaging at home

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Abstract. Leisure computing has been traditional associated with interactive entertainment media and game playing, yet despite the penetration of computing into the home, this form of engagement only comprises a small part of how we act when we are at leisure. In this paper, we move away from the paradigm of leisure technology as computer-based entertainment consumption towards a broader view of leisure computing. This perspective is more in line with our everyday experience of leisure as an embodied, everyday accomplishment in which people artfully employ the everyday resources in the world around them in carrying out their daily lives outside of work. We develop this extended notion of leisure using data from a field study of domestic communication focusing on asynchronous messaging to explore some of these issues and develop these findings towards implications for the design of leisure technologies.

Keywords. Communication, domestic computing, ludic computing, playfulness, shared displays, situated messaging.

1. Situating leisure technologies in the home

When we speak about leisure technologies, it is important to clarify what we mean by the term 'leisure' before rushing to fill this apparent gap in our lives with technology. This somewhat obvious treatment of the term is curiously not evident in the current computer-based technologies and interactive media experiences that seem to define the literature on leisure and entertainment computing, and sadly narrows the perspective of what it might involve in the home (typically as gaming or audio-visual media consumption), and so we begin by broadening our focus on what leisure involves, and only then attempt to identify what leisure technologies might involve within a home environment. This discussion is developed through an examination of asynchronous messaging within a domestic setting, allowing us to explore some of the sociable, emotional and playful aspects of leisure communication that typically, although perhaps unfairly, are excluded from studies of workplace practices.

1.1 On leisure

Leisure, then, is commonly described as antithetical to work, and as taking place during free, or spare, time. It is generally associated with recreation, relaxation or pleasure, and is also commonly coupled with reference to unhurried activity ('at your leisure') and general idleness. We may associate it with the evening, weekends or holidays and involving life at home, with friends or travelling, in direct opposition to working hours or the working week. More problematically for design, leisure has even been characterised as involving *inactivity* – a real challenge to technology developers wishing to impose on us new tools to occupy our (clearly underused) time. So, leisure may involve actively engaged fun – the perspective that technology developers and media content providers have typically taken, but it is not exclusively about fun, excitement, engagement or action. Even accounting for its

broadening of definition, this more reflective view of leisure perspective is not an area that has been well served by recent computer-based developments. Perhaps this is one of the weaknesses of the painfully named 'funology' (e.g. Blythe *et al.* 2003) – the 'science' or study of fun, in its exclusive focus on enjoyment and the enablement of pleasure – a very restricted domain of investigation in which the more complex phenomena that compose the variety of human endeavour are excluded. Yes, we may be able to while away the hours playing solitaire, to keep up with remote family members through computer-based methods of communication, or vegetate in front of the television with any number of media viewing formats, but these technologies are not the inevitable or exclusive outcome of designing to support leisurely activity.

1.2 Leisure and entertainment technologies

The current embodiment of leisure technology is typically framed as a vehicle for entertainment, through televisual (for example as satellite television, VCRs, DVRs, DVDs) and other audiovisual media (such as music listening), or immersive gaming systems (e.g. Playstation, Xbox, Gameboy, handheld computer or PC). However, as we move away from the traditional notions of leisure computing, or more specifically of computing in the entertainment industry, we can begin to lose our preconceptions of leisure time as something that needs to be filled, typically with highly engaged play. Simple examples of this can be seen in the role that the viewing and sharing of photographs, or shared listening to music can play in the social life of the family; these are complex activities that unfold over time and may be interwoven with other activities and cannot be easily depicted as a highly focussed entertainment activity (see other papers in this issue).

Leisure and entertainment are already a part of our everyday activities, something that we regularly and unproblematically engage in and understand without reference to computer-based or audio-visual media, and it is a commonplace observation to see that we manage to entertain ourselves well enough without playing within a structured gaming environment. It is within this everyday social context that we frame our argument and seek to examine what people do when entertaining themselves within their leisure time by uncovering the activities and practices that people engage in. Problematically, the area has few clear boundaries, and typically, terms like fun, entertainment, play and playfulness, creativity, humour, jokes and joking (amongst others) are all used to encompass the domain. We use all of these terms somewhat interchangeably and loosely to explore the issues arising, although this apparently vague terminology is empirically grounded in the terminology used by our own study participants.

Studies of human activity and communication within the domain of interactive technology (such as CHI and CSCW) tend to focus on improving the effectiveness of the communication (in terms of its quality, efficiency and 'fit' with existing activities and practices), with technology designs usually, although often implicitly, expressed in terms of making communication 'better'. This is true even in instances where it is recognised that home and non-work environments are different from the workplace, and that the design and evaluative criteria used in the workplace are not necessarily appropriate. We argue here that while this is one view into what technology can do (i.e. improving the effectiveness and appropriateness of interpersonal communication), this perspective misses out a great deal about a major component of the social interaction that occurs through messaging media: people making entertainment for

themselves and others through the expression of humour and in playful creativity. This is of course true in both the workplace and the home, and is an important binding part of the fabric of social structures that we are part of. This is not to say that such leisure media and technologies are entertaining, or particularly 'fun' in themselves (and most usually they are not!), but that they allow people to artfully express aspects of their own creativity through their use for a variety of purposes.

The paper then, attempts to examine this aspect of leisure as observed in a field study of communication in the home. We focus on asynchronous messaging and the artful techniques that people employ in their messaging through the use of resources that they co-opt in their messaging activities. Moreover, we focus on situated messages – these are messages that are left in a place (not to a person) and which are interpreted as being related to that place, with all of the contextual baggage that this carries. However, before we attempt this, we outline the literature on domestic technologies used in computing to support messaging activities and the previous research that has been done on understanding communication patterns within the home to ground our own research within this broader context.

2. Communication at home

2.1 Research into home activities and communication

Disappointingly, at least for technology design, there have been few useful studies of domestic life centred on home dwellers informational and communication lives outside the literature in computer studies. Whilst home life (and more frequently, family life) has long been a topic of enquiry in the sociological and anthropological literatures, for the purposes of design, these studies have proved difficult to turn towards supporting technological innovation and understanding the incorporation of new technologies into the practices of their users' lives. Although glossing over the rich details of this previous research into home life, most of this has a focus on high level issues such as gender, childhood and cultural issues that are of less obvious concern to design, whilst others have employed statistical techniques to identify trends in quantitative data that have say little about the lived practices of those home dwellers that they document. Whilst the area has suffered from something of a lack of interest in the past within computing and technology studies, a number of recent studies of home life with an orientation towards Ubiquitous Computing, HCI and CSCW have begun to produce findings, and we have begun to build a richer picture of what domestic life, at least in the affluent Western world, may involve at a level of detail that can provide technology designers with an insight into the potential for domestic and leisure computing.

Technology-oriented studies of home life and domestic activity range across a diverse set of activities, from mediating intimacy (e.g. Vetere *et al.*, 2005) to 'mothers work' (e.g. Taylor and Swan, 2005), and calendar use (e.g. Crabtree, *et al.*, 2003) to the organisation and use of paper mail (e.g. Harper *et al.*, 2003; Crabtree, Hemmings and Rodden, 2003). The organisation of home life has surfaced as an important topic of investigation in the home, mirroring the workplace research and studies that have been influential in the design of organisational and groupware systems. Taylor and Swan (2005) provide an ethnographic account of the design and use of informational

artefacts in the home, and the 'artful' ways that these organising technologies are generated and used in scheduling, but also in an important, though less well recognised, function, in shaping the social relations between family members. Other studies, ostensibly examining the role of entertainment technologies in the home, also offer an insight into the social organisation of the home; O'Brien *et al.* (2000) thus provide a description of the distributed and co-operative nature of home life, in particular exploring the role of space, and how family members co-ordinate and interact socially around entertainment technologies, highlighting the 'natural sociality' of home life. In an entertaining and revealing ethnographic romp through a variety of homes, Bell, Blythe and Sengers (2005) expose myths about what home actually means to its members and develop a set of design criteria that go beyond the purely functional, include (amongst others) a commentary on spirituality, community, and even the consumption of pornography. They make strong reference to Gaver's (2002) oft quoted notion of ludic design, highlighting the need for designers to support people to "explore, wonder, love, worship, and waste time", although unfortunately for this paper, the field data from which this discussion is derived is not evident in the paper itself.

2.2 Computing and communication technologies at home

Within this growing research interest into the home, there is a thread of interest in which has begun to point towards the roles that different display surfaces play in the home, perhaps driven by the powerful role that displays have had in the workplace (see for example, O'Hara *et al.*, 2003). Attention has been given to pin-boards (Laerhoven, et al. 2003), fridge doors (Norman, 1992; Swan and Taylor, 2005), kitchen countertops, tables and walls (Crabtree, Hemmings and Rodden, 2003), and even floors (Harper *et al.*, 2003). Parallel to this research, a sizeable body of research has emerged on the design of digital display surfaces, although most of the existing work on public displays has centred on supporting co-worker awareness and co-ordination within the workplace, educational, or public domains, and not activity within the home. One such project that has moved electronic displays into the home environment is the Appliance Studio's txtboard. The txtboard is a slim, self-contained display device that is intended to be hung on a communally visible wall, which displays text-messages sent to a dedicated phone number. In a field study of the use of the txtboard in a home environment (O'Hara et al., 2005a,b; see also Taylor, in press), a range of important findings were revealed about its use in communication within the home, and the lived practices of the participants in the study. Messaging was used in calls for home members to undertake some form of action, in promoting awareness and reassurance, to demonstrate affective awareness through reaching out to give a 'social touch', as reminders to others, in redirecting messages, and as an information store for later use. Yet although such studies by O'Hara *et al.* and Taylor *et al.* detail studies of the conduct of family life around a public and situated display, these are constrained to a limited set of media and centred around a single electronic display, and so cannot tell us about the wider picture of display types and their use around the home.

Other projects in a similar vein include the ASTRA system (Marcopoulos et al. 2004) developing a 'home awareness' system using mobile devices to capture images, short messages and reachability information for later viewing on a monitor in the home by remote family members. This display functionality was found to be important, in that the personal effort costs put into sending the messages at an appropriate time and personalised to the recipient was highly valued, and in evaluation the system was said to have built an increased sense of connectedness for its

users. In another related example, the Casablanca project (Hindus et al., 2001) developed the idea of the media space within a home, developing an application based on a notice board metaphor, the CommuteBoard. The CommuteBoard allowed co-ordination between commuters to support sharing journeys to work, using a shared screen for drawing on between homes, with an audio-based activity monitor to support unobtrusive household activity for co-ordinating the initiation of messaging. Both papers on the ASTRA and Casablanca projects provide a valuable indication of the utility and use of such displays, but unlike the txtboard study, their focus is more on the design of the devices, and less attention is paid to the incorporation of the display into the everyday life of the home and the communication (and of specific relevance for this paper, asynchronous messaging activity) that is undertaken in this context. Similar studies have been carried out in other projects, and they all give insight into the role that displays may play in communication. Yet few of these projects (albeit with some exceptions) have attempted to go beyond the functional roles that these displays have on communication and awareness although several provide a tantalising view into how they are employed in the work of 'doing family' in passing. For example, Hutchinson *et al.* gesture towards the role that their home displays have in supporting family playfulness, but this not explored in any deep way through their analysis; this is clearly a major issue for design, yet requires a good deal more research.

Despite these various studies of communication in the home, there has been little theoretical discussion of the nature and role that display surfaces play in communication. In one of the few papers directly addressing this, Crabtree, Hemmings and Rodden comment on the role of the display as a site, or series of sites for co-ordination and communication:

> "... we consider displays as heterogeneous collections of fragmentary sites constructed where trajectories collide and where displaying goes on to provide for communication and the coordination of practical action." (2003)

Building on detailed ethnographic data, they pull out the *situatedness* of displaying activities, and this is a point of departure that we take in our research, examining how distributed and situated displays in the home are crafted towards the purposes to which their creators intend them to be used.

3. Conducting the study

The research described in this paper takes a deliberately narrow point of investigation: the use of asynchronous messaging within the home. The reason for this limited focus was scoped by its application towards the design of a multimodal messaging display to be used within the home environment and enrich domestic connectivity.[1] However, the scope of this research was not primarily to increase the quantity and quality of home-unit connectivity or activity or event awareness, but to support relationship and 'home-building' activities. This spin on the notion of display use, with its focus on relationships rather than a narrow concern with the effectiveness of communication, requires us to undertake empirical studies of what these activities might involve.

The study was based around home visits to a broad mix of 10 homes (see table 1 for more detail of the composition of these homes), made up of a total of around 40 people (with occupancy varying slightly over the study). They

included families with children, single occupant homes, homes with intergenerational occupancy or guests, and shared homes; participants came from a variety of ethnic backgrounds, occupations, incomes and age ranges, and worked in both traditional nine-to-five working patterns and in shift work, so that different patterns of communication were necessary. These homes are not intended to offer up statistical data, but to capture a varied set of domestic configurations and forms of occupancy that are more or less representative of typical UK domiciles in an unashamedly qualitative study of practice.

	Status	Male					Female					Children
		Age	Ethnicity	Occupation	Working Habits		Age	Ethnicity	Occupation	Working Habits		Age
					9 - 5	other				9 - 5	other	
1	CH	30's	BW	Sales	x		20's	BW	Administrator	x		
2	SH	20's	BW	Job Seeker	x		20's	OW	Student	x		
		30's	OW	Lorry Driver		x	40's	OB	Nurse		x	
		30's	OW	Asylum seeker								
		30's	OW	Student	x							
3	F	40's	BW	Administrator	x		40's	BW	Administrator	x		17, 18
4	MC	30's	BW	ICT		x	40's	BW	Education		x	
5	F	50's	Ch	Management		x	50's	Ch	Education		x	16
	G						30's	Ch	Accountant			
6	F	40's	BB	Artist		x	40's	BW	Student		x	10, 8, 4
7	F	30's	OW	Management	x		30's	OW	Management	x		6m
							70's	OW	not working			
8	MC	30's	BW	Education	x		30's	BW	Medicine		x	4, 7
9	SH-F	40's	BW	Student	x		40's	BW	Property		x	
		20's	BW	Musician		x	30's	BW	Civil Servant	x		
		20's	BW	Musician		x						
		20's	OB	Student (lodger)		x						
10	S, G	50's	BW	Buisness	x		50's	OW	Writer		x	

Ethnicity	
BW	British White
OW	Other White
BB	British Black
OB	Other Black
Ch	Chinese

Home status	
CH	Cohabiting
MC	Married Couple
S	Single
SH	Shared Home
F	Family with Kids
SH-F	Shared Home of Friends
G	Frequent/long staying guest

Table 1. Details of the composition of the homes under investigation

Data collection was based around a series of visits to these homes extending in most cases over two to three months. This centred on several interviews held with all of the participants (including guests and children) in their own homes, in which we also collected video recordings of the homes and message contexts of use as well as photographing the messaging artefacts observed. In order to maintain the longitudinal and contextual nature of the study, photo diaries and written diaries were used to collect a record of the participants activities and their thoughts about the messaging-related activities that they observed or were engaged in – and these were carried out by all members (including children and guests) of the homes that we were investigating. This is an ongoing project, and we have also conducted a series of technology probes (see Hutchinson *et al.*, 2003) in a few of these homes to date. Due to the everyday nature of home life and in contrast to many organisational settings, we have also opportunistically collected data from a number of other homes that we have encountered over the course of the study; these however, have been used to help inform our understandings of home life, and are not directly represented in the data reported here.

The findings derived from the study are extremely broad ranging, but we focus here on three elements that speak most clearly about the leisure-related theme followed in the paper. It is important to recognise that these elements are not all independent of one another and may well be interwoven; they include playfulness, multidimensional utility and emotion, and these are discussed in turn below.

4. Playfulness: making our own entertainment

It quickly became apparent to us that messaging within the home was being used in a variety of forms of play in the homes studied, through humorous annotation to existing messages, drawings, creative use of messaging media and content. Yet this was often had to pin down and clearly define as 'play', as it was often hard to see obvious similarities between observed instances, and often the use of these messages was more complex that the term play might suggest. Our subsequent examination of the literature on play has shown that this problem is not unique to our own research. Whilst it may be manifestly evident to an observer what play is and when it occurs, play has struggled for a definition of what it involves, and has been described as an elusive topic of enquiry. Ellis (1973) gives an excellent summary of different schools of thought and their definitions, but directs us towards an understanding of play in which a definition is counterproductive and in which play activities are non-exclusive to a single category, citing Hutt (1966):

> 'the sheer heterogeneity of this melange of activities that can be broken down into a variety of categories such as investigation, manipulation, specific and direct exploration, and epistemic behaviour, seems to preclude the general principle of arriving at general principles predicting the nature, occurrence and setting of all of these behaviours' (p.21)

It is clear that a firm definition and theory of play is inadequate, because it does not have a common role and characteristics that help to distinguish it from other activities (Millar, 1968). Millar goes on to suggest that play is best used as an adverb: *playful,* describing 'how and under what conditions an action is performed' (p.21). This sits comfortably with our everyday understandings of (typically game) playing, which may be deadly serious, and conversely, with everyday tasks and work which can be conducted in a playful way. We adopt this approach here; we are concerned with playfulness in messaging, which may extend beyond the more commonly held folk views of what the term play may mean, and the sorts of activities that are to be considered as play, be this gaming, humour, or its apparent antonym, 'work' (cf. Huizinga, 1938).

This issue of playfulness was apparent in a large proportion of the messages observed or described to us. It was most common in those households with children, both by the parents and by their offspring, but was also seen in the other homes, although it was less visible in the shared homes and between people with less social ties (such as the lodger in home 9). This playfulness covered both the topic of messages, with incitements to do playful things, and the crafting of messages. This issue of crafting playful messages could be seen in the use of unusual or appropriated messaging media, but it could also be seen in the placement of media. In one home, postcards were displayed on the toilet door, so that they could be read 'at leisure', but were also occasionally sent in the knowledge that they would be displayed in this location, and the content humorously tailored accordingly. Following McLuhan's dictum (1964), the choice of medium for the message was important in conveying its playfulness for the study participants. We have

hearsay examples of this where messages written on misty bathroom mirrors reappear – occasionally inappropriately – when they mist up again. More prosaically, messages written on generic messaging media, such as yellow post-it notes are less easy to pass off as obviously playful (and indeed, we saw this media being chosen to denote the dullness of the message, such as instructions on how to fill a washing machine) than others written on context-relevant media (such as annotated postcards and newspaper articles), or personalised media (e.g. highly coloured or odd-shaped paper notes).

In another example of creative playfulness in messaging, we have observed our participants in the homes seeking out the affordances of display surfaces to fit the particularities of the message. This was seen at a mundane level as postcards were left under a glass dining room tabletop for reading and looking at when sitting down at a meal, or the selection of vertical surfaces on walls and doors for quick message reference as they are passed by or waited beside. We have also observed this a number of times in a more playfully and creatively complex form, as paper-based messages have been placed on cooker hobs (see for example fig. 1), laptop and piano keyboards, kettle handles, and light switches: items that will inevitably need to be used and which the message will have to be 'dealt with' in some way before the object can be used. There is a degree of temporality or event-related sequencing in this, as the creators of messages are often aware of when these objects that their messages are appended to might be used, so that, depending on their choice of location, the message is likely to be read at an appropriate time.
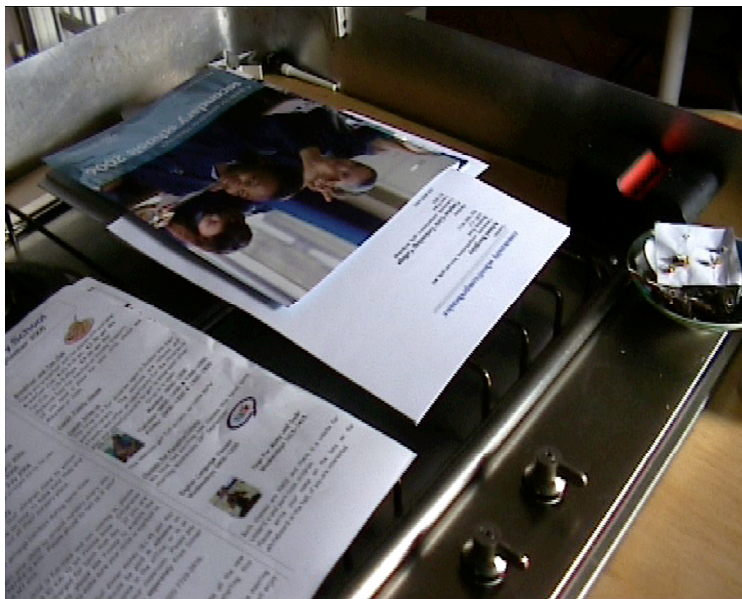
Fig 1. Paper-based material laid out on a kitchen hob

Playfulness then is clearly important in the conduct of leisure activities. Going about doing things to amuse others and to entertain themselves in doing so is an important aspect of how people spend their leisure time. Making creative use of the resources that they have available to them in carrying out their activities (in this instance, messaging), is likely to be seen as something that gives them the ability to be playful: standardising methods of

action are both likely to lead to both diminished effectiveness in communication, but also an impoverished leisure experience as there is little opportunity for people to make entertainment out of their everyday accomplishments.

## 5. Multifunctional utility: leisure and domestic work

Leisure time in the home is rarely spent without some form of domestic responsibility, and indeed this is the case for all socially competent of the members of the household, and it is apparent that there is likely to be an interweaving of the functional with the less obviously functional, sociable, emotional and playful aspects of leisure. This area of interweaving messaging forms across variety of uses is explored in this section, showing how leisure and non-leisure activities may be bound together through the messaging practices employed in the households studied.

Developing this argument from the previous section, an aspect of playfulness that we observed lay in people creatively making use of a message to act in more than one capacity, perhaps to simultaneously poke gentle fun at another household member, provide a reminder to them about something that they had forgotten, give them a gentle rebuke or feedback on an inappropriate message that they have posted, or to deliberately demonstrate an emotional response to another family member, whilst at the same time telling them about some functional issue in the home. Here we can see users playfulness expressed within aspects of more functional communication about things and events.

There were many instances of doodling on message boards (as whiteboards or chalk boards) and on existing paper messages posted in public places, intermingling functional information about the organisation of home life with more entertaining aspects of use. An example of this was in a home where the parents had covered an entire wall in their living area with blackboard paint (see figure 2). The top level contained information that the mother referred to every morning, while the areas that were accessible to the children were highly volatile over time, and were heavily annotated and drawn over. A great deal can be seen going on here: the display functioned as an organisational medium for planning children's activities, in general home and activity awareness, in use as a dynamic to-do-list, with different media incorporated into the display (a child's sticker incorporated into the display can be seen on the left, circled). The wall was explicitly intended for multi-person use: it was collectively understood to be used for play, and allowances were made for playfulness in the control that parents operated over it. This was mediated by the affordances that the elevation of the display offered through height access, as the children could not easily delete, write on or over those areas they could not reach.

One of the widely used messaging centres (or 'centres of co-ordination', Crabtree and Rodden, 2004) found in the homes was on the door of the refrigerator through the use of magnets (see also Norman, 1992 and Taylor and Swan, 2005). Besides the usual information of charts, travel itineraries, urgent bills and shopping list, various other magnetic artefacts find their way there, fridge magnet 'poetry' (a genre of magnetic words or letters in different styles that can be arranged to form sentences) were commonly seen. Social interaction around this can be seen in various ways: it can be used to show love and affection, humour, or sarcasm, but this can also be used (created or

modified and subsequently, interpreted) to depict the 'mood' of the person creating it if this is indicated in the content of the text, or of a more general mood in the home at a specific point of time.
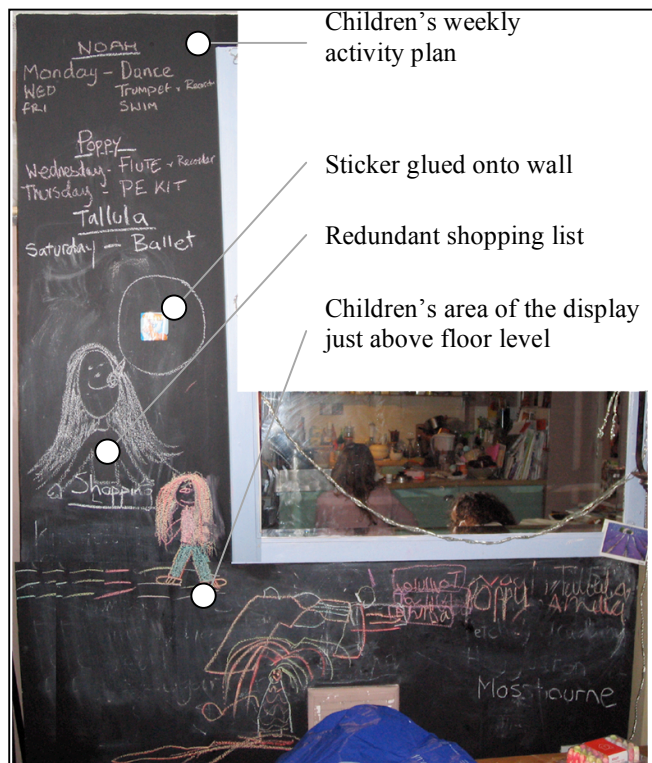
Fig 2. Blackboard painted wall from home 6

This playfulness within utility appeared in a number of guises, even in the way that items as mundane as shopping lists were written: in one, we saw "loo rolls" (toilet paper) with the "oo" dotted to appear as eyes and the 's' elongated to look like a smile underneath them; in another case, as one partner was vegetarian (male) and the other (female) not, they referenced ready meals as 'girly' and vegetarian meals as 'boy's' on the shopping list. Whilst these may appear as extremely mundane and everyday findings, which importantly, we would argue that they are, they serve to illustrate precisely the kinds of activities that make a home what it is: these are activities that are deliberately intended to be read as playful, and to visibly express the social relationships that exist within the setting.

6. Displaying care: physical embodiments of affection

Leisure activities are seldom carried out entirely in complete seclusion from friends and family, and whilst they may be carried out alone, they often reflect the social and familial ties that people are bound within. One of the features of domestic life that we observed was in the way that messages were crafted in response to these social relationships. Other authors have pointed out the role of situated messaging in their expressions of love for one another, and in relationship management: in their evaluation of Homenote (see Taylor *et al.*, in press; also O'Hara et al., 2005a,b), messaging is used to demonstrate affective awareness through reaching out to give a 'social touch', as reminders to others.

Our own studies of messaging in the home picked up on a number of these issues, and it was common to see and to have messages described to us showing that the communication was done with care and affection, and not just as a functional communication procedure. This crafting could be carried out through a number of ways, in an explicit social touch (e.g. 'I love you', 'thinking of you'), but more commonly in an intangible form, in which the nature of the content, the presentation of the content, or the media of the message were selected to demonstrate that particular care and consideration had been paid in initiating and constructing the communication artefact, although this might not be explicitly recognized in the nature of the message itself. This was reflected in diverse ways, from the timing of a text (SMS) message so that it arrived when it was most appropriate, to the obviously time-consuming collation of a variety of documents together in a tabletop display so that they could be referred to in combination with a handwritten note.

In an example of this in messaging displays, we have seen examples of shared calendars in which (in all instances reported) the mother keeps track of activities and appointments for the entire family. What is interesting within these managed calendaring systems in the home is that the calendars are rarely, if ever, examined by the other members of the home: "*she has one, but no one ever reads it…it's never out*" (daughter, home 3). The owner of the calendar therefore has to communicate the information held on these calendars to the other members of their family as the events recorded on them become relevant: the calendar acts as a driver for communication, as is not a communication media in itself. In a sense, the mother is doing what mothers have long been expected to do, caring for their family, in this case, by helping to plan their time. Messages of all kinds would then need to be communicated by the mother to the family to remind them of upcoming events listed in the calendar; yet it was not that the calendar was not known about by the rest of the family, but that they were happy that this should be carried out by the mother, and that the mother was happy to 'gift' this organizational work for her family. This 'gifting' (cf. Taylor and Harper, 2002) of effort in creating displays and messages is an important one, because it allows people to express their love and affection for others in a practical way – it is more than simply saying 'I love you', it is a practical demonstration of this as a physical embodiment of the care and affection of one person for others.

7. Design implications

The study of messaging use in this paper has implication both for leisure-based messaging and communication systems within the home, but it also carries implications about leisure technology in a broader context of use outside the home. The activities that we have described here have involved household members creatively making use of the resources around them to entertain themselves, and the others around them. We have seen from our research that playfulness and entertainment behaviours do not necessarily involve game playing, at least as a formalised turn-taking activity, with a final result, a winner or a loser. More commonly, we have seen people making play with and through technology for a variety of social and individual purposes. Of course, this does not need to just cover the home: there is no reason to suggest that playful systems could not be beneficial within the workplace (see for example Abramis, 1990), public spaces, or other settings, although these environments may have different design

constraints, from the forms of play, numbers of users and social contexts that these activities are interleaved with. Here lies a serious point for technology designers: systems that open themselves up for, perhaps unanticipated, use (cf. Robinson, 1993) give their users a powerful tool for artfully integrating them into other practices, a good deal of which, at least in the home, are playful and entertainment-related. By allowing users to generate, co-opt, display and annotate a variety of media we can give them the resources to do many forms of communication, one of which is the ability to support play and more importantly, playfulness. And whilst play does require social rules, it is the very socially constructed nature of these rules, and not their technological embodiment, that makes them powerful, and allows them to be applied in a variety of ways. We would therefore not encourage strong rule sets that form 'methods' of play, but would rather allow these to be generated on an ad hoc basis, and to draw from the existing social practices around messaging that household members already use in their everyday lives.

Whilst we do make a case for opening systems up to 'ludic' use (cf. Gaver, 2002; Huizinga, 1938), care may need to be taken in managing these systems. There are 'humorous' activities that may be deemed unacceptable within the home, such as commenting on what are deemed as sensitive topics (e.g. sex, death, drugs), or where such messaging might be used for bullying, or even where parental or another shared occupant prying into previous events was deemed to be inappropriate. These concerns give rise to management issues, not necessarily of content control, but of content management – who can access and delete electronically held information – when there may be no clear boundaries about what content is allowable, or who can access information held on it. Of course, this is similar to a paper-based system, many of which we have seen in the homes we visited. But there is a difference here, in that electronic systems can be invisible to external monitoring and 'social' policing (as with SMS text messages and Internet chat rooms) and thus are open to what may be deemed as less responsible patterns of use. We need to recognise that messaging, like other leisure activities also takes place within environments that children can inhabit, as well as the adults that such technology is typically marketed at, and the concerns that we have of children, and the behaviours that they exhibit are different to those that we have of the adult worlds of work (at least those outside of childcare and education).

A final point that can be made here is that the approaches that we have within the usability engineering techniques currently in use for technology development, the fundamental criteria that we have for developing such systems are inappropriate practically unsuited for the development of leisure technologies. In the context of productivity computing, articulated as it is around a mantra of efficiency, effectiveness and usefulness, the concept of leisure computing is a problematic one (see also Crabtree and Rodden, 2004). How we allow people to be playful, to connect their workaday and leisure activities, and to express their social and emotional lives is not one that we can use the design and evaluative criteria that we have developed over the last twenty years within interface design. We need to develop new criteria for assessing the appropriateness of leisure technologies that can be fed into the design process, and those centred around 'usability' clearly are inappropriate in this case.

8. Conclusions

We have attempted to provide in this paper an indication of what a leisure technology might need to support, extending this beyond the scope that the current notions of leisure technology have been presented to us as consumers. Looking at what our lives at leisure actually involves can provide a richer insight into our activities that need support and particular care in the design of leisure technologies that fit with our leisure practices. Alongside this critique of the current paradigm of what leisure technology is, the dictionary definitions provided of leisure are limited in telling us about what it involves at a practical level. The notions of slacking, being 'offline' and 'downtime' that form a part of what the term leisure is considered to mean are clearly limited, and not all domestic life could be described as slow-paced and leisurely. On occasion, our leisure time at home may be extremely frenetic, more on a par with what we would conceive as the time-pressures and business of the workplace. It would also be a mistake to say that the forms of leisure activities practiced within the home are universally 'fun' or good humoured for all of those involved. The everyday expression "making fun at someone else's expense" illustrates this quite clearly: we may well remember from our own experiences when we were the butt of someone else's fun, or where we provided amused entertainment for others unbeknownst to ourselves. What is important here to recognise is that there is an element of creativity in our 'making fun' – the juxtaposition of unlikely ideas together, drawing of satirical pictures or scribbled comments, displaying annotating pictures, posting of puns, jokes and humorous materials in shared social areas, and so on. That these materials may be used in non-trivial ways, from what we might consider as positive (e.g. building a home or family identity) to negative (e.g. bullying) does not concern us here, and we remain deliberately non-judgmental about this, at least in terms of our definitions, although, as we have shown, the uses to which messaging displays may be put may have implications for design.

The notion of leisure entertainment that we are attempting to convey here is not that these artefacts are funny by themselves (perhaps by an inept mistake of their creator), but that they are deliberately *designed to entertain* by their creators. To complicate the issue, the notion of entertainment is not always the primary purpose of the messaging act, and the entertainment value may itself arise out of cleverly wrought materials. Moreover, what is designed to entertain, may not be a) recognised as such (e.g. it was not seen to be funny), b) as being intended to entertain (e.g. by missing the point of a joke), or c) as something that people might want to recognise as entertaining (e.g. as in the case of sexist/racist jokes). Notably in these instances, it remains the *intention* of the actor to be playful, and this is the issue that we wish to explore here, and not the perceived value derived from the recipient/s (intended or not) of that message. It is this intentionality, and the provision of resources to creatively support this intentionality, that are of concern to us here.

Beyond the notion of leisure as entertainment, we also see leisure as bound up within social and family relationships. How people use their leisure time to build and cement their social relationships is clearly a very important one, even at the simple level of asynchronous messaging that has been examined in this paper. As with the critique of entertainment as not necessarily being a highly engaged medium, we can also see this as true for the emotional aspects of leisure. The role of visibly making an effort in a messaging display to demonstrate an emotional

relationship is an interesting one, and clearly extends outside of domestic messaging behaviour. Of course, how time and effort can be embodied through electronic media is not an easy transition to make, but it is certainly one that deserves consideration in the design process for leisure technologies. How emotional relationships can be demonstrated through the media and artefacts that we utilise in our leisure time is clearly important to us, and is what occupies a significant proportion of what we, as socially competent actors, do during the time that we have with our friends and families.

Notes

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