

Being-With: A Study of Familiarity

Abstract

How people learn to use an interactive device has always been an important field of research in human-computer interaction (HCI). The theoretical bases of which have ranged from the traditional cognitive perspectives through situated learning to collectivist - social perspectives. Each of these has treated learning to use interactive devices in a typical dualistic manner with a clear distinction between “man and machine”. However, in addition to simply using interactive technologies we also co-exist with them, a relationship which might be called *being-with*. For many of us, interactive technology has always been there (we are born into a world replete with it) and we have a deep familiarity with it. Familiarity, according to Heidegger, is non-dualistic; it is a fact of our existence, of our worldliness; it is one of the primary ways in which we relate to the world, and offers an alternate basis for thinking about how we learn to use technology. An empirical study of familiarity is presented involving a group of seniors learning to use a personal computer and the services it provides. The analysis of the resultant substantial body of interview and discussion group data lead to the conclusion that to become familiar with technology is to integrate it into one’s everyday life - an everyday life which is correspondingly reconfigured. Specifically, learning to use these technologies is better seen as changing the practices of everyday life to accommodate them. This dimension of *being-with* potentially has significant consequences for very many aspects of HCI. So, in addition to designing for ease of use; designing for experience perhaps we should now add designing for *being-with*.

Keywords: being-with, familiarity, learning, qualitative analysis, Heidegger, Borgmann.

1 Introduction

Human-computer interaction (HCI), by definition, has focussed on the nature of interaction which is the principal relationship between people and computers. Initially this focus was solely on usability (e.g. Nielsen, 1990) now it is recognised that the overall experience (e.g. McCarthy and Wright, 2004) with interactive devices, including fun (e.g. Blythe *et al.*, 2003), aesthetics (e.g. Petersen *et al.*, 2004), affect (e.g. Norman, 2005) and so forth should also receive their due attention. Despite this expansion of context, HCI is nevertheless predicated on optimising the *design* of the interactive system to reflect its *use*, and the resultant experience.

However given the intimacy of interactive devices in our everyday lives, appearing as they do in almost every aspect of what we do perhaps it is time to consider whether *use* or *interaction* adequately describe this relationship. It is not so much a matter of how we *use* them but the recognition that we co-exist *with* them. In identifying the relationship *being-with*¹ we are potentially faced with a whole host of new challenges for the designer, evaluator and theorist, not least because technology has been shown to have a significant effect upon the ways in which we think and act (Heidegger, 1977; Burke and Ornstein, 1997; Nye, 2006). Let us take a moment to draw a parallel with the motor car: it is fair to say that most, if not all, of the usability problems have long been resolved (*cf.* synchromesh gears; seat belts) though aesthetics, image and price remain hotly contested. But we simply don’t use (drive)

¹ It should be understood that *being-with* is conceptually different from ubiquitous computing. Ubiquitous computing (Weiser, 1991) refers to an account of HCI in which information processing has been embedded into everyday objects and activities. In contrast *being-with* is the recognition that our everyday lives are filled with technology. Sitting here in my study, I can see my laptop, laser printer, external DVD writer and a wireless router. None of these could be described as examples of embedded (and hence ubiquitous) computing but all of them are everyday items.

cars, we have also learned to live *with* them affording them significant proportions of our towns and cities; we drive them despite the fact that they kill thousands of us each year and contribute pollutants to the environment; some of us use them to signal our status to others and it is not unusual for people to admit to loving them. Similarly for interactive technology: this year's mobile phone announces one thing about us while last year's model says something else (e.g. Liu and Donath, 2006); being a Mac person is different from being a Windows® user (e.g. Kahney, 2004); and a word processor is not just a typewriter with added features – its has replaced the typist, empowered the semi-literate and enslaved the academic (Zimmerman, 1990). Online social networks have similarly changed the way we interact with our friends and given us the opportunity to experiment with our identities (e.g. Turkle, 1995) while a report in the Guardian newspaper claims that the World Wide Web has now become feminised (The Guardian, 2007). There are, of course, myriad other examples of this non-neutrality of technology. However to understand *being-with* may well require a fresh vocabulary or a new theoretical / explanatory framework and perhaps new practical design and evaluation tools. A potential starting point might be the work of Albert Borgmann, an American philosopher of technology, who has developed a number of interesting concepts drawing upon the work of Heidegger. This research has also found empirical expression in Scandinavian Informatics (e.g. Croon Fors and Nyberg, 2002; Croon Fors and Stolterman, 2003; Croon Fors, 2006) to which the interested reader is directed.

So what is meant by *being-with*? A number of philosophers have noted that technology does not simply make tasks more efficient, it changes the underlying human practice. Zimmerman (1990: 205-7), for example, writing on Heidegger's attitudes to technology notes that he objected to the use of typewriters to produce personal letters. Heidegger argued that as handwritten letters take longer to both read and write they necessarily require more conscious thought and involvement. The introduction of this technology has changed the human practice of putting pen to paper and with it many of its intellectual and affective components. Borgmann has made similar comments on the subject of domestic heating by contrasting the difficulty of maintaining a fire with the convenience of a modern domestic furnace (central heating). The former practice is contingent - cutting wood according to the changing needs of the household, as compared with setting a thermostat and timer. In all, new technology is often treated with suspicion. Zimmerman neatly describes this, in this case of air travel, in the following terms, "If god had wanted us to fly, he would have given us wings" (*ibid*: 2007). Nye (2006: 199) makes a similar point when he notes that "a child born since 1950 finds it 'natural' to use electric lights, to watch television [...] and to use satellite-base communications. That child's grandparents regard such things as remarkable innovations that had disrupted the normal". In addition to this loss of these 'authentic' practices, technology, it has been argued, forces us to treat the world and everything in it as a resource to be exploited.

Borgmann's concept of the *device paradigm* is of particular interest here (Borgmann, 1984). The device paradigm is an account of technology use in which people treat it purely instrumentally, that is, as merely a means to an end (and with little regard for the means). Technology, for example, makes the procurement of goods "instantaneous, ubiquitous, safe, and easy" (Borgmann, 1984: 41) – witness the convenience of online shopping. As part of this discussion he also distinguishes between commodities and things, a commodity is a context-free entity isolated from traditions and customs. A thing, in contrast, is capable of engaging and connecting with us. So, for example, a hamburger bought from a chain is an example of a *commodity*, whereas a home cooked dinner is a *thing*. Hamburgers are seen to be uniform, safe, reliable and quantifiable (though may be seen to be contributing to the homogenization of society); while a home cooked dinner relies on the skill of the cook, the availability of ingredients, time, effort and is an experience not easily susceptible to quantification. One is packaged and delivered (often in an opaque wrapper) while the other is open to inspection, modification and even participation. In the context of interactive technology we now buy and use

mobile phones, laptops, MP3 players and so forth (often from supermarkets together with the weekly groceries) which are known to be safe, reliable and usable without necessarily having the faintest of ideas of how they work. Yet less than 20 years ago it was not only commonplace to tinker with one's PC (personal computer) but often absolutely necessary. Many of us will remember debugging the `autoexec.bat` and `config.sys` files to resolve conflicts in, for example, loading devices into memory. Information technology, in those days, was a *thing* requiring familiarity with its operation. In contrast, today there is an increasing dichotomy between the user interface and the 'black box' which lies beneath. For example, the appearance of the special folder *My Documents* as part of the Microsoft® Windows 95™ operating system served not only to emphasize ownership (together with *My Computer* etc.) but also to distinguish clearly between the users' data and systems folders where tampering is discouraged. This should not be read as a nostalgic plea for the 'good old days' but a recognition that people widely accept automatic control (e.g. the "automatic pilot" on aircraft; driverless trains; cash dispensers) despite the fact that these systems are deliberately opaque and their operation is increasingly *unfamiliar*. It is this theme of familiarity which is now considered.

1.1 Defining Familiarity

Familiarity is a thorough knowledge of, or an intimacy with something or someone. The etymology of the word indicates that it is from the same root as *family*. Familiarity is commonplace and everyday, indeed we are warned that it breeds contempt (Publilius Syrus) - and children (Mark Twain). Aside from familiarity as intimacy, it can also be used to indicate a passing acquaintance. For example, cabin crew routinely ask passengers to locate the emergency exits as they may not be familiar with the layout of that particular aircraft. We also invite participants in laboratory studies to familiarise themselves with the experimental setup (e.g. Lim *et al.*, 1996). Yet familiarity, in either sense, is not a concept which has received sustained attention in the field of human HCI excepting perhaps our recent work (e.g. Turner and Van De Walle, 2006; Turner *et al.*, 2007). In approaching its study we have sought a more formal definition of the concept and for that we have turned to the writings of Martin Heidegger. Winograd and Flores in their *Understanding Computers and Cognition* (1986) are usually credited in bringing the work of the philosopher Martin Heidegger to the attention of the HCI community.

Heidegger is most famous for his major work – *Being and Time* (1927/1962) which is primarily concerned with the question, 'what does it mean to exist?'. By posing this fundamental question, Heidegger shifts the focus of attention from the theoretical to the practical; from the cognitive to the phenomenological; from abstract knowledge to the practical and everyday. Heidegger argues that Western thought (and by extension HCI) places greater value on the abstract and theoretical while our real focus should be on the mundane, everyday and concrete.

For Heidegger, familiarity encompasses the ideas of *involvement* and *understanding*. Here involvement may be taken as something approaching a synonym for 'being-in-the-world' while understanding should be interpreted as 'know-how'. Dreyfus (1991) notes that "This know-how ... is more basic than the distinction between thought and action" and describes human beings as "We are such skills", thus directly equating humans with our know-how. In these terms, understanding interactive technology simply means being able to use it (i.e. demonstrating our familiarity with it). We use these skills to cope with the world which, according to Heidegger, has three key characteristics. Firstly, it comprises the totality of inter-related pieces of equipment. Each piece of equipment being used for a specific task – hammers are for driving nails into wood; a word processor is used to compose text. The second 'component' of the world is the set of *purposes* to which these tasks are put. Of course, while we cannot meaningfully separate out purposes from tasks in these (non-Cartesian) worlds we can recognise that the word processor is used to write an academic paper for the *purpose* of publication and dissemination. Nails are driven into wood to provide illustrations for

philosophical discourse. Finally, in performing these tasks we acquire or assume an *identity* (or identities) as carpenters, academics and so forth. In using these concepts and viewpoint we are moving away from thinking in terms of *what* are the nature of things (and ourselves) to *how* we manage and cope with things. More generally, we demonstrate our familiarity with the world by coping with situations, tools and objects or more specifically by our understanding of the *referential whole*. The *referential whole* as Heidegger (1985) notes in his *History of the Concept of Time* (HCT) is described as:

‘My encounter with the room is not such that I first take in one thing after another and put together a manifold of things in order then to see a room. Rather, I primarily see a referential whole ... from which the individual pieces of furniture and what is in the room stand out. Such an environment of the nature of a closed referential whole is at the same time distinguished by a specific familiarity. The ... referential whole is grounded precisely in familiarity, and this familiarity implies the referential relations are well-known.’

HCT 187

This contradicts the view which assumes that we have to synthesize a ‘manifold’ of things, perspectives and sense data. Instead Heidegger argues that we simply perceive the room’s *Gestalt* and in doing so we are able to deal with its contents through our familiarity with other rooms. Familiarity is then a ‘readiness’ to cope with, say, chairs (e.g. by sitting on them) which has developed from our earliest days. Heidegger describes this readiness as ‘the background of ... primary familiarity, which itself is not conscious or intended but is rather present in [an] unprominent way’ (HCT 189). Thus, assuming that we are in the world of modern computing, when we enter our places of work we see desks, chairs, computers, network points and so forth. We do not perceive a jumble of surfaces, wires and inexplicable beige boxes (unless we have just been burgled). However, if we are not in this world the scene might indeed appear chaotic and meaningless.

1.2 Familiarity and HCI

More than twenty years ago Bewley *et al.* (1983), writing of the four design goals which were adopted in the design of the legendary Xerox Star’s user interface, noted of the first of these, “There should be an explicit user’s model of the system, and it should be familiar (drawing on objects and activities the user already works with) and consistent.” *User model* and *consistency* have received abundant attention, familiarity scant. However familiarity is explicitly linked to the users’ world of objects and activities. Similarly, Raskin (1994) in a short essay on what *intuitive* means when attributed to a user interface equated it with *familiar*. He writes that a user interface is ‘intuitive’ in as much as it resembles (or is identical) to something the user already knows. He continues “In short, *intuitive* in this context is an almost exact synonym of *familiar*”. In much the same way, Mackay *et al.* (1998) describe an augmented reality (AR) prototype designed to support air traffic controllers and their interactions with paper flight strips. By adopting an AR approach they sought to avoid the problem of “forcing an abrupt change in the controllers’ familiar styles of interaction.” Similarly Kasabach *et al.* (1998) have reported the development of *digital ink* which combines the familiar (ink – everyone uses a pen) and the new (digital media). Digital Ink is described as a writing tool that “both understands people’s handwriting, and allows them to turn any writing surface into a personalized interaction surface”. A little more theoretically, Lim *et al.* (*ibid*) use of action identification theory as a framework for understanding why direct manipulation is a successful interaction style. This theoretical framework suggests that when performing a task, people identify the task at a particular level of abstraction, depending on, among other factors, their familiarity with it. Highly familiar tasks are identified in terms of what needs to be done while less-familiar tasks focus on how the task is to be accomplished. Action identification theory is itself based on the treatment of attention from the perspective of automaticity, that is, the extent to which tasks become automatic with practice (or familiarity). Familiarity (e.g. Freeman *et al.*, 2000) also appears as a content factor in presence

research. Presence - thinking or feeling oneself present in a virtual environment - is treated as a multi-factorial experience and familiarity with the (virtual) medium being one such factor. The degree to which one is familiar with the medium or substance of the virtual environment is believed to be a significant factor in the experience of presence. Finally, manuals are another means by which people learn to use an interactive system, and typical example is the *NASA Project Gemini Familiarization Manual* (McDonnell Corporation, 1965). This manual is a description of the spacecraft's systems and "... The manual is intended as a familiarization-indoctrination aid and as a ready reference for detailed information on a specific system or component." Indoctrination – a word more usually associated with all encompassing teachings and beliefs – conveys the practice of “over-learning” by which the astronauts became ‘one’ with their spacecraft. Having reviewed the nature of familiarity, we turn to the case study.

2 A Study of Familiarity

This section describes an empirical study of familiarity. One of us (Van De Walle) undertook the teaching of a group of seniors at their residential home (“Redhouse”) as part of the MITS initiative supported by Age Concern Edinburgh (a charity working for the needs of the elderly). MITS (Mobile Internet Taster Sessions) provided an opportunity for a group of older people to familiarize themselves with computers. MITS ran for ten months.

The computer lessons were delivered in Redhouse's common room which is furnished with chairs, armchairs, tables and other pieces of furniture, including a piano. The residents take their lunch there twice a week. The computer was placed against one of the walls, away from the chairs and the tables, next to the main entrance to the room. Forty people registered for the lessons thus forming the *Redhouse Computer Club*. People were taught in groups of 8 or 9.

The purpose of the lessons were as follows: (a) to overcome anxiety and to realise the fun that can be had from the computer in a relaxed and informal atmosphere; (b) to explore what the computer could do and be confident in basic commands and file management and (c) to introduce word processing, email and the Web. Every group received a one hour lesson every week. People were taught in groups of 8 or 9. In August, lessons decreased to half an hour per week as the long lesson had proved too tiring. In September, the frequency was again reduced to one lesson in a fortnight for each group due to other commitments.

Of the forty computer club members, twenty volunteered to take part in this research. Initially, only one group discussion was set up, which the twenty people have attended for four sessions. However, tensions within the group quickly arose, this was because of discrepancies between participants' situations and expectations in relation with computers. Some participants highlighted that others were more advanced than they were and that the interventions of the more advanced in the discussions were not relevant to them, or simply were not making sense. The participants were then offered the opportunity to register either to the Wednesday group for “complete novices” or to the Thursday group for “advanced novices”. The two discussions groups met regularly, first on a weekly basis then every fortnight for between 60 to 90 minutes. Around twenty people attended these discussions, some regularly, others less so. Of the twenty participants in the group discussions, fourteen were also interviewed individually. Interviews were recorded and transcribed in full. In total more than seventy hours of interviews and discussion were recorded.

3 Data Analysis

Seventy hours of recorded interviews and discussion is a very substantial volume of data and because of this only a fraction can be reported here. All transcripts were read thoroughly and notes made of topics and themes as they occurred. The set of potential themes was reviewed for duplication and

edited appropriately. As in much qualitative research, the process is fundamentally interpretive: meaning is often implicit and can only be understood through familiarity with the entirety of the data. This approach is consistent with Pollio *et al.* (1997: 37) who describe the process of *hermeneutic data analysis* as “interview data are treated as a ‘text’ presenting a complex network of internal relations such that no single aspect may be understood independent of reference to the text taken in its entirety”. This process was supported by the data analysis tool - SATO - is discourse analysis software created by François Daoust. Having identified a number of candidate themes these were compared with each other and refined until their underlying organisation emerged. These themes are: *The Meeting of Two Worlds*, *Computers are Part of Modern Life*, *Participating in The Modern World* and *Reconfiguring One’s World*.

3.1 The Meeting of Two Worlds

Participants (identified by their initials) acknowledged the existence of a new, unfamiliar, technological world. DW talked of a “*technological age*”, MK of a “*technological world*”, IB and MK of an “*electronic world*”. According to MK and MTu, the modern world is also a “*global world*” and those who inhabit it are “*global beings*”.

MK: “Hum, for a start, it is a global world, on a magnitude that we simply did not understand or contemplate in my youth. It’s a technological world, as IR says, where you can fight wars with half a dozen men in a tent.”

MTu: “And above all it is a faster world.”

MK: “It’s a faster world, yes.”

Thursday discussions (1st May)

MK stressed that a new world has emerged and that it extends far beyond the sphere of computers and technology, affecting virtually every aspect of life.

MK: “... I am standing at a point where I see a new world in every aspect, as I say, whether it’s sport or religion or politics, or cooking or the telly or anything ...”

And

MK: “I’ve got a quote from yesterday’s paper. Now, this is not limited to computers. It’s something that I have come across in all sorts of other fields. “The fact is that the world goes quicker and the amount of information available increases exponentially. There is only so much we can take.”

MK: “I am being dragged, kicking and screaming into the new world by my family, who started me off on the movement out of the old world a long time ago. And in that respect I think that I am better placed than most to make the transition.”

Thursday discussions (1st May)

Participants made it clear that they did not belong to this modern technological world. NS, IR, and MK commented on the novelty of the new world and the depth of the rift between the old and the new (NS: “*it is a completely new world*”). Contrasting the new and old participants said that while the former involves mostly dealing with technology, the latter involves dealing with people. Beyond human relationships, IR also pointed to the predominance of language in his life, both oral and written. When JC declared “*there was nothing technical in my world*” or “*I haven’t used that much in the way of technology*”, she expressed a feeling common to many of the participants in noting that technology had only a peripheral role in their lives both at home and work (prior to retirement). Indeed their jobs had mostly involved other people. For example, JC had a guest-house so she “*was familiar with the people coming and staying*”. DW and NS had been involved in social work, NS working directly with people and DW more on the administrative and management side. DW also “*studied quite a bit (...) on*

holy scriptures of different faiths” which is “*far from technology. In fact, it really is far*”, involving “*a different use of one’s brain*”. IR was a priest and a broadcaster; SC was a doctor. MTu was a secretary after she had trained and practised a few years as a lawyer. In her job everything was done by hand. With such backgrounds, participants such as DW could say, “*technology has not been part of my life*”. Echoing JC and DW, NS reported that she had “*no experience whatever with technology*” and that she sees it as “*a completely new thing*” to which she “*hadn’t paid much attention*” and “*I haven’t even touched a typewriter*”. However all participants were familiar with domestic appliances but many found new electronic models of washing machines rather daunting. Their domestic appliances were, perhaps consequently, quite old. DM reported having an eighty year old hand sewing machine still in working condition and that she wanted to sell it because she could not lift it up from the ground on the table any more. She indicated that “*anybody who bought it could fit a little electronic thing on*”, allowing it to be updated. Almost all participants had a television and/or a radio and a telephone. However, most had had a television for a very long time. For example, DM’s parents bought their first radio in 1939 when she was nineteen years old and she only bought her first television in 1969, when she was fifty-two years old. She observed that she “*come(s) from a very un-mechanically and un-technologically minded family*”.

3.2 Computers are Part of ‘Modern Life’

Participants noted that computers have become ubiquitous and were actively defining modern living. For example, JC stressed that “*everything is computerised now*”, adding that “*It’s a part of modern life*”. She mentioned the use of computers for library catalogues and people accessing web sites for information. Other participants (e.g. SC, NS, NM) commented that computers are now used by doctors for consultations as well as by staff in hospitals and in banks. Consequently people have to be computer literate in order to be employable, and that many people were retiring in preference to learn about computers when these were introduced to their places of work. Computers are also seen as part of new methods of communication.

SC: “I think that in the future we are going to need it. Perhaps we don’t need it now but we will in the future, like we needed pen and ink. Now we have letters but soon we won’t use letters because we will be using computers.”

Wednesday discussions (19th March)

Computers have also become part of the everyday life of a variety of communities to which some participants belong. For example, NS is a very committed Quaker. The Edinburgh Quaker branch, to which NS belongs, had recently acquired two computers. These are used to take minutes of meetings. This innovation has significantly affected NS’s ability to maintain her previous level of participation to the Quaker community.

NS: “at [Quaker] meetings, the young people say, “Oh, I didn’t download that and this” or “It’s not on the floppy disk”, this sort of thing. And I just had to think, “Well, I don’t know what you are talking about”. But it distracted me from the meeting because I didn’t know what they were talking about. It would have been better if I had understood.”

And ...

NS: “Well, I missed out on a lot, you know. I wasn’t getting a clear idea of what happening. And I had to wait after a much longer report came out and read it. Whereas, at the time, if I had understood, I could have got it there and then but I didn’t. Now, when I hear particularly younger people talking about downloading and what have you and CD ROMs and things like that, I know now [Laughs] what they are talking about, it’s computers. But before I didn’t. I didn’t have a very clear idea. That might have been my own fault for not

paying more attention at an earlier time. We have two computers in the meeting house and everything is there, if I want to go and look at it. But I haven't looked at it yet. But there is a whole system now because we are the headquarters of the Friends in Scotland. And now, whether I like it or not, I've got to learn how to operate – not necessarily to operate the computer but to go and read if I wanted to what's there."

Wednesday discussions (21st May)

3.3 Participating in The Modern World

As we have seen, participants see computers as actively defining the way in which the modern world works. People unfamiliar with the technology are unable to understand situations where computers are involved. In turn this excludes them from the opportunities which computers afford (e.g. information retrieval, communication, saving money on shopping). Consequently, participants indicated that one of their main ambitions in embarking on the MITS was to engage with this modern world.

DM: [reading her notes] "... I do not share the hostility to computers, which I find in the opinions voiced by some of my friends, friends of my own age I may say. My own attitude is that the computer won't go away however hostile one may be to it and therefore it seems sensible to accept this fact and at least make an attempt to cope with what has become such an ever present part of modern life."

Wednesday discussions (29th October)

JC: "You have to try the modern world if you can."

DG: "I think that we are learning to fit in the world that is developing, isn't it?"

Wednesday discussions (14th May)

Younger people use computers, knowing about computers and their use of "computer language" underlines the connection between this new generation and their world. DW and MTu both thought that becoming more familiar with computers would bridge the gap between generations, especially between the retired people and those more directly involved in the modern world by virtue of their work. They also thought this important within the context of their own families. JC and MK have stressed their need to participate in today's world. JC said that she does not want to be left behind the "dark ages" and stressed that any attempt at resisting the advance of technology – a frequent attitude in her generation – is not only useless but also ill-advised, as technological progress brings people benefits. She considered that one can only strive to adapt to the technological world by acquiring the skills that are required to do so. To DT noticing that "*life (is) becoming so mechanical*", JC replied:

JC: "But that's the way it's going and I don't think that we can do anything to prevent it. All we can do is do our best to understand and learn about computers so we can join the rest of the humanity in knowing how it works. Because that's the way it's going."

Wednesday discussions (21st May)

MK developed her argument differently. She was less apologetic about technological progress and did not declare her willingness to take part in the modern world in a positive manner. Debating with other members of the Thursday group who tried to moderate her judgments, she justified her attempts at taking part in the modern world by saying that this world is putting pressure on her to take part in it. She indicated that the new technological world was affecting many of her everyday experiences. Eventually, everybody – including her – will have to be either part of it or be "*excluded from life*". According to her, ignoring computers would mean a fatal mistake. She argued that computers constitute something basic in the context of the modern ways of living and that life itself is at stake. MK consequently considered that she had to learn how to use computers, which belong to the tool kit of modern ways of living.

MK: “The world is there. The world in which I have to function everyday is there and I am in it. And these machines are now in it. And I've got to come to terms with these machines if I am going to continue to live in this world.”

Thursday discussions (27th March)

MK: “I have still a horrible feeling that although it is on the surface just something that we can... Computers are not a thing that we can talk about and then leave, and go on and talk... They are somehow basic to our living nowadays, from where you get your water from to all sorts of other things that I can't think of. They are part of a very changing, very rapidly changing world and we ignore their presence, even subconsciously, at our peril.”

Thursday discussions (1st May)

MK: “But what annoys me, you see, is that if I don't come to terms with this thing, I am going to be - if I am not already - I am going to be cut off from a whole lot of things, activities. I mean, they are not offering us only WWW addresses.”

MK: “So, I don't know what to do, then that's me cut out of that area of life.”

MK: “I just regard this as, I think, a way to getting on with life.”

Thursday discussions (17th April)

In contrast, DW does not feel such pressure. She thought that she could go on without using computers, living in the old world where what dominates are relationships with people.

DW: “For some reason, if I couldn't be part of the technological age, not because I have rejected it, not because I don't want to have anything to do with it, but just because I would not bother with that, I think that there are still ways in this dramatically changing world in which I can still live on the basis of relationships.”

DW: “My point was only that one could still live without the computer.”

Wednesday discussions (7th May)

For DW the challenge was to enter in or benefit from the new world while maintaining the practices of the old.

DW: “Well, if you start at all, yes. And to be a novice is to be somebody who is wanting to start, yes. I think it has to be another world. And I don't think it could lead me to the exclusion of my own world, which has been built up over the seventy odd years. It's not an either, it can be a both and... I think, perhaps, until you came along I would have said, “well, that's not for me, that's not my world”. I probably would have said that's not my world. And it isn't. And I mustn't deny the good things of what this strange funny background, educationally, has brought me. Yes it's both and ...”

Individual interview (13th May)

3.4 Reconfiguring One's World

For participants familiarisation with the modern world required the reconfiguring of their everyday lives. This process involved a number of changes to the participants' relationships, language, ownership and perceptions. This section illustrates some of these changes.

Computer Terminology and Everyday Language

SC indicated that “there are quite a lot of reasons for learning about computers, which really have nothing to do with the use of computers”. One of them concerns computer terminology. Participants stressed that “computer language” had now become part of everyday language.

DM: "I am thinking about the everyday language – sometimes people use the expression 'download', for example. Well, if you don't know anything about computers, you don't have a clue what that means. And there are one or two words like that came into ordinary everyday language."

Wednesday discussions (21st May)

The presence of "*computer language*" in everyday language implies that it has penetrated the participants' everyday lives noting that it cropped up in everyday conversations with family relatives and friends. Its frequent use on TV with, numerous references are made to web sites and email addresses in almost every programme, was also noted. The penetration of computer language into television programmes was another major issue. The participants observed that TV soaps ("soap operas") and other dramas, show people using and talking about computers. MR especially stressed how much this issue mattered to her, as she watches television drama regularly. She found that computers are frequently involved but she had failed to make sense of their use. Another example of this change in everyday language was identified by SC who indicated that computing terms frequently appear in crossword clues. This, she believed, is a relatively recent phenomenon. According to SC, this is not a trivial issue as crosswords are very popular with people of her age. According to her, it is part of her generation's 'knowledge'. She revealed that her main motivation for learning to use computers was to upgrade the linguistic skills:

SC: "The only need that I have at the moment is not for the computer but the computer vocabulary because I am addicted to crosswords and for the last... just recently, they have started putting computer words in the answers to clues. That's really the only need I have for a computer at the moment."

Wednesday discussions (28th May)

NS also noted that computer terminology has become part of everyday language. Computer terminology is becoming commonplace with her fellow Quakers especially among the younger ones. NS observed that her lack of command of the '*language*' was leading her to be exclusion from these meetings.

Friends and Relatives Use E-Mail

Participants considered that computer-based communication had significantly increased their opportunities for communication with their family and friends. Email is often the only way they can be in touch with them, as some are difficult to reach by telephone.

DW: "My great nephew, even my nieces who are in their fifties, they would never communicate with me unless I have an email. I mean, they told me that. They don't even telephone."

Thursday discussions 16/10

Communication has played an important role in motivating family members to encourage some participants (e.g. JC, NS, MK, and NM) to use computer technology. It should be noted that family also played a role in encouraging some of them (e.g. NS) to change their attitude toward computers.

NS: "I am quite happy to know now more about computers"

NS: "... to know about how to operate them. Because ... I had no time for them at all but now I realise that I was being a bit pig-headed towards them, you know. I just put it out of my mind as something that wasn't for me. And then I thought... and of course, my family said, "Well, that's a very negative attitude that you are taking".

Wednesday discussions (7th May)

E-mail was also identified as a cheap alternative to long distance telephone calls.

NS: "I think that we prefer the telephone but when I phone Canada, I get a shock when the bill comes in. [Laughs] An occasional email is fine to let them know that everything is all right. And maybe once a month I ring and we have a conversation."

NS: "And the children could talk to me on the computer because they are quite literate. But from a purely financial point of view, if you've got people abroad it's quite a saving

Wednesday discussions (21st May)

Ageing Makes Computers Relevant

As indicated above, participants experienced and reported a number of changes related to computer technology that had changed the makeup of their everyday lives. Age-related changes were also a major factor, specifically the issue of mobility. Familiarisation with computers was seen as a possible means of ameliorating the expected loss in mobility (already restricted for JC and some others). Participants regarded the Internet as a substitute for "going out" and a means of staying in touch with life in the outside world. Consequently, if the computer was not always seen as fitting into everyday life (for example, SC could not find a place for computers "at the moment") its potential was appreciated in the context of the loss of mobility.

DT: "... as you will get less and less able to go out and do things yourself physically, you can do some... you can keep in touch with this machine. The way you can operate it, you are going to bring in all sort of things, which you can't, you no longer can do physically. ...That's what it means to me."

Wednesday discussions (14th May)

SC: "I think that when you are housebound, it's going to be a link with the outside world."

Individual interview (13th February)

Even JC envisaged that she might adopt new ways of doing things with the computer as she goes along, such as Internet shopping as she anticipated that she will respond to changes in her circumstances. The second age-related change mentioned by a number was the worsening of handwriting. Letters typed on a computer (and then printed) offer the potential to continue to communicate with friends and relatives legibly.

DW: "I think I might think of getting a word processor and a printer because I do write a great deal and it's not... Oh, you know one's handwriting becomes changed with the state of one's fingers and also, you know, it's much clearer. Even if one has got good handwriting it's much clearer for people to read. And that would definitely be something I'd use every single day, you know."

Individual interview 7/09

SC: "But I think that... And, of course, when you get older your handwriting isn't so good and so that being able to type a letter is good."

Individual interview 13/02

From the perspective of age-related changes computers offer a means of keeping in touch with people and the world and a means of keeping active despite disabilities.

4 Discussion

We have considered how a group of seniors learned how to use interactive technology. What did not appear to be a significant issue for them was the learnability of the technology *per se*, though this is not to suggest that they did not face problems with it. Nielsen (1990) identifies *learnability* as the first on the list of attributes (or components) of usability. He has defined a learnable system as one which the user "can rapidly start getting some work done with the system". Surprisingly, this concept

has not been developed since this initial definition (*cf.* Preece *et al.*, 2002; Dix *et al.*, 1998; Carroll 2001; 2003). While we do not dispute the importance of the learnability of the technology involved in this study what does seem to be more important are the consequences and focus of this learning. While the participants learned to use a PC, email and to browse the Web, what emerged is that their learning was not focussed or confined to the technology. Instead they chose to engage with it to meet the demands, hopes and aspirations of their everyday lives. They saw the technology as a means to an end which included being in contact with relatives, ameliorating some of the consequences of ageing and not being excluded from the modern world. These findings are, of course, consistent with other related work (e.g. White and Weatherall, 2000; Selwyn, 2004; Adams *et al.*, 2005; Olphert *et al.*, 2005). On this evidence it would be short-sighted to characterise the learnability of an interactive system simply in terms of uninvolved cognitive processes. Instead we must also be sensitive to the consequences of learning for many of our everyday practices as a detailed analysis of the transcripts of their interviews and discussions has revealed.

It became clear that the seniors had an awareness of technology having become ubiquitous and affecting very many aspects of everyday life. They saw it as having infiltrated television and the media in general as well as travel, shopping, communication, everyday language and the lives of friends and family often signified by the occurrence of “computer language”. This has led them to consider their place in the modern world and their need to accommodate technology, recalling what has been described as the *domestication of technology* (e.g. Silverstone and Haddon, 1996; Haddon, 2003). However this only captures part of what it means to co-exist with technology. Our survey of the philosophical (and history of philosophy) research in the area of *being-with* technology indicates that its introduction does not merely make existing practices faster or more efficient but fundamentally changes them. Everyday exposure to technology also establishes a ‘horizon’ - a *technological horizon* which is the baseline of our familiarity with it. So, for example, shopping has traditionally involved going to a store, selecting goods, paying for them and then returning home with them. This practice is one which most of us in the West grew up with and one which we see as natural, authentic and familiar. This everyday practice established – in part – our technological horizon for shopping. This self-same generation may or may not have embraced Internet shopping which offers greater convenience, cheaper goods, more choice but also requires us to change our everyday practices to accommodate them. Shopping at a dotcom is quite a different experience to visiting a city-centre store yet it is one which the current generation may establish as their default or technological horizon. There is no reason, of course, to believe that the phenomena described in this study have not been mirrored in very many, if not all, of our everyday lives. If this is so, there is a clear opportunity to establish a broader research programme to explore shifting technological horizons and the relationship of such changes to evolving practices in the use of interactive technologies.

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