

E-scaping the ageing body? Computer technologies and embodiment in later life

CHRISTINA E. BUSE*

ABSTRACT

This paper explores the embodied dimensions of computer and internet use in later life, and examines how technology use relates to constructions and experiences of the ageing body. It is argued that previous research on technology use and embodiment has neglected older bodies, in contrast to research on gender and disability. Furthermore, while earlier theorisations presented internet use as disembodied, it is argued that the experience of using such technologies is grounded in our embodiment. In the light of these limitations and arguments for more complete theories of the body, this paper explores how technology use relates to various aspects of embodiment. These issues are examined in the light of data from qualitative interviews and time-use diaries completed by retirees in 17 households in the United Kingdom. By examining the ‘technobiographies’ of these older computer users, it is shown that changes in body techniques are prompted and in some cases required by broader cultural and technological change. The findings evince the process of acquiring computing skills as an embodied competency, and as a form of ‘practical knowledge’ that can only be ‘learned by doing’. These experiences of technology use were embedded within constructions and experiences of ageing bodies. Although the participants drew on discourses of ageing in complex ways, their coding of computer technologies in terms of the competences of youth often reproduced hierarchies between young and old bodies.

KEY WORDS – embodiment, computers, internet, older adults, lifecourse, biographies.

Introduction

While the topic of embodiment has recently proliferated in sociology research, there have been comparatively few studies of the ageing body (Twigg 2004). Such research is now increasing, however, and has already pointed to the centrality of the body for both the lived experience and perceptions of old age, yet in one field older bodies are still largely absent,

* Department of Sociology and Social Policy, University of Leeds, Leeds, UK.

theories of information and communication technologies (ICTs) and embodiment. This gap was noted by Featherstone (1995), who pointed out that theorisations of the new possibilities for embodiment created by ICTs had neglected older bodies, in contrast to the considerable research and theory on gendered bodies and the internet. Early theorisations celebrated the possibilities of the internet for escaping from the constraints of the body and from marginalised embodied identities (Hawthorne 1999). Furthermore, writing on 'cyborgs' or 'postbodies' described bodies that transcend the boundaries of human and machine and that can escape the limitations of mortality (Katz and Marshall 2003; Lupton 1995). It is now over a decade since Featherstone's original argument, but research on the ageing body and the use of computer and internet technologies remains scant. Although there is a growing body of research on the experiences of older internet users (*e.g.* Hill, Beyon-Davis and Williams 2008; Richardson, Weaver and Zorn 2005; Selwyn 2004; Selwyn *et al.* 2003), the embodied dimension of these encounters with new technologies has yet to be examined in detail.

On the other hand, theorisations of other areas of embodiment and digital technologies have moved on considerably. Utopian visions of escaping the body through virtual technologies have been criticised for ignoring the continued location of internet use in real bodies, spaces and power relations (Holloway and Valentine 2003). This includes digital divisions in internet access, not least those around age, with older people remaining significantly marginalised from internet use compared with other age groups (Dutton and Helpser 2007). Such divisions clearly limit the chances of escaping the constraints of the ageing body through the internet. Additionally, while people may choose to disguise or alter their embodied identity in cyberspace, their new identity often reflects idealised representations of particular bodies, and reproduces power relations that define which identities are desirable (Holloway and Valentine 2003). It is increasingly recognised, however, in both sociological theorisations of technology use and embodiment (*e.g.* Shilling 2005; Williams and Bendelow 1998: 6) and in recent approaches to human-computer interaction (*e.g.* Dourish 2001), that experiences of technology use are always grounded in our embodiment. Despite the fluidity of online identities, we still have to eat and sleep and cannot avoid the bodily discomfort of long sessions at the computer (Lupton 1995). Furthermore, these theories conceptualise embodiment as the 'basis of our being-in-the-world' (Williams and Bendelow 1998: 8), which challenges the idea that the mind can become detached from the body, as our perceptions, meanings and experiences of the world are inseparable from our embodied interactions with it (Dourish 2001). Building on such critiques, recent sociological work has

examined the relation between information technologies and discursive constructions of disabled bodies (Moser 2006) and embodied gender identities (Bryant 2003; White 2006).

As a preliminary task, a search for findings or theory on the relation of older bodies to computer or internet use was conducted, but with the exception of unpublished work on images of ageing bodies in Saga Zone discussion forums (Garde-Hansen 2008), no other research or theory exploring this issue in detail was found.¹ While the idea of escaping the ageing body through internet use now seems questionable, how the use of these technologies relates to constructions and experiences of the ageing body remains salient and largely unexamined.

Ageing bodies and computer use

Despite the neglect of older bodies in the literature on cyber-technologies, it has been argued that these technological possibilities are particularly relevant in later life (Featherstone 1995). The body is central to representations of old age, which have been predominantly negative in Western culture (Woodward 1991). The dominant discourses have represented old age in terms of dependency, decay and declining mental and physical capabilities (Katz 2001; Richardson, Weaver and Zorn 2005). These images are gendered as a consequence of the greater emphasis on physical appearance for women, and the representation of ageing bodies as at odds with norms of attractive femininity (Twigg 2004; Woodward 1991). It has been argued, however, that consumer culture is creating more positive representations of older people as active, healthy, independent and youthful (Katz 2001; Katz and Marshall 2003; Westerhof *et al.* 2010), but those in ill-health and the 'oldest old' may be unable to attain such images (Featherstone and Hepworth 1991). In such cases, online interactions offer possibilities for creating new images of the ageing body, and for escaping the negative judgements based on its outward appearance (Featherstone 1995). While, as mentioned, the view that the ageing body may be 'escaped' has been criticised, it is argued that the internet may help compensate for physical difficulties which constrain other forms of interaction (Dickinson and Hill 2007), enabling differential possibilities for embodiment.

Despite the slight attention to the ageing body and internet use, previous studies have indicated ways in which internet and computer technologies relate to broader representations of later life. Contrary to the hopes for new images of older bodies, it has been suggested that computer technologies are firmly located in existing discourses. For instance,

Östlund (2002) found that computer-design literature generally presented older people as homogeneous and focused on disability and decline. There have been exceptions, however, and recent work has challenged the association of old age with decline (*e.g.* Reed 2008) and recognised the heterogeneity of older people (Czaja and Lee 2008; Slegers, van Boxtel and Jolles 2009). In terms of older internet users' constructions of themselves, while Richardson, Weaver and Zorn (2005) in New Zealand found prominent references to 'ageing as decline', they showed that this discourse was drawn on in complex ways and also resisted. Other research by Lin, Hummert and Harwood (2004) examined age identities in an online community for the over fifties, hosted by the United States *Senior Net* non-profit organisation (*see* <http://www.seniornet.org/>). They found that rather than avoiding identifications based on embodiment, themes around the body and health were prominent in online discussions. 'Physical decline' was a common theme, but occurred alongside more positive representations of 'mind over body' and 'active ageing'.

While these studies have examined representations of ageing that are highly embodied, none have focused on the ageing body or embodiment. Furthermore, except for a brief discussion by Richardson, Weaver and Zorn (2005), most have concentrated on discursive representations. It has been argued that the body cannot be reduced merely to discourse, but that its understanding must take into account the way in which it is simultaneously social and biological (Shilling 2005), and the interconnection of these meanings with the materiality of the body and ageing (Twigg 2004; Woodward 1991). On the other hand, despite much discussion of physical limitations on computing among older internet users (*e.g.* Hill, Beyon-Davis, and Williams 2008; Saunders 2004; Selwyn 2004), such discussions often neglect the broader discursive context of these experiences. There have been calls for both the sociology of ageing (Laz 2003; Twigg 2004) and the broader sociology of embodiment (Shilling 2003) to draw on insights from both social constructionist and phenomenological perspectives in their examinations of the lived experiences of real, material bodies, and their constitution in relation to broader discourses.

Reconstructing technology and embodiment

An examination of the interconnection of these different aspects of embodiment will illuminate our understanding of the relation between embodiment and technology use, as demonstrated by studies of other social groups. For instance, White (2006) showed that computer programmers'

accounts of their working experience displayed a strong awareness of bodily pain and discomfort, and included frequent references to their bodies as 'large and sedentary'. Their accounts were situated within broader discourses around gender and technology, and while technical mastery was linked with hegemonic masculinities, the construction of the computer programmers' bodies as static, fat and lazy was associated with de-valued masculinities. Similarly, Moser (2006) found that constructions of computers and other technologies as compensating for disabilities reproduced the boundaries between normal/abnormal and able/disabled bodies.

When applying a multi-faceted approach to understanding the relation between embodiment and technology use, the concept of 'body techniques' is useful. It was introduced by Mauss (1979) in an exposition of the social nature of bodily actions. He defined 'body techniques' as 'the ways in which from society to society men know how to use their bodies' (1979: 97). Body techniques are culturally transmitted or passed down, and vary greatly among societies and historical periods. The concept was later adapted by Crossley (2007) in a synthesis of knowledge, understanding, meaning and embodiment that sought to overcome mind/body dichotomies. He exemplified body techniques that involve embodied knowledge which is difficult to verbalise and that are grasped practically through action rather than theoretically. Crossley argued that the concept is useful when conducting empirical research on embodiment (2007: 87), which may involve examining the transmission of embodied knowledge, mapping socio-demographic patterns in the diffusion of body techniques, or examining change in body techniques over time.

While Crossley did not explicitly apply these ideas to technology use, Hayles (1999) used a similar notion, 'incorporating practices', to understand how technological tasks become embodied. Hayles defined an 'incorporating practice' as 'an action that is encoded into bodily memory by repeated performances until it becomes habitual' (1999: 199). She argued that technological change leads to changes in incorporating practices, as new technologies require people to use their bodies in different ways. As with Crossley's argument that body techniques can be understood by examining learners' experiences, Hayles suggested that changes in bodily practices can be encapsulated by examining people's adaptation to new technologies. A similar concept was applied by Dourish (2001), in theorising computing as a form of embodied interaction. Drawing on the work of Heidegger, he distinguished between objects that are 'ready-at-hand' and 'present-at-hand'. If the user is consciously aware of an appliance or device, like the computer mouse, it is 'present-at-hand', but if the device is invisible, like the hard drive, it is 'ready-at-hand' and the user instead

focuses on the work that the device enables. Dourish did not differentiate learners' and experienced users' awareness or orientations, but argued that computer users' orientations repeatedly alternated.

Drawing on the embodiment perspectives outlined above, we now examine such processes in relation to the experiences of using the internet and computer technologies in later life. This paper will explore the construction of ageing bodies and subjectivities in discussions of computer and internet use, and examine the intersection of broader discourses with daily lived experiences of the ageing body. It will also explore biographical experiences with computer technologies, to illuminate the development of computing skills as a body technique. While previous studies of computer use among older age groups have included some examination of biographical experiences (*e.g.* Reed 2008; Selwyn 2004), this analysis will focus on the embodied dimensions of this process.

Methodology

The data presented in this paper were drawn from a broader study of domestic internet and computer use in retirement (*see* the Acknowledgements). A purposive sample of 17 households was recruited in 2007–08, by contacting local organisations involved with older people in a city in the North of England, and snowballing from the first contacts (*see* Table 1). The inclusion criteria were that the participants should be retired from full-time work, and have a computer and internet connection at home. In sampling, the study sought to recruit participants from different class backgrounds, although the majority of households (10 of the 17) had previously been employed in middle-class occupations (and some continued in part-time work). There were 13 couples and four single persons. For one couple (household 14), only one partner was interviewed. The ages of the participants ranged from 52 to 100 years, and none were from minority ethnic groups.

The data were gathered through multiple qualitative interviews and time-use diaries. There were individual and joint interviews, as while joint interviews can reveal dynamics between a couple's members, they can also inhibit disclosure (Valentine 1999). The first interviews were of the couple together, and then each member was asked to complete a time-use diary for one week. The diaries were later drawn on to help the participants reflect on and discuss everyday practices of technology use (Silverstone, Hirsch and Morley 1991), and to build an in-depth picture of people's activities. They were also useful for exploring the tensions between what participants said they did and everyday practices (Bytheway and Johnson

TABLE 1. *The research participants' former occupations, computing experience and equipment*

Names	Age (years)	Former occupation(s)	Workplace experience		Computing equipment in the home
			Computers	Internet	
1. Emma	57	Research assistant, administrator	Yes	Yes	One shared PC and internet connection
Jeff	62	Teacher	Minimal	No	
2. Andrew	65	Draftsman	Yes	Yes	One shared PC and internet connection
Jenny	59	Lecturer, administrator	Yes	Yes	
3. Barbara	67	Part-time occupational therapist	No	No	One shared PC with internet connection and a word processor
George	71	Project manager	Yes	Intranet ¹	
4. William	80	Accountant	Yes	No	One PC with internet connection, only used by William
Hilda	83	Teacher	No	No	
5. Maggie	73	Teacher, ran care-home	Yes	No	Have own separate PCs both connected to internet, plus a laptop
Richard	74	Electrical contractor, ran care-home	Yes	No	
6. Enid	80	Teacher, writer, clerical	No	No	Own separate PCs both connected to internet
Albert	88	Cartographer	No	No	
7. Audrey	76	Head teacher	Yes	No	Own separate PCs both connected to internet, additional PC used by son when visiting
Fred	79	Local councillor	No	No	
8. Bill	70	Joiner	No	No	One PC with internet connection, mainly used by Bill
Jane	68	Sales clerk, printing, auxiliary nurse	No	No	
9. Deidre	67	Deputy head	Yes	Intranet ¹	One computer and one laptop with wireless internet connection ²
Arthur	70	Teaching, freelance photojournalism	Yes	No	
10. Betty	100	Accounts clerk	No	No	One PC with internet connection which is only used by John
John	77	Computer operations shift leader	Yes	No	
11. Brenda	72	Accounts clerk	Yes	No	One PC with internet connection which is only used by Brenda
Greg	75	Factory worker	No	No	
12. Ian	57	Physics lab technician	Yes	Yes	Shared computer and internet connection
Lesley	53	Electronic engineer	No	Yes	
13. Carol	71	Education officer, teaching, clerical	Yes	Yes	One laptop with internet connection
14. Joan	66	Factory worker, care assistant	No	No	One laptop with internet connection, only used by Joan
Mike	68	Painter and decorator	No	No	
15. Dot	69	Factory worker	No	No	One laptop with internet connection
16. Pearl	72	Executive officer RAF, clerical/office work	Yes	No ³	One PC with internet connection
17. Jack	71	Lecturer	Yes	Yes	One laptop with internet connection

Notes: The names are fictitious. 1. Use of intranet but not of World Wide Web. 2. Computer is mainly used by him, and the laptop mainly by her. 3. Did not use in previous occupation, but uses in post-retirement part-time work. PC: personal computer. RAF: Royal Air Force.

2002). Following completion of the diaries, individual follow-up interviews were arranged.

The data were analysed using qualitative thematic analysis, which involved carefully reading and re-reading transcripts, and noting emerging themes and concepts in the margins, before organising the data into larger thematic categories. These larger ‘master themes’ (Smith 1995) were: ageing/biography/generation, work and leisure, space and home, temporalities, social networks beyond the home, as well as embodiment. All the interviews included discussion of some aspect of embodiment, whether this was change in mental and physical health in old age, mortality, or accounts of technology use as an embodied practice. While the majority of the data on embodiment emerged from the interviews, the time-use diaries drew attention to the relation of computer use to daily embodied rhythms and routines, and also how physical constraints shaped the time spent on particular activities, including technology use. After the initial stages of reading the transcripts and identifying the emerging themes, the computer program Atlas/ti was used to assist with the organisation, coding and retrieval of the data. The coding was carried out primarily by the author, but emergent themes were discussed with two supervisors (one a sociologist and one a social geographer). In keeping with qualitative approaches it was on-going and flexible, and as new themes emerged the data were repeatedly and systematically trawled.

Findings

Technobiographies and changing body techniques

As Mauss (1979) pointed out, the development of a particular body technique may occur during an individual’s lifecourse. By examining the ‘technobiographies’ (Henwood, Kennedy and Miller 2001) of the participants, we will now explore how the technological changes experienced during their lifecourses resulted in changes in their embodied competencies. Despite some variation by age, gender and occupation, the interviewees had generally taken up computing late in life, either near the end of their careers or after retirement. The participants described their daily work tasks and routines prior to the introduction of computers, as with cartography, calculations and statistical reports being ‘done by hand’. Before the mechanisation of various clerical tasks, as in the United Kingdom after the Second World War, calculations were carried out by clerical workers, generally women who were known as ‘computers’ (Balsamo 1996; Hayles 2005). Women like Pearl and Betty described how they had carried out even complex calculations ‘in their head’

rather than using machines, as Pearl found in her first job as an office junior:

I worked for a stint in the pay bills office doing wages for hundreds of men, [and we] did it all in our heads. The boss, she used to check the sheets with a really old-fashioned adding machine, that's about all we used, and that's why I don't need an adding machine when I'm adding up.

Many skills now associated with 'computational machines' were then the domain of human intelligence and craft (Hayles 2005). These abilities had stayed with participants like Pearl, who stated that she still does not 'need an adding machine'. The absence of this embodied competency among younger generations was noted by Betty and John, who said 'it makes me fear and tremble for shop assistants who have to use the machine to work out the change, 98 pence from a quid [pound], that sort of thing'. Although Pearl described such calculations as being carried out 'in her head', it may be that they were externalised using pen and paper (Clark and Chalmers 1998), as was mentioned by other participants, while John used a 'slide rule' to carry out calculations.

Many of the participants experienced the shift from manual to computerised work processes during the late 1980s or early 1990s. As a draftsman, Andrew described the 'transformation from everything being done on paper'. A number of participants recalled their initial feelings of fear and apprehension when beginning to use computers, and said that they had distrusted the change from manual procedures. For example, as an accounts clerk, Brenda had continued to keep ledgers or paper back-ups 'just in case'. It was often difficult to adapt to *not* doing tasks manually, and for many participants, using computers initially took longer, as Pearl described:

At first because you were learning to use them they did take longer than when you were doing them by hand, like tables and things like that. [Take] lists, I could probably write mine quicker [than by using the computer].

This illustrates the difficulties of adapting to new embodied practices, as many skills that had been learned much earlier had become ingrained (Mauss 1979). The initial misgivings were often followed by appreciation of the benefits of computer technologies in making manual tasks quicker and easier. For instance, Andrew found that rather than having to add up figures manually, 'when you've got an Excel spreadsheet you can just do it absolutely automatically', and 'it was just brilliant compared to the way that we were doing it'. Some of the participants left work before the introduction of computers, however, and did not learn to use them until after retirement. The participants' experiences therefore differed by age, gender and class, with the older participants, housewives and those

employed in certain occupational sectors, such as manufacturing or social care, being less likely to have used computers at work.

It was found, however, that with the shift from manual to computerised procedures, many of the changes in embodied practices exemplified the way in which ‘new techniques mutate of old’ (Crossley 2007: 92). Although the majority of the participants had not used personal computers until late in their lives, many had used typewriters, and some had used word-processors or the early mainframe computers. The skills and experiences learned on these machines often shaped their later experiences of computing, both at work and at home. Typewriters were most frequently mentioned as stepping stones, because they necessitated ‘familiarity with the keyboard’ and the embodied competency of touch-typing. As with participation in other body techniques (Crossley 2007), typing skills were gendered, reflecting the predominance of women in clerical positions (from the second quarter of the 20th century). Only one man in the sample had learned to touch-type, in contrast with several women who learned either in school or through clerical work. These women had generally typed letters for their husbands before the latter learned to use computers – the participants’ responses indicate that while many men had learned to use the keyboard, few could touch-type. As Albert recollected, ‘If I had a letter to write in the past, I always had to get Enid to type it for me because I still work like this [mimed one finger at a time]. I am getting faster, but the amount I do I can manage like that now’. Their husbands’ inept and slow typing with one finger was a frequent source of comment or amusement among the women participants.

Typing skills did not translate into computer-use skills for all the participants. While Carol and Pearl found their keyboard skills helped when learning computing, others like Enid felt it would have been ‘better to start with an absolutely clean slate’. As well as gender differences in the acquisition of typing skills, there were gender differences in the construction of these skills and their perceived relevance to computing. Men frequently described typing as unimportant or ‘not proper computing’, while women like Enid and Carol felt the computer was merely a ‘glorified typewriter’. Others like Joan had lost many of their former typing skills although traces remained. She explained:

It did leave me with that little bit of ... I remembered ASDFG when I went on to the computer. I can’t say it’s coming back because I’m not using two hands; that was totally touch-typing when you are reading and typing.

Joan’s experience indicates some limits to the transferability of earlier embodied competencies to new practices (Crossley 2007), not least because new technologies necessitate new embodied competencies (Hayles 1999).

For example, neither mechanical typewriters nor the early personal computers had a mouse, and many people find this device difficult to use. As Brenda said, 'the one thing I never liked was the mouse, I've got used to it now but, oh for ages, I used to struggle with it'. The physical difficulty of using the mouse meant that it became 'present-at-hand' and the focus of attention (Dourish 2001). Although Brenda overcame this difficulty, others like Betty, who had previously been a proficient typist, had not learned computing partly through a fear of the new technologies and also because of 'trouble with the mouse'. While a number of previous experimental studies have noted that some older people have problems using a mouse (Czaja and Lee 2008), they have generally been attributed to physical limitations rather than the difficulty of developing new embodied skills.

The participants contrasted their own struggles with adjusting to the new body task demands posed by computer technologies with the presumed and known experiences and competencies of younger people. Unlike older people who came to computing later in life, young people were described as 'growing up' with computers, so using tools such as the mouse were said 'to come naturally' to them, and did not have to be learned. As Ian reasoned, 'they don't think twice about it, they've been brought up with computers in school and keyboard skills and things that people had to learn. I've taught people who didn't know how to use a keyboard [and who] were completely useless with a mouse'.

The collected evidence points to a cultural shift in embodied competencies as technologies have changed. For many of today's older people learning to use a computer mouse was 'a struggle', but the participants believed that using computers was 'second nature' among younger people who encountered the device at an early age. This supports the proposition that technologies encountered during the formative period of the life-course are more readily adapted to (Bolin and Westlund 2009; Rama, Riddler and Bourma 2001), and reflects the great difference in older and younger cohorts' everyday technological experiences during their formative years. Pearl echoed a widespread view among the participants, when she said that her age group 'didn't have computers when we were younger' and therefore 'probably found it more difficult to pick up things'. Several participants had a keen understanding of early learning and the technological context, and compared today's younger people growing up with computers with their generation's experience of being 'brought up' with the radio, so that using the wireless was 'built into' them and came 'naturally'. The participants' experiences confirmed that body techniques are patterned according to historical and cultural location (Crossley 2007; Mauss 1979), and reflect the different technological and social contexts of successive birth cohorts.

Acquiring computing skills as an embodied competency

So far this examination of the participants' technobiographies has illustrated that personal experiences intertwine with broader cultural shifts in body techniques, but now we focus on their experiences with computers to elucidate the embodied nature of acquiring computing skills. After the initial reservations about computing felt by many participants, the progression towards competency was described as something that could only be achieved through practice or use. Although some participants initially took courses or consulted manuals, generally they were not found very useful. As Carol explained, 'I must have started *Introduction to Computers* courses so many times over the last 10 years of my working life, [but] unless you've got one in front of you, there's no point in going, because it's like pianos, you need to keep practising'. Similarly, Ian said he 'can't learn by sitting in a classroom' but has to 'get in front of a keyboard on a new piece of software and plug away at it for several weeks, and then it just comes naturally'. Computing was not something that could be learned theoretically, therefore, but needed to be learned through action and practice (Wacquant 2004). Although new learners like Jane and Dot sometimes needed a particular application to be explained (Crossley 2007), they also confirmed that it was practice that they needed to progress. This reflects other forms of embodied, practical knowledge that can only be acquired through 'learning by doing' (Wacquant 2004). Several participants compared the practicalities of learning computing to other embodied competencies such as 'playing the piano' or 'riding a bike'.

While acquiring greater competency with computing, the majority of the participants did not understand or want to understand the inner workings of computers (Lupton 1995). As Jenny said, 'we haven't got any interest in the box itself', while her partner, Andrew, said that 'it's not in my nature to want to take it apart and rebuild it again'. The tacit, practical knowledge possessed by many participants enabled them to make use of computers as tools, without being concerned in abstract terms about how they worked (Dourish 2001; Polanyi 1966). In contrast, Ian's previous job as a physics technician involved programming and building new computers, and he found the everyday use of computers mundane. In his words:

I always say to people, 'it's like a train set, people who have train sets, they don't build them to run them, they build them to build them'. ... Once we'd got it running, the word processor was working, you get bored with it. ... It is the thrill of building it; then it's just a tool.

This reflects the contrast between tacit, everyday knowledge and expert knowledge; that is, the knowledge of technicians that enables them to

understand the connections between everyday practices and the inner workings of machines (Polanyi 1966). The contrast also draws attention to the instrumental nature of learning computers for most of the participants. They focused on what they needed to know, rather than trying to understand how computers worked. As Jenny stated, she did not want to know about the various aspects of computing, all she wanted was 'to be able to do this little bit that I want to do, and I want to be able to do it well'. Most participants wanted to learn only a particular set of practices. George put it like this:

The people who set up computers are trained in computers, but they're not trained to listen to people and what they actually want. ... Which may not be endless clever things, like you can do this and this; you just want email, internet and the ability to type.

For George, as for most participants, the most relevant applications were email, information searching and word processing, which previous studies have found to be the main uses of computers and the internet among older users (Hill, Beyon-Davis and Williams 2008; Selwyn *et al.* 2003). Most participants did not feel there was 'any point' in learning about social networking sites or chat-rooms, although one had used them to communicate with grandchildren. Many similarly argued that there was 'no need' to use the internet for shopping or banking, as these facilities were nearby and could be accessed in person. While some participants used the internet to access news, others like Jeff and William felt that although they 'could if they wanted to' they 'haven't got that desire to do so'. Characterisations of their approach to computing also drew on age differences, with a tendency to associate practices such as using Facebook with younger people. As Joan reasoned, 'I don't think they [computers] are geared for the elderly, why should they be? I think they are geared for the younger with all these Facebook and things'. The instrumental, functional approach of older people who used the internet as a 'tool' was also differentiated from that of younger people who used it more flexibly. As Ian said; 'to them it is a games machine or homework machine, whatever they want it to be'.

Like other forms of practical, embodied knowledge, for those who reached a high level of competency, using the computer 'came naturally' or became 'automatic' and computer hardware, including the mouse, become 'ready-at-hand' instead of the focus of conscious attention (Dourish 2001). As Arthur said, when he first began to learn computing, 'there were so many simple solutions that you didn't know', whereas 'today we just do these things automatically all the time, and you forget once you've got started that other people struggle with them'. This comment evinces a general rule, that the struggles of acquiring computing

skills are forgotten once the learner attains embodied competency (Crossley 2007; see also Slegers, van Boxtel and Jolles 2009). Ian could not understand why people found word-processing difficult, for to him ‘you use that without thinking about it, don’t you?’ Responding to this remark, his wife Lesley pointed out that this was not the case for beginners, and in effect argued that the embodied nature of computing skills meant initial difficulties were often forgotten:

I think the more you use a computer, the more comfortable you become with it. I think that is fair, if you were hands-on everyday, some things just become, [well] you don’t know how you know them, because you’ve now learnt it, it’s automatic ... you could compare it to the skills you have at home. If you were to ask your mum how she made apple pie, she could tell you the recipe but [not] how she makes it the way it is ... the skills she has learnt over time and how she does things without thinking about it ... and I think computing falls into the same bracket.

Like other practical knowledge, Maggie’s comment described the nature of computing skills as a practical, embodied competency which is learned by doing, and then becomes automatic and something that is ‘done without thinking’. She also alluded to the difficulty of putting into words or making explicit the nature of such embodied, practical knowledge. As with other forms of tacit knowledge, this instance implies knowing ‘more than we can tell’ (Polanyi 1966: 4). Her husband, Ian, echoed this understanding with the phrase, ‘you don’t know how you know it’. Ian had both an abstract or theoretical understanding of computers and the tacit, practical knowledge that comes with everyday use (Dourish 2001).

While several participants had become proficient computer users, new developments in the technologies could undermine their competence and necessitate new body techniques. For instance, while Barbara and George had ‘felt confident’ with their previous computer, they had found it difficult to adapt to a new one and their usage had reduced. Similarly, Brenda had decided not to get a laptop as to use it required a new technique for moving the cursor, and would not be ‘easy to manipulate’. As discussed earlier in relation to the transition from typewriters to computers, several participants came up against limits to their ability to transfer or adapt skills learned from earlier forms of the technologies. For example, Lesley said that while Ian found it easy to apply his computer expertise to ‘new stuff coming in’, she found it difficult to adapt to new programs. As she remembered:

I *hated* the change from Works to Windows. I got happy with one set of instructions on how to do something, and then Ian would come along and make the computer more efficient, more organised and better [but] it didn’t do it the way I used to know how to do.

In short, although practical knowledge could become encoded in embodied memory, it could be difficult to transfer to new practices (Crossley 2007). Knowledge could also be forgotten or displaced by new skills. Barbara, for example, found that after learning to use their new computer she was no longer able to use the word-processor because of the lack of regular practice. As she perceptively noted about recent changes in technology, ‘nowadays if you [don’t] practise [you lose the skill]: it’s not like riding a bicycle, you never forget riding a bicycle’.

Although some participants had reached the level of embodied competency with computing, for many it was still a source of worry or uncertainty, particularly those who had only recently begun to learn. These participants contrasted their computer skills with those of young people, for whom embodied competency was seen as the norm. Young people were described as using computers ‘automatically’, with a knowledge of computing as embedded ‘instinctively’ into their thought patterns and actions. For instance, Andrew said ‘their dexterity and mindset is completely different to mine’, while Jenny described an instinctive knowledge of computing among ‘young kids’ with the generalisation that ‘they think in a computer way, whereas we think in terms of a hard copy, a paper, a book’. As with other body techniques (Crossley 2007; Narvaez 2006), in polarising these differences in embodied competencies, the participants constructed category differences between young and old (Woodward 1991). Moreover, the division was seen as hierarchical, with young people having superior technological abilities to older users. These views were encapsulated in a brief exchange between Brenda and Greg:

Greg: I think technology is moving so fast, I think as you get older you just can’t cope with it.

Brenda: We need the young ‘uns to show us [laughs].

This exchange reflects broader cultural meanings in which computer and internet technologies are coded as the domain of ‘youth’ (Jaeger 2005; Richardson, Weaver and Zorn 2005). Even some competent computer users like Maggie and Richard described themselves as exceptional among their age peers, reinforcing the association of technological ability with youth (Lin, Hummert and Harwood 2004). Two retirees who were competent users contested this discourse, however, with Ian and Arthur saying that they had ‘informed the lower generation as well’ and helped their children with computing. Even these two acknowledged the generation gap and divisions between ‘old folks’ and ‘young people’, however, and only Carol and Jack did not refer to young/old divisions in their remarks.

Computer use, constructions and experiences of the ageing body

In distinguishing their abilities from those of ‘young people’, the participants not only reflected on different levels of embodied competency but also drew on broader discourses about the ageing body. As generally found in representations of ageing, the ‘discourse of decline’ was prominent in their accounts (Richardson, Weaver and Zorn 2005). For those who had taken up computing after retirement, it was often described as more difficult to learn because of a decline in memory and mental capabilities. For instance, Dot stated that, ‘as you are older your brain is slower than when you were younger so it takes longer for you to memorise things’. Mental decline was also a concern for more established computer users, including worries that future memory loss may create risks when conducting online financial transactions. Others, like Albert, described the difficulties when adapting to new programs. He said, ‘with age there’s a certain amount that you can learn that with electronics that sort of thing, there’s so many new words, and the memory won’t retain the descriptions of what’s actually going on’. The participants also related differences in computing ability to physical decline. William, for example, thought that difficulties with reading computer screens were possibly ‘a factor of older people’s eyes, younger people may find screens easier than we do’. Some participants occasionally contested the discourse of decline, however, for instance Jane and Dot, who when discussing the difficulties of learning computing in later life agreed that ‘age shouldn’t be any barrier to learning’. The clearest resistance to this discourse came from Carol, who argued consistently that, ‘the capacity to learn continues long after retirement’. She mentioned several people who had learned computing and other new skills in their seventies or eighties, and argued that while some may experience memory problems, the association of mental decline with old age is socially constructed. As she reasoned:

It’s self-fulfilling, this thing. If we’re told that we’re going to lose our memories as we get older, then we tend if we make little mistakes to think, ‘Oh, my God, that’s a sign of ageing’. ... There is an expectation that older people degenerate, [but] because the physical degenerates doesn’t mean that the mental degenerates at the same rate, if at all.

This comment invokes the ‘mask of ageing’ by contrasting continuing mental abilities with physical degeneration in old age (Featherstone and Hepworth 1991). The division between mind and body was evident in descriptions of older people who were mentally active and able to use computers, while experiencing declining physical health and mobility. It also emerged in relation to the discourse of ‘positive’ or ‘successful’ ageing, which emphasises personal responsibility and the importance of

‘keeping active’ (Katz 2000, 2001; Laliberte-Rudman 2006). The interview responses drew on this discourse in contradictory ways; on the one hand, several participants described computer use as a way of keeping ‘mentally active’ and keeping ‘the grey matter going’, but on the other, some saw the use of the internet for activities such as shopping as creating laziness and physical inactivity, and raised the danger of getting stuck indoors. As Andrew reasoned:

If you need to go to the bank, to walk into town only takes 15 minutes, and at least walking there and back you’ve done a mile-and-a-half brisk walking, so it’s doing you good as well. ... [Because] I guess it is very easy if you are that way inclined to ... just get stuck behind your computer, or to just do everything from home on your computer.

This apposition reflects the division between body and mind found in many depictions of computer culture, in which the body is seen as being neglected because of long periods spent online (*cf.* Lupton 1995; White 2006). Several participants believed, however, that computer-based facilities were valuable for older people who were not able to get out, and that they would be useful if they became physically immobile, again linking technology use to a narrative of decline. As found by Richardson, Weaver and Zorn (2005), therefore, discourses of ageing were drawn on in contradictory ways, and resisted as well as reinforced in accounts of technology use.

It is difficult, however, to separate ‘real’ lived experiences of the body from the discursive constructions of ageing bodies (Woodward 1991). Experiences of change or deterioration in bodily capacities over time can make the ageing body ‘reappear’, although these are always read in relation to broader cultural meanings (Crossley 2006). A number of participants described such changes in bodily capabilities, both in their general accounts of technology use, and when considering the time spent on particular activities as recorded in their diaries. Some mentioned that a deterioration in health had led to a ‘slowing down’ and to less time being spent on physically-demanding tasks and hobbies. For these participants, more time was instead spent using the television or the computer which, as Fred said, ‘isn’t physically demanding. I can sit there in a nice comfortable chair. ... The older I get, the less I want physically demanding things, I soon get tired’.

As others have suggested (*e.g.* Dickinson and Hill 2007), computer use could also compensate for deteriorated sight or hearing, which could limit social interactions or the use of other technologies. For instance, Albert’s hearing problems created difficulties in face-to-face communication and in using the radio, television or telephone, but computer and internet activities were unaffected. Similarly, Deidre’s deteriorating eyesight meant

that computer and television use increasingly replaced reading as a source of enjoyment. For other participants, however, health problems had constrained computer use. Hilda described her poor eyesight as a reason for not using the computer, saying ‘apart from anything else, I think my eyesight would go against it’. As found by studies of other age groups, more general experiences of bodily pain and discomfort can limit computer use (Lupton 1995; White 2006). For example, Andrew and Jenny found the ‘physical aspects’ of computing restricting, and described how too much time on the computer could make your ‘eyes hurt’ or your ‘back ache’. The analysis of the diary entries also revealed how computer use was situated within and constrained by bodily rhythms of sleeping, getting up and meal times (Adam 1995).

As well as the lived experiences of bodily constraints, it is argued that consciousness of one’s mortality draws attention to the limitations of purely social constructionist accounts of the ageing body (Twigg 2004). While we are not often directly aware of the process of bodily ageing, it is argued that the passage of time is experienced more directly in relation to an awareness of finitude and the ‘irreversibility of time’ (Hockey and James 2003). This sense of time being ‘limited’ and ‘running out’ emerged strongly throughout the interview accounts, and computer use was situated within a sense of this parameter. As found by studies of television use (Haddon and Silverstone 1996), the limited and valuable nature of time meant that participants like Lesley and Emma did not want to ‘waste’ it on the computer. As Emma reflected:

I do feel a huge pressure of ‘we are not here for ever’. [laughs] I know we all feel that none of us is going to die, but we are, and that’s not within our control, and I don’t know how long we’ve got, and what do I really, really wanna do with my life? And sitting in front of the computer is not one of those things that’s on my list, to be honest. [laughs]

The issue of mortality also arose among couples with only one person being computer competent, for there were concerns that if she or he died, the partner would not be able to access their online bank account. It also emerged in relation to online communications. For example, Bill and Jane used the computer to contact members of Unison’s Retired Members’ Association and pointed out that when members died, they ‘don’t let you know ... and you’re sending stuff out every month’.² Another participant, Audrey, expressed concern about what would happen to her online genealogy research after she died, and hoped one of her grandchildren would carry it on. As argued by Shilling (2005), online experiences are always situated within and return to physicalities, with mortality representing the ultimate limitation to attempts to challenge the constraints of the body through cyber-technologies.

Discussion and conclusions

Contrary to the view that the ageing body may be escaped through computer and internet technologies, the key argument presented in this paper is that computing is usefully understood as an embodied practice that requires ‘body techniques’. Through examining the biographical experiences of older computer users, this paper has illustrated how, as with other body techniques, the knowledge involved in computing can only be acquired practically through repetition and hands-on experience (Crossley 2007; Wacquant 2004). Once embodied competency is reached, however, computer use becomes automatic or unconscious and a form of tacit knowledge that is difficult to put into words (Polanyi 1966). This has implications for broader understandings of how computing and other technological skills are acquired, as well as specific implications for understanding older computer users. If computing can only be learned through practical experience, this may help explain why previous studies have shown that many older people find computer training courses or manuals unhelpful (*e.g.* Dickinson and Hill 2007; Richardson, Weaver and Zorn 2005; Saunders 2004). It also supports the finding of experimental studies that for older computer learners, hands-on training is most helpful (*see* Czaja and Lee 2008 for a review). This has implications for those who are keen to assist older people learn computer and internet skills, as the government promotes the inclusion of older people in the ‘information age’ (Selwyn 2004). Hands-on learning has also been found to be most effective among younger people (Czaja and Lee 2008), which emphasises that computing skills are a form of practical or embodied knowledge for all age groups.

In terms of our understanding of the experiences of older computer and internet users, this paper has stressed the importance of situating computer use in later life within people’s biographical experiences of technology throughout the lifecourse. This has implications for the design of research, which has generally attributed difficulties in using computer hardware, such as the mouse, to the deterioration of psycho-motor functions in later life (*see* Czaja and Lee 2008 for a review). While physical constraints were an issue for some of the participants, their accounts also evinced that such problems reflect difficulties in applying acquired embodied skills and knowledge to new technologies, and in adapting to the required changes in physicality. Although many had learned keyboard skills by using typewriters or word processors, the computer mouse demanded new embodied knowledge and skills. Proficiency in computing involves habituation and suggests that experience is the key to overcoming such difficulties, which is supported by the finding that problems with using the

mouse are generally overcome with practice (Alm, Gregor and Newell 2002).

This finding supports both the argument that the design of new computer systems and devices should map more directly on to familiar technological practices (Dickinson and Hill 2007), and the claim that older people's difficulties in learning to use computers reflect their different formative technological experiences (Rama, Ridder and Bourma 2001). By examining the participants' biographical experiences, this study has shown that technologies experienced early in the lifecourse were more easily adopted and used 'naturally', whereas those that were entirely new were a struggle to learn and use. The participants described young people's ability to use computer technologies 'automatically' as acquired through early exposure, which supports the assertion that the 'generation gap' between 'young' and 'old' reflects different formative experiences more than differential capacities. Although the small scale of this study limits the generalisability of its findings to all 'older people', their consistency with the results of previous comparable studies lends support to the broad conclusion.

While the key message of this paper is that computer use should be understood as an embodied practice, it has also indicated that other aspects of embodiment relate to technology use, and that people situate their acquisition of 'body techniques' in their experiences and constructions of older bodies. As suggested in earlier work (*e.g.* Dickinson and Hill 2007), the use of computer technologies can to some extent compensate for physical limitations in later life, but also can be constrained by these difficulties. These lived experiences of bodily change and constraints are situated within broader cultural discourses surrounding the ageing body, and it is difficult to separate these elements. The findings of this study therefore add weight to the argument for a multi-faceted approach to embodiment (*cf.* Laz 2003; Shilling 2003, 2005; Twigg 2004) and for such an approach to be extended to the understanding of technology use in later life.

Acknowledgements

The data reported in this article were collected for my broader PhD research on domestic internet use in retirement, which was conducted at the University of York and funded by a White Rose Studentship Scheme (a collaboration among Yorkshire universities). Thanks to my PhD supervisor Sarah Nettleton for feedback on earlier drafts of the paper, to the two anonymous reviewers of this article for their helpful comments, and most particularly to the participants in the research.

NOTES

- 1 Saga Zone is a social networking website for the over-fifties, created by the British insurance and holiday company Saga (see www.sagazone.co.uk).
- 2 'Unison is Britain and Europe's biggest public sector union with more than 1.3 million members. The members work in the public services, for private contractors providing public services and in the essential utilities' (<http://www.unison.org.uk/>).

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Accepted 27 January 2010; first published online 16 March 2010

Address for correspondence:

Christina Buse, Centre for International Research on Care,
Labour and Equalities (CIRCLE),
School of Sociology and Social Policy,
University of Leeds, Leeds LS2 9JT, UK

E-mail: c.buse@leeds.ac.uk.