Internet adoption among older people: A birth cohort study.

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Internet Adoption among Older People: A Birth Cohort Study

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SUMMARY

The aim of this research is to investigate the process of Internet adoption among a cohort of older people who reached their formative years historically prior to the public emergence of the Internet, and who have gained no previous exposure to the Internet in their educational and working lives. This research is based on an ethnographic research study of a number of participants who attended one-off, introductory Internet workshops. It is situated within an interpretive paradigm. The research involved a follow-up of research participants approximately six months after their workshop attendance. This research employs Everett Rogers' (2003) theory of the Diffusion of Innovations, and draws on diverse literatures from Information Systems, Sociology, Gerontology and Gerontechnology. It investigates why the aforementioned cohort of older people may be adopting (or rejecting) the Internet; how they are adopting; and how this process can occur over time. It also proposes a potential means for accelerating Internet adoption among older people. The results of this research reveal that the process of Internet adoption characterising this specific cohort can be long and complex, and can be shaped by social network ties. The influence of strong ties was most evident, but weak ties were also important. The influence of both strong and weak ties is emphasised in the proposal of community networks and of intra- and intergenerational partnerships, which are recommended as community-based, 'home-from-home' environments in which older people (and other social groups) can 'trial' the Internet and observe it in use by others.

DECLARATION AND STATEMENTS

DECLARATION

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Signed ..... (Candidate)

Date .....

STATEMENT 1

This thesis is the result of my own investigations, except where otherwise stated. Sources are acknowledged in the appended bibliography.

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Date .....

STATEMENT 2

I hereby give consent for my thesis, if accepted, to be available for photocopying and for inter-library loan, and for the title and summary to be made available to outside organisations.

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ABSTRACT

Research surveys reveal that older people are disproportionately less likely than younger people to adopt the Internet (ONS 2008a; Dutton *et al.,* 2005; Welsh Consumer Council, 2005). The likelihood of Internet adoption is shown to rapidly decrease according to age, and patterns of non-adoption are most pronounced amongst oldest people (Dutton *et al.,* 2005). This relative lack of Internet adoption among older people is seen by some commentators to isolate them from society (Harrington and Harrington, 2000). However, this same survey data also reveal growth in Internet adoption among older people in recent years. Researchers suggest that little attention has been paid to older people's adoption of Information Communications Technology (ICT) like the Internet (Selwyn *et al.,* 2003). The aforementioned trends – namely the reduced propensity for older people to adopt the Internet, alongside patterns of growth in Internet adoption among older people – suggest that it is desirable and timely to gain a better understanding of why and how older people may be adopting (or rejecting) the Internet.

The primary aim of this research is to investigate the process of Internet adoption among older people, whose membership of a specific birth cohort means that they reached their formative years historically prior to the public emergence of the Internet[1], and who have not been previously exposed to the Internet in their educational and working lives. Why and how they are adopting are of particular interest in this research, as is the impact of time on the adoption process. This research also aims to propose a means for accelerating Internet adoption among older people.

The focus on birth cohort in this research enables an appreciation of the fact that today's current cohorts of older people are relatively under-exposed to the Internet compared with younger cohorts, due to the historical timing of their birth and the later historical emergence of the Internet. This research aims to investigate the process of Internet

[1] It is recognised that the Internet was 'born' in the 1960s as a communication network between researchers linked to the US defence department. By the 'public' emergence of the Internet, the researcher means the emergence of the Internet in the home, workplace, and educational and community settings over the course of the 1980s and 1990s.

adoption among those older people for whom lack of historical exposure means that the Internet has not 'migrated' from their educational or working careers.

This research is based on an ethnographic investigation conducted at a series of Internet beginners' workshops, where many of the research participants were using the Internet for the first time. Data was collected by participant observation, interviews and the postings the research participants made to an on-line discussion forum at the workshops. By adopting the interpretive paradigm as the epistemological underpinning of this research, the researcher assumed that the process of Internet adoption among older people was not an objective phenomenon with known properties and dimensions. Rather, understanding was developed from the data and was gained through a holistic perspective, and not through the ability to identify a set of variables.

The results of this research reveal that the process of Internet adoption characterising this specific cohort can be long and complex. The uncertainty surrounding the Internet and the dissonance surrounding adoption were important in this context. It was also discovered that the Internet adoption process among this cohort can be shaped by social network ties. The influence of strong ties was most evident, but weak ties were also important. Strong ties were those the research participants had with close family members and with their friends. It was discovered that they had key influence on the adoption process in several ways, including their efforts at persuasion, and the opportunities they provided for vicarious trial and observation of the Internet. The influence of weak ties was apparent in the research participants' desires to 'keep up' with the times and with existing Internet adopters. The influence of both strong and weak ties is emphasised in the community networks and the intra- and intergenerational partnerships, which are proposed as potential means for accelerating Internet adoption among older people.

ACRONYMS AND ABBREVIATIONS

AAMI	Age Associated Memory Impairment
CAL	Cymru Ar-lein
Email	Electronic mail
ICT	Information Communication Technology
ISPs	Internet Service Providers
IT	Information Technology
ONS	Office for National Statistics
SPA	State Pension Age
TGG	The Glasgows Group
UK	United Kingdom
US	United States
WAG	Welsh Assembly Government
Web	World Wide Web
WWW	World Wide Web

1. INTRODUCTION

1.1 BACKGROUND INFORMATION AND RESEARCH MOTIVATIONS

At the root of this Thesis research is the motivation to understand the process of Internet adoption among older people, whose membership of a specific age cohort means that they reached their formative years historically prior to the public emergence of the Internet[2], and who have not been previously exposed to the Internet in their educational and working lives. The intention is to access their own experiences and perspectives of Internet adoption as they gain their first (or nearly first) use of this technology.

The Internet is a form of Information Communications Technology (ICT)[3]. ICT refers to *"the hardware, software, networks, and media used to collect, store, process, and transmit information in the form of voice, data, text and images"* (The World Bank, 2008). The Internet is described as (DiMaggio *et al.*, 2001: 3):

> *"*[T]*he electronic network of networks that span homes and workplaces... that people use to exchange e-mail, participate in interactive spaces of various kinds, and visit sites on the World Wide Web."*

The Internet is increasingly penetrating society at a time when there is a disproportionate population growth, with a greater proportion of older people than younger people in the population (ONS, August 2005). These two forces - the diffusion of the Internet and population ageing - are converging during this unprecedented nexus point in history. Research surveys reveal that older people are disproportionately less likely than younger people to adopt the Internet (ONS, 2008a; Dutton and Helsper, 2007; Welsh Consumer Council, 2005). This relative lack of Internet adoption among older people is seen by

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[3] Other forms of ICT include, among others: mobile telephony, digital television, Digital Versatile Discs (DVDs), and flash memory 'sticks'

some commentators to isolate them from the society in which they are growing in number (Harrington and Harrington, 2000). It is argued elsewhere that if older people are to be integrated in society, technology should be explicitly directed to the fast growing segment of independent older adults (Harrington and Harrington, 2000). With projections for the proportion of older people in the population to increase in the future, and research evidence that points to the reduced propensity among older people to adopt the Internet, the place of the Internet in the lives of older people is an important issue in the present and in the immediate future. However, commentators suggest that little attention is given to older people's adoption of ICT like the Internet (Selwyn *et al.,* 2003).

The same research surveys which show that older people are characterised by a reduced propensity to adopt the Internet compared with younger people also reveal growth in adoption among older people during the 2000s (ONS, 2008a; Dutton and Helsper, 2007; Welsh Consumer Council, 2005). This growth is reflected in levels of household connections, levels of access to the Internet inside and outside the home, and levels of usage, including levels of daily or almost daily use, among oldest age groups (ONS, 2008a; Welsh Consumer Council, 2005). These research findings suggest, therefore, that older people are less likely to adopt the Internet than are younger people, but that they are coming to adopt in greater numbers in recent years. This recent growth is an interesting research prospect, because the surveys that reveal adoption levels among older people provide no explanation of how and why they are adopting the Internet. To the researcher's best knowledge, this research interest has not previously been investigated. It therefore provided motivation for the conduct of this research.

Another interesting feature of current debate in this context is the belief propounded by several commentators that older people's Internet adoption will start to approximate that of younger generations as a result of more technologically-experienced middle-aged cohorts and other younger cohorts replacing older cohorts over time (Balazs, 2004; Morrell *et al.,* 2004; Fox, 2001). Dutton and Liff (2006) have drawn attention to the importance of distinguishing cohort from other aspects of age, including 'lifestage' (for

example, those older people in retirement, or those with potentially declining physical and mental health), when examining levels of adoption and use of the Internet. It is the idea of birth cohort as *"a constituency of people who have simultaneously reached their formative years during a distinct historical period"* (Hunt, 2005: 215), rather than lifestage, that provided a further motivator to the conduct of this research. Again, and to the researcher's best knowledge, there is no research that has explored the Internet adoption of older people who, as a specific birth cohort, reached their formative years prior to the emergence of the Internet as a social and leisure tool, and who have not previously been exposed to the Internet in educational and workplace settings.

1.2 UNDERSTANDING AGE AND 'OLDER' AGE

The meaning of age and, by extension, 'older' age, is not straightforward. Many people rely on chronological age to define the onset of older age (O'Hanlon and Coleman, 2004). However, chronological age is seen as only a rough indicator of the ageing process (Victor, 1994), and one that differs in importance between cultures and over historical time (Pilcher, 1995). It is also argued that chronological age tells us little about the characteristics possessed by people of a given age (Kovach and Knapp, 1994) and that it fails to appreciate the heterogeneity that can exist among people of the same age and the homogeneity that may characterise people of different ages (O'Hanlon and Coleman, 2004). Moreover, it is argued that chronological age does not grasp how earlier life experiences may impact in later life (O'Hanlon and Coleman, 2004).

The concept of 'birth cohort' contextualises individual lives according to the unique social and historical time into which they were born, and according to the company of other cohort members, or 'coevals' (Pilcher, 1995). A further way of understanding age according to historical context, and one that also departs from chronological age, is by the 'life course' approach (Hunt, 2005). The life course concept does not assume a stable social system, but one that is in a constant state of flux over time (Hunt, 2005). It recognises that experiences of later life are fundamentally influenced by the individual's cumulative life histories and by the specific historical conditions that impacted their

earlier lives (Hareven, 1982). In this way, one's age, gender, ethnicity and so forth can exert a strong influence on life experiences and life chances throughout the life course (Bradley, 1996). Given their emphases on changing historical circumstances and cumulative life histories, the notions of cohort and the life course can be seen as promoting the idea of old age as a highly diverse period of life (Gilleard and Higgs, 2000).

Examination of today's older people in the 'consumer society' also reinforces the notion of cohort, because older people's consumption histories are seen to be linked to their cohort experiences of a developing focus on consumption (Vincent, 2003). However, Hunt (2005) emphasises that many older people are excluded from participation in the consumer society due to some earlier life course conditions that are not conducive to choice of lifestyle in older age, including detrimental living conditions and opportunities to accrue wealth.

Indeed, some commentators argue that many older people are 'socially excluded', in the sense that they may, to use Kruger's (1998) terminology, have little or no access to the 'ladder' of personal advancement and upward mobility. To demonstrate, older people are seen to be socially excluded on a number of fronts, including their lack of material resources, lack of contact with other people, poor housing and limiting illness (Social Exclusion Unit, 2005), and are argued to be less likely than younger people to be able to change their social and economic circumstances as they get older (Richards, 2006). Indeed, even those older people who may not be characterised by those factors of disadvantage associated with social exclusion (Social Exclusion Unit, 2005) may often be socially excluded simply due to their advanced age (Olphert *et al.,* 2005). Also, some commentators see older people as 'digitally excluded' in so far as the marketplace has thus far not delivered for older people widespread access to those ICT like the Internet (Sinclair, 2006) that are seen as pre-requisites for full participation in contemporary society (Partridge, 2004).

1.3 INTERNET ADOPTION AMONG OLDER PEOPLE

At the current time, the Internet has become the fastest-growing ICT in history (Dholakia *et al.,* 2003; d'Haenens, 2001), but research surveys reveal that older people represent one particular segment of society that the Internet is largely not penetrating, in comparison to younger generations (ONS 2008a; Dutton *et al.,* 2005; Welsh Consumer Council, 2005). The likelihood of Internet adoption is shown to rapidly decrease according to age, and patterns of disengagement are most pronounced amongst the oldest generation (Dutton *et al.,* 2005). The result is an 'age divide', in which the propensity to adopt the Internet is reduced as age increases. The same pattern has been identified in the adoption of broadband Internet connections (Dwivedi *et al.,* 2006). Other surveys reveal the 'social patterning' of the age divide (Chen and Wellman, 2003); that is, how the interrelation of age with other demographic categories like gender, ethnicity, income and health can provide a fuller understanding of patterns found in the research data (Vuori and Holmlund-Rytkonen, 2005). The impact of retirement as a 'lifestage' distinct from (presumably) earlier life stages, such as 'student' and 'employed' has also been researched (Dutton and Helsper, 2007). The findings of this research suggest that in 2005 the retired had Internet access for a longer period than those who were students or those who were employed, but that they were the least likely to use the Internet in public and community sites, the least likely to report that losing their Internet access would be a problem, and the least likely to positively rate their Internet skills (Dutton and Helsper, 2007).

The idea of 'technology generations' shifts the focus from survey data that shows discrepancies of adoption between younger and older people, towards the idea that today's younger people are qualitatively different from older people because they have grown up in a world immersed in technology (Harding, 2000). Some commentators suggest that an individual's exposure to technology between the ages of 10 and 25 years has a long-term impact on the way that they use technology (Becker and van de Goor, 1997), and on the decisions they make about technology in later life (Docampo Rama,

2001). Thus, the 'technology generations' discourse broaches the idea of historical exposure to technology, and therefore offers a starting point for understanding the role of birth cohort in understanding older people's Internet adoption. To explain more fully, a focus on historical exposure to technology can facilitate an appreciation of how many of the members of the oldest cohorts in society today may have been through their educational and working lives prior to the emergence of the Internet as a social and leisure tool.

Digital inclusion – *"the use of technology, either directly or indirectly, to improve the lives and life chances of disadvantaged people and the places in which they live"* (Digital Inclusion Team, 2007: 5) – is believed to offer the opportunity to bridge the so-called technological '*generation gap*' (Burdick, 2001). Commentators perceive a number of potential benefits associated with the digital inclusion of older people, including improving their social and economic wellbeing (Aldridge, 2004) and their quality of life (Osman *et al.,* 2005). The provision of 'drop-in' facilities and 'taster' sessions aimed specifically at older people are proposed in the literature as potential means for getting them digitally included (Aldridge, 2005).

The *'silver surfer'* discourse suggests that a significant proportion of older people may be reaping the benefits of the Internet (Hines, 2004; Weightman and McDonagh, 2003). Research statistics show that rates of Internet adoption among older people have risen in recent years (ONS 2008a; Dutton *et al.,* 2005; Welsh Consumer Council, 2005) and show signs of increasing further (Dutton *et al.,* 2005). What is missing from this data, however, is explanation of how and why older people may be coming to adopt the Internet in greater numbers, and how the adoption process may unfold over time.

1.4 DIFFUSION OF INNOVATIONS

Everett Rogers' (2003) Diffusion of Innovation theory provides a model of the diffusion process that can help to make sense of the data that show the reduced propensity of older people to adopt the Internet compared with younger people, and their growth in adoption

over recent years. It does so by focusing on the rate, or 'relative speed', with which a given innovation is adopted by different members of a social system. For Rogers (2003), the diffusion process is one in which an *innovation* is *communicated* through certain channels over *time* among the members of a *social system.* He shows that the diffusion process in a social system follows an S-curve, in which the adoption of an innovation begins with slow change, is followed by rapid change, and ends in slow change as the product matures or new innovations emerge. Rogers (2003) also presents a '*Diffusion of Innovation Curve*', on which each of his five adopter categories - namely innovators, early adopters, early majority, late majority and laggards - can be located according to their rate of adoption; that is, how early or late they adopt a given innovation. His intention is to demonstrate that people adopt at different times and at different rates.

The adoption process tracked through the diffusion curve is essentially an *'innovation-decision process'*, which again reflects a time dimension in the adoption process. This process involves individuals passing through a number of stages, from first gaining *knowledge* of the innovation, to forming an attitude toward it at the *persuasion* stage, to making an *adoption* or rejection decision, to *implementation* of the innovation, and through to *confirmation* of their decision. These steps suggest that the introduction of an innovation does not guarantee its adoption over the long term, unless a positive decision is made at the confirmation stage. The outcome is either adoption - *"a decision to make full use of an innovation as the best course of action available"* - or rejection - *"a decision not to adopt an innovation"* (Rogers, 2003: 37). Decisions to adopt or reject an innovation may be reversed at a later time, indicating the importance of discontinuance in this context.

Time is also apparent in the innovation-decision process in what Rogers (2003) calls the '*innovation-decision period*'. This is *"...the length of time required to pass through the innovation-decision process"* (Rogers, 2003: 21). The innovation-decision period is an important consideration in the diffusion of innovations because it acknowledges that individuals vary in the time that they require to reach an adoption decision, which gives

an indication of their levels of innovativeness and provides a useful way of assigning people to adopter categories.

1.5 RESEARCH AIM AND QUESTIONS

Given the above discussion of the current state of knowledge about the Internet adoption of older people, the motivation for conducting this research is to gain a fuller understanding of the *process* of adoption. A further motivation is to contextualise this understanding of the adoption process with the idea of how many members of today's current cohort of older people reached their formative years historically prior to the emergence of the Internet as a social and leisure tool, and may not have been exposed to the Internet in education and workplace settings. This focus is intended to provide a better understanding of the role of historical exposure to technology during the formative years of life on adoption decisions made later in life (Docampo Rama, 2001). Dholakia and colleagues (1996: 8) suggest *"once a technological system gets established in one life sphere, it has the potential to migrate to the other connected spheres"*. To the best of the researcher's knowledge, there is no research that sheds light on the process of Internet adoption among those older people for whom lack of historical exposure means that the Internet cannot 'migrate' from their educational or working careers. To this extent, the primary aim of this thesis is to *investigate the process of Internet adoption among a cohort of older people with no previous historical exposure to the Internet.*

In order to fulfil the primary purpose of this research, four research questions will be answered. These are:

- Why are older people adopting (or rejecting) the Internet?
- How are older people adopting the Internet?
- What is the impact of time on older people's adoption of the Internet?
- By what means can older people's Internet adoption be accelerated?

It is anticipated that this investigation will contribute knowledge to the research and policy communities in several ways.

1.5.1 Contributions to Knowledge

The research presented in this Thesis aims to provide an original contribution to existing knowledge in seven main ways. These are explored briefly here, but are elaborated in the Methodology chapter. First, the intention of this research is to address the gaps identified by other authors in existing knowledge surrounding the Internet adoption of older people (Paul and Stegbauer, 2005; Morrell *et al.,* 2004; Selwyn *et al.,* 2003; Melenhorst, 2002). The survey data that show the discrepancies between younger and older people, and between the retired and those people in other lifestages, have a number of limitations. Chief among them is their limited capacity to capture the *process* of Internet adoption among older people, such as *why* and *how* they adopt (or not). This research will attempt to address these gaps in knowledge by contributing toward an understanding of these issues.

Second, this research aims to contribute toward current understanding of age-related technology adoption in the Information Systems (IS) discipline. It focuses on a specific cohort of older people for whom the Internet has not 'migrated' from previous exposure in education and workplace settings. It is anticipated that this focus on cohort could provide a fuller understanding of the impact of age, period and cohort effects on older people's Internet adoption. At the time of writing, the researcher has found no evidence of other researchers in the IS field reflecting on their data in this way.

Third, this research aims to contribute to existing knowledge by utilising the Diffusion of Innovation theory proposed by Rogers (2003). As far as the researcher is aware, to date this approach has not previously been conducted to explore older people's Internet adoption.

Fourth, by being open to the possibility of Internet rejection and discontinuance among the research participants, the researcher hopes to augment a somewhat limited research base which tends to focus on the attitudes of existing users (Olphert *et al.,* 2005).

Fifth, this research will aim to incorporate a time dimension in the process of Internet adoption among older people. This research responds to recognition of the non-static nature of technology (Choudrie and Dwivedi, 2005). By conducting data collection with research participants at two separate times, approximately six months apart, it is anticipated that this research presents a *"moving picture of behaviour"* (Rogers, 2003: 127) as older people make their first (or nearly first) use of the Internet and later make decisions pertaining to its adoption.

Sixth, it is anticipated that this research will contribute towards policy and practice, by proposing a potential means for accelerating Internet adoption among older people. The Diffusion of Innovation theory appears to be ideally suited to achieve this aim, given its attention to the five-fold categorisation of adopters, which is seen to have particular utility for marketers and disseminators, and for others seeking to establish evidence-based interventions (Beilenson, 2005). By using this specific theory, it is expected that this research will respond to Valente and Davis's (1999) argument that few studies attempt to use the lessons from diffusion research in order to accelerate the diffusion of innovations.

Seventh, this ethnographic research responds to Choudrie and Dwivedi's (2005) call for the employment of ethnographic research, and observation and interview techniques, in the IS discipline to explore technology adoption issues. In this way, it is anticipated that this research will provide an incremental contribution to research methods in the IS field.

1.6 METHODOLOGY

This is an ethnographic research study that is based on observational, interview and forum posting data derived from participants at *'Meet the Mouse'* workshops. Meet the Mouse was a national public awareness initiative, which formed part of the Welsh Assembly Government's (WAG) 'Cymru Ar-lein' ('Wales On-line') strategy. The initiative was aimed at raising awareness and use of the Internet, through a schedule of workshops held in venues throughout Wales and that were free of charge to its audience. The workshops were one-off 'taster' sessions specifically aimed at introducing to the Internet those individuals with little or no on-line experience. It operated in the period November 2003 to July 2006. For the purposes of this research, the researcher attended the workshops in the early period of their operation, November 2003 to March 2004. Undertaking the research at these workshops was particularly appropriate because the vast majority of its audience were gaining an initial first-hand exposure to the Internet.

This research is situated in the interpretive paradigm, which was selected because it was seen as a more appropriate and feasible epistemology to apply to this particular research. The term interpretivism denotes *"those strategies in sociology which interpret the meanings and actions of actors according to their own subjective frame of reference"* (Williams, 2000: 210). It has the potential to provide a descriptive analysis that emphasises deep, interpretive understandings of social phenomena (Bevir and Rhodes, 2003). Interpretivism assumes that human experience is a process of interpretation of meanings and actions, that social reality is relative to the observer, and that everyday concepts must be understood and interpreted to create knowledge about the world (Khazanchi and Munkvold, 2003). By adopting an interpretive approach, the researcher assumed that the process of Internet adoption among older people was not an objective phenomenon with known properties and dimensions. Rather, understanding was developed from the data and was gained through a holistic perspective, and not through the ability to identify a set of variables (Hancock, 2002). In line with the tenets of interpretive research procedure and the exploratory nature of this study, the researcher did not strive to pre-define dependent or independent variables, or to test hypotheses.

Data collection was conducted both inside and outside the Meet the Mouse workshops. At the workshops, data collection involved participant observation of the workshop participants as they gained first-hand exposure to the Internet for the first (or nearly first) time. This initial stage of data collection also involved initial interviews with workshop participants, which were focused on gaining an understanding of their current state of Internet adoption. Postings made to the on-line Meet the Mouse discussion forum were accessed (with permission) post-workshop and noted with the interview data when transcripts were made. Outside the workshops, data collection involved follow-up interviews with a selection of individuals initially interviewed during the workshops. The focus of the follow-up interviews was on exploring in greater detail the Internet adoption of older people, and on elaborating pertinent issues raised in the initial interviews. They occurred up to six months following the research participants' attendance at the workshops.

The research data were coded in line with the qualitative data analysis techniques described in the literature (Miles and Huberman, 1994), and were analysed in accord with the principle of hermeneutics (Boland, 2002). The intention of the analysis was to understand the data in its entirety (Myers and Avison, 2002) and to bring the research participants 'to life' (Boland, 2002). The data were presented in the form of vignettes, in order to provide illustrative stories (Grbich, 2007), that presented the participants in context and conveyed a sense of process and time (Seidman, 1998). It was, in short, about the research participant and the researcher telling a story.

1.7 OUTLINE OF THESIS

This Thesis is organised into eight chapters. The next chapter, Chapter Two, provides a discussion of age and 'older' age. The focus is on moving away from a definition that is based on chronological age, towards one that acknowledges the historical timing of an individual's birth and formative years, and towards an appreciation of older age as a time of life in which the cumulative impact of earlier life experiences and life chances

are evident. These approaches to understanding age and older age are those that focus on 'birth cohort' and the 'life course', respectively.

In Chapter Three, the Internet adoption of older people is explored; first through the survey data which reveal the reduced propensity for older people or retirees to adopt the Internet, and second, through discussion of 'technology generations'. In this chapter, the reader's attention is drawn to those survey data that reveal that while older people are disproportionately less likely to be Internet adopters than are younger people, there has been a growth in adoption among oldest age groups in recent years.

In Chapter Four, the Diffusion of Innovations theory provided by Rogers (2003) is presented and described. This particular theory is seen as having potential for providing a fuller understanding of the trends in the survey data by focusing on, among other things, the 'relative speed' with which an innovation is adopted by different members of a social system. Examples of applications of this theory in the work of other researchers are provided.

Chapter Five provides a discussion of the research methodology and the appropriateness of the research methods adopted in addressing the research aim and questions. The selection of the interpretive methodology is justified and the conduct of the ethnographic research is described. How the qualitative data were analysed in terms of inductive logic and hermeneutic analysis, and the presentation of the data in the form of vignettes, is explained. Finally, the quality of the interpretive research and the ethical implications that imposed on the study are considered.

Chapter Six presents the observational, interview and forum posting data in the form of vignettes. The workshops and the research participants are given 'thick description', and the aim is to present data that can adequately respond to the stated research aim and research questions.

Chapter Seven provides a discussion of the research results and their implications. Discussion in this chapter responds specifically to the research aim and associated questions, and incorporates the concepts and literature initially presented in Chapters Two, Three and Four.

Finally, Chapter Eight presents a digest of the research carried out, and includes a brief discussion of the research findings in terms of responding to the research aim and questions. The research is discussed in terms of its contributions to a specific audience and research literature, and in terms of what it offers new to the audience and the literature and how others can potentially use this research. The implications of this research for theory, IS methodology and policy and practice is contemplated. Finally, the limitations of the research are acknowledged, and recommendations for future associated research are made.

2. UNDERSTANDING AGE AND 'OLDER' AGE

2.1 INTRODUCTION

This aim of this chapter is to arrive at a suitable approach to the study of 'older people'. To achieve this, the chapter focuses on age in general, and 'older' age more specifically. Some important concepts, including 'birth cohort' and the 'life course', which are drawn on and elaborated in later chapters, are introduced. It is stressed that older people represent a diverse grouping, and one which is stratified according to such variables as gender, socioeconomic class and ethnicity. Consistent with the life course approach, such stratification is seen as an ongoing outcome of earlier life conditions and experiences. Consideration of what it means to be 'old' in today's society is intended to provide an historical overview of how today's current cohort of older people differ from those cohorts that went before them. The position of older people in the consumer society is also considered, as is the social and digital exclusion of older people. Before commencing to a discussion of these and other important concepts it is first necessary to establish the importance of the study of age and 'older' age more specifically.

2.2 POPULATION AGEING

Population ageing refers to the fact that there are now more people of older age (that is, aged 65 years and older), relatively and absolutely, than at any other time in history (Pilcher, 1995). It is a global trend, common to almost all developed and most developing countries (Select Committee on Economic Affairs, 2003), that has accelerated over the course of the twentieth century (Pilcher, 1995). A number of factors are identified as having contributed toward population ageing, including declines in fertility, improvements in mortality rates (Vincent, 2005), post-war improvements in living standards and health care (Department for Work and Pensions, 2005), and improved diet (Harrington and Harrington, 2000). Population statistics and trends make clear the extent to which the population is ageing, and how this ageing is likely to unfold in the future.

2.2.1 Population Statistics and Trends

Recent decades have witnessed a rising proportion of older people in the population, especially oldest age groups (Bernard and Phillips, 2000). A declining proportion of the population aged up to 16 years old compared to an increasing proportion aged 65 years and over, is especially marked (ONS, August 2005). According to population statistics released by the ONS (ONS Nomis, 2005), in mid 2004 41.9 per cent of all adults resident in the UK were aged 50 years and older. Most recent figures show that 16 per cent of the UK population in mid-2005 was aged 65 years and older, and 12 per cent was aged 85 years and older (ONS, August 2006).

Population ageing in the United Kingdom (UK) is not a new phenomenon, but is a long-running social trend identifiable from at least since 1911 (Vincent, 2003) or as much as 150 yeas ago (Vincent, 2005), and one that is likely to accelerate in the twenty-first century (Peace *et al.*, 2007). Projections forecast a significant increase in the proportion of people over State Pension Age (SPA) (65 years for males and 60 years for females) in the UK over the next half century. In 2001, 10.8 million people were over SPA, and this is projected to rise to over 15 million by 2040 (Shaw, 2003). Other projections suggest that five out of every 20 people will be aged over 65 by 2051 (Select Committee on Economic Affairs, 2003). It is expected that the number of older people will gradually exceed the number of younger people, and there will be an increase in the proportion of oldest old (Peace *et al.*, 2007a).

Riggs (2004) argues that as a result of the ageing of the population and increased life expectancy, the meaning of old age is always subject to renegotiation, and she suggests that research into old age should accordingly respond to these recent demographic transitions. The study of age has recently become of interest in scholarly research. The next section examines this research interest in age, because it emphasises the importance of age in social research and its importance as a key research variable.

2.3 AGE IN SCHOLARLY RESEARCH

Bradley (1996) argues that the demographic transitions that accompany population ageing have played a part in raising the profile of older people in scholarly research. This can be seen in the disciplines of Sociology and Gerontology and in the relatively new discipline of Gerontechnology.

2.3.1 Age in Sociology, Gerontology and Gerontechnology

Research into the sociology of age is concerned with the study of how certain phenomena come to be associated with age (Bytheway, 1990). In Bytheway's (1990) sociological approach to later life, he argues that it is necessary to examine the relationship of certain phenomena with age as they unfold over time. This can be achieved, he asserts, through the examination of the processes, origins and consequences of change in an individual's circumstances and condition, and in particular the changes that are directly consequent upon age (Bytheway, 1990).

Generally, sociologists distinguish between five broad age groupings, namely childhood, youth, young adulthood, mid-life, and old age, but may also categorise individuals in these categories into sub-groups (Bradley, 1996). For example, in relation to old age specifically, individuals may be considered as 'young old' (age sixty or sixty-five to seventy-four) or 'old old' (age seventy-five and older) (Arber and Ginn, 1991). More recently, the sociology of ageing has focused attention on the idea of social differentiation, and how age interacts with other factors such as gender, ethnicity, socio-economic class and so forth (Hooyman and Kiyak, 2007). Sociologists also draw attention to the fact that the meaning of 'age' and 'ageing' often vary in different societies (Bradley, 1996) and at different points in history (Hockey and James, 2003).

Whereas sociology focuses attention on age *per se*, gerontology is concerned with the process of ageing and, more specifically, how this process impacts on older people in

particular (Victor *et al.,* 2007). Gerontology is defined quite simply by Victor *et al.,* (2007: 85) as *"the study of ageing...* [which] *draws upon a range of diverse methods and theories...* [and which] *is characterised by its multidisciplinary approach... but increasingly by its interdisciplinary approach."* As with the sociology of age, the study of changes that occur for individuals over the course of time represents an important focus in gerontology (Gearing and Dant, 1990). However, it also differs from sociology in the sense that it is *"a multi-disciplinary field of study with a particular focus of interest rather than an academic discipline like psychology or sociology"* (Fennell, 1990: 62). It is characterised by the involvement of a diversity of scientific disciplines drawn from the behavioural, natural and social sciences, and is aimed at *"identifying, investigating and understanding the ageing experience and the effects of 'ageing'"* (Victor *et al.,* 2007: 86).

In more recent years, gerontology has dealt with older people's use of Information and Communications Technology (ICT) (Monstad, 2006). Attention to this emerging aspect of later life has prompted the arrival of a new discipline called 'gerontechnology', which is a composite of two words; 'gerontology', the scientific study of ageing, and 'technology', including those civil, biological, mechanical, industrial, information, and other technologies that are argued to have the potential to fulfil the needs of an ageing society (Harrington and Harrington, 2000). Harrington and Harrington (2000: 6) define gerontechnology as *"the study of technology and aging* [sic] *for ensuring good health, full social participation, and independent living throughout the entire life span, however much it may lengthen"*. They assert that gerontechnology *"can enhance the performance and opportunities of older citizens in new roles that fit their new ambitions"* (Harrington and Harrington, 2000: 6). These new roles include those brought about as a result of changed work, leisure, living and social situations (Harrington and Harrington, 2000).

2.3.2 Age as a Key Research Variable

Although fields such as gerontology and gerontechnology have arisen to focus on the study of age, and old age more specifically, there is little consensus among authors about

the position of age and ageing in current scholarly research. Despite what Cavanaugh (1999: 1) calls a *"generative period... of excitement and discovery"* in the relatively recent research interest in age and ageing, other authors suggest that age is a relatively under-researched topic. Bradley (1996) argues that there has been a historic neglect of age, as well as other dimensions of inequality like gender and ethnicity, in research. She traces this oversight of age back to classical sociology, and points to two main assumptions characteristic of classic theorists. First, classic theorists were preoccupied with work and the public sphere, and assumed that it was these economic factors that could explain inequality. As a result, all social groups who were less likely to be involved in production or political activities, namely children, women and older people, were sidelined in classic theories. Second, age was perceived then as a natural phenomenon that affected all individuals. It was assumed that all individuals would pass through all stages of the life course, and so age was not identified as a crucial source of social disadvantage (Bradley, 1996).

In agreement with Bradley (1996), Blaikie (1992) sees the seeming neglect of age in social research to be a result of the 'pervasiveness' of ageing. He argues that (Blaikie, 1992: 4):

"Social scientists have been at pains to demonstrate the ways in which class, race and gender permeate the whole of life. In taking for granted the pervasiveness of ageing we have neglected to recognise its full significance as an organising principle that we all of us live with all of the time."

Making a similar point, Fennel (1990) suggests that age has received scant attention within the sociology of stratification, which has instead taken other variables, like socioeconomic class and gender, as its focus. Bradley (1996: 146) also sees age as *"the neglected dimension of stratification"*. Other authors similarly argue that although age has recently been recognised as a key aspect of inequality and stratification, it remains largely neglected in research (Bradley, 1996; Marcoen *et al.*, 2007). Also, some authors now point to the neglect of *old* age, rather than age *per se*, as a key variable in research.

Askham *et al.*, (2007), for example, suggests that despite increasing research attention, old age is still frequently viewed as outside the mainstream of sociological theorising and investigation.

This lack of attention to age may be explained, in part, by the idea among some authors that age differentiation may not be so important, due to the flexibility of the different phases of life and 'discontinuities', as well as broader structural changes in contemporary society (Hunt, 2005). Hunt (2005) frames his discussion of the importance of age as a key research construct in terms of the move from pre-industrial society through to modernity and later to postmodernity. He argues that, at the very least, the relevance and meaning of age have changed in the postmodern era. Hunt (2005) argues that in pre-industrial societies older people were accorded status and power, and were integrated into dimensions of social, political and civic life, but that modernity signalled the rigorous structuring of the life course, particularly through retirement, and the social and economic disengagement of older people. In modernity, he argues, the highly structured norms that accompanied established stages of life carried different expectations concerning how individuals were meant to behave and respond to others. Now, in the late- or postmodern West, Hunt (2005) suggests that the significance of age categories is changing and declining, and that there is greater ambiguity related to the way people should behave according to their age, and how they relate to other generations. Hunt (2005) attributes this to the breaking down of clearly defined age categories, and the erosion of strict norms related to how people of a certain age are expected to behave.

Despite the changes in how age is conceived over historical time, Hunt (2005) points towards the perseverance of age as a social category. Other authors also admit that age is now recognised, somewhat belatedly, as a key dimension of late modern societies (Bury, 1995) and of inequalities in society (Bradley, 1996). Nowadays, Bradley (1996) contests, there is a greater awareness of how the experiences of different age-groups are socially determined and altered by social and historical contexts, and a greater appreciation that all individuals within a specific age-group do not necessarily share a

common position, due to the consequences of the ways that individuals may differ from one another, including their socioeconomic class, gender and ethnicity. Age is now seen by some authors to be a fundamental variable in the study of populations (Bytheway, 1990).

Several reasons are put forward for this recognition of age as a key research variable. First, Hunt (2005) argues that age categories continue to inform aspects of social inequality, and that age category membership is an important way that people define themselves and other people. Arber and colleagues (2003) also argue that, for many older people, age represents a social marker for a host of distinctive processes within their lives, including the physiological ageing process and various social and economic changes, such as widowhood and declines in the value of pensions with advancing age. Related to this is the second reason for why age is believed to be a key research variable, and that is that age is *"an immutable social fact"* (Chambers, 1995: 146). This is the argument that we will all grow old, and that while there is mobility in social class status, and gender roles are arguably less confining, our age is fixed (Chambers, 1995). In contrast to other authors, who see such categories as ethnicity and, to a lesser degree, gender, as relatively inflexible (Williams and Harwood, 2004), Coupland (2004: 77) discusses a *"more flexible social order"*, brought about by moves away from industrialisation and towards service economies, and the attendant loosening of *"traditional, rigid patterns of social organization, most obviously class and gender configurations linked to occupational roles"*.

On the other hand, age, or chronological age at least, is not socially negotiable, and it *"plays an almost autocratic role in our social lives"* (Chambers, 1995: 146). Even the boundaries of age groups, which are arguably more socially fluid and negotiable, require people to 'qualify' to pass and to make transitions over the life span from 'young' to 'old'; for example, in terms of the visibility or otherwise of the signs of physical ageing (Williams and Harwood, 2004). The permeability of these groups is not unconditional, and boundaries are truly only unidirectional (Williams and Harwood, 2004). What is

obvious here is the belief that all individuals are at various stages on the 'path' towards old age, regardless of how they may try to avoid their arrival at this state.

The third reason for why age is a key research variable is identified role in creating differential access to power, status, material resources and citizenship (Pilcher, 1995). Bradley (1996: 146) argues that age, like other dimensions of inequality such as class and gender, *"involves the construction of social differences which in turn brings differential access to social resources, such as wealth, power and status"*. This can be seen in the lower age limit, set at 18 years in the U.K., for such activities as voting and getting married, and it can also be seen in the institutionalisation of retirement for women at age 60 and for men at age 65. In this sense, ageing is seen to legitimate access to certain social experiences, while denying access to others (Hockey and James, 2003).

In response to the heightened awareness of age as key research variable, Cavanaugh (1999: 1) perceives a recent *"...climate of excitement and discovery unprecedented in science"*, that has put the study of ageing firmly on the research agenda. He argues that from being a somewhat under-researched topic, ageing is now largely seen as a highly complex, dynamic process that can be understood only by considering it from multiple perspectives (Cavanaugh, 1999: 1):

> *"Aging* [sic] *has been a relatively recent focus of biological, behavioural, and social sciences, which creates a rather limited set of data with which to test theories... By the same token, the 'newness' of aging* [sic] *as a focus of study also creates a fertile arena for speculation, resulting in many competing (and sometimes contradictory) notions of why aging* [sic] *occurs."*

Similarly, there exist a number of competing perspectives on the meaning of age, and these are explored next.

2.4 THE MEANING OF 'AGE'

To reiterate the point made by Cavanaugh (1999), there are many competing perspectives on what ageing really means. The literature also reveals a host of different meanings of age. The first is chronological age.

2.4.1 Chronological Age

Chronological (or calendar) age is counted on a numerical basis according to calendar time, beginning from year of birth to the current point of reference, or until the year that death occurs. It can be used to define the onset of old age but, although it can serve as a predictor of health problems in later life (O'Hanlon and Coleman, 2004), chronological age provides only a somewhat rough indicator of the ageing process in biological terms (Victor, 1994). Rather, it brings about changes in the individual's structural position in society, and helps moderate age-based structural institutions such as retirement, and structural opportunities and constraints (Ginn and Arber, 1995). It also serves an important official function in modern Britain by compelling, prohibiting or permitting individuals to undertake certain activities, such as voting and drinking, thereby shaping inter-age relationships, and empowering some individuals while disempowering others (Pilcher, 1995).

Research shows that the significance of chronological age differs across historical and cultural boundaries. It is argued to have increased in importance alongside the development of capitalism in Western societies (Thompson, 1967), where it is often used for grouping people together according to the behaviour patterns culturally expected of people at given ages, relative to individuals at earlier or later stages (Pilcher, 1995), and for acting as an important social and personal marker of identity, behaviour, expectations, experiences and preferences (O'Hanlon and Coleman, 2004). However, in pre-industrial societies and in other cultures today, chronological age is neither recognised nor is it particularly significant (Pilcher, 1995). In some cultures for example, other points of reference to important events, such as severe climatic events like a

typhoon or maturational events like puberty, are bestowed greater importance than is chronological age (Pilcher, 1995).

Chronological age can be seen as a limited way of conceiving age in a number of key respects. While it is clear and inarguable in one sense, as it provides a clear indication to the reader of what the researcher means by 'age', it is also somewhat vague in another sense, in so far as years since birth tells us little about the characteristics possessed by people of a given age (Kovach and Knapp, 1994). O'Hanlon and Coleman (2004) contend that definitions of old age based solely or mainly on chronological age fail to appreciate not only the heterogeneity that can occur between people of the same ages, but also the homogeneity that may exist between people of different ages. Thus, they argue that chronological age fails to account for the differences that may exist between those older people who may be economically, physically and politically active, for example, and those who are inactive in these arenas. Similarly, they argue that chronological age fails to adequately grasp how issues associated with later life may be pertinent at earlier stages of life (O'Hanlon and Coleman, 2004). The loss of spouses through death at a relatively early age serves as an example that dispels the belief that chronological age groups may be unique in certain ways and thus qualitatively different from other age groups.

The limitations of chronological age as a predictor of age-related behaviours are discussed by other authors (Balazs, 2004; Pecchioni *et al.,* 2004). For them, it is the meanings that individuals assign to their own ageing that provide a greater understanding of age (Pecchioni *et al.,* 2004). Indeed, older people may not feel their chronological age, and may actually feel around 10 to 15 years younger than they actually are (Balazs, 2004). It is argued that the inherent problem of conceiving age in such a deterministic way, as chronological age categories do, is the suggestion that age-based systems of classification are natural and inevitable (Hockey and James, 2003). However, individuals do not age exactly alike, chronologically or otherwise (Pecchioni *et al.,* 2004). In response to this, a number of non-chronological age categories have arisen in an attempt to take better account of the meaning of age.

2.4.2 Non-chronological Definitions of Age

Acknowledging the shortcomings of conceiving age in terms of chronology, Sugarman (2001) discusses four 'non-chronological' age categories, namely biological age, psychological age, functional age, and social age. Another definition of age referred to in the literature is contextual age (Rubin and Rubin, 1982).

Contextual Age Contextual age is a reflection of what individuals experience during their chronological years (Baringer *et al.,* 2004). Rubin and Rubin (1982) assert that contextual age is a better indicator of ageing than is chronological age, because of its focus on social and environmental factors. For them, contextual age considers the individuality of ageing, along such interrelated dimensions as physical health, interpersonal interaction, social activity and economic security (Rubin and Rubin, 1982). A such, they argue that it can overcome negative stereotypes associated with old age, and can better acknowledge some of the more positive events in later life, such as, for some older people, a greater sense of economic well-being (Rubin and Rubin, 1982).

Biological Age Biological age, sometimes referred to as physiological age (Ginn and Arber, 1995), is an estimate of a person's present position in relation to their potential life span (Sugarman, 2001). Ideas about biological ageing include, for example, the stiffening of joints, and greater brittleness of bones, and more visible changes like decreases in skin elasticity (Victor, 1994). Such physical signs of ageing are known to biologists as 'senescence', which is a natural process, and not one brought on by pathology or disease, which results in decreases in efficient functioning of an organism with age (Victor, 1994). It can reduce the older person's ability to adapt to physiological stress and lessen their resistance to disease and pathology (Victor, 1994). Recent biological research confirms previous beliefs that people do not suddenly become old when they enter 'old age', but rather that ageing is a gradual process (Moody, 2006). As a result, older people may be highly differentiated in terms of senescence, and may not always experience 'inevitable' physical and mental decline (Hunt, 2005).

Psychological Age Psychological (or subjective) age relates to people's sense of their own age, irrespective of their chronological age (Sugarman, 2001). It is also seen as referring to the functional level of a person's psychological abilities that they can use to adapt to changing environmental demands, and which foster and maintain self-esteem and personal control (Cavanaugh, 1999). Examples include memory, intelligence, feelings, and motivations.

Functional Age Functional age relates to a person's capacities or abilities relative to other people of a similar chronological age, and takes account of the extensive variation in the rate of physiological and psychological maturation throughout life (Sugarman, 2001). Research by Scahie (1977) on functional age gives due attention to individual variability in the maintenance and development of behavioural competence.

Social Age Social age is the extent to which a person's social roles, lifestyle, and attitudes conform to the norms and the social expectations for someone of their chronological age (Sugarman, 2001). Social ageing is argued to be related to life course transitions and how their timing and sequencing is patterned according to such dimensions as gender, ethnicity and social class (Ginn and Arber, 1995). Social age is also believed to be a 'socially constructed' notion based upon age norms related to perceived appropriate attitudes and behaviour, subjective perceptions, and ascribed age (Ginn and Arber, 1995).

2.4.3 The Social Construction of Age

The idea that age is a social construction is a fundamental point made in the sociological and the gerontological literatures, and one that has a rather large literature attached to it (Hunt, 2005; Pilcher, 2005; Kendig, 1986). As such, it requires elaboration because it is seen as a key aspect of how age and ageing are understood (Pilcher, 1995). The social construction of ageing emerged as an important theme in the social sciences from the late-1970s onwards, in recognition of the social environment as a significant

contribution to the meaning of age and the ageing process (Pilcher, 1995). In recent sociology, concepts related to the 'stages' of life have been sidelined in favour of a social constructionist approach, in which the primary concern is with discovering how such concepts as 'stages' have come to be put together (Hunt, 2005). From this perspective, ageing is as much a social construction as it is a biological fact (Kendig, 1986). The physiological differences between people of different ages have long been recognised, but the social construction of age prompts questions pertaining to the ways that various societies have interpreted, understood and attached significance to such differences over the course of historical time (Bradley, 1996).

The social construction of age focuses attention on how people may be seen as products of the 'socialisation' process (Pecchioni *et al.,* 2004; Victor, 1994). Socialisation is the process through which people develop specific patterns of social behaviour (Ziegler and Child, 1969), or the process by which people learn the social roles and behaviours that they require to participate effectively in society (Brim, 1968). Moore *et al.,* (2002) see socialisation as helping society to function by reinforcing particular beliefs, traditions and values. They also argue that socialisation helps people to develop their personal identities and to assume new roles as they progress through life (Moore *et al.,* 2002).

Socialisation is a life-long process, but childhood and adolescence are argued to be particularly crucial times (Moore *et al.,* 2002). During childhood, the socialisation process is focused not only on the present, but on the roles and behaviours that will be required in the future (McNeal, 1987). The family is argued to be the first and typically the most powerful agent of socialisation during this time (Moore *et al.,* 2002). Socialisation in the formative years of life is seen to have repercussions throughout the life span. For Glenn (1977), the life period between ages 10 and 25 years is a most critical period in which people acquire norms, values and skills that influence future behaviour. Becker (1992) also identifies the formative years as the key time that people acquire important values, norms and skills that influence the way that they behave in later life. After this period, adults are believed to be less susceptible to attitudinal and behavioural changes (Glenn, 1977).

Socialisation also refers to the way that people learn their culture, mainly during childhood but also throughout life (Victor, 1994). It is argued that through socialisation successive generations learn the skills, values, attributes and roles which enable them to become fully participating members of their society at large (Victor, 1994). Socialisation is also argued to play a key role in teaching people how to adapt to new roles and to relinquish old roles as they age, and is therefore seen as *"a continuous process of adopting and discarding roles"* (Victor, 1994: 19).

It is also possible to discern the social construction of age through the idea that socio-cultural expectations and values play a key role in shaping the life experiences of people at different ages. From this perspective, age implies social and moral obligations, and sets of expectations of behaviour related to aged identities, which are socially constructed in and through certain social contexts and practices (Hockey and James, 2003). According to Victor (1994), expectations may also be placed on the type of social roles that older people should or should not assume. Older age is simultaneously seen as a time of loss of social roles, such as through retirement, widowhood and other bereavements, and a time of acquiring new roles, such as grandparent (Victor, 1994). As well as experiencing an addition or loss of roles, older people may also suffer from ambiguity about their general social role, brought on as a result of the lack of clear guidelines or requirements for certain roles associated with older people (Victor, 1994).

Victor (1994) identifies three main organising values in Western societies that may negatively impact on older people. These are the work ethic, an orientation towards youth, and progress. Practices which are seen to exclude older people from paid employment, and the emphasis upon youth in popular culture, such as music, fashion and leisure, are seen to undermine the experience of old age (Victor, 1994). Also, the rate of social change within society, allied with the belief that new is inherently better than old, has led to the devaluation and perceived obsolescence of older people's skills, and the belief that older people are unable to gain new skills (Victor, 1994). In this way, values can be seen as working to fix individuals in specific social-historical cohorts; that

is, groups with common ideals derived from their common experiences (Kaufman, 1986). The influence of socio-historical context can be further articulated through an exploration of 'cohorts' and of 'generations'.

2.5 COHORTS AND GENERATIONS

A further way of examining the meaning of age is by notions of 'cohorts' or 'generations'. Unlike the definitions of age provided above, the idea of cohorts and generations as a way of articulating age recognises the key importance of social and historical context.

2.5.1 Cohorts

A cohort is a defined population who experience the same significant events at, or within, a given period of calendar time (Pilcher, 1995). Individuals may be members of a number of cohort groups. For example, people who graduate at the same time may be known as a 'graduating cohort', and those who marry at the same time may be referred to as a 'marriage cohort'. Hunt (2005: 215) defines a birth cohort as *"A constituency of people who simultaneously reached their formative years during a distinct historical period"*. Birth cohorts are likely to have been influenced by the same economic and cultural trends, so that cohort members typically display comparable attitudes and values and can claim similar experiences (Hunt, 2005).

Sociologically, the concept of cohort is a way of contextualising the lives of individuals according to two main features: first, according to historical time, meaning the time into which they are born, grow up and grow old; and second, according to the company of their 'coevals', meaning those individuals of the same or similar calendar age (Pilcher, 1995). In this way, cohort members are born, grow up and grow old more or less in tandem with each other, and so will share a common exposure to certain experiences and opportunities (Pilcher, 1995), often authenticating the identity of common cohorts (Vincent, 2003).

Definitions of cohort may be narrow, relating to individuals born on the same calendar day, month or year. They may also be more broad, relating to individuals born within a given period, perhaps of up a time-span of between 5 and 10 years (Victor, 1994) or even more than a decade (Pilcher, 1995), and can even extend up to twenty years or more (Glenn, 1977), such as the 'baby boomers' of the period 1946 to 1965 (Blaikie, 2006). Such cohort boundaries are often considered arbitrary (Evandrou and Falkingham, 2006) and as resting upon the 'shaky foundations' of assumed age-related characteristics (Blakemore, 1989: 160). However, they do tend to reflect groups of people with a number of historical experiences in common (Evandrou and Falkingham, 2006). In Western societies, the counting of age in terms of calendar time means that members of a particular cohort have lived through a certain historical period, having been included in many historical events, opportunities and crises and excluded from others (Pilcher, 1995). The historical period of an individuals' life can then act to shape or constrain the range and possibilities of their experience (Pilcher, 1995).

For Victor (1994), society can be conceived as a series of birth cohorts moving through time, each successive cohort being influenced by a unique historical sequence of events. As a result, several cohorts will experience a single event at different stages of development (Victor, 1994). By virtue of their experience of a unique set of social, economic, political and other events, successive cohorts entering the older population bring with them differences in such variables as labour force participation, family structure, fertility and education (Serow *et al.,* 1994). As a result, one cohort may experience old age differently to another cohort (Vincent, 2003). Indeed, a birth cohort may be seen as having a distinct culture of its own, with its own distinctive experiences, values and norms (Pecchioni *et al.,* 2004). For example, the 'baby boomer' cohort born following the Second World War experienced as teenagers and young adults the collective sense of liberation and the changes in social conventions of the 1960s, and may be expected to have a different experience of old age compared to earlier cohorts (Vincent, 2003).

However, it cannot be assumed that insofar as cohorts grow old together they necessarily grow old in the same way. As such, the notion of cohorts represents a departure from perceiving groups of people – for example, older people – as homogenous groupings (Hareven, 1982). It draws attention to the differences not only *between* cohorts in their experience of the same historical events, but to those that exist *within* cohorts (Victor, 1994). In addition to differences between and within cohorts, Vincent (2003: 47) argues that cohort differences are also *"socially dynamic"*; that is, the impact of major changes, such as changes in opportunities for education and professional jobs, which affect one cohort can have consequences for the next and subsequent cohorts.

2.5.2 Generations

The term 'generation' is frequently used to mean 'cohort' (Vincent, 2003). Vincent's (2003) argument about socially dynamic cohort differences has echoes with Bradley's (1996) ideas about generations. Bradley (1996: 154) defines a 'generation' as *"a group of people who are born at around the same time"*, and argues that:

> *"Each generation grows up in a specific historical context, entailing exposure to specific experiences and intellectual influences, which will inform its members' feelings, behaviour and beliefs. In this way new cultural formations come into being as each generation achieves a position of social dominance."*

Vincent and colleagues (2006) argue that the concept of 'generation' has at least three possible meanings. First, it may refer to successions of parents and children within a family lineage (Vincent, 2003; Vincent *et al.*, 2006). Second, it may refer to cohorts who, by virtue of being born at around the same time, experience the same historical changes at about the same stage of life. Third, it may refer to historical generations, whose collective identity shapes their behaviour and attitudes and distinguishes them from preceding generations. For example, Edmunds and Turner (2002: 7) refer to the importance of traumatic events such as wars and economic depressions in constituting a

generation, which they define as *"an age cohort that comes to have significance by virtue of constituting itself as a cultural identity"*.

2.5.3 Generational Succession and 'Pseudo-cohorts'

Consideration of generations also entails description of generational succession, since it raises the issue of the replacement of older cohorts over time with those people who previously occupied younger cohorts.

According to Cutler (1970:33):

> *"One of the most interesting longitudinal social phenomena is the process of generational succession. Here is a perpetual process which combines sociological and psychological as well as biological mechanisms into a single process...* [H]*uman generations overlap, coexist, and communicate with one another. Herein lies the excitement of the generational analysis of human behaviour..."*

One way to gain a better understanding of the impact of generational succession is through the construction of 'pseudo-cohorts' in existing research (Evandrou and Falkingham, 2000). Using this approach, it is possible to construct a number of synthetic or 'pseudo' cohorts; for example, those born in 1950-54, 1955-59, 1960-64, and so forth. These cohorts can then be tracked using available data. For example, the 1950-54 cohort are currently aged 54-8 (in 2008); in five years' time they will be 59-63; in a further five years they will be 64-68. In this way it is possible to track the progress of the overall age group, and to express data as group means or averages. Using group averages it is possible to compare differences between groups and to contemplate the likely direction of future trends. It enables the researcher to recognise the influence of social context on the experience of ageing (Victor, 2002).

2.5.4 Age, Period and Cohort Effects

Finally, consideration of cohort and generation entails discussion of cohort, period and age effects. Victor (2005) provides a useful elucidation of these three effects:

- *Age effects:* Age effects impact at or about a specific age, regardless of historical time. They reflect the influence of developmental time, for example the physical, social and psychological changes that are associated with human ageing. Age effects may be intrinsic or reactive. Intrinsic age effects relate to changes that occur naturally and inevitably during the ageing process, irrespective of social context. Reactive age effects are shaped by the social context in which ageing occurs, and are therefore historically and culturally specific.
- *Period effects:* Period effects impact on everyone at a particular time. They reflect the influence of historical time and events or trends which may stimulate changed attitudes throughout *all* cohorts at a particular point in historical time, and not just single age groups or cohorts. As the groups affected by these events or trends die out, the period effect may appear to be an age or cohort effect.
- *Cohort effects:* Cohort effects impact on one age group or cohort in the population. They reflect the influence of historical time and events upon the attitudes of groups of individuals, and the influence of individual time by linking the individual experience to the wider social context of the peer group to which they belong, including its composition in terms of size, gender, ethnicity, etc.

Each of these effects can offer a different explanation for trends that may be identified in data, and are a key feature in the gerontological literature (Victor, 2005).

2.6 'LIFE CYCLE' AND 'LIFE COURSE' APPROACHES TO AGE

In addition to the various meanings of age and the idea of cohorts and generations, a further concept that can illuminate the study of age and ageing is the idea of the 'life

course'. First, however, it is necessary to discuss the notion of 'life cycle', which preceded that of life course in the gerontological literature.

2.6.1 The 'Life Cycle'

The 'life cycle' refers to *"a fixed and repetitive sequence of ages and stages within human life and experience"* (Hockey and James, 2003: 5), and describes the developmental stages that individuals undergo over the course of time (Pilcher, 1995). The life cycle is conceived as *"an orderly progression from infancy to old age with biological and socio-cultural factors interacting to govern the sequence of progression"* (Victor, 1994: 11-12). From this perspective, individuals are believed to develop progressively and sequentially from infancy and childhood through to youth, adulthood and old age, all the while developing physically, psychologically and socially (Pilcher, 1995).

Although it had dominated sociological and anthropological thinking (Hunt, 2005), the life cycle concept is now quite widely criticised as ethnocentric, difficult to conceptually and practically apply (Hunt, 2005), and as emphasising the individual and neglecting the roles of other collectivities and processes (Morgan, 1996). Further, in contemporary Western societies especially, recognition of diversity in life experiences and the increasing chance of discontinuities in life, including changes in relationships and in labour market structure, are argued to have signalled the redundancy of the life cycle concept, and a move towards the apparently more flexible notion of the life course (Hunt, 2005).

2.6.2 The 'Life Course'

In contrast to the notion of life cycle, the life course concept does not assume a stable social system, but one that is constantly changing (Hunt, 2005). Therefore Hunt (2005: 216) conceptualises the life course as *"The social element of a life span which may have fairly clear 'stages' of life and regulation, but may also be marked by variety and*

discontinuity". Thus, the life course suggests more flexible biographical patterns within a continually changing social system (Featherstone and Hepworth, 1989).

The notion of the 'life course' is most closely associated with Tamara Hareven (1982). The life course approach, as developed by Hareven, strives to follow and determine the movement of individuals through different family configurations and roles, and the timing patterns that affect these transitions as they occur under different historical conditions (Hareven, 1982). Hareven's (1982: 2) conceptualisation of the life course framework emphasises the notion of *"cohorts moving through history, each with his or her distinct life experiences, influenced by the historical circumstances encountered earlier in life"*. To quote Hareven (1982: 2), the life course framework represents a *"comprehensive, integrative approach"*, through which researchers can *"interpret individual and family transitions as part of a continuous process of historical change"*.

Hareven (1982) emphasises the importance of gaining an understanding of the place of life course stages in an entire life continuum rather than at any one specific and isolated stage, such as childhood or old age. Thus Hareven (1982: 2) views an individual life transition as part of a *"cluster of concurrent transitions and a sequence of transitions that affect each other"*. Hareven (1982) outlines three essential features of life course analysis. These are:

- *Timing:* The synchronisation of different individual roles over a person's career
- *Interaction:* The relationship between individual life course transitions and changing historical conditions
- *Integration:* The cumulative impact of earlier life course transitions on subsequent transitions

First, Hareven (1982) emphasises the interaction between three forms of time: individual time, family time, and historical time. Individual time is roughly expressed in terms of chronological age, which provides an indicator of social roles, expectations, rights and responsibilities. These are conditioned by family time, which represents the generational

position of an individual in an extended family matrix, and which changes as older generations die and new ones are born. The influence of historical time, which denotes the overall social and economic, institutional and cultural changes in the wider society, including demographic and economic changes, is evident through the positioning of different generations of family in different birth cohorts (Hareven, 1982).

Second, Hareven (1982) emphasises the integration of life course transitions and changing historical conditions. According to Hareven (1982), an understanding of the synchronisation of the different levels of time is an important part of investigating the relationship between individual lives and the wider process of social change. Third, and finally, Hareven (1982) perceives the cumulative impact of earlier life course transitions on subsequent transitions. The conceptualisation of the life course as cumulative and interconnected also involves not only recognition of the stages within an individual's own life course, but also the interrelationships between the life courses of other individuals, as their individual pathways merge into collective configurations (Hareven, 1982). For, to reiterate Pilcher (1995), an individual's position in the life course is indicated by the nature and intensity of the relationships with other individuals who are themselves at particular stages of their own life course.

Taking these three elements of the life course approach together, Hareven (1982) considers family status and the position that individuals experience in later stages of life as shaped by their cumulative life histories and by the specific historical conditions that affected their lives at earlier stages of life. Thus the paths which people take on the way to old age, including differences in their cultural heritages and life experiences, each influence how individuals and families adapt to the social and economic conditions that they face in old age (Hareven, 1982). In this way, individuals should be considered not only as belonging to a specific period of time, but also in earlier times in their lives when different historical forces prevailed (Hareven, 1982).

2.6.3 Life Course Stratification

One of the main uses of the life course as an organising principle has been to develop the examination of earlier sources of dependence and inequality, and their consequences in later life (Bury, 1995). From such a perspective, old age is seen not as a separate period of life but as a stage at the end of life that is shaped by a lifetime of experiences over the human life course from birth to death. As such, conditions of living such as an individual's gender, social class, ethnicity, and educational attainment and occupational experiences are key sources of differentiation among older people (Moody, 2006).

Diversity in terms of such dimensions can be conceived as 'interlocking statuses' which combine with age in locating people within wider social circles (Kendig, 1986). One way of understanding this interrelation is by the ideas of 'double jeopardy' or 'triple jeopardy', which refer to the ways in which disadvantages of age may be compounded by those of ethnicity, gender or class (Bradley, 1996). Bradley (1996: 172) adds the notion of 'quadruple jeopardy' to describe how *"these four factors* [can] *come together to create the worst cases of poverty and misfortune"*. Bradley's (1996) idea of age, class, gender and ethnicity as 'lived relations' pays particular attention to the way that these dimensions exert a strong impact throughout the life course. She argues that (Bradley, 1996: 202-203):

> *"They exist outside of us as individuals, they put constraints upon us, they affect our life chances... All these lived relations involve differential access to power and resources and are therefore not only aspects of social differentiation but also of social inequality. They merge together to form the complex hierarchies which are characteristic of contemporary societies."*

'Lived relations' that can condition life experiences include gender, marital status, socioeconomic class, educational qualifications, and ethnicity, are these are explored next.

Gender Gerontological research shows that men and women can follow different life course paths, resulting in variations in economic well-being and family resources in later life (McMullin, 1995). Inequalities between men and women in old age are not unique to that life stage but are continuous, with patterned inequalities evident over the life course (Hess, 1994). As a result, men and women can enter old age with vastly different personal and social resources as a consequence of their life course experiences within social structures that are influenced by gender (Hess, 1994). Today's very old age cohorts are populated mainly by women who, at this point in history, have not accumulated a great deal of wealth during their working years, in comparison with men (Burdick and Kwon, 2004). Some of this gender-based discrepancy can be explained by the historic participation of men and women in pension schemes. Price and Ginn's (2003) research reveals important differences in the pension participation of men and women, and a particularly stark gender difference in private pension coverage, which they attribute to women's greater propensity for part time work. The authors also suggest that while women may decide to opt out of private pension schemes if their husbands have good pensions, married men tend to participate in additional pension schemes as part of their traditional 'breadwinner' role (Price and Ginn, 2003). Other factors that are identified as having an influence on women's conditions throughout their life course, including in later life, are their flatter earning profiles and their interrupted employment histories when they have children (Ginn, 2003).

Marital Status[4] The separate and the collaborative research of Arber and Ginn reveals the key influence of marital status on older people's incomes and material circumstances (Arber, 2006a; Arber and Ginn, 1996; Ginn, 2003). Arber (2006a) argues that while some older married people may be highly advantaged in terms of their household income and material circumstances, these advantages are enjoyed by only a minority of women, given their propensity to outlive their husbands and the rates of non-marriage amongst women. Ginn and Arber (1996) reveal that married women exhibit fewer years

[4] Legal marital status is argued to be becoming an increasingly poor indicator of living arrangements and partnership status among people of all ages, including older people, as they are increasingly establishing intimate relationships whilst maintaining separate living arrangements rather than cohabiting or entering remarriage (Arber, 2006b).

of employment and substantial periods of part-time, rather than full-time, work in comparison to never-married women and men (Ginn and Arber, 1996). Arber and associates' (2003) analysis of household income also reveals that marital status is a key determinant of income in later life. They show that divorce and widowhood have a particularly detrimental impact on the financial status of both men and women, but more so for women. The particularly disadvantaged position of divorced women is, in part, believed to be because they have no access to their ex-husbands' pensions and may have had their own working lives curtailed by childrearing duties (Arber, 2006a). Also, although widowhood has been shown to have a major adverse effect on the material well-being of older men and women, its impact is argued to be greater for women (Arber, 2006a), who are more likely than men to experience a drop in household income following widowhood (Ginn and Arber, 1995). Marital status also impacts upon pension accumulation among men (Price and Ginn, 2003). Employed men's participation in third-tier pensions has been shown to be markedly lower among those who are separated or divorced, possibly due to other demands on their income such as maintenance payments or divestment of income as a result of divorce (Price and Ginn, 2003). Also, even among those men who re-partner, rates of third-tier pension contributions remain lower than those of married men (Price and Ginn, 2003).

Socioeconomic Class Differences among socioeconomic strata are believed to be generally greater among older people than they are among younger- and middle-aged cohorts (Rosenmayr, 1982). Taking a life course approach, Rosenmayr (1982) suggests that this can be explained by the greater differences in their initial social situations and of earlier life conditions. In this way, social class is seen as a function of accumulated advantage or disadvantage over the life course (Dannefer, 2003). Private pensions, for example, which incidentally are argued to be more available to men (Hunt, 2005), may be seen to perpetuate class inequalities arising during working life (Price and Ginn, 2003). For example, men and women who occupy manual occupations are less likely than their counterparts in middle-class occupations to have occupational pensions to protect them from cuts to state pensions (Ginn, 2003). Evidence also suggests that those people who are most disadvantaged in the labour market not only have lower earnings

from which to make pension contributions but also tend to have less knowledge of pensions, less access to the most advantageous types of private pension, and are less likely to be able to afford independent advice on such matters (Ginn, 2003). Commentators suggest that it is usual for income to decline relatively over the course of retirement as a result of inflation and the gradual rundown of economic assets (Walker and Foster, 2006). Widowhood, serious illness and entry into an older people's home may also cause depletion of economic resources, often with concomitant degradations in older people's living conditions (Walker and Foster, 2006).

Educational Qualifications Educational qualifications also moderate opportunities for pension accumulation (Ginn, 2003; Price and Ginn, 2003) and life conditions in old age, by providing opportunities for entry to occupations that can, though not always, allow the accumulation of resources over the life course, such as savings, investments and occupational pensions (Hunt, 2005). One interesting discussion of the influence of educational qualifications on the life course is provided by Ginn (2003), who reveals the impact of education and motherhood on women's opportunities for employment and for pension accrual. Her analysis reveals that for well-qualified women with children, especially those occupying professional or managerial positions, return to full-time employment in the same job is easier than it is for women lacking in or having few qualifications, and especially for those well-qualified women who also have a well-qualified husband. Ginn's (2003) analysis shows that graduate mothers will experience a substantial loss of private pension entitlements compared with childless graduate women. However, the impact of motherhood on pension prospects is most stark for women without degree-level qualifications, as the low wages typical of the jobs they tend to occupy provide little income to pay for childcare and can sometimes, in turn, discourage these women back into the labour market (Ginn, 2003).

Ethnicity[5] [6] A number of sociological approaches to ethnicity concentrate on its relationship with other forms of social stratification, and draw attention to how social class and status often coincide with ethnic inequalities (Hunt, 2005). Peace and colleagues (2007) use a life course perspective and argue that those individuals from ethnic minority groups who have little education and have worked in low-paid manual jobs are more likely to lead a life of disadvantage, which can result in cumulative disadvantage in later life. These disadvantages may include poor language skills, incomplete work histories, lack of eligibility for health and welfare services, financial insecurity, and social isolation, which may combine to result in multiple jeopardy through issues related with age, gender and ethnicity (Peace *et al.,* 2007a).

Upon settling in the UK, many of today's older minority ethnic migrants entered low-status employment with poor pension entitlements (Boneham, 2002). Ginn (2003) also suggests the negative impact of shorter employment records of migrant older ethnic populations on their incomes prospects, but she also adds a number of other reasons that may explain lower levels of retirement income among minority ethnic groups, including discriminatory processes in the labour market, the limited type and availability of work in the area of settlement and, to a lesser degree, a lack of fluency in the English language. Ginn (2003) also points towards the possibility of 'financial exclusion', through which minority ethnic groups may lack information about the British pension system and receive less attention from pension providers marketing their financial products.

[5] The term 'ethnicity' is typically seen as defining communities by way of cultural characteristics (Hunt, 2005), which encompasses a subjective way of defining a sense of belonging to a group (Boneham, 2002).

[6] Data from the 2001 Census reveal that black and minority ethnic groups have a younger age structure compared to the white population, reflecting their patterns of immigration to the UK throughout the twentieth century. Due to diverse migration circumstances, including the timing of migration, and the varying extent to which each group has suffered racism and discrimination, different ethnic groups vary in such factors as their employments rates, earnings, household income, educational qualifications, car ownership, housing tenure, and English fluency (Ginn, 2003).

2.6.4 Life Course Diversity

What is clear from this discussion of life course stratification is that older people, as a group, are diverse. As such, research which treats older people as a unitary category maintains what is described as a 'flawed' assumption that they share common experiences and lifestyles (Evandrou and Victor, 1989). Gilleard and Higgs (2000) argue that since old age has become a predictable expectation of the adult lifespan, ageing is no longer understandable in terms of any common or totalising experience. Rather, it has become more complex, differentiated and ill-defined, and is experienced from a variety of perspectives and expressed in a multitude of ways at different points in people's lives (Gilleard and Higgs, 2000).

It is broadly accepted that older people represent a diverse group[7] (Kendig, 1986; Baringer *et al.,* 2004). With its emphasis on historical time and life events, the life course approach is broadly accepted as a useful paradigm in the investigation of late-life diversity (De Jong Gierveld, 2006). It is argued that as the population ages, it becomes more diverse (Daatland and Biggs, 2006). The heterogeneity of older people is reflected in a variety of ways, including health, consumption patterns, financial resources, leisure pursuits, physical mobility and psychological disposition, where they live and who they live with (Evandrou and Victor, 1989), giving rise to recognition of the intra-cohort differences which exist among older people (Kovach and Knapp, 1994). Indeed, Setterson (2006) argues that the variability between people of old age is greater than that which exists in any other age groups (Settersten, 2006).

While no ages are experienced homogenously by cohorts (Coupland, 2004), Kendig (1986) suggests that the experience and timing of major life events, or 'trajectories', can vary markedly among the members of a given cohort. It is the accumulation of divergent trajectories over a life time that, for Kendig (1986), means that older people are likely to

[7] Settersten (2006) and Biggs (2006) caution against making assumptions about the diversity of older people to the neglect of the things that they have in common. Settersten (2006) recommends preserving openness to commonalities between older people and to the experiences that may persist across time and context, as well as the things that make older people different and which vary across time and context.

be more diverse than other age groups. Other authors, like Baringer and colleagues (2004), make a similar point when they suggest that as life experiences shape individuals, and as individuals in generations become older, the more different from one another they become, and the greater the diversity characteristic of older people. What these authors achieve by referring to the diversity among older people is a useful initial articulation of what it can be mean to be 'old' in contemporary society. This is a key issue in the gerontological literature (Bradley, 1996), and is explored more thoroughly next.

2.7 WHAT IT MEANS TO BE 'OLD'

The diversity characteristic of older people makes the task of understanding what it means to be 'old' today a somewhat difficult one. However, Bond and colleagues' (2007) argument about the loosening of the life course is a worthwhile point to discuss, because it can help develop an understanding of how older people of today are different to previous cohorts of older people.

2.7.1 Today's Older Cohorts

Bernard and Phillips (2000) encourage recognition of how the social and economic circumstances of older people have changed quite drastically since the pre-industrial era. In doing so, they argue that it is possible to recognise that older people today find themselves in a very diverse set of circumstances, which are markedly different to those that have characterised previous cohorts of older people (Bernard and Phillips, 2000).

Social Circumstances Changes in the social circumstances of older people can be seen in changes to family and work life over the latter half of the twentieth century (Pilcher, 1995). Changes to the family as a social group are evident over the former half of the twentieth century (Phillipson *et al.*, 2001). Recent decades have witnessed profound changes in the composition of the family and a decrease in the size of individual families, brought about chiefly by lowered fertility and increased rates of divorce

(Bernard and Phillips, 2000). The presence of multi-generational households, though still encountered as a response to different kinds of social needs, underwent a rapid decline from the 1950s onwards, partly due to improvements in housing standards (Phillipson *et al.,* 2001). The trend towards residential independence in old age evident by the start of the 1960s followed the previous trend of co-residence of different kinds of relatives evident in the nineteenth century (Phillipson *et al.,* 2001). The number of widows and widowers has also increased, as have rates of solo living among older people (Bernard and Phillips, 2000).

Phillipson and colleagues (2001) also note the importance of the geographical distribution of family ties from the 1960s onwards. Phillipson and co-workers (2001) suggest that previously dense kin networks evident prior to the 1960s, and described in research such as that undertaken by Townsend (1957) in east London, soon gave way to a gradual dispersal of kin networks. This dispersal is also noted in Rosser and Harris's (1965) research undertaken in Swansea, which identified a decline in contact between generations and a move towards more loosely-knit patterns of contact and lower levels of kinship solidarity. Changes in the family can also be seen as closely linked to those in the workplace. In the pre-industrial past, family and working life were arguably more closely integrated than they are today, so older people were more likely to be supported within the family in the absence of paid employment (Pilcher, 1995). Lower life expectancy meant that people retained their work and family roles for most of the life course, and the lack of formal retirement and state pensions meant that most people only stopped working with severe illness or death (Pilcher, 1995). In contrast, nowadays, the institutionalisation of retirement and the introduction of state pensions in 1908 mean that most older people can finish their working lives years, or perhaps decades, before they die (Pilcher, 1995).

Economic Circumstances At the start of the twenty-first century, life in retirement is longer than it ever was in the past, with people living an average of over 20 years beyond SPA (Ginn, 2003). Increased longevity has meant that, for many older people, the post-retirement years have become a time for making plans for enjoyment (Wenger

and Burholt, 2001). This compares with previous cohorts of older people whose expectations of retirement were of a time to experience declining health (Wenger and Burholt, 2001). As a result of greater longevity, an adequate pension income is now more necessary than ever before, and especially so for women who tend to live longer than men (Ginn, 2003). Rates of female participation in the labour market have increased, alongside a rise in women's membership of occupational and private pension schemes (Bernard and Phillips, 2000). This is, in part, due to an increase in education provision over the twentieth century, which has resulted in changes in the types of jobs held and the work experiences of older people, both male and female (Bouma and Harrington, 2000).

In absolute terms, older people today have higher incomes than ever before (Victor, 2005). Balchin and Finch's (2006) analysis of the Pensioners' Income Series 2004/5 reveals the sources of pensioners' average gross income in 2004/5, and shows that half (50 per cent) of all pensioners received a state pension; over a quarter (27 per cent) received occupational pensions; and relatively few received income from investments or earnings (9 per cent respectively). The same source also reveals that pensioner incomes have grown faster than average earnings across the economy as a whole over the last decade (Balchin and Finch, 2006). The average net income for pensioners grew by approximately 25 per cent between 1996/7 and 2004/5, whereas average earnings rose by only 15 per cent in real terms over this same period. The growth in pensioner income over the last three decades is attributed to substantial increases in incomes from occupational pensions, investments and benefits (Balchin and Finch, 2006).

However, while the overall financial position of older people is believed to have improved, the majority of today's UK pensioners are reliant upon the basic state pension as their main source of income (Naegele and Walker, 2007), and pensioners remain concentrated in the lowest income quartiles of the population as a whole (Victor, 2005). This may be due in part to up to one million eligible older people failing to claim the means-tested Pension Credit (Naegele and Walker, 2007). The difference between those older people in the top and bottom ends of the income distribution is access to non-state

sources of income, with those in the bottom quintile most heavily reliant upon the state for income (Victor, 2005). As a result, the available research evidence suggests that income inequality is growing among older people, with increasing polarisation between relatively well-off pensioners and those in receipt of Pension Credit (Arber, 2006b). This is important because research evidence suggests that those older people who are disadvantaged in terms of pension membership tend to also be disadvantaged in the housing market, and are therefore less able to rely on equity release in times of financial hardship (Evandrou and Falkingham, 2006).

2.7.2 'New Transitions'

What these changing social, economic and political circumstances indicate is how the experience of old age has changed over the course of recent history, and how it may continue to change in the future. Bernard and Phillipson (2004: 360) suggest that people moving through their 50s and 60s may be affected by '*new transitions*', as the traditional means of integration – in relation to work and the family – become less apparent, especially compared to ten or twenty years ago. The authors predict that current trends in employment and family experiences may lead to new types of social integration, as work becomes less important, and leisure and consumption experiences gain greater value (Bernard and Phillipson, 2004). Technological development is also implicated alongside consumption as playing a key role over the life course (Hunt, 2005). The abilities of older people to participate in the so-called 'consumer society' is a particularly interesting issue referred to in the sociological and gerontological literatures. It deserves attention because much research interest has grown around older people's participation in the consumer society (Vincent, 2003), and their social and digital exclusion (Selwyn, 1994; Kruger, 1998).

2.8 OLDER PEOPLE IN THE CONSUMER SOCIETY, AND SOCIAL AND DIGITAL EXCLUSION

According to Hunt (2005), society shapes and limits life experiences and life chances throughout the life course, and is manifest in today's era through, amongst other things, aspects of consumption and technological development. In today's society, retirement from paid work is sometimes conceived as both a distinct post-work stage of the life course and as an expanded opportunity for consumption and new possibilities in later life (Gilleard and Higgs, 2000). Consumption can be seen as *"how one spends one's time, money and other material resources"* (Gilleard and Higgs, 2000: 193). It has implications in terms of birth cohort, because the development of the consumer society is an historically recent one (Vincent, 2003).

For Vincent (2003), the consumption histories of older people are both personal and collective, in the sense that they are linked to the cohort experiences of a developing consumer society. She illustrates her argument by looking at what she sees as the intensification of the social segregation around age groups in the twentieth century, and its particular manifestation in patterns of consumption and taste between generations. Vincent (2003) attributes the differences of attitudes towards marriage and tastes in fashion and music to a so-called 'generation gap'. Her intention is to illustrate how rapid social change can foster different experiences and values in different birth cohorts.

2.8.1 'Cultures of Ageing'

Gilleard and Higgs (2000) extend this argument and suggest the existence of intra-cohort differences as well. They argue that we no longer live in a homogenised 'ageing society'. Rather, a variety of potentially competing 'cultures of ageing' have emerged from growing disparities of wealth amongst older people and the concomitant rise of 'lifestyle consumerism' and its attendant abundance of choice. They define culture as *"the various and complex systems of meaning that constitute everyday life"* and consider consumer society as a culture in itself (Gilleard and Higgs, 2000: 2). By emphasising the

consumerist society, the authors situate ageing as a central constituent in the cultures of the present day, and disassociate it from ideas of ageing as disengaged from the main components of social life and as constructed out of welfare and lack (Gilleard and Higgs, 2000). They argue that (Gilleard and Higgs, 2000: 84): *"Cultures* [of ageing] *are emerging because of the widening choices and the increasing numbers of people in a position to act out those choices."*

As the roles and lifestyles available to older people arguably become more diverse through the proliferation of many different cultures of ageing (Gilleard and Higgs, 2000), it is suggested that older people are becoming more differentiated by the way they lead their lives (Biggs, 2006). This variation is believed to have contributed towards an erosion of visible differences between people based on age, and an increase in the overall similarities between older and younger people, making it more difficult to identify patterns that distinguish one generation from another (Biggs, 2006; Hunt, 2005). As a result, Gilleard and Higgs (2000) perceive it as no longer appropriate to consider 'age' as conferring some common social identity, nor as treating older people as a distinct social group with shared concerns and common interests (Gilleard and Higgs, 2000). Rather, they challenge the idea of a singular life course through which all people pass, and suggest that individuals can employ human agency over how they express and experience ageing (Gilleard and Higgs, 2000).

2.8.2 Exclusion from the Consumer Society

Hunt (2005: 6) suggests that we live in *"a society that is finely fragmented by people's ability to participate in the consumer society"*. But while access to consumer goods is argued to provide adults of all ages with the ready means to participate in the 'contemporary cultural mix' of a consumerist society (Gilleard and Higgs, 2000: 66), there are certain earlier life course conditions that are not always conducive to choice of lifestyle in old age (Hunt, 2005). These include crowded living conditions, poor diet, inferior housing, violence, high levels of stress, a family history of restricted life longevity, and a lack of healthy lifestyles and exercise (Hunt, 2005).

Lack of access to the world of consumption is argued to be a major marker of inequality and exclusion, and one which may be differentially impacted by such factors as age, gender and ethnicity (Hunt, 2005). The availability of money is key in this context (Hunt, 2005), because in a consumer society, lack of money or having less money than one is used to, can be seen to undermine status and jeopardise social links by limiting opportunities for the conspicuous consumption on which status is often secured (Long, 1989). Those people - young and old - who lack the money to indulge their consumption desires can suffer economic exclusion, whereas other people may be spatially excluded as a result of their lack of access to a car or other transport which may enable them to fulfil a lifestyle of consumption (Hunt, 2005).

Indeed, in their work on 'cultures of ageing', Gilleard and Higgs (2000) acknowledge that an individual's working life history may open up choices or constrain the possibility of choice in later life (Gilleard and Higgs, 2000). Gilleard and Higgs (2000) suggest that among older people the consumer lifestyle is mainly the province of white, male, younger and well-off married retirees who have the material and cultural capital to attract the interest of retailers. They, and other authors (Victor, 2005), see the 'oldest-old' as disadvantaged in the consumer society in so far as it is the newly retired who tend, on average, to have more money than those who have been retired for an extended time (Gilleard and Higgs, 2000). As such, Hunt (2005: 55) argues that *"Not being part of the consumer world is therefore a social exclusion that may differentially affect individuals by way of age, gender, and ethnic background."*

2.8.3 Social Exclusion

According to Burchardt and colleagues (1999), individuals are socially excluded if they fulfil both of the following criteria: one, they are geographically resident in society; and two, they do not participate in the normal activities of citizens in that society. Kruger (1998) describes exclusion as existing between social groups and individuals who have

little or no access to the 'ladder' of personal advancement and upward mobility, and their resulting disempowerment and feelings of alienation.

While it is recognised that older people represent a social group with widely different social and economic backgrounds and interests (Richards, 2006), they are said to be socially excluded for a number of reasons, including lack of material resources, poor access to services, low income, and limiting illness (Social Exclusion Unit, 2005). Some of these factors may overlap, resulting in many older people experiencing 'multiple exclusion' (Social Exclusion Unit, 2005). For some older people, exclusion may persist from earlier in life, for instance due to limits of income. For other older people who may not lack the resources listed above, the very process of ageing itself may lead them to become excluded; that is, they may be socially excluded only on the basis of chronological age (Social Exclusion Unit, 2005). Indeed, it is argued that the process of ageing itself can lead to older people becoming increasingly socially excluded as functions such as mobility and cognition may gradually reduce (Olphert *et al.*, 2005; Social Exclusion Unit, 2005). Also, while older people are likely to share some or all of the demographic characteristics, such as low income and lack of paid employment, which are associated with younger people who experience social exclusion, their experiences of exclusion can be compounded because they are less likely than other social groups to be able to change their social and economic circumstances as they get older (Richards, 2006).

2.8.4 Digital Exclusion

Related to this discussion of social exclusion is the belief that access to Information Communications Technology (ICT) like the Internet and the ability to use them are pre-requisites for full participation in contemporary economic, political and social life (Partridge, 2004). This form of exclusion has come to be known as *'digital exclusion'*. It is described by Selwyn (2004) as exclusion that is based upon a perceived dichotomous divide between individuals who are 'connected' and individuals who are 'disconnected' from technology, information and, by extension, society at large (Selwyn, 2004). To this

extent, digital exclusion is seen to represent a further dimension of social exclusion (Kruger, 1998).

Older people, as well as other 'disadvantaged' social groups - such as those with minimum or no educational attainment and those on low incomes - are argued to be at risk of digital exclusion (European Commission, 2005) because the marketplace has thus far not successfully delivered widespread Internet access to older people (Sinclair, 2006). Older people are seen to be excluded because they are, on average, disproportionately less likely than younger people to reap the benefits associated with the Internet (Mason and Hacker, 2003). One example of how older people can benefit socially from the Internet is access to public services. Older people are reported to be heavy users of public services, such as those related to health and social care, particularly compared to younger generations (Bradbrook and Fisher, 2004). However, there is a potential risk that older people will be excluded further in society if such public services continue to develop around technologies, possibly reinforcing the impact of digital and social exclusion (Bradbrook and Fisher, 2004).

2.9 CONCLUSION

Age is often taken for granted as a biologically-grounded given; that is, it is thought of as a measure of the passage of the time between birth and death (Hockey and James, 2003). Similarly, the concept of chronological age is a reflection of how many years an individual has lived since birth. This approach to conceiving age was shown to have limitations. The approach taken in this chapter was to demonstrate the complexity of age, and its relationship to the passage of historical time. This approach necessitated a focus on 'birth cohort', and the shaping of an individual's experiences according to the historical period in which they have lived. In doing so, it was possible to arrive at a fuller understanding of age, and one which recognises that members of a given cohort grow old together (Pilcher, 1995).

The idea of cohort is adopted throughout the remainder of this Thesis. In so doing, the intention is to demonstrate that the researcher appreciates the fact that history exerts a profound role in shaping lives (Moody, 2006). To this extent, the life course approach can assist the focus on historical time. The life course approach facilitates an understanding of the inherently flexible and variable nature of life stages, and their timing and sequencing, by considering the centrality of cultural and historical contexts, and how the course of life can be seen as constituted by a series of interrelated events, with cumulative outcomes (Pilcher, 1995). It also draws attention to how ages and stages in the course of an individual's life are changeable according to the prevailing socio-historical context within which they take place (Hockey and James, 2003).

It has been shown in this chapter that the life course is played out within systems of stratification (Hess, 1994). The idea of life course stratification focuses on the ways that older people as a group may be differentiated according to other important demographic variables, including gender, socioeconomic class and ethnicity. In agreement with Bradley (1996), it was considered best not to see these categories as having a logic of their own, but to consider their interacting dynamics. In this way, it was demonstrated how older people are a diverse group.

Consideration of older people's role in the so-called consumer society focused attention on the idea of older people as actively choosing to pursue their leisure interests and engaging in the contemporary 'lifestyle culture' (Gilleard and Higgs, 2000). However, it was recognised that the ability to participate in the consumer society is not equally distributed among older people. To reiterate Hunt's (2005) argument, non-participation in the consumer society may be seen as a form of social exclusion. The final consideration in this chapter was the digital exclusion of those older people who, to adopt Selwyn's (2004) definition of digital exclusion, are 'disconnected' from technology, information and, by extension, society at large. This is an interesting point because it broaches the subject of older age as a key consideration in older people's relationship to ICT like the Internet. The Internet adoption of older people is a key idea in this Thesis, and it is elaborated in the next chapter.

3. INTERNET ADOPTION AMONG OLDER PEOPLE

3.1 INTRODUCTION

In the previous chapter, it was argued that generations are formed as a result of discontinuous changes in the social environment, such as those resulting from wars and economic depressions, which people occupying certain birth cohorts live through (Edmunds and Turner, 2002). Buckingham (2006) argues that in today's era the potential role of media and technology complicates further the construction and self-construction of generations, given a growing emphasis on how they participate in defining the meaning of age differences. Buckingham (2006) goes so far as to suggest that, at least in principle, the radical shifts in technology and the media may assume as significant a role in defining generations as Edmunds and Turner (2002) attribute to the role of traumatic defining events. This chapter explores the Internet adoption of older people, and how their propensity for adoption tends to be lesser than that of younger people. What this means in terms of the 'age divide', the idea of 'lifestage', and the 'generation gap' are explored, and a focus on birth cohort is recommended.

3.2 OLDER PEOPLE, ICT AND THE 'DIGITAL DIVIDE'

First, the pace of technological change over the past century and the more recent spread of Information Communications Technology (ICT) are discussed. Specific attention is paid to the diffusion of the Internet and its unequal spread to different social groups, which is seen to represent a 'digital divide' (Norris, 2000). This discussion is intended to establish the context in which today's older cohorts find themselves with regard to ICT.

3.2.1 Information Communications Technology (ICT) and the Spread of the Internet

The past century has been a period full of revolutionary technological innovations entering society on a massive scale (Docampo Rama, 2001). It started with the introduction of the telephone at the start of the twentieth century, followed by technologies like the radio, gramophone, refrigerator, television, video recorder, computer, compact disc, and mobile telephone. The early stages of the twenty-first century are witness to the growing phenomenon of Information Communications Technology (ICT). ICT is *"the hardware, software, networks, and media used to collect, store, process, and transmit information in the form of voice, data, text and images"* (The World Bank, 2008).

The Internet is a form of ICT, and one which is described by Dholakia and colleagues (2003) as the fastest-growing ICT in history. DiMaggio and colleagues (2001: 3) refer to the Internet as:

> *"*[T]*he electronic network of networks that span homes and workplaces... that people use to exchange email, participate in interactive spaces of various kinds, and visit sites on the World Wide Web."*

The diffusion of the Internet as a social and leisure tool began at the end of the twentieth century and continues to the present time. Pearce (1998) sees the growth in the spread of the Internet as an outcome of two events. The first event was the release in 1991 of Worldwide Web server software by CERN (The European Laboratory for Particle Physics), which was developed to mediate among a number of information formats, enabling the sharing of information between computers over digital networks. The second event was the release in 1993 of Mosaic Internet browser software by the National Center for Supercomputer Applications (NCSA) at the University of Illionois, which enabled computer users to access information free of charge on the World Wide Web (WWW, or Web). For Pearce (1998), the combined effect of these two events was the simplification of access to the Internet which, in turn, triggered the rapid adoption of Internet technology. This trend of adoption began in the 'networked' community, primarily in government-related and educational institutions, that benefited from an

existing communications infrastructure, and rapidly spread to other segments of society as access to the Internet became widely available over telephone lines (Pearce, 1998). However, research reveals that there are particular segments of society that the Internet is largely not penetrating (ONS 2008a; Dutton *et al.,* 2007; Welsh Consumer Council, 2005). The result is what many commentators refer to as the 'digital divide' (Riggs, 2004; Norris, 2000).

3.2.2 The 'Digital Divide'

The term 'digital divide' refers to *"the gap between those who can effectively benefit from information and computing technologies and those who cannot"* (Ryder, 2001). It was first coined in the mid-1990s at a time when debate raged about the possibility of building regulation into the US Telecommunication Act 1996, in order to offset market forces (Tsiavos *et al.*, 2001). Since then, discussions relating to the digital divide, and its manifestations and effects have assumed greater importance in socio-political debate and in the political policy arena (Bridges, 2001). Today, the digital divide is argued to be the single, largest, segregating force in the modern world (PR Newswire, 2000), having repercussions in various areas including education, economic competitiveness, employment, citizenship and political participation (BECTA, 2001). As a result, the digital divide is seen by some commentators to be equally significant as the divisions in class and basic literacy that existed in the industrial age, and the persistence of social and economic divisions between the First and Third Worlds (MacNamara and O'Donnell, 2001).

The 'digital divide' may be conceived in either, or both, of two ways; first, *"as a sheer matter of access to Internet hookups or* [second] *as a more culturally complex issue involving a population segment's interest in, use of, and proclivity toward adoption of new technologies"* (Riggs, 2004: 226). In respect of the Internet, this would mean access to Internet connections, and interest in, use of, and proclivity toward adoption of the Internet. Research evidence reveals that certain social groups are more or less likely to be on the 'wrong' side of the digital divide. Digital divides are seen to exist according to

a number of factors, including ethnicity, income, socio-economic status and geography. Access to and ownership of ICT is lower among ethnic minority groups, particularly those resident in deprived neighbourhoods (PAT 15, 2000). In terms of income, the ONS (February 2005) recently divided UK households into ten equal decile groups according to gross annual income. Results show that in the financial year 2002 to 2003, levels of household connections were lowest in the lowest two income groups, at 12 and 14 per cent respectively. From the second decile group onwards, adoption levels increased rapidly with income, peaking at 86 per cent for households in the highest income decile group (ONS, February 2005). Similarly, the higher an individual's socio-economic class, the more likely they are to have access to and use the Internet (MORI, 2005). Also, in respect of geography, degree of urbanisation has been found to be an important factor in terms of access to the Internet (Eurostat, 2005), and in the UK a clear North/South divide is evident, with the South East the most connected region (74 per cent) and the North East the least connected (54 per cent) (ONS, 2008b).

The results of two Oxford Internet Surveys (OxIS), one undertaken in 2003 and the other in 2005, suggest that in Great Britain it is age and education that most influence the digital divide. Referring to the two OxIS surveys (2003 and 2005), Dutton and colleagues (2005: 8) argue that:

"There are clear digital divides among different social groups. Men were more likely to access the Internet than women, although the gap appears to have been closing... Younger people were overwhelmingly more likely to go online...[and] *Those who have left formal education later are more likely to use the Internet."*

Similarly, in Europe, differences in Internet use are said to be *"mainly a matter of age and education, whereas a gender gap is small"* (Eurostat, 2005: 15). Other factors that contribute towards the digital divide in Europe are urbanisation and presence of children within the household, with Internet penetration lower in 'thinly' populated, rural areas of the European Union and in childless households (Eurostat, 2005).

Age and education level are also important features of the digital divide in the United States (US). Nie and Erbring (2000: 5) reveal that in the US, *"the most significant factors facilitating or inhibiting Internet access are education and age"*. Fox's (2005a) work for the Pew Internet and American Life Project adds ethnic group and household composition to this list. Fox (2005a) argues that those groups that tend to 'lag' behind in their propensity to go on-line in the US are those aged 65 years and older, African-Americans, and those with lower levels of education. Adults who do not have a child in the home, those with disabilities, and those who do not speak English are also less likely to have access in the US (Fox, 2005a). However, the biggest gap that Fox (2005a) observes is age. She argues that (Fox, 2005a: 6):

> *"The majority of older Americans is offline... Americans age 65 and older are the least likely demographic group to have an Internet connection and* [those who do have a connection] *are continuing to lag younger users in access speeds as well."*

Indeed, a wealth of recently published survey evidence shows that age is a key variable affecting an individual's propensity to adopt the Internet, with older people less likely to adopt than their younger counterparts (ONS 2008a; Dutton *et al.,* 2005; Welsh Consumer Council, 2005). Adoption of broadband Internet connections has also been shown to be impacted by age (Dwivedi *et al.,* 2006).

3.2.3 Why the Focus on Older People is Important

The research literature suggests that the Internet adoption of older people is important for three main reasons. First, older people constitute an increasing proportion of the population, due to population ageing (ONS, August 2005), but their lack of Internet adoption can be seen to isolate them from the society in which they are growing in number (Harrington and Harrington, 2000). It is argued elsewhere that if older people are to be integrated in society, technology should be explicitly directed to the fast growing segment of independent older adults (Harrington and Harrington, 2000). Harrington and Harrington (2000) are scholars in 'gerontechnology', and they argue that

older people need to be *"on the crest of technology"*, or else risk falling behind in being fully participating members of their own society. They argue that (Harrington and Harrington, 2000: 9):

"Advances in technology change society, and technology never stops changing; it keeps on moving like a tidal wave as human knowledge increases... [F]*alling behind the wave of technology* [can] *precipitously disrupt a life. Often this means that people who don't keep up will face technical, perhaps social isolation, and will suffer in productivity and gratification."*

Second, older people are believed to be at a disproportionate risk of social exclusion compared with younger people (Social Exclusion Unit, 2005), and to be more likely than younger generations to be digitally excluded (Milne *et al.,* 2005; Olphert *et al.*, 2005). It is argued that people who lack access to the Internet tend to share similar demographic profiles with those who can be seen as excluded in other areas of life, including low income and lack of employment (Richards, 2006). In this context of exclusion, older people are seen to stand out as a particular concern because they are arguably more likely to share some or all of these characteristics, but to be less likely to be able to change their social and economic circumstances as they get older (Richards, 2006).

Third, and finally, the Internet appears to offer a route to distance older people from social and digital exclusion. This can be seen in the opinion of Bernard and Phillips (2000), who argue that technology has significant potential for older people due to its inherent qualities. The first of these qualities is its 'intergenerational' nature, in so far as they believe that it has the ability to improve the circumstances and quality of life of people of all ages. The second quality of technology is its potential for assisting with many of the 'traditional' problems associated with ageing, including decrements in mobility. The third quality of technology is that it is pluralistic and preventative. It is believed to have the potential to facilitate communication to enable older people to participate as citizens in decision-making, and to empower people as they shop, vote and seek help in all areas of policy (Bernard and Phillips, 2000).

The European Observatory SeniorWatch recognises that the benefits of ICT should extend to all people, *"not least to older citizens because they merely missed the opportunity to gain experiences with* [ICT] *during their working or educational life"* (SeniorWatch, 2002). The Office of Communications (Ofcom) has published a position paper on why connecting older people to the Internet is an important imperative. In the paper it is argued that *"being on-line is becoming more and more a necessity of life and less and less of an optional extra"* (Ofcom, 2007: 1). With an ever wider range of information, products and services going on-line, and the possibility of faster and cheaper communication, these benefits, although relevant to everyone, are arguably especially relevant for older people, many of whom are less mobile than younger people (Ofcom, 2007). However, many older people cannot take advantage of these benefits, as they lack connectivity and skills to go on-line (Ofcom, 2007). As a result of this (Ofcom, 2007: 2):

> *"The Ofcom Consumer Panel consider that it is a timely moment for government and other key stakeholders to develop a strategy for helping older people become connected."*

Given the volume of families, information and services going on-line, Age Concern (2006) also deem it a vital and timely concern to get older people digitally included. With projections for the proportion of older people in the population to increase in the near future (Select Committee on Economic Affairs, 2003), and research evidence which points to the reduced propensity among older people to adopt the Internet (e.g. ONS, 2008a), the place of the Internet in the lives of older people represents an important issue in the present and in the immediate future. However, despite some agreement among commentators that getting older people connected to the Internet is both important and timely (Ofcom, 2007), there is a lack of consensus on the impact of age in terms of Internet adoption. It points towards something of an 'age controversy' in the literature.

3.2.4 The 'Age' Controversy

The 'age controversy' can be seen between those scholars who believe that age can be used as an independent variable to explain a particular instance of individual or collective behaviour, and those who do not. Focusing first on those authors who suggest the insignificance of age, older age is seen to be relatively insignificant, by itself, as a barrier to ICT adoption and use (Olphert *et al.*, 2005). The inevitability of cohort succession is one of the main factors that some authors draw upon to deflect concerns about the age divide (British Telecom, 2004). From this perspective, age is seen to represent a declining feature of the digital divide over the coming years, as more technologically competent and engaged age groups replace the current oldest, least engaged cohort (British Telecom, 2004). It is suggested that in the near future, lower levels of Internet adoption among older people will dissipate as currently computing 'Baby Boomers' – a cohort of individuals born in the period 1946-1960 - continue to advance in age, and as more new users of all ages continue to adopt the Internet (Riggs, 2004).

Another argument which suggests that age, in itself, is not a significant barrier to the adoption and use of ICT is that which focuses on the interplay of individual's demographic characteristics. From this perspective, demographic factors such as income and education are believed to impede accessibility and usability as much for older generations as they can for the rest of the population (Browne, 2000; Foskey, 2001; Selwyn *et al.,* 2003). However, a number of other research projects raise the profile of age as a significant issue in the analysis of technology adoption. One example of such research was undertaken by Morris and Venkatesh (2000), who show that age is a highly significant factor influencing technology adoption and sustained usage decisions, even after controlling for potential confounding variables such as income, occupation and education. Choudrie and Dwivedi (2005, 2006, 2007) have provided evidence of the significant, direct and moderating impact of age on individuals' behavioural intention, adoption and usage behaviours. Also, Robertson and Soopramanien (2005) argue that while inequalities among other demographic groups appear to have diminished in recent years, inequalities according to age have persisted. For instance, there are now

apparently negligible differences in rates of Internet access and use between males and females in the UK (Faulkner, 2004)[8], but age-related inequalities are seen as persistent (European Commission, 2005; Olphert *et al.*, 2005). However, to present this chapter in a way that suggests that the propensity to adopt the Internet according to age adversely affects only older people is to underestimate the nature of the issue. Rather, the reader's attention is drawn to the fact that digital divides can exist at all ages.

3.2.5 Digital Divides at all Ages

Empirical research shows that the digital divide can impact people of all ages, including children. A number of research projects have recently focused on children and young people in the context of ICT. Importantly, some of these research studies point towards the interrelation of (young) age with other characteristics. Becker's (2000) research uncovered differences between low-income and high-income children's access to and use of Internet technology, which he attributed to the possibility that low-income families with home computers lacked connections to the Internet. Valentine's research with her colleagues (2002) shows that, between schools, the provision of hardware is highly unequal, driven by differential visions of the role of technology in the curriculum, budgetary positions, and educational priorities. Also, in the home, middle class school pupils and older pupils (year 11 pupils especially) had more independent access to, and exclusive use of, computers within the home, because they were more likely than pupils in lower social groups and younger pupils to have a computer in their bedroom (Valentine *et al.*, 2005).

The existence of digital divides at all ages questions the idea that the age divide will no longer be important in the future, as younger, more apparently technologically-adept cohorts replace current older, and less engaged cohorts. Rather, when younger cohorts become 'old', they may still fall on the 'wrong' side of the digital divide. A report by British Telecom (2004) urges caution in accepting cohort succession as a possible

[8] Liff and Shepherd (2004) argue that gender gaps still exist in terms of the amount and type of use women and men make of the Internet and their confidence in such use

solution to the age divide in the near future. The report indicates that a significant proportion of the 'young-old' (55 to 64 years) lack confidence in using the Internet, and it suggests that their exclusion behaviours and profile may be perpetuated in the future (British Telecom, 2004: 19). If this is correct, it appears that the succession of today's relatively unengaged older people by a younger, more engaged cohort may not be a straightforward inevitability. It gives ammunition to the pursuit for understanding the 'age divide'.

3.3 THE 'AGE DIVIDE'

According to Riggs (2004), age represents one of the factors most actively complicating the digital divide. The idea of the 'age divide' suggests that differences in the propensity to adopt the Internet are moderated by age. From this perspective, older people are seen to lag behind younger people with regard to their access to and use of the Internet (SeniorWatch, 2002). Research surrounding the 'age divide' often draws attention to what Riggs (2004) terms 'Internet hookups', or connections, and provides an indication of the extent of Internet adoption among older people. Much of this research is based on empirical data drawn from research surveys.

3.3.1 Internet Adoption of Older People in Wales

This research is conducted within the context of the Welsh Assembly Government's 'Meet the Mouse' workshops, which were held throughout – and only in – Wales. In Wales, a significant '*digital gap*' has been identified in respect of older people's involvement with the Internet (Beynon-Davies *et al.*, 2005; Hill, 2005). The Welsh Consumer Council (2004, 2005) has consistently found that age influences the propensity for people to have household Internet connections, to access the Internet at a variety of places, and to use the Internet. Significantly, the likelihood of not being connected to, or using, the Internet is most pronounced amongst oldest age groups, typically constituting individuals aged 65 years and older (Welsh Consumer Council, 2004, 2005). The Broadband Wales Unit (2004) has also revealed the reduced likelihood

for older people to have broadband connections and to be aware of broadband technology. The most recent publication of the Welsh Consumer Council's *'Internet Inequality'* report is from 2005, and it is the data from this publication that is presented and discussed here.

Household Connections Statistics released by the Welsh Consumer Council (2005) show that older age groups in Wales are the least likely consumers to have household Internet connections. Table 1 shows that levels of household Internet connections decline rapidly amongst individuals aged 55 years and over. In 2004, only 30 percent of those aged 55-64 years had an Internet connection, dropping markedly to only 14 percent amongst those aged 65 years and older. However, the data show that the percentage of older people (55 years or over) with household Internet access steadily increased in the period 2002 to 2005. The figures imply a growing acceptance of Internet adoption amongst older people.

Table 1: Percentage of adults in Wales with household Internet connections, according to age group (2002-2005)

Percentage of adults in Wales with household Internet connections, according to age group				
	Year			
Age (Years)	**2002**	**2003**	**2004**	**2005**
16-24	41	52	52	46
25-34	41	42	45	45
35-44	44	50	53	50
45-54	48	45	55	47
55-64	28	30	30	44
65+	12	13	14	17

SOURCE: Welsh Consumer Council (2005: 4)

Internet Access Research by the Welsh Consumer Council (2005) reveals that in Wales during the period 2004 to 2005, there was growth in the proportion of people aged 55-64 years who accessed the Internet at a combination of locations. As illustrated in Table 2, in 2005 15 percent of people in this age group accessed the Internet inside and outside the home, compared to the national average of 17 percent. However, by means of comparison, 32 percent of people aged 16-24 years accessed the Internet at a combination of locations, while only 2 percent of the oldest age group (65 years and older) accessed the Internet inside and outside the home in 2005.

Access to the Internet in the home provides more promising results in terms of Internet access amongst older people. Growth in the proportion of all people aged 55 years and over accessing the Internet in the home was evident in the period 2004 to 2005. 23 percent of people aged 55-64 years accessed the Internet at home only in 2005, representing an 8 percentage point increase on 2004 figures. The proportion of people aged 65 years and older accessing the Internet at home only was significantly smaller but did show growth, improving by 3 percentage points from 9 percent in 2004 to 12 percent in 2005.

In terms of access to the Internet outside the home, only 1 percent of people aged 65 years and over and 4 percent of people aged 55-64 years accessed the Internet exclusively at locations outside the home in 2005. Amongst other age groups this proportion was significantly higher, particularly amongst the youngest age groups (14 percent amongst people aged 16-24 years and 25-34 years).

Table 2: Adults in Wales who access the Internet inside and outside the home, according to age group (2004-2005)

Percentage of adults in Wales who access the Internet inside and outside the home, according to age group						
	Home and outside		**Home only**		**Outside home only**	
Year	**2004**	**2005**	**2004**	**2005**	**2004**	**2005**
Age (Years)						
16-24	32	32	19	11	16	14
24-34	17	21	26	21	19	14
35-44	19	18	30	29	11	9
45-54	21	19	25	22	6	4
55-64	10	15	15	23	4	4
65 +	2	2	9	12	1	1

SOURCE: Welsh Consumer Council (2005: 17)

Internet Use In Wales, the likelihood of being a non-Internet user is also highly correlated with age. Statistics published by the Welsh Consumer Council (2005) reveal that in 2004 and 2005, significant proportions of older people in Wales never used the Internet, as evidenced in Table 3. As in the UK, patterns of non-use according to age are most exaggerated amongst people in the oldest age group, aged 65 years and older, of which 89 percent were non-users in 2004. In 2005 the proportion of oldest non-Internet users was double the proportion of youngest non-users (86 percent and 43 percent, respectively). However, the figures do reveal a decline in the proportion of older non-users (aged 55 years and over) in the period 2004 to 2005, compared to an increase in non-users amongst all other age groups (16 to 54 years).

Table 3: Adults in Wales who do not use the Internet, according to age group (2004-2005)

Percentage of adults in Wales who do not use the Internet		
	Year	
Age (Years)	2004	2005
16-24	34	43
25-34	39	43
35-44	42	45
45-54	48	55
55-64	71	58
65+	89	86

SOURCE: Welsh Consumer Council (2005: 17)

Broadband Adoption In Wales, survey evidence of propensity to adopt broadband according to age is provided by the Broadband Wales Unit (2004). The results of its most recent survey reveal that, in 2004, consumers aged 55 years and older and who were on-line were the least likely to have a broadband connection. Highest rates of broadband penetration were among those aged 24 to 34 years (25 percent), and the lowest rates were among consumers aged 55 to 64 years (16 percent) and those older than 65 (11 percent). The survey reveals that awareness of broadband was highest among the 16 to 54 year-olds (ranging from 98 percent among 16 to 24 year olds to 95 percent among 45 to 54 year olds), lower among those aged 55 to 64 years old (92 percent) and lowest among those aged 65 years and older (74 percent). Awareness of average monthly cost of broadband connection was lowest among oldest consumers, and consumers aged 45 years and older were more likely to state that they 'don't know' the potential benefits of broadband (Broadband Wales Unit, 2004).

3.3.2 Internet Adoption of Older People in Great Britain

The pattern of reduced propensity to adopt the Internet according to age is not peculiar to Wales, but is also characteristic of trends identified in Great Britain. An abundance of research statistics confirm the significance of age in terms of Internet use in Great Britain, and the stark differences in the propensity to use the Internet amongst youngest compared to oldest age groups in particular (ONS 2008a; ONS, 2006; Eurostat, 2005). Fortunately, examination of trends in Great Britain benefits from more up-to-date data than that available for Wales.

Recent research data provided by the Office for National Statistics (ONS) (2008a) reveal age-based differences in when adults last used the Internet. The data covers the three-year period 2006 to 2008, and concerns all people on-line and off-line. The results indicate that:

- The likelihood of using the Internet in the last three months declined with advancing age. The percentage of people who had used the Internet in the last three months increased among all age groups, but the oldest age group (65 years and older) was the least likely to have used the Internet in the last three months. In 2008, 26 percent of the oldest age group had used the Internet in the last three months, representing an increase of 11 percentage points since 2006. The discrepancy with other age groups was particularly large; 93 percent of the youngest age group (16-24 years) and 63 percent of the oldest-but-one age group (55-64 years) had used the Internet in the last three moths.
- The likelihood of having never used the Internet increased with advancing age, but the percentage of those in the oldest age group (65 years and older) that had never used the Internet fell 12 percentage points from 82 per cent in 2006 to 70 per cent in 2008.

The ONS (2008a) data also reveal the frequency of Internet use among Internet users, which also shows a relationship to age:

- The percentage of people who used the Internet every day or nearly every day increased among all age groups over 2006 to 2008 (with the exception of the 45-55 years age group, which exhibited a 2 percent decline between 2007 and 2008)
- The likelihood of making daily or almost daily use of the Internet declined with age. The oldest age group (65 years and older) was the least likely to make such frequent use of the Internet, although the percentage who did so increased from 43 percent in 2006 to 54 percent in 2008. The age group 55-64 were the next least likely to have used the Internet every day or nearly every day (64 percent). The youngest age group were most likely to have used the Internet on a daily or almost daily basis (77 percent in 2008).
- The likelihood of using the Internet at least once a week but not every day decreased for all age groups, presumably reflecting their increased likelihood of using the Internet daily or almost daily (with the exception of those aged 45-54 years, who showed a 4 percentage point increase over 2007 to 2008). A similar percentage of 65+ and 55-64 and 45-54 year-olds used the Internet at least once a week but not every day (27 percent, 25 percent and 27 percent respectively). Youngest Internet users were the least likely to use the Internet at least once a week but not daily (19 percent among 16-24 and 25-44 year olds).

The impact of age on the adoption of broadband in the UK has also been examined. Research by Dwivedi *et al.,* (2006) reveals a correlation between the rate of Internet use, the user's age, and their broadband adoption. Dwivedi and co-workers (2006) conducted a cross-sectional study to examine usage of online/electronic services and their effect on predicting adoption of broadband in British households. Their results show clear associations between type of access and frequency of access, with broadband adopters using the Internet on a more frequent basis than dial-up - or narrowband - adopters. The results that the scholars obtained when examining the relationship of age to Internet use are most insightful in the context of this research. Their findings show a negative correlation between frequency and duration of Internet access and consumer's age, with the frequency of access and the time spent online on a daily basis decreasing as age

increases. They also found that access to and use of on-line services and applications decreases as age increases (Dwivedi *et al.*, 2006).

3.3.3 What the Survey Data Reveal and Do Not Reveal

The survey data reviewed above reveal that older age groups are disproportionately less likely than younger age groups – and the youngest age groups especially – to adopt the Internet. They also reveal that there has been some growth in Internet adoption among older people in recent years. These data have utility in enabling researchers and policy makers to measure the prevailing state of, and changes in, Internet adoption among different social groups (Hill, 2005), and to establish a baseline for evaluating progress towards policy goals for universal service (DiMaggio *et al.*, 2001). However, there are a number of important issues related to adoption that the survey data do not reveal.

The above survey data are drawn from research studies that are cross-sectional in design; that is, they make inferences about the impact of age by taking a cross-section of the population and comparing the characteristics of groups of people of different ages at a single point in time. This type of research design assumes that studying people of different ages at a single point in time is the same as studying a single group over time (Victor, 1994). The cross-sectional design also lacks a 'time' dimension, and so it possible to examine only differences between groups rather than changes (Victor *et al.*, 2007). While period effects are held constant, the cross-sectional design confounds age and cohort effects. As a result, it is difficult to determine whether age groups differ due to the ageing process, or because of different historical events experienced in earlier life (Victor *et al.*, 2007). Cross-sectional research also has the potential to confound multiple coincident events (Davey *et al.*, 2005), such as, for example, changes in income and residence. Finally, cross-sectional studies can underestimate the dynamic and fluid nature of beliefs, attitudes and decisions, and may therefore fail to fully capture the complexity or periodicity of the adoption process (Krahanna *et al.*, 1999).

As well as the shortcomings of the cross-sectional design, there are limitations of grouping all 'older people' into one category (Victor, 1994). The group statistics use relatively small age categories, of less than a decade, for all but the oldest age group. The youngest age category spans only eight years, and all the other age groups, with the exception of the oldest, span nine years. The last age category, which represents the oldest individuals surveyed, relates to all people aged 65 years and older. If we assume that the survey respondents are no older than 95, this last group may potentially include up to three decades of individuals that is treated as one group. Moreover, by dichotomising people into those who are adopters and those who are non-adopters, survey data like these neglect those categories of people in between these two extremes (Rose, 2006).

Finally, as described in Chapter Two, people of the same age may be dissimilar in several respects, such as social class and gender, and other demographic indicators. Making overall comparisons is therefore limited because average figures may conceal variation within age groups (Victor, 1994). Attention to the 'social patterning' of the digital divide encourages recognition of the interplay between demographic variables, and reveals that *"there are systematic and meaningful variations in the kinds of people who are on and off the Internet"* (Chen and Wellman, 2003: 2)

3.3.4 The 'Social Patterning' of the 'Age Divide'

Thus far, discussion has centred on the extent to which older people are responding to rapid technological change in comparison with younger people. In line with the thoughts of Paul and Stegbauer (2005), this 'two worlds apart' assumption – that is, younger versus older people – may be too simplistic. Rather, other factors such as gender, education and socio-economic status may also play an important role in the diffusion of technology (Paul and Stegbauer, 2005). Harrington and Harrington (2000: 16) make this same point when they argue that:

"Each person is unique, and his or her individual situation may make him or her even more so. Also, although many of the things that any given person wants may stay the same, options for obtaining these things may change, again, on a highly individualistic basis that depends on age, socio-economic, political and other factors. All of these must be incorporated into our assessments of desire [to appropriate technology]".

Authors like Ito and colleagues (2001) question the significance often assigned to any demographic characteristics, age included, in discussion of the digital divide. One of the handicaps of this approach is that it fails to acknowledge how individuals with presumably advantageous demographic characteristics may not be on-line. For instance, research shows that a significant proportion of individuals in the UK have the financial means to afford household Internet connections but remain off-line, presumably for reasons other than income (BT, 2004).

A more detailed examination of the interaction of demographic variables (for example, age and income) may provide a more accurate indication of an individual's unique position, and the multiplicity of drivers or barriers that may influence this position (Chen and Wellman, 2003)[9]. Indeed, research evidence does suggest that the 'age divide' is socially patterned, because there can be differences *among* older people in their relationship to the Internet. For example, a report by the Cabinet Office (2004) suggests that older people who are on low incomes, with a disability and from ethnic minority groups are the least likely to engage with ICT. Melenhorst's (2002) focus on technology adoption among older people suggests that women are more likely than men to refuse to adopt the Internet. It is possible to see here that not only may older people differ from the general population in terms of Internet adoption, they may also be internally differentiated. Paul and Stegbauer (2002) conjecture that these gender-based differences are possibly due to a number of historical influences. For men, they argue that the influence of their former job experiences may predispose them towards accepting the Internet, while for women, their lower levels of educational attainment compared to

[9] This is consistent with the emphasis on life course stratification in Chapter Two, which urges a focus on the interplay of factors that can influence a given individual's position in society.

men, and their concentration in the very old age group, may predispose them towards showing little interest in technology (Paul and Stegbauer, 2002).

Research undertaken in Finland can illuminate the idea of the 'social patterning' of the 'age divide'. Vuori and Holmlund-Rytkonen (2005) examined the Internet use of people aged 55 years and older and segmented this group according to differences in perceptions, attitudes and behaviour towards the Internet. They discovered that educational level, health and willingness to try new products and services did correlate strongly with Internet familiarity and usage. They found that the more educated and healthy the respondent, the more likely they were to be an Internet user, and that those who were more willing to try new products and services had typically also used the Internet. The researchers also found that people who considered themselves younger than their chronological age were not necessarily more likely to be Internet users than those who felt their cognitive age matched their chronological age (Vuori and Holmlund-Rytkonen, 2005).

Vuori and Holmlund-Rytkonen (2005) performed a cluster analysis on their data in order to classify older people into specific segments according to their Internet familiarity and demographics. They anticipated deriving four segments: 'healthy indulgers', 'healthy hermits', 'ailing outgoers', and 'frail recluses'. They believed that the merit of this model was that while there are no age differences across the four segments, these groupings could differ across many areas that define life stages (Vuori and Holmlund-Rytkonen, 2005). The segments also represented the respondents' lifestyles, personalities, self-perceptions and health. From their data, the authors developed two main segments, namely 'healthy indulgers' and 'ailing outgoers'[10]. Respondents belonging to the 'healthy indulgers' cluster were younger (average age 58) than those in

[10] Vuori and Holmlund-Rytkonen (2005) recognise that their research sample did not contain all four cluster segments. They suggest that 'frail recluses' could not be reached because relatively few live in Helsinki or visit shopping centres, and others may still have been employed. 'Healthy hermits' could also not be reached, and the authors explain that, in all likelihood, this is because most of them are pensioners and are socially withdrawn. They also suggest that older consumers in Finland may be more homogeneous, due to the country's higher level of general welfare, public health care and national basic pensions, than there is in the United States where the life stage model was developed (Vuori and Holmlund-Rytkonen, 2005).

the 'ailing outgoers' cluster, and they were more likely to be healthy, well-off, married, female clerical workers with a college degree. They had good computer skills and were active Internet users. Their general outlook on life was positive and they felt younger than their chronological years. Meanwhile, respondents in the 'ailing outgoers' cluster were older (average age 71), and were more likely to be less educated females, mostly retired, with a monthly income smaller than that among respondents in the 'healthy indulgers' cluster. They were more likely to be deficient in their computer skills, and while they had tried the Internet they were not regular users. They were cohabitants, and were social and active. They had satisfactory health, and their self-esteem was as high as their counterparts in the 'healthy indulgers' cluster. They also considered their lives to be meaningful, felt that they could get along with the constant change in the world, and felt younger than their chronological years.

Vuori and Holmlund-Rytknonen's (2005) study illuminates the idea of the 'social patterning' of the digital divide, by way of differentiating consumers according to 'lifestage'. This is an interesting way of looking at discrepancies of adoption according to age, and it deserves more thorough attention.

3.4 IMPACT OF THE RETIREMENT LIFESTAGE

While the studies discussed above have been used to examine the idea of an 'age divide', other research focuses more on the idea of 'lifestage' to explicate the seemingly age-based differences in propensity to adopt the Internet. In respect of older people, the relevant lifestage for consideration in this section is retirement[11].

[11] Another aspect of lifestage is the potentially declining physical and mental health of an older person (Beckett, 2000). The impact of this aspect of lifestage is explored in section 3.7 which explores, among others, access issues as barriers to older people's Internet adoption.

3.4.1 The Internet among Retirees

A particularly interesting idea that has emerged in the literature, and which can shed light on older people's Internet adoption, is that of 'lifestage'. It has been used in Great Britain-based research in the 2005 and 2007 Oxford Internet Surveys (OxIS) (Dutton *et al.,* 2005; Dutton and Helsper (2007). In the 2005 survey, the relevant life stages for analysis were 'pupils', 'working age', and 'retirees' (Dutton, Gennaro and Hargrave, 2005). Some of the results of the survey show that:

Internet Use

- In 2005 the retired were the least likely to be Internet users (30 percent) compared with those of working age (68 percent) and pupils (97 percent)
- However, the retirees had shown the biggest increase in Internet use in the period 2003 to 2005, with use rates up by eight percentage points from 2003. In comparison, rates of use had increased by only one percentage point among those of working age in this same period, and had fallen by one percentage point among pupils

Access at another Person's Home

- Retirees were the least likely to access the Internet at another person's home (15 percent) compared with those of working age (22 percent) and pupils especially (70 percent)

Downloading or Listening to Music On-line

- Retirees were the least likely to download or listen to music on the Internet (34 percent) compared with those of working age (54 percent) and pupils (80 percent)

In the 2007 survey, Dutton and Helsper (2007) also explored 'lifestage' as a key factor that shapes individuals' Internet use. The lifestages that they refer to are 'students', 'employed' and 'retired' (and sometimes the 'unemployed'). The results of the survey reveal that in 2007, students (97 percent) were three times more likely to use the Internet than those who were retired (31 percent). One of the most interesting of their findings was that retired people were just as likely to use the Internet in 2007 as they were in 2005, suggesting a plateau in use among those who have retired. Some of the other survey results show that (Dutton and Helsper, 2007):

Duration of Access and Use

- The retired had access to the Internet for a longer period of time (an average of 4.7 years) than students (average 4.1 years) and the employed (average 4.6 years)
- The retired had used the Internet for more time (average 5.2 years) than students (average 5.1 years), but for less time than the employed (average 5.6 years)
- The retired had broadband access for the shortest period of time (average 2.3 years) compared with students (average 2.6 years) and the employed (average 2.8 years)

First Use of the Internet

- The retired were most likely to have started using the Internet in the home (70 percent), as were the employed (51 percent), while students were more likely to have first used the Internet at school or university (47 percent)

Locations of use

- The retired concentrated their Internet use at their own or at other people's homes (17 percent; percentage for own homes is not shown), and relatively few used the Internet at public libraries (7 percent), Internet cafes (4 percent) or at

schools/universities (2 percent). In comparison, most students used the Internet in schools or universities (88 percent) and the majority of the employed used the Internet in the workplace (51 percent)

- Although the retired used the Internet in other people's homes (17 percent), they were less likely to do so than were students (58 percent) and the employed (27 percent)

Reasons for discontinuing use and non-use

- The retired were more likely to stop using the Internet because it was too expensive (46 per cent) or because they were not interested in using it (39 percent). The unemployed were also most likely to cease use because they perceived the costs as too expensive (46 percent), while the employed stopped using the Internet because they no longer had a computer available (43 percent)
- The main reasons for non-use among the retired were that they did not know how to use the Internet (81 percent), they didn't know how to use a computer (80 percent), and they had no computer available (77 per cent)

The importance assigned to the Internet

- The retired were the least likely to report that losing their Internet access would be a problem (47 percent), compared with students (82 percent) and the employed (66 percent)

Self-rated ability to use the Internet

- The retired were the least likely to have confidence in their own abilities to use the Internet (40 percent) compared with the employed (63 percent) and students (86 percent)

Communication Online

- The retired were the least likely to perform all of the following communication activities online: checking electronic mail (email), sending attachments with email, instant messaging, sending jokes or other humorous content, participating in chat rooms, writing a 'blog', and making or receiving phone calls over the Internet
- The retired were the least likely to have created a profile for themselves on social networking Websites (only 2 percent compared with 15 percent of the employed and 42 percent of students)
- The retired were the least likely to have met new people on-line (10 percent) compared with the employed (23 percent) and students (35 percent)
- The retired were more likely to report that their contact with family and friends living nearby and those living further away had increased through their access to the Internet

Dutton and Helsper's (2007) findings are interesting because they illuminate the importance of considering retirement as a lifestage when analysing older people's Internet adoption, and how this may be different to earlier lifestages such as being a student or being employed. In this regard, the idea of lifestage acknowledges something of the historicity that is intricately tied up with notions of Internet adoption among older people.

3.4.2 What the Survey Data Reveal and Do Not Reveal

The OxIS surveys (Dutton *et al.,* 2005; Dutton and Helsper, 2007) reveal that individuals in the retirement lifestage are less likely than are people in other, presumably younger, lifestages to be Internet users. However, like the 'age divide' data, these OxIS data also have their limitations. For instance, the data may tell us less about the impact of retirement on Internet adoption and more about the presence of children in the home. Research surveys show that people with dependent children in the household are more likely to have Internet connections than are those with independent children and those

without children (Tuck, 2003). We may assume that people of the working age lifestage are more likely to have children in the home than are those who are retired, and this may possibly account for a degree of the differences in Internet adoption between these two groups. Also, differences between retirees (and those of working age) and pupils or students may be explained by the greater tendency for younger people to spend time outside the home than younger people, and to visit places where Internet access is offered, such as educational establishments and Internet cafes (Tuck, 2003).

Furthermore, analysis of lifestage does not indicate whether or not the retired people included in the analysis were recently retired or whether they were long-term retired. This could have implications for whether or not they encountered the Internet in the workplace prior to retirement. To illustrate, research by Ofcom (2006) has focused on the attitudes towards communications technology of older people, who are defined as those people aged 55 years and older. They distinguish between current Internet users who have and those have not been exposed to the Internet in the workplace. Accordingly, they propose that those they classify as 'absorbers' had been obliged to learn about computers at work and had since become part of the 'digital age'. The 'self-starters', on the other hand, had gained no computer training at work and had later taught themselves how to use the Internet.

Dholakia and colleagues (1996: 8) suggest that *"once a technological system gets established in one life sphere... it has the potential to migrate to the other connected spheres"*. The three spheres of people's 'lifespace' that they refer to are work, 'homelife', and transactions. The work sphere includes computers, robots and other automated equipment; homelife includes radio, television and stereos for private entertainment; and transactions include shopping, banking, insurance, taxes and so on (Dholakia *et al.,* 1996). Stewart (2002) has drawn on their ideas and has focused on the workplace as a sphere of life from which the Internet can 'migrate' into the home. Of course, this idea of 'migration' may potentially have implications in terms of possible differences between those retired people who were exposed to the Internet in the workplace prior to retirement and those who were not. Dutton and Liff (2006)

recommend distinguishing between lifestage and cohort to examine issues related to Internet adoption and use. Doing this may be better placed to acknowledge that retired people may differ according to when they left the workplace, and the impact this may have in terms of whether or not they were exposed to the Internet during their working lives[12]. Thus, what is missing in these survey data is recognition of birth cohort and the differences that this may entail in terms of differential historical exposure to technology. The notion of a 'generation gap' supports this contention, and stresses the impact of exposure to technology in one's formative years (Docampo Rama, 2001). As such, it provides a starting point for understanding the role of birth cohort in older people's Internet adoption.

3.5 THE 'GENERATION GAP'

It is generally agreed that the children of today are growing up in a world immersed in technology (Harding, 2000) and that young people *"possess sophisticated knowledge and skills with information technologies"* (Bennett *et al.,* forthcoming). On the other hand, older people are seen to be excluded from the world of ICT due to its prevailing culture of 'youthism' (Breton, 2000). This division represents an aspect of what for some authors has come to be known as the *'generation gap'* between younger and older generations (Buckingham, 2006).

Among the first to discuss the idea of a 'generation gap' was Tapscott (1998). Tapscott (1998) argues that generational differences are produced by technology, rather than any other social, historical or cultural forces. He also suggests that technology is producing a 'generation gap', as the habits and preferences of the older generation are superseded by those of the young generations (Tapscott, 1998). More recently, Buckingham (2006) has described the 'generation gap', which he believes has emerged as a consequence of adults' fears about the pace of social change and their anxieties about a loss of continuity with the past. For Buckingham (2006), the notion of a technological generation gap

[12] Of course, there are those older people who may be short-term retired and who may still not have been exposed to the Internet during their working lives due to the nature of their jobs.

suggests not only that fundamental and irrevocable change has occurred, but that technology is the source of such a break with the past.

McDaniel (2002: 535) reinforces the centrality of generation in the context of ICT, and argues that: *"In development, adoption, uses and impacts, technologies shape, and are shaped by, social relations and social structures."* McDaniel (2002) is not alone in believing in the centrality of technology in shaping generations, and vice versa. His views are echoed elsewhere by authors commentating on the idea of 'technology generations'.

3.5.1 'Technology Generations'

Docampo Rama (2001) uses the notion of generation as a range of birth cohorts that display similar behaviours, and share norms or values that are based on common social environments during their formative years. He has conducted an analysis of the present generation of older people, and how this generation compares with others, in the context of technological change. For this purpose, he used the idea of 'technological generations' in order to portray something of the differential experiences people can gain by dealing with certain technologies when they are young, and of the ways that these experiences can shape attitudes towards similar or dissimilar technologies that appear later in life (Docampo Rama, 2001).

He defines technology generations as *"generations of people that differ in the type of technology experience in their formative years (i.e. before the age of 25)"* (Docampo Rama, 2001: 7). He argues that the formative experiences of these technology generations may have consequences for their current behaviour towards present-day Information, Communication and Education appliances, or what he calls ICE devices. To this extent, he distinguishes three different technology generations based on their experience of electrical ICE in the period before the age of 25: the electro-mechanical generation (born 1930-1960), the display generation (born 1960-1970), and the menu generation (born after 1970) (Docampo Rama, 2001).

Docampo Rama's (2001) analysis of the historical development of user interfaces for consumer electronics emphasises how these interfaces have changed over the course of the twentieth century. He shows that a typical user interface of the first electrical devices contained robust mechanical push buttons, sliders and switches that activated the basic functions of the device. He argues that a user's learning ability in new situations can be facilitated by reusing knowledge of earlier but related situations. However, he emphasises that older people, by virtue of having been exposed to technology interfaces quite different from those used by younger people today, may have acquired some knowledge that is not useful in the context of contemporary technology use. As a result, part of the knowledge of the past has to be suppressed. The extent to which this suppression can be achieved is limited however, because it entails 'forgetting' those norms, values and skills learned in the formative period of life (Docampo Rama, 2001).

What Docampo Rama (2001) is arguing is that older people's historical exposure to technologies that are quite different from those we use today can have implications for their current use of technologies. Paul and Stegbauer (2005) argue a similar point. They suggest that socialisation in different times creates different learning styles and approaches to technology. They argue that today's teenagers have grown up with digital technology, and get in touch with these technologies through trial and error and informal learning processes with their peers. Meanwhile, the elderly are more used to reasoning, systematic and logical thinking, and linear step-by-step processes which, while they may be useful for formal learning, can represent an obstacle to dealing with new technologies (Paul and Stegbauer, 2002). Harrington and Harrington (2000) make a further useful point when they suggest that older people may have learned earlier in life that a device must be treated with proper care, and that unbounded exploration by trial-and-error may cause disruption of the device or even danger. In this respect, they argue that 'unlearning' may be far more difficult than learning (Harrington and Harrington, 2000).

Kapp (2007) also suggests that generations are shaped, in part, by the technologies which surround them as their members grow up. He focuses specifically on the 'baby

boomer' generation and the 'gamer' generation. He argues that baby boomers were the first generation to be raised on television and mass consumerism, during an era of 'one-way' technology better known as 'broadcasting', whereas the 'gamer' generation grew up on video games, the Internet and electronic gadgets. In contrast to the 'one-way' technology of the 'boomer' generation, 'gamers' share knowledge, are constantly connected electronically to others, and are comfortable with Web-based technologies (Kapp, 2007). They are indicative of what has come to be known as the 'digital generation'.

3.5.2 The 'Digital Generation'

Young people are often defined as a 'digital generation' in fields as diverse as government, education, commerce and youth activism (Buckingham, 2006). The 'digital generation' may also be called 'Generation Y', 'milleniums', 'echo boomers', 'Net generation', or the 'gaming generation' (Deloitte Consulting, 2005). Buckingham (2006: 1) defines the digital generation as *"a generation defined in and through its experience of digital computer technology"*. While there is no consensus on this, the members of the 'digital generation' are typically thought to have been born at any time between and including the years 1981 to 1993 (Deloitte Consulting, 2005). As a group, they are believed to be 'techno-savvy', connected '24/7', self-confident, optimistic, independent, goal oriented, success driven, and lifestyle centred. The impact of technological advancement in their lives is stark. They have never experienced life without computers, and they have grown up believing in the reverse accumulation of knowledge (that is, the younger you are, the more you know), and the idea that the world is a mere click away (Deloitte Consulting, 2005).

Buckingham's (2006) assessment of the so-called 'digital generation' draws attention to the consequences of technological change for different generations. He stresses how the consequences of such change can vary according to how individuals use technology, and the purposes that they use it for. By pointing towards systematic differences between adults and young people in what they do with technology, Buckingham (2006) implies

that there exist very different consequences of technology among older people than there are among younger people. These older people may include those who Blaikie (2006) calls the 'golden cohort', who are those people born in the period 1918 to 1945. At the time of writing, members of the golden cohort are those people who are retired or are close to retiring. There is no treatment of the 'golden cohort' from a 'technology generation' perspective, so there are no adjectives to list to describe their characteristics in this context. However, by virtue of the historical timing of their birth cohort, it is clear that a proportion of the 'golden cohort' would have spent their formative years prior to and during World War Two, and some, though relatively few and only narrowly, missed World War Two altogether. It is clear that, while some members of the 'golden cohort' may have used the Internet in the latter years of their careers, many more would have been retired before the emergence of the Internet in the broader workplace in the early 1990s[13]. Also, had they not undertaken learning in mid- to later-life, they would have not been exposed to the Internet in educational settings.

3.5.3 Historical Exposure to Technology

It was suggested earlier that it is a timely concern to get older people connected to the Internet (Ofcom, 2007). One of the reasons why consideration of older people and the Internet is a timely one is that, unlike those younger age cohorts, many of today's older people are unique in that they have not been exposed to the Internet during their educational or working lives (Osman *et al.,* 2005). This very fact suggests that older cohorts have been relatively under-exposed to the Internet compared to most people occupying younger cohorts, and the youngest cohorts especially. Thus, in line with the thoughts of Bouma and Harrington (2000: 141) it is evident that:

> *"We need to be careful when generalizing* [sic] *and remember that older individuals have long life histories filled with diverse experiences. Some have technical*

[13] This does not include universities and the military, where the Internet has a longer history

backgrounds, others don't[14]*. They are very heterogeneous as a group, also with respect to information and communication."*

According to Becker and van de Goor (1997), the technology experience acquired during the formative period between ages 10 and 25 years has a long-term impact on the user's way of handling current technology. Docampo Rama (2001) extends this argument and suggests that this period is an important time in which attitudes and behaviours about technology are formed, and which can impact decisions about technology in later life. Others also emphasise the importance of increasingly early contact with technologies in shaping attitudes and behaviours toward their existence and use (Madden *et al.,* 2005).

Roberts *et al's.,* (2005) historical overview of older people's exposure to technologies through the life course suggests that today's oldest cohorts have experienced technology in ways that are fundamentally different to those experiences that characterise most younger people, because of the rapid pace of technological change. Bouma and Harrington's (2000) example of older people's exposure to email is particularly illustrative in this context. They see email, which did not enter the professional world until the early 1990s, as emerging too late for many of today's oldest cohorts who had retired by this time. As a result, many of today's older people did not gain experience of this technology during their working lives, and did not have the opportunity to learn of the potential benefits of email in the workplace. Now, faced with the prospect of using email, many older people need to learn to type, a skill which was not widely learned in the past (Bouma and Harrington, 2000).

The idea of historical exposure to the Internet developed here is intended to portray the fact that, by virtue of the historical timing of their birth and the later historical timing of the emergence of the Internet, many of today's oldest age cohorts have had no opportunity to familiarise themselves with this technology during their educational and

[14] It is recognised that younger people may also not have technical backgrounds: for example, they may be employed in occupations that do not require the use of technology etc.

working lives[15] (Osman *et al.,* 2005). Thus, the idea of proximity to the Internet acknowledges the importance of birth cohort membership. It suggests that the way that people experience the Internet and the attitudes that they have towards it are shaped by the fact that people of different birth cohorts encounter the Internet at different stages of their lives.

3.5.4 Differences between Younger and Older Cohorts

For Paul and Stegbauer (2005), the proximity of older people to the Internet provides good reasons why many of them are not on-line. They argue that retired older people have no professional incentives to use the Internet, and that Internet technology has more to offer to younger people – in terms of on-line chat, films, and music – than it does to older people (Paul and Stegbauer, 2005). Riggs (2004) focuses her attention on older people's lack of exposure to the Internet during their time in the educational system. She suggests that key to understanding the notion of proximity in this context is the differences in skills and expertise between older and younger generations, the latter of whom came of age in a computer-literate society. She argues that older people, who she defines as over age 55, tend to lack the skills and expertise associated with computer technologies and the Internet, because these are assets that are acquired through schooling and other activities, like paid employment, most frequently associated with younger people (Riggs, 2004).

Hawisher and colleagues (2004) extend this argument beyond the educational and working arenas, to incorporate what they call the 'gateways', or routes, to technology. They list these gateways as schools, workplaces, communities and homes, and argue that the more gateways people have open to them, the more likely they are, over their lifetimes, to acquire, develop and value effective sets of digital literacy skills (Hawisher *et al.,* 2004). In respect of many older people, we may consider such gateways as schools and workplaces as largely closed, while communities and homes are more open,

[15] There is, of course, the exception of those older people who return to education in later life, those who may continue working beyond retirement age, and those who may be bringing up their grandchildren.

provided of course that they desire to or are able to make use of them. However, taking a historical perspective, older people have of course lacked access to all of these gateways, because the Internet has emerged relatively late in their lives. Hawisher and co-workers (2004) make reference to these issues of closure when they argue that the relative importance of these gateways will vary according to the needs and motivations of those who use them, the timing of these needs within individual lives, the historical contexts in which such gateways exist, and the sets of social circumstances which shape them.

Thinking of older people as lacking in their historical exposure to the Internet in certain gateways like schools and the workplace prompts awareness of how non-exposure may sometimes pose a barrier to Internet adoption. Their relative lack of exposure is also seen as a possible reason for why they are more likely to lack interest in the Internet compared with younger people (Millward, 2003; Foley and Alfonso, 2002), and why they may perceive the Internet as irrelevant to their everyday lives (Olphert *et al.,* 2005). Further, research suggests that there are preferences among older people for more traditional technologies (Melenhorst, 2002) or for other pastimes and activities (Selwyn *et al.,* 2003). Other research reveals that older people are less likely compared with the UK average to understand and describe technical terms such as 'broadband', and are less likely to keep informed of new ways of connecting to the Internet (Ofcom, 2005).

3.6 DIGITAL INCLUSION

Digital inclusion is believed to offer the opportunity to bridge the 'generation gap' between younger and older people (Burdick, 2001). The Digital Inclusion Team (2007: 5) define digital inclusion as *"the use of technology, either directly or indirectly, to improve the lives and life chances of disadvantaged people and the places in which they live"*.

3.6.1 Digital Inclusion of Older People

Commentators perceive a number of potential benefits associated with the digital inclusion of older people. These include improving their social and economic wellbeing (Aldridge, 2004) and quality of life (Osman *et al.,* 2005), and the provision of opportunities for updating obsolescent skills and knowledge (Glendenning, 2004). Digital inclusion may also improve access to services that older people may previously have found inaccessible due to lack of mobility or transport (Olphert *et al.*, 2005), and provide opportunities for older people to access information and interact with other people (Osman *et al.,* 2005). The Internet is believed to offer opportunities for older people to pursue social networking and leisure hobbies (Norris 2001), and to access on-line health information (Becker, 2004). Finally, the Internet is argued to provide the opportunity for younger generations to benefit from access to the experience, expertise and creativity which older people can provide on-line (Browne, 2000). Thus, the pursuit of digital inclusion appears to have significant potential for older people who are not yet on-line, and for younger users. However, while there is a good level of agreement among commentators on how digital inclusion may benefit older people, there is little consensus on the way that such inclusion can be achieved.

An array of approaches for achieving the digital inclusion of older people is proposed in the literature (Aldridge, 2005). According to Sinclair (2006), a senior policy manager for Age Concern, learning about the Internet is a crucial component of digital inclusion. However, other research evidence suggests that the lack of a comfortable learning environment is a significant barrier to older people's involvement with computer-based learning (Jah, 2006). To this extent, a number of recommendations are made by researchers, including introductory ICT courses (Gilligan, 2003), and the provision of 'drop-in' facilities and 'taster' sessions, aimed specifically at older people (Aldridge, 2005).

3.6.2 'Digitally Included' Older People, and 'Silver Surfers'

The same survey data that reveal the reduced propensity of older people to adopt the Internet compared to younger people also show that there is growth in adoption among oldest age groups in recent years (ONS 2008a; Dutton, Gennaro and Hargrave, 2005; Welsh Consumer Council, 2005). Rates of non-use among older people in Great Britain have dropped in the period 2006 to 2008 (ONS, 2008a). In Great Britain, 22 per cent of retirees were Internet users in 2003, rising to 30 per cent in 2005 (Dutton *et al.,* 2005). Indeed, BTOpenworld (2002) figures suggest that more retired people are spending time on-line rather than pursuing other hobbies. Also, figures released by Ofcom (2006) state that just over two thirds (68 per cent) of Internet users aged 65 years and older used the Internet for communication purposes on a weekly basis in 2006, only slightly less than UK adult Internet users (72 per cent).

Such positive research results in the context of older people's Internet adoption have given rise to the '*silver surfer*' discourse (Hines, 2004; Weightman and McDonagh, 2003). Sandelowski (2008) defines them as those retired older people who have never learned about or used computers in the workplace but are now embracing the Internet. Statistics reveal that in 2002 the UK had the third highest percentage of silver surfers in Europe, behind Sweden and Denmark (BBC, 2002), two countries which are widely considered two of the main forerunners of Internet penetration (Goliath, 2005). Some commentators perceive silver surfers as a potentially lucrative market prospect (Sloane, 1999), because they are seen as having relatively high amounts of disposable income and spare time available following retirement (Cracknell *et al.,* 2000). Research which portrays older people as an economically advantaged group has led to their being considered a viable market for consumer goods (Cutler, 2006). However, Minkler (1994) warns that beliefs in the affluence of the older population break down when this group is disaggregated, because they can conceal the economic differences that exist between older people, and obscure the economic problems that can prevent many older people from conforming to the stereotype of affluence. This could, he argues, lead to the

further neglect of the demands of low-income consumers and the reduction of government policy programs designed to assist older people (Minkler, 1994).

3.7 CONCLUSION

This chapter has explored the Internet adoption of older people. At the time of writing, while there is an abundance of survey data related to this issue, there are only a small number of exploratory research studies. Selwyn and colleagues (2003) suggest that little attention has been paid to older people's adoption of ICT like the Internet. Before them, Melenhorst (2002) pointed out the paucity of research examining age related motivating factors for use and non-use of the Internet, and Morrell (2002) asserted that despite the growing number of older people on-line, there has been little research which focuses on the needs and potentials of this group. More recently, other authors suggest that older people play only a minor role in research on information needs and usage patterns of Internet users (Paul and Stegbauer, 2005). Thus, the lack of attention to older people in the context of Internet adoption is widely referred to. In spite of this limitation, this chapter has pulled together the existing base of knowledge surrounding older people's Internet adoption.

This chapter has reported on the 'age divide' and the impact of the retirement 'lifestage', which largely focus on surveys of the prevailing state of Internet adoption. These approaches to understanding age-based discrepancies do have their merits, such as in enumerating which specific population segments are more likely to be on-line and which are not, and in emphasising how retired people differ to younger, non-retired people in (presumably) earlier lifestages. However, they are somewhat limited in elucidating the reasons for this. Also, the focus on retirement lifestage does not distinguish between those longer-term retirees who left the workplace prior to the emergence of the Internet, and those shorter-term retired who may have used the Internet prior to retirement. Dutton and Liff (2006) recommend distinguishing between lifestage and cohort to examine issues related to Internet adoption and use. To the researcher's best knowledge, research in this vein has not be undertaken to date, but it appears to offer significant

potential for differentiating between retired older people who have and have not been exposed to the Internet prior to retirement.

The idea of a 'generation gap' draws attention to differences in historical exposure to technology among younger and older people. This is an interesting development in the literature because it provides a starting point for comprehending the role of cohort in the context of Internet adoption. The notion of birth cohort emphasises the fact that most older people had retired or were close to retiring at the time that the Internet emerged in the workplace. It also draws attention to how older people, by virtue of the historical timing of their birth, had long left the educational system prior to the emergence of the Internet. Of course, there are exceptions to these 'rules', since many older people may still be active in the workplace or may actively pursue their educational careers into their later years. However, the notion of birth cohort does appear to offer a useful means for understanding differences in older people's Internet adoption, because it pays attention to the historical circumstances that coevals share by virtue of growing up at the same historical time, as well as those circumstances that they do not share with those people who have grown up in earlier or later times. Reflecting the frequent conflation of generation and cohort, Salkowitz (2008: 3-4) acknowledges this when he argues that *"understanding and addressing generational differences rather than just age differences provides much more effective answers to the mysteries of why some technology solutions succeed and others do not"*.

How cohorts are historically situated in terms of the emergence of new technologies appears to be a key issue. While this issue is broached in the literature surrounding the 'generation gap' and 'technology generations', no previous research has explicitly focused on the Internet adoption of a cohort of older people who have not been exposed to the Internet in their educational and working lives, and who are gaining an initial first-hand exposure to the Internet. This is a potentially promising avenue of research, for it may illuminate the Internet adoption of older people in terms of age, cohort and period effects. Dholakia and colleagues (1996: 18) suggest that *"once a technological system gets established in one life sphere, it has the potential to migrate to the other connected*

spheres". Examination of cohort could potentially shed light on how older people adopt the Internet when it does not 'migrate' from educational and workplace settings.

What is also missing in the survey data presented here is an appreciation of the *processes* through which older people may or may not adopt the Internet. The focus on survey data seems incapable of capturing this idea of process, and instead portrays adoption as a static notion, and one that dichotomises people into those who are adopters and those who are non-adopters, seemingly neglecting those categories of people in between these two extremes (Rose, 2006). Technology adoption is not static however (Choudrie and Dwivedi, 2005), and so ideas about digital divides, like those surrounding the age divide, are limited in their capacity to account for the *spread* of Internet use in society (Rose, 2006). For this reason, Rose (2006) recommends the diffusion model, which looks not at the distinction between adopters and non-adopters but at the *rate* of adoption (Rogers, 2003). It is the theory of the 'Diffusion of Innovations' forwarded by eminent scholar Everett Rogers (2003) to which attention is turned in the next chapter.

4. THE DIFFUSION OF INNOVATIONS

4.1 INTRODUCTION

The previous chapter examined the disparities of Internet adoption between younger and older people. Everett Rogers (2003) provides a model of the diffusion process that helps to make sense of these disparities. His model focuses on the relative speed with which a given innovation is adopted. Adoption is measured in terms of the length of time required for a certain percentage of potential users to adopt. Rogers (2003) moves away from the idea of adoption as a simple decision to purchase towards a model that accounts for the process of adoption. It incorporates awareness building and an evaluation period that may occur prior to adoption, including the possibility of trial and rejection, the importance of demonstration and recommendation, and post-adoption re-evaluation and re-invention. It therefore provides a useful means for comprehending the process of Internet adoption among older people, and the influence of time in this context.

Diffusion research represents a way of describing and perhaps even explaining change, be it social or behavioural change (Rogers, 2003). Contributions to the field have become, in the words of eminent diffusion researcher Rogers (2003: 102), *"...highly regarded, both in providing theoretical understandings of human behaviour change and in bringing about more effective programs of social change around the world"*. In terms of articulating social change, the appeal of diffusion research lies in its ability to capture and isolate the effects on the change process of innovations, as types of communication messages and as they permeate the structure of a social system over time (Rogers, 2003). It is its ability to trace the spread of an innovation through a system over time and/or across space that has, for Rogers (2003), *"...the unique quality of giving "life" to a behavioural change process"*, and which gives it its conceptual and analytical strength in articulating human behaviour change. It is this aspect of behavioural change that is particularly appealing, because it may provide a better understanding of why and how older people are coming to adopt the Internet.

4.2 BEGINNINGS OF THE THEORY OF DIFFUSION OF INNOVATIONS

The study of the diffusion of innovations began over a century ago with Gabriel Tarde's (1903) book on *The Laws of Imitation.* Tarde (1903) is credited as having identified the adoption and rejection of innovations as a crucial variable in diffusion research (Rogers, 2003). He believed that the human tendency to imitate others was the fundamental law of social phenomena. His scholarly observations led Tarde to assert that *"... the social being, in the degree that he is social, is essentially imitative..."* (Tarde, 1903:11), and that *"... imitation is the cause of all social likeness"* (Tarde, 1903: 37). Tarde made a number of important arguments that were to influence later research in the diffusion of innovations. Among them was his idea that although imitation assists the diffusion of innovations throughout society, there also exist barriers - or obstacles - to diffusion (1903: 366-367):

"These obstacles are the logical and teleological contradictions which are opposed to it by other inventions, or the barriers which have been raised up by a thousand causes, by racial pride and prejudice, for the most part, between different families and tribes and peoples and, within each people or tribe, between different classes."

Another of Tarde's (1903: 367) contributions to diffusion research was his observation of a process of 'imitation', by which innovations penetrate society first among higher-status groups and later, downwards, to lower-status groups. Thus for Tarde (1903: 368):

"...[I]*mitation always descends from the state which is for the time being superior to those which are for the time inferior, just as it descends from the highest to the lowest rungs of the social ladder."*

Tarde's (1903) observations led him to contend that the rate of adoption of a new idea tends to follows a sigmoid-shaped (or S-shaped) curve over time, and that the takeoff in this curve begins when a system's 'superiors' start to use the new idea. He believed that

the tendency for innovations to spread throughout society along an S-shaped curve reflected three fundamental states, namely slow progress to start, fast progress and acceleration in the middle, and gradual deceleration at the end.

It was not until forty years after Tarde's work that his observations were followed up by empirical studies of diffusion. The 1943 study by Bryce Ryan and Neal Gross (1943) of the spread of hybrid-corn use among Iowa farmers is acknowledged as the watershed (Rogers, 2003). Their research findings supported Tarde's idea that diffusion followed an S-curve. They found that a number of factors aided the adoption of the hybrid corn, including the abilities of farmers to test the seed samples on a small plot, to gather information from qualified sources, and to inspect the results of those neighbours who had adopted. They also observed that when enough farmers had adopted hybrid seed corn, the rate of adoption took off. Ryan and Gross's (1943) work is credited as laying the groundwork for the diffusion paradigm, which spurred subsequent studies of the diffusion of innovations (Degenne and Forse, 1999; Rogers, 2003; Valente and Davis, 1999).

A further 'stepping stone' in the development of the diffusion of innovations theory was the 'two-step flow' of communication hypothesis forwarded by Lazarsfeld *et al.* (1948). They reported a greater prevalence of interpersonal discussions than mass media usage during a typical day in the 1940 U.S. presidential campaign. It led the scholars to assert their hypothesis that *"ideas often flow from radio and print to the opinion leaders and from them to the less active sections of the population"* (Lazarsfeld *et al.,* 1948: 151). Since the introduction of this two-step flow model, the idea of opinion leaders has become a guiding theme for diffusion and marketing research (Burt, 1999).

4.2.1 The Contribution of Everett Rogers

In his book, *Diffusion of Innovations*[16], now in its fifth edition, Everett Rogers (2003) builds on and extends previous attempts at articulating the process of innovation diffusion. He draws on Trade's concept of 'imitation', which he calls 'adoption', and he refines Neal and Gross's distinctions between early accepters, early adopters, the majority, and later accepters. He has done this by producing the 'Diffusion of Innovation Curve' and a corresponding set of individual adopter types, including innovators, early adopters, early majority, late majority and laggards, each with their own location on the adoption curve. According to Baumgarten (1975: 12), the large bodies of research resulting from the concern with the dynamic process of the spread of new ideas and products is *"expertly summarised"* by Rogers' theory of the diffusion of innovations. Rogers is also credited as having developed the most widely accepted method of adopter categorisation (Mahajan *et al.,* 1990). Rogers' (2003) theory posits that researchers and disseminators can use these adopter categories to target the individuals or groups most likely to adopt an innovation at a particular time. As a result, Rogers' (2003) categorisation of adopters is seen to have particular utility for marketers and disseminators, and for others seeking to establish evidence-based interventions (Beilenson, 2005).

Most of this chapter is dedicated to exploring Rogers' (2003) Diffusion of Innovations theory. Towards the end of this chapter, the applications of Rogers' theory are considered. However, for now it is necessary to describe the diffusion process, as conceptualised by Rogers (2003).

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[16] Rogers (2003) distils hundreds of diffusion studies from over a dozen disciplines, including anthropology, communication, sociology, education and marketing. Rogers settles on what he calls a 'middle-range analysis', a compromise level of theoretical complexity somewhere between empirical data and grand theory (Rogers, 2003). His motivation for writing his book was "...to describe a general diffusion model and to argue for greater awareness among the various research traditions" (Rogers, 2003: 39).

4.3 THE DIFFUSION PROCESS

For Rogers (2003: 11), *"Diffusion is the process by which (1) an innovation (2) is communicated through certain channels (3) over time (4) among the members of a social system"*. It includes both the planned and the spontaneous spread of new ideas. Each of these four main components of the diffusion process is explored in turn.

4.3.1 Innovation

Rogers (2003: 12) defines as 'innovation' as *"...an idea, practice, or object that is perceived as new by an individual or other unit of adoption"* (Rogers, 2003: 12). The idea may or may not be 'objectively' new; what is important is the perceived newness of the idea for the individual. Innovations may be adopted as 'technology clusters'; that is, as a package consisting of several technologies. Also, the adoption of one new idea may trigger the adoption of several others.

4.3.2 Communication

Rogers (2003: 19) describes diffusion as *"...a very social process that involves interpersonal communication relationships"*. It is *"a particular type of communication in which the message content that is exchanged is concerned with a new idea"* (Rogers, 2003: 18). A communication channel is a means of communicating with another individual or, in Rogers' words, *"...the means by which messages get from one individual to another"* (Rogers, 2003: 18).

4.3.3 Time

The time dimension is incorporated in the diffusion process in three ways. First, individuals pass over time from first knowledge of an innovation through to its adoption or rejection and the confirmation of their decision to adopt or reject, in the 'innovation-decision process'. Second, how early or late an individual is to adopt an innovation is

indicative of their levels of 'innovativeness', which can be used to assign individual to distinct adopter categories which reflect the time at which they adopted. Third, and finally, an innovation's rate of adoption in a social system is typically measured as the number of members of the system who adopt the innovation in a given time period (Rogers, 2003).

4.3.4 Social System

Finally, diffusion occurs within a social system. Rogers defines the social system as *"...a set of interrelated units that are engaged in joint problem solving to accomplish a common goal"* (Rogers, 2003: 23). A system has a 'structure', which is *"the patterned arrangements of the units in a system, which gives stability and regularity to individual behaviour in a system"* (Rogers, 2003: 37). A system is composed of its members, including individuals, informal groups, organisations, and/or subsystems, whose pursuit of a common objective binds them together as a system. Structure among the units in a social system may be formal, such as in patterned hierarchical relationships, or it may be informal, existing in the interpersonal networks that link system members and the communication that occurs between them. Rogers (2003: 24) calls this the '*communication structure*' of a social system, which he defines as *"...the differentiated elements that can be recognized* [sic] *in the patterned communication flows in a system"*.

4.4 RATE OF ADOPTION

The diffusion of innovations is a process that takes place over time. The rate of adoption is *"...the relative speed with which an innovation is adopted by members of a social system"* (Rogers, 2003: 23). It is usually measured by the length of time required for a certain percentage of a system to adopt an innovation. The rate of adoption states that the cumulative function of the rate of adoption is an S-shaped curve.

4.4.1 S-curve Diffusion

The adoption of an innovation typically follows a normal, bell-shaped Gaussian curve when plotted over time on a frequency basis. The cumulative number of adopters follows an S-shape (sigmoid) curve, which is graphed as the rate of adoption over time: the first people to adopt in the earliest stages of diffusion start the curve in an upward direction; the curve climbs upwards as more individuals adopt in each succeeding time period; the curve levels off as the number of people who have not yet adopted decreases and the product matures or new innovations emerge. When it reaches its asymptote the diffusion process is complete.

Rogers (2003) contends that while most adoption rates are S-shaped, there can be variations in the curve of the 'S'. The steepness of the S-shaped curve depends upon the rate of adoption. When diffusion occurs relatively rapidly, the S-curve is quite steep. When the diffusion process occurs more slowly, the S-curve is more gradual and can result in a 'lazy' trajectory (Rogers, 2003).

4.4.2 Perceived Attributes

According to Rogers (2003), the rate of adoption is impacted by five factors. These are relative advantage, compatibility, trialability, observability, and complexity. The first four factors are generally positively correlated with rate of adoption, while the last factor, complexity, is generally negatively correlated with the rate of adoption. Together, they are known as the 'perceived attributes' of an innovation.

Relative advantage: Relative advantage is *"...the degree to which an innovation is perceived as better than the idea it supersedes"* (Rogers, 2003: 15). The degree of relative advantage need not be objective, but the degree to which an individual perceives it as advantageous according to a number of measures, including in economic terms, social prestige factors, convenience and satisfaction. Thus, the innovation need not have an objective advantage, just a perceived advantage.

Compatibility: Compatibility is *"...the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters"* (Rogers, 2003: 15). Ideas that are incompatible with the values and norms of a social system will not be adopted as rapidly as innovations that are compatible. Similarly, compatibility of an innovation with a preceding idea can speed up the rate of adoption because pervious practice with older but compatible ideas can decrease the uncertainty of an innovation. Also, when an innovation can meet personal needs, a faster rate of adoption can occur. The adoption of an incompatible innovation will often necessitate the prior adoption of a new value system, which is a relatively slow process.

Complexity: Complexity is *"...the degree to which an innovation is perceived as difficult to understand and use"* (Rogers, 2003: 16). Ideas that are perceived as complicated are adopted more slowly than those that are readily comprehended by most members of a social system.

Trialability: Trialability is *"...the degree to which an innovation may be experimented with on a limited basis"* (Rogers, 2003: 16). This trial may involve re-invention of the innovation to customise it to the individual's own conditions. By testing an innovation, the potential adopter can give meaning to an innovation and find out how it works. An innovation that is not divisible will generally be adopted more slowly than those that can be experimented with and therefore pose less uncertainty to the individual.

Observability: Observability is *"...the degree to which the results of an innovation are visible to others"* (Rogers, 2003: 16). The visibility of the results of an innovation can stimulate peer discussion of a new idea. Those innovations that are easily observed and communicated to others are more rapidly adopted than are innovations that are low in observability, which tend to diffuse more slowly.

Knowing the way that individuals perceive these attributes can help predict an innovation's rate of adoption. Taking the above characteristics of an innovation into

account, adoption will be more rapid for those innovations that are perceived as having greater relative advantage, compatibility, trialability and observability, and less complexity (Rogers, 2003).

4.5 THE INNOVATION-DECISION PROCESS

The adoption process tracked through the diffusion curve is essentially a decision-making process. This process denotes the individual's journey towards adoption or rejection of an innovation, involving a series of choices and actions and the key influence of time in this context. First, individuals must learn about the innovation (the *'knowledge'* stage); second, they must be persuaded of the value of the innovation (the *'persuasion'* stage); third, they must decide to adopt it (the *'decision'* stage); fourth, they must implement the innovation (the *'implementation'* stage); and fifth, they must reaffirm or reject their decision (the *'confirmation'* stage).

4.5.1 From Knowledge to Confirmation

Rogers (2003) compartmentalises the diffusion process into five main stages through which individuals often, though not always, pass through sequentially: knowledge, persuasion, adoption, implementation, and confirmation. These steps suggest that the introduction of an innovation does not guarantee its adoption over the long term, unless a positive decision is made at the confirmation stage.

Knowledge: The innovation-decision process commences when an individual first gains knowledge of an innovation. This knowledge is gained when the individual is first exposed to the existence of an innovation and gains some understanding of how it functions. Awareness of an innovation may be accidental, when the individual does not actively seek the innovation. Alternatively, individuals may gain awareness-knowledge through behaviour that they initiate. Individuals tend to selectively expose themselves to ideas that are in accordance with their interests, needs and existing attitudes, and will consciously or unconsciously avoid messages that conflict with their existing

predispositions. Early knowledge is important in this process. Rogers (2003) posits that early knowers of an innovation are at an advantage compared to later knowers: they are better educated, have higher social status, have more exposure to mass media and interpersonal channels, have more social participation, and are more cosmopolite. In this sense, early knowers can share those characteristics assigned to innovators and early adopters. However, early knowers are not necessarily early adopting an innovation.

Persuasion: Persuasion occurs when an individual forms a favourable or unfavourable attitude toward the innovation. At this stage, the individual becomes more psychologically involved with the innovation. It involves the individual actively seeking relevant information, deciding what messages are credible, and how to interpret the received information. In developing a favourable or unfavourable attitude toward the innovation, the individual may mentally apply the idea to present or anticipated situations in a process of vicarious trial, involving hypothetical and counterfactual thought and future projections. Reinforcement of initial beliefs about the innovation is sought at this stage, and the subjective opinion of peers is important for reducing uncertainty about expected consequences.

Decision: A decision occurs when an individual engages in activities that lead to a choice to adopt or reject the innovation. Having gained awareness-knowledge at the initial knowledge stage, individuals may then proceed to gaining how-to knowledge and principles knowledge. In the former, knowledge consists of information necessary to use an innovation properly. In the latter, knowledge provides information about the functioning principles of the innovation. The decision stage involves trying out the innovation on a partial basis to determine its usefulness for the individual's current situation. In some instances, the trial of an innovation by a peer can substitute, in part, for the individual's trial[17].

[17] Rogers' (2003) ideas here are about 'observational modeling', which is the observation and imitation of another person's behaviour (Bandura, 1977). His ideas build on Albert Badura's social learning theory, which suggests that people can learn from observation of other people's activities.

Implementation: Implementation takes place when an individual uses an innovation. At this stage, the innovation-decision process proceeds from being *"a mental exercise of thinking and deciding"* (Rogers, 2003: 179) towards overt behaviour change as the innovation is put into practice. This stage involves active information seeking, for the individual may need to resolve issues relating to the innovation's use and potential operational problems. It may be a lengthy process, depending on the nature of the innovation, but eventually the innovation becomes a regular part of an adopter's ongoing routine. For some adopters, implementation represents the termination of the innovation-decision period, but others continue to a 'confirmation' stage.

Confirmation: Confirmation happens when an individual seeks reinforcement of an innovation-decision that has already been made, but may reverse this previous decision if exposed to conflicting messages about the innovation. At this stage, an individual may be in a state of dissonance, which is *"an unstable state of mind"* that they seek to reduce or eliminate, and which can be achieved in three main ways (Rogers, 2003: 189). First, an individual may seek information about an innovation that may meet a personal identified need. This behaviour occurs at the knowledge stage. Second, the individual may be motivated to adopt when they have a favourable attitude about an innovation, and perceives a gap between their attitude and their behaviour. This occurs at the decision and implementation stages. Third, and finally, an individual may secure further information that questions their previously made decision to adopt or reject an innovation. Thus, during the confirmation stage, the individual wants supportive messages that prevent dissonance from occurring.

Another stage that is not formally part of Rogers' (2003) model, but which allows for adaptation of the innovation in a local context, is what he calls *'reinvention'*. This is the process of change that an innovation can go through as adopters adapt the innovation to suit their needs during its adoption and implementation. Rogers (2003) argues that a higher degree of re-invention leads to a faster rate of adoption, since a re-invented innovation will more readily fit an adopter's conditions. It can also lead to a higher degree of sustainability of an innovation, meaning that it will continue to be used over

time. Thus, potential adopters are active participants in the adoption and diffusion process (Rogers, 2003).

Conceptualised in this way, Rogers (2003) argues that the innovation-decision process may lead to a number of different states. The decision made may lead to adoption, which is *"a decision to make full use of an innovation as the best course of action available"* (Rogers, 2003: 21). Alternatively, the decision-making may lead to rejection, which is *"a decision not to adopt an innovation"* (Rogers, 2003: 21). Rejection may be active or passive. Active rejection occurs when adoption is considered and tested out but then rejected. Passive rejection, or non-adoption, occurs when the use of the innovation has never really been considered. Finally, the innovation-decision process may lead to 'discontinuance', which is a decision to reject an innovation after previously adopting it. This can involve 'replacement discontinuance', which is a decision to reject an idea in order to adopt an innovation that supersedes it, or it can involve 'disenchantment discontinuance', which is a decision to reject an innovation as a result of dissatisfaction with its performance.

4.5.2 Information-seeking and Information-processing

The behaviour of the individual during the innovation-decision process is essentially about dealing with the uncertainty that is inherently involved in deciding about a new alternative to a previously existing idea. It leads to Rogers (2003) positing that *"...the innovation-decision process is essentially an information-seeking and information-processing activity in which an individual is motivated to reduce uncertainty about the advantages and disadvantages of the innovation"* (Rogers, 2003: 14). At the initial knowledge stage the individual is mainly interested in general information that can reduce the uncertainty about the cause-effect relationships that are involved in the innovation's capacity to solve a problem; for example, what is the innovation, and how does it work? This information is usually embodied in the innovation itself, and is effectively transmitted by mass media channels.

During the persuasion and decision stages, individuals will increasingly seek innovation-evaluation information in order to reduce uncertainty about the innovation's expected consequences. The information they seek at these stages is more specific; for example, what are the benefits and disadvantages of the innovation for me in my particular situation? This evaluative information is most effectively conveyed by interpersonal communication networks with near peers. Such subjective information is especially likely to influence individuals at the decision stage, and perhaps at the confirmation stage.

4.5.3 Innovation Uncertainty and the Exchange of Information

For Rogers (2003), information exchange is the essence of the diffusion process. Through the exchange of information an individual communicates a new idea to one or several others. This process involves *"(1) an innovation, "(2) an individual or other unit of adoption that has knowledge of, or has experienced using, the innovation, (3) another individual or other unit that does not yet have knowledge of, or experience with, the innovation, and (4) a communication channel connecting the two units"* (Rogers, 2003: 18).

The innovation-decision process entails a series of choices and actions over time, and essentially involves dealing with the uncertainty that is inherently involved in deciding about an innovation. The newness of the idea means that some degree of uncertainty is involved in diffusion. *"Uncertainty is the degree to which a number of alternatives are perceived with respect to the occurrence of an event and the relative probability of these alternatives"* (Rogers, 2003: 6). Uncertainty implies a lack of predictability, of structure and of information. The potential advantage of a new idea may impel an individual to seek information about the innovation. Once information-seeking activities reduce uncertainty about the innovation's anticipated consequences to a tolerable level, decisions concerning adoption or rejection can be made. The individual's use of the innovation provides further evaluative information about its consequences.

The mass media are usually the most rapid and efficient means of creating 'awareness-knowledge'; that is, informing potential adopters about the existence of an innovation[18] (Rogers, 2003). But Rogers (2003) credits interpersonal channels - those that involve face-to-face exchange between two or more individuals - as more effective in persuading an individual to accept an innovation (Rogers, 2003: 18). He argues that exposure to interpersonal channels of communication should promote early awareness of innovations, thereby increasing the rate of adoption. This is particularly the case, argues Rogers (2003), if the interpersonal channel links two or more individuals who are similar in socioeconomic status, education or other important attributes.

4.5.4 Roles in the Innovation-decision Process

Rogers (2003) argues that opinion leaders, change agents and change aides can have an important bearing on the innovation-decision process, by influencing the decision-making of members of the social system.

Opinion leaders[19]*:* According to Rogers (2003) opinion leaders *"serve as a model for the innovation behaviour of their followers"* (Rogers, 2003: 27). They conform to the system's norms, and so they *"exemplify and express the system's structure"* (Rogers, 2003: 27). For Rogers (2003), opinion leaders have relatively frequent informal influence over the behaviour of others, and opinion leadership is not a function of the individual's formal position or status in the system. Rather, the opinion leadership role is earned and maintained by the individual's technical competence, social accessibility, and conformity to the system's norms. The system's norms will determine, to a certain extent, the degree of innovativeness of the opinion leader. Deviation from the system's norms can result in the loss of respect for the opinion leader. Importantly, systems may have both opinion leaders and leaders who oppose change (Rogers, 2003).

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[18] Rogers (2003) has also recognised the increasing importance of interactive communication via the Internet for informing potential adopters about the existence of an innovation

[19] Opinion leadership is explored in greater detail in the section on 'Diffusion Networks'

Change agents: Change agents represent change agencies external to the system, and are *"individual*[s] *who influence clients' innovation-decisions in a direction deemed desirable by a change agency"* (Rogers, 2003: 27). They can positively influence innovation-decisions by mediating between the change agency and the relevant social system. They do so by providing a 'communication link' between a resource system with some kind of expertise and a client base, involving feedback which flows through the change agent to the change agency so that interventions can be appropriately adjusted to suit the changing needs of the client base. The change agent's 'ideal' functions include creating intent to change in a client and promoting their self-reliance. For this, they require a high degree of empathy and rapport with their clients, but with professional training and qualifications, they are often very different from average clients.

Change aides: Change aides are employed by the change agency. They are less than fully professional change agents, but their task is to influence the innovation-decisions of their clients. They have less competence credibility but more safety or trustworthiness credibility. They are more like their average client, so their communication tends to be more effective.

4.5.5 Types of Innovation-decisions

Rogers (2003) identifies four types of innovation-decisions and assigns characteristics to each:

Optional innovation-decisions: The individual is the main unit of decision-making; choices are made independent of the decisions made by other members of the social system, although the norms of the social system and communication through interpersonal networks can help shape the decision.

Collective innovation-decisions: Choices are made by consensus among the members of a system; all units in the system usually must conform to the system's decision once it is made.

Authority innovation-decisions: Choices are made by a minority who possess power, status or technical expertise in a system; other individuals have little or no influence on the decision but help to implement it once it has been made.

Contingent innovation-decisions: Choices are made after a prior innovation-decision; involves a sequential combination of two or more of the aforementioned innovation-decision types.

These types of innovation-decisions reveal that individuals will not always proceed in a time-ordered sequence through the innovation-decision process, but may, for example, be ordered to adopt by an authoritative figure before going through the persuasion stage. Innovations requiring an individual-optional innovation-decision tend to be adopted more rapidly than when an innovation is adopted in an organisation. Also, when more people are involved in making an innovation-decision, the rate of adoption is slower.

4.5.6 The Innovation-decision Period

Time is also apparent in the innovation-decision process in what Rogers (2003: 21) calls the '*innovation-decision period*'. This is *"...the length of time required to pass through the innovation-decision process"* (Rogers, 2003: 21). It can be measured as the time that elapses between first knowledge of the innovation to the decision to adopt or reject it, which may involve days, months, or years[20]. This is essentially a *"gestation period during which a new idea ferments in an individual's mind"* (Rogers, 2003: 213).

[20] Rogers (2003) argues that, in a strict sense, the innovation-decision period should be measured from first knowledge to confirmation of an innovation. However, he recognises that such measurement can be impractical or impossible because the confirmation stage may continue over an indefinite period (Rogers, 2003: 213).

The innovation-decision period is an important consideration in the diffusion of innovations because it acknowledges that individuals vary in the time they require to reach an adoption or rejection decision. The time an individual requires to reach an adoption decision gives an indication of their level of *'innovativeness'* and provides a useful way of assigning people to *'adopter categories'*.

4.6 INNOVATIVENESS AND ADOPTER CATEGORIES

To make the S-curve diffusion model actionable, Rogers (2003) introduced the idea of 'innovativeness' to describe the degree to which an individual is relatively early in adopting innovations than other members of a social system. The notion of innovativeness also helped Rogers (2003) to develop his ideas about adopter categories, which are assigned to individuals on the basis of their time of adoption.

4.6.1 Innovativeness

Innovativeness is *"the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a social system"* (Rogers, 2003: 22). The individual's innovativeness is affected both by their personal characteristics and by the nature of the social system in which the individual is a member. It indicates overt behavioural change rather than cognitive or attitudinal change. Rogers (2003) partitions the continuum of innovativeness into distinct adopter categories. He developed his adopter categories as 'ideal types' in order to demonstrate that people adopt innovations at different times and at different rates.

4.6.2 Adopter Categories

Essentially, the adopter categories are *"classifications of the members of a social system on the basis of their innovativeness"* (Rogers, 2003: 37). Following Ryan and Gross (1943), Rogers (2003) categorises adopters according to how late they adopt a diffused technology. As such, the five adopter categories can each map onto the diffusion of

innovation S-curve depending on how early or late they adopt an innovation. The five adopter categories are: 'innovators', the 'early adopters', the 'late majority', the 'late majority', and 'laggards'. Members of each category typically possess certain distinguishing characteristics, as shown:

Innovators: Innovators represent the first 2.5 per cent of adopters. They are the first to adopt an innovation, and so are located at the beginning of the S-curve. They are venturesome and educated, and show greater propensity to take risks. Innovators cannot depend upon subjective evaluations from other members of their system, because few or no local others have adopted. Instead, they have multiple sources of information, including a high degree of mass media exposure and interpersonal networks that extend over a wide area and beyond their local system. They appreciate technology for its own sake and are motivated by the idea of being a change agent in their reference group. They are willing to tolerate initial problems that may accompany new products or services. Innovators are also active information seekers regarding innovations and are better able to cope with high levels of uncertainty about an innovation.

Early adopters: Early adopters represent the next 13.5 per cent of adopters. They are popular and educated, and are respected opinion leaders. They are visionaries in their market and are attracted to high-risk, high-reward projects. Early adopters are not very price sensitive because they envision great gains in competitive advantage from adoption. They typically demand personalised solutions, quick-response, and highly qualified sales and support. Stimulus from mass media messages tends to be sufficient to prompt adoption among earlier adopters.

Early majority: The early majority are the next 43 per cent of adopters, making up over a third of the total system. They adopt innovations just before the average member of a system. They are positioned between the very early and the relatively late to adopt. Due to this position, the early majority are an important link in the diffusion process, because they provide interconnectedness in the system's interpersonal networks. They are not opinion leaders but they have many informal social contacts and interact frequently with

their peers. Their innovation-decision period is longer than that of the innovators and the early adopters, and they may deliberate for some time before completely adopting an innovation.

Late majority: The late majority represent a further 34 per cent of adopters. They adopt just after the average member of a system. They are of lower socio-economic status. They are sceptical and traditional individuals who are very price sensitive, and who require convincing. Adoption may be a result of economic necessity or increasing peer pressure. The late majority are motivated to adopt in order to stay abreast of other adopters, and often rely on a single, trusted adviser to help them make sense of the technology. By the time they adopt, an ample degree of interpersonal, local experience has been accumulated, so later adopters do not need to rely as much as earlier adopters on mass media channels for relevant information. As they are less change-oriented, they require a stronger and more immediate influence, which can derive from interpersonal networks and from peers. However, they are more likely to discontinue innovations than are earlier adopters.

Laggards: The laggards make up the final 16 per cent of the system, and represent a sixth of the total system. They are located at the asymptote of the S-curve, which denotes where the diffusion process is complete. Their innovation-decision period is lengthy. They are traditionalists whose point of reference is in the past. They are suspicious of innovations and only want to maintain the status quo. They possess almost no opinion leadership and many are near isolates in the social networks of their system. Their precarious economic position makes laggards highly cautious in adopting innovations.

Members of each adopter category tend to share some characteristics in common. Rogers (2003) classifies adopter categories according to their socioeconomic characteristics, their personality variables, and their communication behaviour. He suggests that, in terms of socioeconomic characteristics, earlier adopters in a social system have more years of formal education, are more likely to be literate, have higher

social and socioeconomic status, and a greater degree of upward social mobility, compared to later adopters. However, earlier adopters are seen as no different from later adopters in terms of age. With regard to personality variables, earlier adopters are argued to have greater empathy, less dogmatism, a greater ability to deal with abstractions, greater rationality and intelligence, a more favourable attitude toward change, a greater ability to deal with uncertainty and risk, greater self-efficacy, and higher aspirations for formal education, higher status and so forth. Finally, in terms of communication behaviour, earlier adopters are believed to have higher levels of social participation, higher levels of knowledge of innovations, more contact with change agents, greater exposure to mass media and interpersonal channels, and are seen as highly interconnected in the interpersonal networks of their system, more cosmopolite, and more engaged in active information seeking. By assigning distinctive characteristics in this way, Rogers (2003) suggests that the five adopter categories can be used for 'audience segmentation' strategies, through which different communication channels and/or messages can be used to reach each sub-audience.

4.7 DIFFUSION NETWORKS

In deciding whether or not to adopt an innovation, individuals depend to a large extent on the communicated subjective experiences of other people who have already adopted the innovation, which flow mainly through interpersonal networks. This is Rogers's (2003) idea about *'diffusion networks'*. 'Diffusion networks' are those interpersonal networks that can influence individuals to adopt an innovation. They communicate innovation evaluation information to individuals in order to decrease uncertainty surrounding an innovation. Rogers (2003: 330) argues that "[at] *the heart of the diffusion process is the modeling and imitation by potential adopters of their near peers' experiences with the new idea*". For this reason, he recommends that an understanding of the nature of networks is necessary for understanding the diffusion process.

4.7.1 Opinion Leadership

Rogers (2003) starts his discussion of diffusion networks by exploring the role of opinion leadership in diffusing an innovation. The role of opinion leaders in the innovation-decision process has already been discussed briefly, but here the focus is on opinion leaders in influencing others' opinions and how this affects the rate of adoption. Rogers (2003: 300) defines opinion leadership as *"the degree to which an individual is formally able to influence other individuals' attitudes or overt behaviour in a desired way with relative frequency"*. He identifies the key role of opinion leaders in the adoption process:

> *"The behaviour of opinion leaders is important in determining the rate of adoption of an innovation in a system. In fact, the S-shape of the diffusion curve occurs because once opinion leaders adopt and tell others about the innovation, the number of adopters per unit time takes off."*

In comparison to their 'followers', Rogers (2003) suggests that opinion leaders tend to be more exposed to all forms of external communication, are more cosmopolite, are of higher socioeconomic status, are more innovative, and have more contact with change agents. Opinion leaders occupy a unique and influential position in their system's communication structure, and tend to be at the centre of interpersonal communication networks.

4.7.2 Communication Networks

Interpersonal networks are privileged by Rogers (2003) as a powerful influence on individual decisions to adopt. He explains this by way of *'communication networks'*, which consist of interrelated individuals who are linked by patterned flows of information. These patterned communication flows in a system help to illuminate the communication structure, which provide predictability to human behaviour.

A personal communication network consists of individuals who are linked by patterned flows of communication to a given individual. Linked individuals in a network may have personal communication networks that overlap. The extent of overlap is an indication of 'communication proximity'. Where personal networks consist of individuals who all interact with one another, they belong to 'interlocking personal networks'. This type of network is in contrast to the 'radical personal network', which consists of individuals who are linked to a focal individual but who do not interact with one another. This type of network is less dense and more open, and it permits focal individuals to exchange information with a wider environment. In this sense, radical personal networks are important to the diffusion of innovations, because their links reach out into the whole system.

4.7.3 Homophilous and Heterophilous Communication

By conceiving the key role of communication flows in the diffusion process, Rogers (2003) recognises its potential to both accelerate and to impede the rate of adoption. He argues that an understanding of the nature of communication flows through interpersonal networks can be enhanced by the concepts of homophilous communication and heterophilous communication. Homophilous communication occurs when two or more people in interaction with one another are similar in certain attributes, such as beliefs, education and socioeconomic status, and are likely to share similar interests, common meanings are a 'mutual subcultural language' (Rogers, 2003: 19). Heterophilous communication is that which occurs between two or more individuals who are dissimilar according to these and other attributes.

Following Tarde (1903), Rogers (2003) argues that due to their social and physical propinquity, individuals are more likely to engage in homophilous communication. This is argued to hold even in a free-choice situation (Rogers and Bhowmik, 1971). Such communication is more likely to be rewarding to its participants, and more effective in terms of knowledge gain, attitude formation and change, and overt behaviour change (Rogers, 2003). However, when members of a system interact with others like

themselves, it can act as a barrier to the rapid flow of ideas within the system (Rogers and Bhowmik, 1970-1971). It leads Rogers (2003: 306) to argue that *"Homophily accelerates the diffusion process, but limits the spread of an innovation to those individuals connected in a close-knit network"*. What Rogers (2003) means is that homophilous diffusion patterns cause innovations to spread horizontally, and not vertically, in a system. Thus (Rogers and Bhowmik, 1971: 537):

> *"New ideas usually enter via higher-status and more innovative members of a system. When a high degree of homophily is present, these elite individuals interact mainly with each other and there is little 'trickle-down' of the innovations to nonelites."*

On the other hand, while heterophilic interaction is likely to result in message distortion, delayed transmission, restriction of communication channels, and an exposure of the message receiver to messages that may be inconsistent with existing beliefs and attitudes (Rogers and Bhowmik, 1970-1971), it may also have communication benefits in the diffusion process (Rogers, 2003). In particular, heterophilous communication has particular informational potential which, though it may be rare, can connect two network 'cliques' and therefore span two sets of socially dissimilar individuals (Rogers, 2003).

An important aspect of Rogers' (2003) argument about homophilous and heterophilous communication is the 'strength-of-weak-ties' hypothesis forwarded by Mark Granovetter (1973). For Granovetter (1973, 1995), the strength of weak ties lies in their abilities to transfer information and influence. On the other hand, strong ties are more likely to promote in-depth, two-way communication, and to facilitate the exchange of detailed information (Granovetter, 1983). According to Rogers (2003), large networks composed of heterogeneous and transient ties are particularly valuable to the diffusion of innovations, because they can provide a broader range of unique and non-redundant information, and are more likely to introduce decision makers to new and foreign ideas and insights. Meanwhile, strong ties, which require more maintenance, are less diverse, fewer in number, and tend to provide a lower volume of information, can provide other benefits that may facilitate diffusion. In particular, they can ease the transfer of

knowledge because they are more likely than a weak tie to be embedded in a dense web of third-party relationships (Granovetter, 1973). Also, Rogers (2003) is in agreement with Granovetter (1973) that strong ties are limited in the extent to which they can provide new information. They reason that because actors are more likely to form strong ties with socially similar actors, they will all tend to possess the same information and to hold similar opinions (Granovetter, 1973; Rogers, 2003).

According to Rogers's (2003) analysis, the diffusion of innovations demands striking the right balance between homophily and heterophily. Thus, for maximum communication effectiveness to occur, a source and a receiver should be homophilous on certain variables and heterophilous on some other variables relevant to the situation. Heterophily between communicators can lead to ineffective communication, since heterophilous individuals *"do not speak the same language"* (Rogers, 2003: 19). Heterophilous communication between dissimilar individuals may also cause cognitive dissonance in so far as individuals are exposed to messages that are inconsistent with existing beliefs. On the other hand, communication between homophilous individuals with the same technical grasp of an innovation can stunt diffusion because there is no new information to exchange. Based on this consideration, Rogers (2003) recommends that individuals be homophilous on all other variables such as education and socioeconomic status but heterophilous regarding the innovation. However, given that knowledge of and experience with an innovation are highly related to such variables as socioeconomic status and education, individuals tend to be heterophilous on both scores, and this represents what Rogers calls *"one of the most distinctive problems in the diffusion of innovations"* (Rogers, 2003: 19).

4.7.4 Critical Mass and Adoption Thresholds

The idea of *'critical mass'* is a further important concept in understanding the spread of innovations through 'diffusion networks'. Critical mass is *"the point at which enough individuals in a system have adopted an innovation so that the innovation's further rate of adoption becomes self-sustaining"* (Rogers, 2003: 343). After critical mass has been

achieved, the rate of adoption accelerates. The S-shaped curve 'takes off' at between 10 per cent and 25 per cent adoption, when interpersonal networks become activated so that a critical mass of users starts to develop. This critical mass is achieved when a sufficient number of individuals have become users. The critical mass then ensures that the innovation's further rate of adoption is self-sustaining. Before this happens, the rate of adoption is slow, but accelerates afterward. A small number of highly influential individuals who adopt an innovation can represent a much stronger critical mass than an equally sized number of individual adopters who have little influence.

Rogers (2003) perceives critical mass as a social *'threshold'* in the diffusion process. He uses Granovetter's (1978) idea of a threshold as *"the number of individuals who must be engaged in activity before a given individual will join that activity"* (Rogers, 2003: 355). In the diffusion of innovations, a threshold is attained when an individual is convinced to adopt as the result of knowing that a minimum number of individuals in the personal communication network have adopted and are satisfied with the innovation. Thresholds vary for different individuals. Innovators have a low threshold for adoption due to their levels of venturesomeness, whereas later adopters have higher thresholds which are only reached when many other individuals in their interpersonal network have adopted. It is this variation in thresholds that helps explain the S-shaped diffusion curve (Rogers, 2003).

4.8 CONSEQUENCES OF INNOVATIONS

Finally, the adoption or rejection of an innovation leads to consequences at an individual and a social system level. Rogers (2003) suggests that there are three dimensions of consequences, namely desirable versus undesirable, direct versus indirect, and anticipated versus unanticipated:

Desirable versus undesirable consequences: Desirable consequences are the functional effects of an innovation for an individual or for a social system. Undesirable consequences are the dysfunctional effects of an innovation. An innovation can have

consequences for adopters and rejecters; for example, a rejecter may be affected because an innovation benefits adopters only, or an early adopter may be advantaged by benefiting from the 'windfall profits' that can sometimes accrue for first adopters.

Direct versus indirect consequences: Direct consequences are those changes that occur to an individual or system in immediate response to an innovation. Indirect consequences are those changes that occur to an individual or system as a result of the direct consequences of an innovation. The difference between them is whether the changes to an individual or to a social system occur in immediate response to an innovation or a second-order result of the direct consequences of an innovation.

Anticipated versus unanticipated consequences: Anticipated consequences are changes that occur as a result of the innovation, which are recognised and intended by the members of a social system. Unanticipated consequences are those changes due to an innovation that are neither intended nor recognised by the members of a social system. Whereas information about the desirable, direct and anticipated consequences of an innovation can be obtained by adopters from their peers, the unanticipated consequences are, by definition, unknown at the time of adoption.

Typically, change agents will introduce into a client system those innovations that they expect will have desirable, direct and anticipated consequences. However, such innovations may result in some unanticipated consequences that are indirect and undesirable for the system's members. This may be the result of the limited ability of change agents to predict the meaning, or subjective perceptions, clients will assign to a given innovation (Rogers, 2003).

4.9 CRITIQUE OF DIFFUSION OF INNOVATIONS THEORY

Rogers (2003) identifies four main shortcomings of diffusion research. These are: the pro-innovation bias, the individual-blame bias, the recall problem, and the issue of equality.

4.9.1 The Pro-innovation Bias

The pro-innovation bias is *"the implication in diffusion research that an innovation should be diffused and adopted by all members of a social system, that it should be diffused more rapidly, and that the innovation should be neither re-invented nor rejected"* (Rogers, 2003: 106). This bias can undermine diffusion research in a number of ways. It can overlook the study of ignorance about innovations; it can underestimate the rejection or discontinuance of innovations; it can fail to address the re-invention of innovations; and it can fail to acknowledge anti-diffusion initiatives designed to prevent the diffusion of 'bad' innovations (Rogers, 2003). As a result of these oversights, diffusion research can be unnecessarily limited in its outlook; for example, it may focus on the diffusion of 'successful' innovations at the expense of those that have been 'unsuccessful'; that is, those that have been rejected or discontinued (Rogers, 2003).

4.9.2 The Individual-blame Bias

An individual-blame bias in diffusion research is that which sides with the change agencies that promote innovations and which holds individuals responsible for their problems rather than the system of which they are part (Rogers, 2003). It is therefore the opposite of system-blame, which would look towards the larger context or system for the problems of individual members of a social system. Rogers (2003) believes that the individual-blame bias prevents a more careful analysis of social problems which might otherwise reveal, for example, that non-adoption may in fact be rational for individuals. Instead, he argues that individual-blame may assign blame to late adopters and laggards for non-adoption. As a result, change agents may be deterred from dealing with later adopters because they feel, on the basis of their stereotypic image as traditional and resistant, that contact will not be successful in leading to adoption. This blame may, in turn, become a self-fulfilling prophecy, as later adopters may then lack information inputs and other assistance from change agents. In this sense, the individual-blame bias in research can limit understanding of the diffusion process (Rogers, 2003).

4.9.3 The Recall Problem

While time is an important feature of diffusion, it also represents a 'methodological enemy' in studying this process (Rogers, 2003: 126). By the very nature of the diffusion process, diffusion studies are dependent on self-reported recall data from respondents about the timing of their adoption. Respondents are asked to recall and reconstruct their past history of innovation experiences. However, Rogers (2003) is aware that such recall is not always entirely accurate, but may suffer from lack of accuracy due, for instance, to the innovation's salience to the individual, the length of time over which recall is requested, and on the basis of individual differences in education and memory, and so forth.

4.9.4 Equality Issues

Rogers (2003) suggests that researchers have been inattentive to equality issues in the diffusion of innovations. In particular, he points towards a lack of research attention paid to the issue of how socioeconomic benefits of innovation are unequally distributed among members of a social system. Rogers (2003) argues that all members of a social system, be they adopters or rejecters, are touched by the consequences of innovation, and he draws attention to the 'digital divide' and how the advantages of the Internet may accrue for certain individuals but not for others. He recommends that future diffusion research tackle equality issues like the digital divide, and that they probe the consequences of innovation (Rogers, 2003).

4.10 RESEARCH USING ROGERS' INNOVATION DIFFUSION FRAMEWORK

This section includes a review of the literature where authors explicitly cite Rogers' (2003) innovation diffusion framework or have used his terminology and inferred his concepts. The chosen research studies are intended to demonstrate the advances made in

understanding the process of diffusion, and how researchers have expanded on Rogers' ideas. To structure this section attention is turned again to Rogers' (2003) definition of diffusion as a process that involves an *innovation* that is *communicated* over *time* among the members of a *social system.*

4.10.1 Innovations

Diffusion involves a perceived new innovation and the potential adopter's consideration of its attributes (Rogers, 2003). Rogers (2003) assigns particular importance to the positive impact of compatibility and relative advantage and the negative impact of complexity in explaining an innovation's rate of adoption. Other studies have also revealed the importance of relative advantage and compatibility in this context (Cooper and Zmud, 1990). Chatterjee and Eliashberg (1990) have developed an analytical model of the innovation diffusion process for a high involvement consumer durable or service. Their adopted approach assumed that *"An individual's perception of the innovation determines his evaluation of the innovation which in turn determines his adoption decision"* (Chatterjee and Eliashberg, 1990: 1058). They assumed that potential adopters evaluate the innovation according to performance and price. Their results showed that favourable information can bring the consumer closer to adoption, while unfavourable information has the opposite effect (Chatterjee and Eliashberg, 1990).

Later relevant research was undertaken by Agarwal and Prasad (1998), who introduced the notion of 'personal innovativeness in the domain of Information Technology' (PIIT). They defined PIIT as a personal trait that is invariant across situational considerations, and which captures an individual's willingness to try out a new Information Technology (IT). They hypothesised that PIIT will moderate the effect of key perceptions of a new IT on usage intentions. These key perceptions included its relative advantage, ease of use and compatibility. The authors did not find evidence for significant moderation effects, but they did find an interaction effect between compatibility and PIIT on intention to use (Agarwal and Prasad, 1998).

More recently, Oh *et al.,* (2003) have examined the individual level factors affecting adoption of broadband in South Korea, using factors taken from Rogers' theory and extended constructs from the Technology Acceptance Model (TAM) (see Davis, 1989). Their findings suggest that congruent experiences and opportunities in adopting a new technology can affect users' attitudes through the extended TAM constructs of perceived usefulness, perceived ease of use, and perceived resources (Oh *et al.,* 2003).

4.10.2 Communication

Diffusion is a particular type of communication in which the message content that is exchanged is concerned with an innovation (Rogers, 2003). Scholars have recognised the role that advertising and word-of-mouth can play in the diffusion process. Horsky and Simon (1983) categorised adopters either as those who adopt a product independently of others – the 'innovators' – or as those who are influenced by others – the 'imitators'. The authors assumed that there are two main types of sources which convey information to potential consumers: producer originated advertising and other press reports, which inform the innovators; and individuals who have already adopted, who inform the imitators through word-of-mouth communications and other means. They discovered that advertising can help to control the distribution of sales over time. They recommend an 'optimal advertising policy', through which firms advertise heavily in the initial period following the launch of a new product, in order to inform all innovators at an early stage of the existence of the product. When these innovators adopt and become word-of-mouth carriers, the level of advertising can be reduced. Such a policy, Horsky and Simon (1983) argue, would result in the peak of sales being higher and occurring earlier than would be the case if no advertising was employed.

While Rogers (2003) privileges media channels as effective in communicating knowledge of an innovation, he sees interpersonal channels as more effective in influencing decisions to accept or reject innovations. Individuals have been shown to have different propensities for relying on mass media or personal channels, and particularly so by adoption category, from innovators to laggards (Gatignon and

Roberston, 1985). For Gatignon and Robertson (1985), personal influence and the mass media are seen as generally interdependent and complementary rather than competing. They found that when personal influence is not operative, mass media may have direct effects, but when conflict occurs, personal influence has greater impact (Gatignon and Robertson, 1985). They argue that individuals who are highly dependent on normative influence will be slower to adopt. Also, they expect that adoption is faster given positive influence from a credible source and given a lack of conflicting opinions (Gatignon and Robertson, 1985).

4.10.3 Time

Diffusion is a process that occurs over time (Rogers, 2003). Karahanna and co-workers (1999) have explored an aspect of the time dimension by examining differences in pre-adoption and post-adoption beliefs and attitudes. To do this they combined aspects of Rogers' (2003) theory with aspects of the Theory of Reasoned Action (TRA) (see Fishbein and Ajzen, 1975). Their research was based on a cross-section of potential adopters and users, and was focused on the adoption of Windows technology in a single organisation. Their results showed that potential adopter behavioural intention to adopt was dominated by normative pressures, whereas user behavioural intention was dominated by attitude. Potential adopter attitude was composed of trialability, perceived usefulness, result demonstrability, visibility and ease of use. User attitude was composed of perceived usefulness and image. Thus, trialability, result demonstrability, ease of use and visibility were no longer important at times post-adoption (Karahanna *et al.,* 1999).

4.10.4 Social System

Many studies of the diffusion of innovations have investigated the role of the social network in the adoption of ICT (Watts and Dodds, 2007; Shampine, 1998; Abrahamson and Rosenkopf, 1990). One way of understanding the role of networks in this context is to understand *who* relays messages to *whom* in the social system (Rogers, 2003). Watts and Dodds (2007) have examined this issue, and propose an 'influentials hypothesis'.

They defined 'influentials' as *"a minority of individuals who influence an exceptional number of their peers"* (Watts and Dodds, 2007:1). Although Watts and Dodds (2007) do not deny that influentials can be important, the results of their research reveal that 'cascades of influence' are not driven by influentials, but by a critical mass of easily influenced individuals. They specify a 'threshold rule', which posits that *"individuals will switch from A to B only when sufficiently many others have adopted B in order for the perceived benefit of adopting a new innovation to outweigh the perceived cost"* (Watts and Dodds, 2007: 8).

Rogers (2003) argues that individuals are more likely to adopt an innovation if others in their personal network have adopted. Goolsbee and Klenow (2002) have examined what they call 'local spillovers', such as network externalities and learning from others, in the context of home computer diffusion. They argue that *"Network externalities arise when the value of participating in a network increases as more people participate in the network"* (Goolsbee and Klenow, 2002: 320). Using data from 110,000 U.S. households in 1997, the authors found that people were more likely to purchase their first home computers in areas where a high fraction of their family and friends also owned computers. They argue that people who lived in places where a high proportion of people already owned computers had a greater affinity for technology, even if they did not already own a computer, and may therefore have been more likely to adopt home computers (Goolsbee and Klenow, 2002).

Rogers (2003) argues that certain innovations are adopted by clusters of individuals. A particularly interesting piece of research which reveals the diffusion of innovations through social networks was conducted by Abrahamson and Rosenkopf (1997). They argue that the introduction of innovations into new segments of a social network can 'trigger' their partial diffusion throughout other parts of the network. They argue that 'bandwagon' effects occur, whereby increases in the number of adopters of an innovation create new information about the innovation, be it positive or negative; in turn, new information will generate stronger bandwagon pressures to adopt; and stronger bandwagon pressures will increase the number of adopters (Abrahamson and Rosenkopf,

1990). Abrahamson and Rosenkopf (1990) also describe how individuals vary in their propensity to withstand bandwagon pressure. They argue that potential adopters with a high threshold adopt only when bandwagon pressure is strong, whereas potential adopters with a low threshold will adopt in response to weak bandwagon pressure, and a potential adopter with a zero threshold requires no bandwagon pressure to adopt. Given this variance in propensity to adopt according to threshold levels, it is potential adopters with zero thresholds who have no predisposition against adopting who are expected to adopt first and, in turn, increase bandwagon pressure. With each cycle of the bandwagon, pressure may prompt adoptions by potential adopters who initially perceived greater losses from adopting. A bandwagon cycle ends when increases in bandwagon pressure are insufficient to encourage non-adopters with the lowest thresholds, and when all existing non-adopters have a threshold level that exceeds the bandwagon pressure (Abrahamson and Rosenkopf, 1990).

'Cohesion' and 'structural equivalence' are two basic mechanisms identified by network analysts through which social influence is likely to operate in the diffusion process (Burt, 1983). In the case of cohesion, social influence operates through close, strong and enduring relations between actors, which lead to shared communication and the mutual exchange of information and opinions (Koka *et al.,* 1999). Alternatively, when diffusion occurs through 'structural equivalence', individuals with similar patterns of linkages in a network are likely to imitate and adopt an innovation adopted by a 'competitor', even if they do not communicate with one another (Burt, 1987). Burt's (1987) analysis suggests that 'cohesion' influence and co-operation are important for eager innovators, who share their enthusiasm with others like them, and are more open to other sources of influence. In contrast, the reference point for later adopters is in structurally equivalent situations (Burt, 1987).

4.11 CONCLUSION

The Diffusion of Innovations theory explores a number of issues relevant to individuals' adoption of technology like the Internet. Rogers (2003) perceives the diffusion process

as one that involves an innovation being communicated over time among members of a social system. It acknowledges that adoption does not begin with the purchase of an innovation, but when an individual first becomes aware of its existence. Rogers (2003) demonstrates how, prior to making a decision of whether to adopt or reject, individuals proceed through a process of gaining more knowledge and understanding of the innovation. This involves information exchange and vicarious trial, which can be facilitated by the individual's interpersonal network. Throughout this process, information regarding the attributes of the innovation is made available to the individual, which will impact on their adoption decision. Following adoption, further decisions are made when the innovation is implemented and possibly re-invented or discontinued.

The Diffusion of Innovations theory may potentially assist understanding of the Internet adoption of older people, because it offers a way of comprehending the *process* by which later adopters come to adopt the Internet. There appears to be no research activity undertaken to explore the Internet adoption of older people that employs Rogers' (2003) theory. In Chapter Three, some of the survey data pertaining to older people's Internet adoption was presented, but it was argued that they provide little value for understanding the process of adoption among older people. Some researchers suggest that longitudinal and qualitative enquiries are appropriate for understanding why and how patterns are found in existing survey data (Choudrie and Dwivedi, 2007; Dwivedi *et al.*, 2006). The next chapter provides a discussion of the longitudinal, ethnographic research conducted for this Thesis research, which was aimed at responding to the research aim and questions originally stated in Chapter One.

5. RESEARCH METHODOLOGY

5.1 INTRODUCTION

The aim of this chapter is to discuss the research procedures followed and their appropriateness in fulfilling the research aim and answering the related questions, through a detailed discussion of the research methodology. A methodology is an approach or perspective, including notions of what we know about society and the extent to which data gathered by social research methods provides meaningful information about society (Mackay and Reynolds, 2001). Methodology informs the design of a research project, and defines the range and limits of the production of knowledge by particular methods (Mackay and Reynolds, 2001). These issues are referred to in this chapter. Prior to embarking on these methodological tasks, it is first necessary to state the research aim and associated questions that have arisen from the literature surveys in the previous three chapters.

5.2 RESEARCH AIM AND QUESTIONS

This Thesis has, thus far, reviewed in separate chapters the literatures surrounding age and older people, the Internet adoption of older people, and the Diffusion of Innovations theory. In the concluding section of each chapter, some of the potential and the limitations of the literatures are discussed, in order to emphasise some issues that need to be addressed, and others that require more clarification. Prominent among the issues that need to be addressed is a focus on birth cohort (Chapter Two), and the process of Internet adoption among older people, and how this process can unfold over time (Chapters Three and Four).

The aim of this research, as initially stated in Chapter One, is to *investigate the process of Internet adoption among a cohort of older people with no previous historical*

exposure to the Internet. In order to fulfil the primary purpose of this research, four research questions will be answered. These are:

- Why are older people adopting (or rejecting) the Internet?
- How are older people adopting the Internet?
- What is the impact of time on older people's adoption of the Internet?
- By what means can older people's Internet adoption be accelerated?

The stated research questions require unpacking in order to provide the reader with a better understanding of why they are important in the context of this research, and how by responding to these questions it is anticipated that this research will contribute to knowledge and practice.

5.2.1 Research Contributions

It is anticipated that this research will provide contributions to knowledge and practice in seven main ways. First, this research is interested in the process of Internet adoption among older people. Selwyn and colleagues (2003) and others suggest that little attention has been paid to older people's adoption of ICT like the Internet. While their research aims to address this issue, it focuses primarily on older people's adoption of computers, and not the Internet. Other researchers also point towards the paucity of research in this area (Paul and Stegbauer, 2005; Morrell *et al.,* 2004; Melenhorst, 2002). This research aims to address this gap in existing knowledge by examining older people's adoption of the Internet, and in so doing to provide an incremental contribution to knowledge. It also aims to provide fuller explanation to the trends identified in recent research surveys which reveal that older people are disproportionately less likely to adopt the Internet than are younger people, but that there has been growth in their levels of adoption in recent years.

Second, this research focuses on a specific cohort of older people who reached their formative years prior to the emergence of the Internet as a social and leisure tool, and

who have had no previous exposure to the Internet in their educational or working lives. Many of today's older people would have been retired or near retiring when the Internet became widely available, and so may not have been introduced to the Internet in the workplace. There is little or no possibility, therefore, of the Internet 'migrating' from the workplace into the lives of this specific birth cohort. As such, those who have since adopted the Internet have *presumably* done so voluntarily (Melenhorst, 2002). This makes those older people who have had no previous exposure to the Internet a particularly interesting group. So far as the researcher is aware, there has been no research activity focused on older people as a specific birth cohort in this context. This, for the researcher, offers a potentially fruitful avenue to pursue, because it may potentially shed light on why and how they are adopting, when they have no previous experience gained through the workplace or their educational careers to influence their decisions. In this way, it emphasises how today's oldest cohorts are fundamentally different to many other people occupying younger cohorts. It also responds to Rogers' (2003) call for researchers to better understand the motivations for adoption. It is anticipated that this focus on cohort could provide a fuller understanding of the impact of age, period and cohort effects on older people's Internet engagement. At the time of writing, the researcher has found no evidence of other researchers who focus on technology adoption issues reflecting on their data in this way.

Third, this research is guided by the insights offered by Rogers' (2003) Diffusion of Innovation theory. This theory has been used by researchers to explore technology adoption. Most recently, Dwivedi (2008) has utilised constructs from Rogers' theory, including relative advantage, to examine broadband adoption and usage and its impact on household consumers in the UK. However, this Thesis research departs from previous studies because it focuses on adoption of the Internet among older people which, so far as the researcher is aware, has not previously been done. By employing the Diffusion of Innovations theory, it is anticipated that this research will contribute towards knowledge by demonstrating the utility of underpinning work in this area with this specific theory.

Fourth, the possibility of discovering instances of Internet rejection and discontinuance in the data is acknowledged. Olphert *et al.,* (2005) argue that limited research has been undertaken to understand the attitudes that older people have towards digital technologies like the Internet, and that those studies that do explore this issue tend to focus on those who use it rather than those who do not. By being open to the possibility of Internet rejection and discontinuance among the research participants, it is expected that this research will contribute to the currently limited knowledge that has been amassed on the antecedents for rejection and discontinuance.

Fifth, this research will examine the impact of time on older people's Internet adoption, in recognition of diffusion as a process that occurs over time (Rogers, 2003). Choudrie and Dwivedi (2005) recognise the non-static nature of technology and suggest that studies of its adoption and diffusion should adopt methods that can capture this particular characteristic within particular contexts. This research responds to their suggestion. It is a longitudinal research design, and so strives to explicate the Internet adoption process by incorporating how older people form initial attitudes about the Internet and, to a certain extent, how these attitudes are modified over a period of time, albeit a short one spanning an average of six months. By planning to conduct research with older people as they make their first (or nearly first) use of the Internet, and then later following-up with the research participants a number of months later, it is anticipated that this research will not rely too heavily on recall data, but will be more of a *"moving picture of behaviour"*, following the *"sequential flow of innovation as it spreads through a social system"* (Rogers, 2003: 127). The Diffusion of Innovations theory appears to be ideally suited to achieving this aim, because it can be used to assess behavioural change (Grunwald, 2002). In doing this, it is anticipated that this research will provide an understanding of the process by which older people adopt the Internet and how this process unfolds over time. To the researcher's best knowledge, this has not previously been done.

Sixth, Valente and Davis (1999) argue that few studies attempt to use the lessons from diffusion research in order to accelerate the diffusion of innovations. It is anticipated that

this research will reveal a means for accelerating the Internet adoption of older people, and so may be of particular interest to policy makers. While rates of Internet adoption among older people are believed to be rising, they remain low compared to those characterising younger people (ONS 2008a). Meanwhile, older people's levels of access to the Internet outside the home (Ofcom, 2005) and in community settings (Olphert *et al.,* 2005; Social Exclusion Unit, 2005) like libraries and Internet cafes (Dutton *et al.,* 2005) is also low. While this does not necessarily indicate that these efforts at improving access for older people are unsuccessful, it does offer scope for the development of an alternative approach. In so doing, it is expected that the proposal of a means for accelerating Internet adoption among older people will contribute towards policy and practice. The Diffusion of Innovations theory could be well suited to achieve this aim, given its attention to the five-fold categorisation of adopters, which is seen to have particular utility for marketers and disseminators, and for others seeking to establish evidence-based interventions (Beilenson, 2005).

Seventh, and finally, this research aims to depart from previous survey-based studies of technology adoption by utilising the ethnographic research method. In so doing, this research aims to address the limited diversity of research methods employed by Information Systems (IS) researchers exploring user-level technology adoption issues, which has been identified by Choudrie and Dwivedi (2005). They suggest that technology diffusion could be studied by employing ethnography, observation and interviews. This research responds to their suggestion. It is an exploratory study that combines the ethnographic method with observations, interviews and postings to an on-line discussion forum. It is therefore anticipated that this research will provide an incremental contribution to research methods in the IS field. Moreover, the conduct of an ethnographic investigation could respond to Rogers' (2003: 116) suggestion that diffusion researchers *"see an innovation through the eyes of their respondents"*.

5.2.2 Scope and Limitations

In short, this research is intended to inform current understanding of why and how older people are adopting the Internet, the influence of time on this process, and how their adoption may be accelerated. It is focused on a specific cohort that has not been exposed to the Internet during their educational and working lives. The decision was taken to focus on this group specifically, rather than to define a research population according to chronological age, because the researcher was interested in developing an understanding of the process of Internet adoption among older people for whom the Internet has not 'migrated' (Dholakia *et al.,* 1996) from the educational and working life spheres.

Focusing on a specific cohort in this way did impose limitations on the study, however. By focusing on birth cohort, this research is limited in the extent to which its findings can be applied to future cohorts of older people. This is because, in contrast to the cohort subject to study in this research, future cohorts may be expected to have gained more exposure to the Internet during their educational and working lives. Another limitation of this study is its adoption of the ethnographic method, which means that the information gathered from each research participant will only be as good as the researcher's interviewing and observational skills. However, the researcher entered the field having already gained experience of interviewing and observation techniques from her involvement in previous research projects. In combination with the researcher's reading of the research methodology literature before entering the field, it is anticipated that the limitations imposed on this study by the ethnographic method are minimised.

Having stated the scope and limitations of this research, this chapter will now go on to provide a discussion of the approach taken by the researcher to respond to the research aim and associated questions, starting with the underlying epistemology of this research.

5.3 UNDERLYING EPISTEMOLOGY

All research is based on some underlying philosophical assumptions about what constitutes 'valid' research, and which research methods are most appropriate (Myers and Avison, 2002). For Myers and Avison (2002), the most pertinent philosophical assumptions are those that relate to the underlying epistemology which guides the research. Epistemology refers to the assumptions about knowledge and how it can be obtained (Myers and Avison, 2002). It deals with the nature and scope of knowledge, and it provides a set of criteria for evaluating knowledge claims and establishing whether such claims are warranted (Khazanchi and Munkvold, 2003).

Guba and Lincoln (1994) suggest four underlying epistemologies, or 'paradigms', for qualitative research, namely positivism, post-positivism, critical theory and constructivism. Orlilowski and Baroudi (1991) suggest three distinct epistemological categories, namely positivist, interpretive and critical. Myers (1997) adopts this three-fold classification in his discussions of the philosophical perspectives underlying qualitative research in the IS field (Myers and Avison, 2002; Myers, 1997). In later work, IS researchers Mingers (2003) and Choudrie and Dwivedi (2005) have also utilised this classification[21].

5.3.1 Underlying Epistemologies in Information Systems

As previously mentioned, a number of IS researchers have classified underlying epistemologies into positivist, critical and interpretive research (e.g. Choudrie and Dwivedi, 2005; Myers, 1997). These are explored in turn.

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[21] Myers (1997) makes it clear that while these three paradigms are philosophically distinct as 'ideal types', in practice these distinctions are more complex. Rather, there is no consensus as to whether these paradigms or underlying epistemologies are necessarily opposed to one another, or whether they may be complementary and may therefore be accommodated in one study (Myers, 1997). Indeed, Stahl (2005) argues that the idea of 'paradigms' is misleading, because it suggests that the three aforementioned paradigms are mutually exclusive and that they represent the totality of possible research approaches. Moreover, as Guba and Lincoln (1994) argue, although multiple paradigms may be employed in a research study, there is no way to evaluate one paradigm over and above others.

Positivism incorporates the ontological basis of realism, through which reality is driven by immutable laws and is deemed to exist objectively and independently of the researcher (Yolles, 2004). Positivists generally assume that reality is objectively given, and that it can be described by measurable properties which are independent of the researcher and the research instruments employed (Myers, 1997). From this perspective, the researcher and the phenomenon under study are deemed to be two separate, independent things (Weber, 2004). Based on its realist ontology, positivism subscribes to an empiricist epistemology, which suggests that a 'true' statement about reality can be objectively deducted from impartial observation (Stahl, 2005) arrived at by means of sensory experience (Khazanchi and Munkvold, 2003).

Positivist researchers generally aim to verify pre-stated hypotheses through rigorous empirical testing (Khanachi and Munkvold, 2003), and to test theory in order to increase the predictive understanding of given phenomena (Myers, 1997) under carefully controlled and repeatable conditions (Travis, 1999). Positivist research methods include observations, measurements, surveys, questionnaires, instruments, laboratory and field experiments, statistical analysis, and simulations (Mingers, 2003). The assumption is that it is possible to discover universal laws that govern the external world (Khazanchi and Munkvold, 2003). Finally, the role of the researcher in positivist research is objective, impartial, passive and value-neutral (Khazanchi and Munkvold, 2003).

In contrast to positivism, the critical paradigm uses historical realism as its ontological perspective, in which the world is not a universe of facts that exists independently of the observer (Khazanchi and Munkvold, 2003). Rather, social reality is seen to be historically constituted and produced and reproduced by people through their actions and interactions (Myers, 1997). The epistemological assumption of the critical research paradigm is that objective observation is not possible, and that all knowledge is generated and justified in the context of the researcher's framework and assumptions (Khazanchi and Munkvold, 2003). In terms of methodology, the critical perspective employs the methods of action research and consultancy (Mingers, 2003). Finally, the

role of the researcher in critical research is transformative and aimed at initiating change in social relations and practices (Khazanchi and Munkvold, 2003) by providing an ideological critique of power, privilege and oppression (Carr and Kemmis, 1986). Thus, the task of critical researchers is one of social critique, and of bringing to light the restrictive and alienating conditions of the prevailing status quo (Myers, 1997).

Similar to the critical research paradigm, interpretive research also includes the epistemological notion that objective observation is not possible. However, interpretivism departs from critical research because it assumes that human experience is a process of interpretation of meanings and actions, that social reality is relative to the observer, and that everyday concepts must be understood and interpreted to create knowledge about the world (Khazanchi and Munkvold, 2003). Also, whereas the critical research paradigm focuses on changing the status quo, interpretivist research is more 'neutral' and descriptive (Khazanchi and Munkvold, 2003).

Contrary to positivism, the interpretive paradigm uses relativism as its ontological perspective, in which the world is not a universe of facts that exist independently of the observer (Khazanchi and Munkvold, 2003). Interpretivists believe that reality and the observer cannot be separated (Weber, 2004), and that either reality is a social construct or at least our knowledge of reality is socially constructed (Walsham, 1995; Klein and Myers, 1999; Orlilowski and Baroudi, 1991). In this way, the interpretive tradition of thinking is more closely aligned to the rationalist than the empiricist traditions in philosophy (Benton and Craib, 2001). Human life is seen as one of meaning, of language, and of reflective thought and communication (Benton and Craib, 2001).

In terms of epistemology, interpretive understanding of the social world is derived from the research participants' perspective, through interpretation of their meanings and actions (Khazanchi and Munkvold, 2003). It is acknowledged that the researcher's prior assumptions, beliefs, values and interests intervene to shape the investigation (Khazanchi and Munkvold, 2003) and that, to this extent, the researcher intentionally constitutes knowledge (Weber, 2004). In this way, the research findings of interpretive

research are seen as the outcome of a process of interaction between the researcher and the research participant (Khazanchi and Munkvold, 2003). The relationship between theory and practice is in the drawing of 'tendencies' rather than predictions when making generalisations (Walsham, 1995). Finally, interpretive research tends to employ such data sources as interviews and participant observation (Mingers, 2003).

Both the positivist and critical paradigms were seen as less than appropriate in the context of this research, given their espoused stances in terms of ontology, epistemology and methodology. This Thesis research is not positivist, because it does not aim to test formal propositions, and it does not involve quantifiable measures of variables, hypothesis testing, or the drawing of inferences. The intention is not to explore how humans behave in responding to external stimuli. Rather, this research is aimed at investigating the idiosyncrasies of older people's Internet adoption as a process that unfolds over time, and is therefore exploratory in nature. The development of general laws and rules, or objective truths is rejected. Further, even though this research did take place within the Meet the Mouse policy initiative, it does not endeavour to be emancipatory (Myers, 1997) or to fulfil political goals in helping to achieve personal and social freedom (McGregor, 2003), therefore negating the selection of the critical science paradigm.

5.3.2 The Interpretive Paradigm

Given this overview, interpretivism was selected because it was seen as a more appropriate and feasible epistemology to apply to this particular research. The term interpretivism denotes those strategies which interpret the meanings and actions of actors according to their own subjective frame of reference (Bevir and Rhodes, 2003). The interpretivist paradigm was chosen for its ability to provide a descriptive analysis that emphasises deep, interpretive understandings of social phenomena (Bevir and Rhodes, 2003). The rationale for the selection of the interpretive paradigm is made clear through a discussion of its ontological, epistemological and methodological principles.

Ontology refers to the existence of reality, and is concerned with what exists (Mackay and Reynolds, 2001). The chosen paradigm was interpretive because, on the basis of its ontological assumptions, it considers reality to be multiple, subjective and socially constructed with the researcher and the research participant both involved in the knowing process (Rowlands, 2005). In line with the purpose of interpretive research, the aim was not to provide causal explanations of Internet adoption among older people, but to deepen and extend the knowledge of why Internet adoption is perceived and experienced in the way that it is among the cohort members involved in this research.

Focusing on the concept of Internet adoption, this research focuses on the ways that older people interpret the socially constructed nature of reality and make sense of the world they inhabit. In accord with the stance taken by interpretive researchers, the assumption was that access to reality, whether given or socially constructed, can be obtained through social constructions such as language, consciousness and shared meanings (Myers, 1997). Consistent and compatible with the ontological and epistemological assumptions of the interpretive paradigm, it was assumed that reality is subjective and is interpreted by people in the context of historical and social practices (Rowlands, 2005). Keeping in mind the ideas of birth cohort and of life course was intended to facilitate the researcher's recognition of historical and social context in the way older people assigned meaning to their Internet adoption.

It was recognised that each of the research participants would be unique and that they would experience the world from their own points of view, and so the existence of 'multiple realities' was acknowledged (Krauss, 2005). This was in line with the relativist ontology of interpretivism, which holds that realities exist in the form of individuals' unique mental constructs, are socially and experientially based, and local and specific (Travis, 1999). To this extent, the possibility of an objective or factual account was rejected (Rowlands, 2005). Instead, the focus was on gaining a relativistic understanding of Internet adoption among older people, which could then be used to inform other settings (Rowlands, 2005).

Epistemology refers to the theory of knowledge, and is concerned with how we know what we know (Mackay and Reynolds, 2001). By adopting an interpretive approach, the researcher assumed that the process of Internet adoption among older people was not an objective phenomenon with known properties and dimensions. Rather, understanding was developed from the data and was gained through a holistic perspective, and not through the ability to identify a set of variables (Hancock, 2002). In line with the tenets of interpretive research procedure and the exploratory nature of this study, the researcher did not strive to pre-define dependent or independent variables, or to test hypotheses. The research topic did not lend itself to a tightly structured study that could be fully designed *a priori*. Rather, it was important to listen to the respondents without selectively testing hypotheses. The focus was on producing an understanding of social context (Walsham, 1995). How these processes occurred over time was also a key interest. Thus, the focus was on the full complexity of human sense making as the situation emerged (Kaplan and Maxwell, 1994). Placing primacy upon the research participant's own interpretations of reality, knowledge emerged from achieving a deep understanding of the data and the context in which it was embedded (Krauss, 2005). In line with the interpretivist epistemology, the researcher recognised the interactive process between the inquirer and inquired-into in the generation of findings (Travis, 1999), and the situational constraints shaping this process (Rowlands, 2005). It was recognised that the researcher was involved in a process in which she could *"intentionally constitute knowledge* [which] *reflects* [her] *particular goals, culture, experiences, history, and so on"* (Weber, 2004: vi) and how the researcher's own perceptions could essentially bias the research (Krauss, 2005).

The philosophical base of interpretive research is hermeneutics and phenomenology (Boland, 1985). For Heidegger (1993), phenomenology is the science of the 'being of being' and therefore forms part of ontology. In line with the tenets of phenomenology, this research does not deal with objective reality, but sees phenomena as the manifestations of perceptions and the result of conscious acts that are not independently given (Stahl, 2005). It focuses on lived experience, a perception of the individual's being in the world as a mode of inquiry that seeks to derive the essence of an experience (Van

Maanen, 1990). In accord with the phenomenological approach, the research task is not only to interpret the meanings that people give to their actions, but to demonstrate how individuals come to construct these meanings within what Husserl calls a 'life-world' (Stahl, 2005). The 'life-world' can be seen as a horizon within which the individual moves (Habermas, 1984).

Hermeneutics is the 'science of interpretation', and is concerned with the analysis of the meaning of texts (Harvey and Myers, 2002). It was seen as potentially useful for providing understanding and making sense of others' actions (Myers and Avison, 2002). This understanding could be gained through a circular engagement with texts, termed by Gadamer (1976) the 'hermeneutic circle', in which the researcher could gain an expectation of meaning from the context of what had gone before (Harvey and Myers, 2002). To this extent, the researcher was keen to avoid covering up the difference between author and reader, but aimed instead at disclosing this and making it explicit in demonstrating the reasons for the understanding developed from the research data (Klein and Myers, 1999). To this extent, the need for understanding context was favourable to the use of this interpretive research (Stahl, 2005).

Finally, methodology is concerned with the process of research (Creswell, 1994). The methodology, which developed from the chosen ontology and epistemology, was qualitative. Each research paradigm incorporates research methods that are useful in different settings and for different purposes (Travis, 1999). While interpretive research often uses qualitative, or non-positivist (Stahl, 2005), methods and tools that focus on interpretation through the analysis of meanings and constructions (Jamal and Hollinshead, 2001), it may also be positivist or critical (Myers, 1997). It is recognised that while this research is qualitative, it does not automatically negate the use of the positivist paradigm. Rather, it is acknowledged that qualitative research can be positivist or interpretive, depending on the philosophical assumptions of the researcher (Rowlands, 2005; Myers, 1997).

The dominant paradigm used for exploring technology adoption among users is positivist, with an emphasis on surveys as the main method of data collection (Choudrie and Dwivedi, 2005). The positivist approach informs us about who are and who are not adopters but tells us little about the *process* of adoption, which is what this research aims to explore. This research employs the longitudinal, ethnographic method. This selection of research method was deemed to be compatible with the goals of this research, for it was seen to be ideally suited to exploring how older people were coming to adopt the Internet and how this process took place over time. Also, this research method was selected for it was seen as compatible with the need to move beyond existing survey data and towards an understanding of the adoption process from the perspectives of older people themselves.

5.4 RESEARCH APPROACH

In the conduct of the research it was necessary to employ an appropriate research approach in order to solicit complete, meaningful evidence, and to analyse evidence through sensitive, systematic procedures (Ratner, 2002). Writing in the context of IS research, Trauth (2001) argues that the nature of the research problem should be the most significant influence on the choice of research methodology; *"That is, what one wants to learn determines how one should go about learning it"* (Trauth, 2001: 4). In the context of this research, the researcher was interested in learning about the process of Internet adoption among older people. The researcher wanted to move beyond the data provided by surveys which show that older people are less likely to be adopters than are younger people. Rather, the researcher wanted to capture the subtleties of adoption as a process, and to understand the context surrounding older people's Internet adoption. An emic (insider) perspective was seen as desirable, for accessing perspectives from older people themselves. For this purpose, a qualitative research approach was seen as more appropriate than a quantitative approach, with its emphasis on an etic (outsider) perspective[22].

[22] It is important to note here that the researcher does not equate the interpretivist paradigm with qualitative research (Myers, 1997). Also, although a qualitative approach was employed, quantitative and

5.4.1 Qualitative Research Approach

Qualitative research methods were developed in the social sciences to assist researchers in understanding people and the social and cultural contexts within which they live (Myers and Avison, 2002). Qualitative approaches ascribe meaning, understanding and explanation to human phenomena, and for this reason appeared to provide 'methodological fit' with the research aim and questions (Jamal and Hollinshead, 2001). Given these considerations, the decision was made that the most appropriate research approach would be qualitative, exploratory, and descriptive, and would be capable of capturing context and meaning.

The lack of preceding knowledge indicated the need for a qualitative approach to the research. The qualitative approach to research is often used in unstudied or understudied areas of research (Strauss and Corbin, 1990), as well as to gain new perspectives on phenomena which are already known and theorised (Hoepfl, 1997). This research aims to develop a more comprehensive understanding of the Internet adoption of older people, which is relatively under-researched. It was therefore deemed desirable to amass qualitative data that can help explain Internet adoption amongst older people from their own perspectives. As such, this research is exploratory in nature and is not an attempt to test pre-existing hypotheses.

A further motivating factor for the adoption of a qualitative approach arose because the research is focused on the study of subjective experiences that cannot be easily measured by quantifiable means, and which may be lost in the quantification of textual data

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qualitative approaches were not viewed as opposing and in conflict. This debate is often drawn between researchers who consider qualitative work to be unrepresentative and open to bias, and others who view quantitative analysis as reductionist, deterministic and limited to positivist theoretical perspectives (Kendig, 1986). A growing body of research has adopted a stance that emphasises the complementary nature of qualitative and quantitative approaches. Victor *et al.,* (2007: 95), for example, stress that quantitative and qualitative approaches *"represent different ways of investigating ageing processes and the social worlds of older people and are appropriately viewed as complementary and representing different perspectives".*

(Myers, 1997). Also, although greater coverage of a number of research participants is possible with quantitative methods, such as the questionnaire survey (Hancock, 2002), qualitative methods of data collection and smaller samples were deemed more appropriate for their potential for eliciting richer, deeper data (Kearsey and Atherton, 2003).

Using an exploratory approach, the onus of this research was on collecting descriptive data, rich in the personal and unique insights and concerns of the research participants. In addition to the potential for exploration, the descriptive nature of qualitative research was advantageous for it allowed the research participants to focus on those issues that were evocative to them personally, and can permit readers to make their own judgements about the data that is reported. This joint meaning making is known as the '*co-authorship*' of narration (Aranda and Street, 2001: 792). In particular, the qualitative nature of this inquiry, rich in context and detail relating to the research participants' experiences, may be more *"epistemologically in harmony with the reader's experience"* (Stake, 1978: 5), and therefore more meaningful (Hoepfl, 1997).

The potential of the qualitative approach for understanding context and meaning was also desirable. This research is ideographic in nature, aimed at assigning description and meaning to unique occurrences, rather than nomothetic, and aimed at generalisation, explanation and theory (Jamieson, 2002b). The intention of this research was to provide detailed contextual knowledge in order to arrive at a greater understanding of Internet adoption amongst older people. In order to achieve this, the possibility of collecting large-scale objective, quantitative data was rejected. Rather, the intention was to obtain qualitative, intersubjective data, with the onus on developing shared consensual understanding between the researcher and research participants (Mingers, 1995). For this reason, the qualitative approach, and the interview and observation techniques in particular, were selected for their potential to obtain richer data than that provided by surveys, and for their appreciation of context (Knoblauch *et al.*, 2005). It was decided that the control and manipulation of context by the use of experimental research (Hancock, 2002), random assignment and multivariate analyses (Sharp-Westat and

Frechtling, 1997), would not have been conducive to the need for understanding natural context.

5.5 RESEARCH METHOD

When conducting research, the selection of an appropriate research method is a critical issue (Dwivedi, 2008). Research methods are *"the means by which knowledge is acquired and constructed within a discipline"* (Harvey and Myers, 2002: 169). The predominant research method employed by IS researchers for examining technology adoption issues is the survey (Dwivedi, 2008), but this research aims to move beyond existing survey data to explore the process of Internet adoption among a specific cohort of older people, including how and why older people are adopting the Internet. A quantitative positivist method was seen as less than appropriate for this purpose. Rather, the ethnographic research method was seen as particularly appropriate for fulfilling the research aim and related questions.

5.5.1 Ethnographic Research Method

In this research, context was acknowledged as important, which necessitated techniques for exploring *"contextual webs of meaning"* (Harvey and Myers, 2002: 173). The main body of techniques for this purpose are subsumed under the domain of an approach called 'ethnography' (Harvey and Myers, 2002). Ethnography is a qualitative research method which derives from the discipline of social and cultural anthropology. The term means 'portrait of a people' (Hancock, 2002), and it is *"a generalised approach to developing concepts and to understand human behaviours from the insider's point of view"* (Morse and Field, 1996: 21). It is a methodology for descriptive studies of cultures and peoples that involves extensive fieldwork by the researcher (Hancock, 2002; Myers, 1997) using a number of data collection methods (including observations, interviews and documentary evidence) in order to gain as many insights as possible into the issue being studied (Hammersley and Atkinson, 1995).

According to Atkinson and Hammersley (1998), ethnography has a number of features. These are its strong emphasis on exploring the nature of particular social phenomena rather than setting out to test hypotheses; a tendency to work mainly with unstructured data that are not pre-coded or categorised; the investigation of a small number of cases; and the analysis of data that involves explicit interpretation of the meanings and verbal descriptions and explanations, largely free of quantification and statistical analysis. This was the adopted approach. It had two particular strengths in the context of this research. First, it offered a means for witnessing human events in the context in which they occurred, and enabled the investigation of issues not accessible to quantitative methods (Brewer, 2000). Second, it permitted the researcher to play a role in identifying behaviours through participant observation, and then allowed the researcher to question the meanings of these behaviours through interview (Hammersley and Atkinson, 1995). In this way, the use of ethnographic research methods meant that opportunities which arose from contextual situations could be followed-up and built upon (Harvey and Myers, 2002).

The ethnographic method was employed in order to gain deeper insights into the meanings older people assign to Internet adoption, and how this adoption process unfolds over time. It was selected because it called for the active involvement of the researcher with the research participants, and was deemed more appropriate than the survey approach which does not make such demands for involvement (Fairhurst, 1990). Assuming the role of an ethnographer entailed the adoption of an empathetic perspective and the privileging of the perspectives of the research participants, in order to understand how they viewed their social world (Victor *et al.*, 2007).

Finally, ethnography is both a research method and the written account of the culture investigated (Denscombe, 1998). Analysis of the ethnographic data sought interpretive understanding of human actions and contexts (Hammersley and Atkinson, 1995). The emphasis was on describing the phenomenon from the insider's (emic) perspective, in an attempt to understand the meaning that it holds for them (Hammersley, 1992). The results of the ethnographic research are expressed using local language and terminology

to describe phenomena (Hancock, 2002). This was achieved by drawing on the employed methods of observation, including note-taking, and interviews. The anthropologist Clifford Geertz (1993) calls this *'thick description'*. Through thick description, the researcher was able to analyse and present the viewpoints of the informants. The intention was to master what van Maanen (1988: 13) calls *"The trick of ethnography"*, which is *"to adequately display the culture (or, more commonly, parts of the culture) in a way that is meaningful to readers without great distortion"*.

Despite the best efforts of the researcher in producing an ethnographic account that conveyed thick description, it is recognised that this ethnography can only offer a partial understanding of reality in so far as it offers a construction of reality as presented by the research participants only. Notwithstanding this caveat, ethnography was a suitable research method for gaining an interpretive and 'emic' understanding. Also, in line with Geertz's (1993) thoughts, while ethnography works at the local level, it is possible to extrapolate important ideas from contextual research: *"The aim is to draw large conclusions from small, but very densely textured facts; to support broad assertions about the role of culture in the construction of collective life by engaging them exactly with complex specifics"* (Geertz, 1993: 23).

5.5.2 The Ethnographic 'Field'

In line with the ethnographic method of research, the researcher spent a significant amount of time in the field. The fieldwork period lasted a total of eight months, which was split into two main components. The first component involved immersion in the field during the period November 2003 to March 2004. The 'field' was a number of Meet the Mouse workshops conducted throughout Wales. The second component of the fieldwork involved following-up with the research participants outside the workshops over the period April 2004 to June 2004.

It is necessary here to provide a brief description of 'Meet the Mouse'. Meet the Mouse was the Welsh Assembly Government's (WAG's) national policy initiative aimed at

promoting awareness and use of the Internet in Wales through a schedule of workshops held in venues throughout the country, and free of charge to its audience. The campaign formed part of the Cymru Ar-lein (Wales On-line): Online for a Better Wales Strategic Framework[23]. The aim of CAL was to help foster (Welsh Assembly Government, 2003b: 10):

> *"...*[A] *Wales that exploits ICT to deliver sustainable improvements in social and economic and health prosperity to achieve a better quality of life for all its citizens."*

The Glasgows Group (TGG), a Lancashire-based conference and events services company, were contracted to provide the workshops for a three-year period. In the event, the workshops ran from November 2003 to July 2006. The workshops specifically aimed at introducing to the Internet and World Wide Web (WWW) those individuals with little or no on-line experience. Undertaking the research at these workshops was particularly suitable for fulfilling the research aim, because it allowed for access to a significant number of older people using the Internet for the first, or the nearly first, time. The assumption made by the researcher was that these first-time Internet users may have been in the process of adopting the Internet, or at least forming some decisions regarding adoption. In line with the ethnographic approach, the researcher studied actual practices - older people's engagement with the Internet - in real world situations, namely the workshops. It was anticipated that the workshops would provide good 'fit' with a 'typical' situation in which one may find older people gaining their first, or nearly first, exposure to the Internet. The strategy of making this choice on the basis of the workshop's fit with a typical situation rather than on its convenience or ease of access was based on a reading of Schofield (1993). Schofield (1993) suggests that selection on the basis of typicality provides the potential for a good 'fit' with many other situations. In the next chapter, in which the results of the research are presented, thick description of the workshops should provide the information necessary for the reader to make an informed judgement about the degree and extent of that fit (Schofield, 1993).

[23] The Cymru Ar-lein Strategic Framework will finish in March 2007, and will be superseded by the e-Wales Strategy and Action Plan due to be published later in 2007

Given that a schedule of workshops and venues was drawn up by the WAG and TGG in advance of the data collection period, the researcher established a specific timetable of data collection venues and dates (See Appendix 1). The intention was to attend each workshop venue visited by TGG in the phase one data collection period, in order to gain a good geographic spread of data collection opportunities. In the event, the researcher attended 27 workshops, including one in each venue visited by the workshops in the data collection period. During this time in the field, the researcher undertook participant observation, qualitative interviewing, and analysis of forum postings. The experience of being in the field and of amassing the fieldwork notes became important techniques for gathering data (Myers, 1997). These techniques, or 'data sources' (Myers and Avison, 2002), are explored next.

5.6 DATA SOURCES

This research is based on qualitative data collected through ethnographic fieldwork. Ethnography is a qualitative research *method*, but qualitative *data sources* are different to methods (Myers and Avison, 2002). They are the means for collecting information. Examples of qualitative data sources include observation and participant observation, interviews and questionnaires, documents and texts, and the researcher's impressions and reactions (Myers and Avison, 2002). This research employed participant observation, qualitative interviews (workshop and follow-up interviews) and analysis of forum postings as data sources.

5.6.1 Participant Observation

During the time in the field, the researcher took the opportunity to gather information by participant observation. This enabled first-hand observation of the behaviours of the workshop attendees. In the context of interpretive research, observations were utilised to make sense of actors' actions and language in their natural settings (Williams, 2000). Participant observation also provided *"the vividness of the descriptive writing to which*

[the reader] *can give rise, the feeling that the researcher really knows the subjects and the sense of empathy which the* [observation] *report often conveys"* (Fennell, 1990: 71).

Observation was selected as an appropriate data collection method for several reasons. First, observation provided important contextual information not easily accessible by other methods, such as surveys (Mahoney, 1997). In particular, observation provided the opportunity to witness the natural research setting, and the interactions between the people who attended the workshops. Second, observation was used to give importance to nonverbal as well as verbal communication. Observation provided opportunities to capture the participants' interaction with the Internet including, for example, issues related to usability. Also, it was interesting to note the interaction and behaviour of individuals unknown to one another who had to share computer workstations, as well as the interpersonal relationships between members of staff, and between staff and participants. Third, observation facilitated access to aspects of the interviewees' learning experience that they may have deemed unnecessary or undesirable, for whatever reason, to discuss in the interviews. Problems navigating Websites due to lack of experience is an example. Fourth, observation was useful in examining how the workshop participants approached different tasks; for example, how they compared in their confidence and skills when using the mouse. Fifth and finally, observation was also convenient, since it was necessary to have a visible presence at the workshops in order to recruit participants for interview.

Observations were conducted throughout the programme of workshops, and not at intermittent workshops, in order to avoid observation of only atypical events and occurrences. Each workshop attended was subject to observation so as to gain a broad understanding of the processes and behaviours that could be associated with older people using the Internet. Participant observation also involved natural conversations, both between the participants and other participants, and between participants and the researcher. The data generated by participant observation was applied to the ongoing analysis in two main ways. First, it was used descriptively to characterise the research

participants portrayed in this study. Second, it was used to test themes identified from the ongoing interviews against the behaviour actually observed at the workshops.

5.6.1.1 Observation Protocol

A semi-structured protocol was employed to guide the collection of observational data. The intention was to observe and interpret meanings in context, and so the protocols were used not as finalised research strategies but as an evolving reflection of the primary issues to be explored in the conduct of the research, in support of the emergent nature of qualitative research design (Hoepfl, 1997). The observation protocol contained a number of structured sections about the research setting and social environment, including the venue and the seating arrangements. The use of the protocol meant that the same criteria of observation were applied at each workshop. Each observation also contained a less structured narrative in the form of field notes, in which the researcher described the activities undertaken, problems encountered and unanticipated events, such as computer crashes.

5.6.1.2 Conduct of Observations

It was important to remain reflective and reflexive, and so the potential impact of observation on the participants and the researcher was pondered and recorded in the observational notes. The risks of missing important observational features, or of not recognising the importance of certain features at the time of observation (Hancock, 2002), were acknowledged. It was not possible to completely overcome these risks given the solitary role of the researcher, but efforts were made to be alert throughout the workshops to different events and occurrences.

An overt approach to observation was employed. The aim of the observation was to become immersed in the workshops in order to gain a fuller understanding of the research context. Opportunities were taken at each workshop to speak formally and informally to participants, which was useful for organising themes to be discussed in

later interviews. Efforts were made to minimise participants' discomfort by assuming an informal role, encouraging participants to openly ask for advice and guidance when using the Internet. In line with the conventional practice of ethnographers, observational notes were compiled at the end of each workshop (Fairhurst, 1990), which facilitated optimum recall of salient issues (Kelliher, 2005).

5.6.2 Workshop Interviews

Qualitative interviewing was used in conjunction with participant observation. According to Kvale (1996), qualitative interviewing is essentially conversation which involves gaining understanding of the world from the interview subject's personal point of view, unfolding the meaning of their experiences and uncovering their lived worlds, prior to scientific explanations. The qualitative approach to interviewing was particularly appealing because it offered the opportunity to focus on the social experiences of participants, was committed to the interviewees' points of view, and allowed for the reporting of data in a style that was rich in their commentary (Denzin, 1989).

5.6.2.1 Interview Protocol

An interview protocol, or schedule, was employed to guide the workshop interviews. It was developed in three stages. The first stage involved drafting questions that could yield relevant information. The guiding concepts and prompts contained in the protocol were formulated through a familiarisation with the literature, achieved over the course of the literature review. These concepts were not intended to form an *a priori* explanation, but rather as a stimulus to relevant conversation during the interview encounters. The second stage involved a pilot study undertaken at an Internet beginners' class. The purpose of the pilot study was to determine whether the questions included in the interview schedule were understandable among people new to the Internet. Feedback on

the content and wording of the interview schedule was sought from the interviewees[24]. Finally, the third stage involved the finalisation of the interview protocol, taking into account the comments made by those involved in the pilot study. At this stage, the protocol was critiqued by the research supervisor, from whom approval to commence with data collection was sought and granted.

A semi-structured protocol was selected as a more appropriate means of soliciting data than a tightly structured protocol. Highly structured interviews involve adhering to a strict script in the ordering and asking of questions, and could potentially have aided the research in providing comparable responses from interviewees. However, the disadvantages associated with highly structured interviews, including constraints on openness and receptivity to unexpected information (Hancock, 2002), and the possible non-inclusion of issues more salient to interviewees (Sewell, 2000), proved sufficient drawbacks to warrant the rejection of this approach.

Using a semi-structured schedule meant that the interviewees were encouraged to enter into a dialogue about the same or similar issues. Probing and reinforcement provided interviewees with the stimulus to discuss certain topics in greater depth. The protocol was intended to encourage free and open responses, and to allow interviewees to describe their experiences and perceptions in their own words (Mahoney 1997), providing interviewees with the freedom to respond and offer information on topics not included in the schedule, thus offering insights that may have otherwise been 'unseen'. Each issue included in the protocol was always explored. The flexibility of the protocol was evident in the extent of this exploration, which was variable depending on the interviewees' abilities or willingness to discuss each issue, and the exploration of issues raised by interviewees but not included in the protocol.

[24] The feedback was positive, though minor modifications to the interview schedule were made at this stage to respond to the confusion among some of the interviewees as to whether the discussion was about computers or the Internet.

5.6.2.2 Conduct of Interviews

The researcher did not want to be obtrusive, and so verbally requested that workshop participants self-select themselves for interview[25]. It was anticipated that non-consenting workshop participants would not self-select themselves for interview. Interviews occurred face-to-face at the end of each workshop and at the workshop venue. Interviews lasted, on average, five to seven minutes each and were not audiotaped. The intention was to reduce the possibility of participants feeling uncomfortable in the presence of a Dictaphone. Hand-written interview notes were taken with permission. This was deemed an appropriate method of recording the interviewees' quotes because the interviews did not require any in-depth exploration of concepts. Rather, the workshop interviews were intended to provide a broad range of data prior to more in-depth exploration of issues during the follow-up interviews. It was therefore suitable and effective to note only those quotes that were particularly insightful and relevant to the research objectives. In this way, the need for lengthy transcription was minimised and irrelevant information was eradicated. However, efforts were made to record quotes verbatim, in order to preserve the exact wording of the interviewees' perspectives. This capturing of the interviewees' own words was particularly effective in presenting the meaningfulness of their experiences and perspectives from their own world-views.

5.6.3 Forum Postings

Data was also derived from the workshop participants' postings to the 'Meet the Mouse' discussion forum. Postings to the forum were made during the Meet the Mouse workshops by all of the workshop participants. The intention of this activity was to provide feedback to CAL about the participants' experiences of the workshops. The

[25] The researcher made it clear to potential research participants that experience of using the Internet was not necessary for involvement in the study, and that the research was not an attempt at evaluating Internet competency. This was to safeguard against the possibility that some attendees would refuse to participate because they felt that the study did not apply to them, and to avoid the potential for bias in the findings if, for example, those who considered themselves competent with Internet technology agreed to participate whereas those who doubted their competency refused participation.

forum postings were deemed a particularly appropriate source of data for fulfilling the research aim. Since workshop participants were encouraged to post messages to the forum about their experiences of the Internet and the workshops, it was anticipated that the postings would contain data relevant to how and why older people may be adopting the Internet, and what they thought of the approach to learning taken at the workshops. The postings to the discussion forum were recorded immediately post-workshop[26].

5.6.4 Follow-up Interviews

Immediately after the workshops, the researcher sought to contact those workshop interviewees who had volunteered themselves for further interview. Contact was established first with those participants who were interviewed earlier in the workshop schedule. The researcher's intention was to allow some time to elapse between the workshop and the follow-up interview so that decision-making processes could be probed, but not so long a time that interviewee recall of decisions made and the context in which they were made could have been jeopardised. In the event, follow-up interviews were conducted, on average, six months post-workshop.

In the first instance, efforts were made to contact consenting workshop interviewees by email. All 78 phase one interviewees were contacted by email. Only eight email responses were received, all of which provided consent for further interview. Where email responses were not forthcoming, contact was established through typed letters to the participants' home addresses. Individuals who responded to email contact were not contacted by letter. Difficulties arose when obtaining home address details of potential follow-up recruits, because addresses of workshop participants were not always recorded by TGG. As a result, it was not possible to establish letter contact with all of those research participants interviewed during the workshops. In the event, letters were sent to 36 workshop interviewees. 16 responses were received, of which one declined consent.

[26] The discussion forum formed part of the Cymru Ar-lein (CAL) Website. The researcher's access to the postings was gained through the CAL Website and its associated discussion forum Webpages. The Cymru Ar-lein discussion forum is now closed, but was available at:
http://www.cymruarlein.wales.gov.uk/forums

Subsequent telephone contact was established with the total 23 consenting contacts (those who consented by email and by letter), in order to schedule suitable dates and times for follow-up interviews. 17 interviews took place due to three cancellations and three instances where it was not possible to re-establish contact in order to schedule interviews.

The purpose of undertaking follow-up interviews was to question a selection of phase one interviewees in greater depth about their Internet adoption. Qualitative interviewing allowed the opportunity for interviewees to elaborate on particularly cogent issues that arose during the workshop interviews, and allowed the researcher to test and potentially corroborate tentative findings drawn from initial analysis of the existing interview data.

5.6.4.1 Interview Protocol

An interview protocol was utilised in the follow-up interviews. The intention was to guide discussion and standardise the interviews in order to gain relevant, comparative data. The protocol was semi-structured so as to invite relevant responses while maintaining openness to unforeseen conversational directions, and to prompt interviewees when necessary. Questions were open-ended and non-restrictive, so as to provide the interviewees with opportunities to openly discuss issues of personal salience. In so doing, the respondents could autonomously construct and order those social events and stories, or '*epiphanies*' (Denzin 1989: 39), of most consequence to them, and the researcher could be more open to emergent themes. An open, genuine and sympathetic approach was used, treating the interviews as individual interpersonal encounters.

Open, explorative questions were asked at the beginning of the interview encounters to generate conversation. Initial ideas for the protocol were generated through analysis of the workshop interview data, and developed as new ideas emerged over the course of data collection. This process of including new paths of inquiry continued until the data collection process drew to a close, when the focus moved from generating possibilities to verifying and confirming emergent themes and concepts (Patton, 2003).

5.6.4.2 Conduct of Interviews

Follow-up participants were interviewed either individually or, when requested, in pairs. A reading of the literature did alert the researcher to some of the limitations of group interviews, including limits associated with tape recording group discussions and the problems of establishing convenient, comfortable locations for all interviewees (Stewart and Shamdasani, 1990). However, the researcher wanted to satisfy all consenting follow-up interviewees and so agreed to interviewing two participants together when requested. In the event, the researcher interviewed four pairings; two were a pair of friends who had attended the workshops together, and the other two were married couples, who also attended the workshops together. All other interviews were conducted with individual participants. One interview pairing provided minimum data from one interviewee. Also, one other interview - one which was conducted on a one-to-one basis - provided limited data[27].

Interviews were conducted in venues of the interviewees' choice, and included the interviewees' homes, cafés/public houses, and hotels. In self-selecting the settings of their interviews, it was anticipated that the interviewees were provided with the opportunity to select venues that were personally accessible, comfortable and private. The follow-up interviews were conducted face-to-face and all interviewees were assured of their confidentiality and anonymity prior to the commencement of the interviews. Telephone interviewing has gained some currency as a means of qualitative data collection (Mahoney, 1997), but face-to-face interviews were deemed more appropriate due to their potential for interpersonal contact and for understanding interviewees' social cues, such as body language.

No specific time limits were set on the interviews. Since it was not known when interviewees would provide the most insightful and salient responses, interviewees were

[27] As a result of gaining minimum data, this first interviewee mentioned is not included in the 'Results' chapter, apart from where she became involved (again, only minimally) in her husband's interview. The second interviewee mentioned is referred to in the 'Discussion and Implications' chapter.

encouraged to speak openly and freely, and to cover all of the topics included in the interview protocol. Avoiding time limits prevented the trade-off described between comprehensive coverage of topics and in-depth exploration of a limited set of questions (Mahoney, 1997). The follow-up interviews required in-depth exploration of concepts, so it was necessary to audio-tape, with the interviewees' permission, the entire duration of each interview. Tape recording encouraged the researcher's concentration on the interviews and better flow of questions. The interviews were tape-recorded in their entirety in order to provide complete data for transcription and analysis. Reliance upon the tape-recordings meant that all the relevant themes broached during the interviews were given equal importance at the transcription stage, and were not dictated by the researcher's perceptions of useful information at the time of the interview encounters.

Notes were taken throughout the interview encounters to record salient information such as the main themes discussed, and the interviewees' body language and enthusiasm. The risks associated with interviewer bias in note-taking (Hancock, 2002) were minimised by the audiotapes, which were the primary source of data. Note taking also helped to avoid the problems of audiotape or Dictaphone faults, and the possible lack of clarity of audio-taped conversations. More detailed field notes were made following each interview encounter. These reflective memos helped establish an '*audit trail*' (Denscombe, 1998), capturing personal thoughts, reflections and speculations. Memos about ways of categorising data (Field and Morse, 1985) were written at times throughout data collection and analysis, and were central to the recording of ideas and the development of emerging theories.

5.7 DATA ANALYSIS

As with quantitative analysis, there is no one method of qualitative data analysis (Victor *et al.,* 2007). The coding of the voluminous data was undertaken guided by the principles set out in the qualitative data analysis literature, chiefly in Miles and Huberman (1984), and analysis was aimed at 'bringing to life' the research participants in accord with hermeneutic analysis (Boland, 2002).

5.7.1 Early Data Analysis[28]

Preliminary observations and analysis began during the workshops. The result was voluminous data related to the research interest, which had to be transcribed and analysed. The raw interview and observational data were partially transcribed verbatim. Sufficient time was allocated between the workshops for analysis of the interview, observational and forum data, in order to explore emergent concepts and theories, and debate the inclusion of new research categories in subsequent fieldwork.

Transcripts were written from the quotes noted during the workshop interviews, and from a playback of the audio-taped follow-up interviews. In order to overcome the problems associated with interviewer bias in tape analysis (Hancock, 2002), all of the interview data were transcribed. Verbatim quotations illuminated the interviewees' experiences and perceptions in their own terms. Tone and inflection were included in the transcripts to provide an indication of the interviewees' mood and meanings. Data were typed into transcripts and were then printed on A4 paper. Wide margins were created on the right-hand side of the pages. These measures enabled the more efficient storage of the data, and the writing of any emergent ideas and comments. Interview and observational data were stored in chronological order of when they occurred, and were assigned reference codes which preserved the confidentiality and anonymity of the data. This enabled the researcher to more efficiently navigate back and forth through the data. Non-verbalised and situational details of the research encounters were recorded in the transcripts in order to preserve significant contextual information lacking from transcripts alone.

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[28] The use of qualitative data analysis software such as QSR NUD*IST and NVivo was considered prior to the data collection phase, but rejected as an analytic tool due to the commitments of time and resources necessary to learn to use the software (Berkowitz, 1997), and the possibility of fragmentation and loss of control over narrative structures and in the generation of insights (Bornat, 2002). Personal, manual data analysis was deemed preferential in terms of providing a greater understanding of the data and context, attainable through the writing, reading and re-reading of transcripts and other qualitative data. Data analysis by the researcher in person was highly time consuming and labour intensive, but was useful in equipping the researcher with key analytic understanding, which was highly beneficial in the course of the data analysis and beyond.

5.7.2 Analysis and Coding

The analysis and coding of the data proceeded according to the methods described in the qualitative data analysis literature (Richards, 2005; Miles and Huberman, 1984). The transcripts were read through and annotated in order to refer to the general content of passages of data. Comments and 'hunches' about the data were recorded in the margins by the researcher in a process of 'purposive reading', which involved reading, reflection and questioning of emerging ideas (Richards, 2005: 69). Memos were also kept, which were dated and which reflected the researcher's ideas and thinking about the data and possible leads to related data or ideas. The memos became informal records of thinking aloud (Richards, 2005).

The preliminary categories and personal reflections and ideas emergent from the data were scrutinised and coded according to those methods described in the literature about qualitative data analysis (Miles and Huberman, 1984). Coding was utilised in such a way as to conceptualise data in both 'emic' (interviewee) and 'etic' (researcher) perspectives. Factual coding was used to focus on specific issues, such as rates of Internet adoption. Interpretive coding was used to focus on more abstract issues, such as the interviewees' perceptions of the Internet. Sections of data were colour-coded according to the category to which they were assigned, which often changed as categorisation of data progressed and relationships between categories were refined. Sensitivity to emergent themes was maintained throughout analysis, to avoid problems associated with the premature drawing of conclusions (Miles and Huberman, 1984).

Informative extracts of information were identified within the data, necessitating choices about which data to include and exclude in light of the research aim and questions. Condensing the data in this way for the sake of manageability and intelligibility, sometimes called 'data reduction', is an appropriate method of qualitative data analysis (Miles and Huberman, 1984). Data reduction was a difficult process given the richness of the data, but it did aid the selection of the most relevant data for fulfilling the research

aim and questions. Remaining open to the emergence of new ideas allowed for unforeseen and unanticipated discoveries from the data. As the analysis progressed, the data that had absolutely no relevance to the research interest, such as general talk, were omitted and coded separately and filed for possible future retrieval.

The researcher sought out relationships in the data and recorded them. This process of reading the transcripts, annotating, memoing, reflecting and linking led to the expansion of the data, as the researcher's ideas were treated as more data. Over the course of analysis, patterns in the data emerged. Coinciding with the emergence of new data, categories were developed and confirmed, and codes were defined and re-defined. This 'data display' stage (Miles and Huberman, 1984) represented a shift in the identification of lower order to higher order categories, as the analysis progressed. All those categories with 'analytical momentum' (Richards, 2005: 69) were reflected on in memos, because they were identified as having potential for explaining patterns in the data. As patterns in the data began to yield initial conclusions, emergent data could be easily accommodated in existing categories, and the necessity for new categories became redundant. This represented the conclusion drawing and verification stage of the analysis[29] (Miles and Huberman, 1984).

5.7.3 Inductive Logic

In accord with the ontology of the interpretive paradigm, inductive logic was employed (Travis, 1999) which, combined with an emergent research design, aided the identification of research categories during the research process (Creswell, 1994). In line with Rowlands (2005), the researcher worked within an established framework as an initial guide to data collection (Rogers' (2003) Diffusion of Innovations). However, this research is inductive in the sense that the researcher was not constrained by prior theory and instead viewed the development of concepts and themes as a purpose of the research

[29] Following on from this analysis, it may have been possible to design more quantitative, structured questionnaires based upon the themes and categories identified in the qualitative data, which could have been distributed to participants at the next round of Meet the Mouse workshops. However, time limits set for data collection meant that this was not feasible.

(Rowlands, 2005). The theory was not used in a rigid way that could have stifled potential new issues and avenues of exploration (Walsham, 2002). Rather, the researcher remained open to the field data, and was willing to modify initial assumptions in a process of iterative data collection and analysis (Walsham, 2002). The researcher chose not to ignore the previous related work in the related field of technology adoption. The concepts employed by Rogers (2003) were used in the initial analysis of the research data but only as a guide. The purpose was not to test Rogers' (2003) theory, but this theory did help make sense of the data. Using an existing theory to guide the analysis also helped ensure that important issues were not overlooked (Rowlands, 2005). This use of theory is in accord with Klein and Myers' (2001) recommendation that research be guided or informed by at least one social theory.

5.7.4 Bringing Research Participants to Life

Finally, a note on how the research aimed to bring the research participants 'to life'. This idea of bringing to life the people involved in this research is motivated by Boland's (2002) discussion of information systems use as a hermeneutic process. Boland (2002: 225) describes hermeneutics as *"the study of interpretation, especially the process of coming to understand a text"*. As previously mentioned, hermeneutics provides the philosophical grounding of interpretivism, but it is also a mode of analysis which can facilitate understanding of textual data (Myers and Avison, 2002).

The first fundamental principle for conducting interpretive field research is the 'hermeneutic circle' (Klein and Myers, 1999). This principle suggests that all human understanding is achieved by iterating between considering the interdependent meaning of the parts and the whole that they form. It refers to the dialectic between the understanding of the text as a whole and the interpretation of its parts, in which descriptions are guided by anticipated explanations (Gadamer, 1976). In practice, the aim of the hermeneutic analysis was to try to make sense of the data in its entirety, and of the relationships between the people involved. In line with Boland's (2002) description of the hermeneutic process, the intention of the analysis was to make an

interpretation of the data and, based upon this interpretation, to bring the research participants *"to life as human beings with enduring personal characteristics used to explain what is happening"* (Boland, 2002: 233). The research participants' ways of life, their relationships with other people, and their unique histories are brought into being. Likewise, the Meet the Mouse workshops are fully described, and the research participants' behaviours during the workshops are reflected on in making meaning of the data. In this way, people and situations are brought to life, providing *"a subjective reality of people with vibrant personalities, strong motivations, deeply-felt intentions and complex histories"* (Boland, 2002: 237). The aim was to afford a respect for individual readers as appropriators of meaning (Boland, 2002).

5.8 PRESENTATION OF DATA

The collected data are presented in the form of vignettes, which is aimed at facilitating the process of 'bringing to life' the research participants and their unique circumstances and situations[30].

5.8.1 Vignettes

Vignettes are a less direct, more abstracted way of presenting data (DeWalt and DeWalt, 2002). In line with Grbich's (2007) discussion, the intention is to provide illustrative stories that could clarify a particular perspective regarding findings in the data. Consistent with the central components of qualitative analysis, the construction of the vignettes allows the researcher to present the participants in context, to clarify their intentions, and to convey a sense of process and time (Seidman, 1998). It is, in short, about telling a story. Telling stories is a major way that human beings make sense of

[30] It is important here to clarify that vignettes were used for presenting data and not for eliciting data. Other researchers have used vignettes during data collection, but their studies have dealt with some highly sensitive issues, such as child abuse (Johnson, 2000). The aim of using vignettes in this way is to present a realistic situation with which the research participants can identify (Urquhart, 2001), often with a decision or judgement formation component, in order to gain a better understanding of their decision-making and judgement-making processes (Alexander and Becker, 1978). This method of collecting data was not employed. Rather, vignettes were used for data presentation purposes only.

themselves and their social world (Seidman, 1998). However, the story told through the vignettes is both the participant's and the researcher's: *"It is in the participant's words, but it is crafted by the interviewer from what the participant has said"* (Seidman, 1998: 102).

The vignettes integrate quotes within the text to ground the analysis and to illustrate the interpretation of the data. They condense the mass of data into a meaningful display which allows the reader an insight into how the data was analysed in a particular research context (Urquhart, 2001). The intention is to present the data in such a way as to evoke a vivid impression of actions and interactions. To this end, the illustrative vignettes reconstruct the experiences described in the interview data, and provide the context in which key situations and interactions occurred. The intention is, in Bailey's (1960: 15) words, to allow the reader *"some kind of check on these abstractions, not by the test of internal consistency only, but also by relating the analysis to what goes on"*.

It is anticipated that the vignettes illustrate the implications of unfolding activities as they occurred in a particular place and at a precise moment in time. The vignettes are drawn from descriptions of the individuals and their unique situations found in the field notes. It is anticipated that they capture the complex experiences each of them had with the Internet. All of the available data is drawn on, including that amassed through observations, interviews and the on-line postings. The intention is to provide information about individuals according to such descriptors as previous occupation and educational attainment, as well as information pertaining to their experience of the Internet and other technologies. Finally, although the intention is to create vignettes that 'fitted' with each of the research participants experience, it must be borne in mind that they are the researcher's own interpretation of the available data.

5.9 QUALITY OF INTERPRETIVE RESEARCH

The criteria for evaluating the quality of ethnographies are evolving, because ethnographic studies are a relatively new research method (Weber, 2004). However,

regardless of research method employed, a common concern among researchers is to be able to justify the knowledge claims that they make (Weber, 2004). Lincoln and Guba (1985) recommend the application of four criteria for assessing interpretive research. These are: credibility; dependability; transferability; and confirmability. It is expected that by making clear to the reader different aspects of this research, including how the evidence was collected and the context in which the research was conducted, it is possible to build a case that the knowledge claims made herein are reasonable and defensible (Weber, 2004).

5.9.1 Credibility

First, credibility refers to the extent to which the researcher interprets and is representative of the research participants and their realities (Guba and Lincoln, 1989). The important issue is the extent to which the respondents and the researcher are seeing the world from the same shared standpoint (Sugarman, 2001). Thus it is necessary to ask whether this worldview is understandable and credible to the respondents, researchers, the research audience and other interested parties (Sugarman, 2001). It was important to be self-aware and reflective throughout data collection and analysis. Reflection on the research process is an essential aspect of quality in research (Victor *et al.,* 2007). The researcher acknowledged her own implicit assumptions, ideological positions and potential biases resultant from the prevailing social, political and cultural context in which the research was conducted (Victor *et al.,* 2007). Being reflective in this way enables other people to discuss and criticise the research study and to arrive at a better understanding of the life-world of older people (Victor *et al.,* 2007).

The inherently subjective nature of the inquiry prompted the researcher's concern for the accuracy and credibility of the adopted qualitative approach and the resultant findings for various reasons, including possible instances when interviewees may not have fully understood the meaning of questions, when event recall may have been faulty (Sharp-Westat and Frechtling, 1997), or when research participants may have been prone to over- or under-statement, lying and contradiction (Hagan, 1989). For this reason,

awareness was maintained throughout data collection of 'impression management', whereby individuals make choices about what to conceal and what to reveal about themselves, in the presence of others, in order to control what people think of them (Goffman, 1974). Follow-up interviewees were provided with opportunities to give feedback on the data collected during their phase one interviews, in order to check the representativeness and accuracy of initial data analysis. Opportunities were taken with the follow-up interviewees to review responses they provided during the first phase interviews and the postings they sent to the on-line discussion forum. The anticipated result of undertaking these checks on credibility was objective reporting (Kellaher, 2005), and research that could be believable from the perspective of the research participants in pursuit of an inter-subjective interpretation of the data (Trochim, 2004).

5.9.2 Dependability

Second, dependability is concerned with the stability of the data over time (Sugarman, 2001). It is about the dependability with which a given instrument measures the attribute it is designed to measure, and how consistent the findings are (Guba and Lincoln, 1989). Dependability is established when the stability of the data, or the data gathering and analysis process, can be tracked and is traceable (Guba and Lincoln, 1989). In pursuit of dependable research, the researcher undertook a number of activities. No variations were made to the data collection process, in order to preserve the dependability of the data. Inviting the follow-up interviewees to select an interview venue of their own choosing was intended to minimise the potential effects of setting on the interview data. It was anticipated that allowing the follow-up interviewees to select a venue where they felt personally comfortable enough to undertake a prolonged period of interview would maximise the dependability of the data.

A sense of interpretive awareness was maintained, and the researcher acknowledged the impact of researcher subjectivity, remained open to emergent theories, suspended preconceptions, focused on description, and checked the plausibility of alternative interpretations (Weber, 2004). Audit trails were maintained in order to provide a

traceable description of the data collection and analysis processes. Also, interview summaries, memos and a reflexive diary aided the researcher in examining the process of the research and the research findings for consistency.

5.9.3 Transferability

Third, transferability is the degree to which the results of the research can be generalised or transferred to other contexts or settings (Guba and Lincoln, 1989). Efforts were made to describe the research context and the assumptions that were relevant to the research. Results were described in sufficiently rich detail in order that readers can make personal judgements about the transferability of the data. The description of the Meet the Mouse workshops in Chapter Six supplies a rich description of the places, times and contexts in which the research data were gathered, in order to facilitate the transferability of the research results to other settings. In addition, the researcher has included a clear description of the research methodology in order to open up the possibility of future replication of this study, thereby enhancing the transferability of the research.

5.9.4 Confirmability

Fourth, confirmability is the degree to which results originate from the contexts and people apart from the researcher, and the extent to which results can be confirmed or corroborated by others (Guba and Lincoln, 1989). Accordingly, efforts were made to associate data with its sources, and to understand the logic employed when making inferences from the data. The procedures for checking and re-checking the data were described, and it was important to search for negative instances that contradicted prior observations (Trochim, 2002). A data audit was established, in order to examine the data collection and analysis procedures, and judgements were made about the potential for researcher bias or distortion (Trochim, 2002). Efforts were made by the researcher to ensure that statements were value free. The interview schedule was beneficial in this regard, for it helped to standardise stimulation across the sample of respondents, and

also provided evidence of the nature of questioning which may be beneficial if the research is to be reproduced.

5.10 ETHICAL CONSIDERATIONS

A number of ethical considerations emerged over the course of the research, and entailed the efforts of the researcher in safeguarding the interests of the participants throughout the research exercise and beyond.

5.10.1 Consent

Specific measures were taken to gain the valid consent of the research participants. No one was coerced or pressured into taking part in the research. All attendees were made aware of the right of refusal and withdrawal. Interviewees were informed of their right to revoke consent at any time, including to withdraw retrospectively any previous consent given (Sugarman, 2001), and their right to refuse to answer questions or to terminate interviews (Gilhooly, 2002). It was also necessary that the interviewees provided their consent for the researcher to audio tape and transcribe the interview data and to use it in the research (Gilhooly, 2002). In order to establish consent for the follow-up interviews the researcher sent emails or consent forms to the home addresses of potential interview recruits. The researcher provided sufficient information about the study upon which the workshop attendees could make a considered judgement. The researcher endeavoured to provide easily readable consent forms and sufficient time for potential recruits to consider their decision (Butler, 1990). These measures were important to establish consent that was informed, voluntary and competent.

5.10.2 Ethical and Professional Integrity

Ethical issues related to the distinct characteristics of the qualitative methodology and, in particular, the interpersonal contact entailed in the conduct of participant observation and qualitative interviewing. Issues of informed consent, trust, integrity, the right of

refusal or withdrawal, anonymity, privacy, confidentiality, safe data storage, data privacy, and the accurate and truthful reporting of findings are some examples of the more pressing considerations regarding professional and ethical integrity taken on board in the course of the research, and followed according to guidelines stipulated in the statement of ethical practice for the British Sociological Association (BSA) (BSA, 2002). These issues emerged at the outset, and persisted throughout the research endeavour.

The research methods employed, namely interviewing and observational techniques, are inherently intrusive and privacy-threatening in nature (Mahoney, 1997), and so it was necessary to strive for informed consent from the research participants at numerous points during the research. First and foremost, the researcher's interest was made explicit at each data collection encounter, and was discussed at meetings between TGG and CAL. Prior to each interview it was necessary to explain the purposes of the research to each interviewee, and to assure them of their confidentiality and anonymity. Interview recruits were reminded that they were not obliged to participate in the research, that their participation was voluntary, and that they could withdraw from the research at any stage, in recognition of consent as a process of renegotiation over time (BSA, 2002). Interviewees were informed that that no persons apart from the researcher would listen to the interview recordings. It was also necessary to request the interviewees' consent for using their forum postings as a data source. In striving for informed consent, it was anticipated that a degree of trust could be established between the researcher and research participants. It was anticipated that this trust could be enhanced by adopting a sensitive and empathetic approach, and the researcher aimed to create a non-threatening environment in which the research participants felt comfortable to act and talk openly and freely (Mahoney, 1997).

5.10.3 Observer Effect and Bias

The selection of participant observation as an appropriate method for eliciting relevant data was tempered by the ethical considerations of observer effect and bias. An overt

approach was deemed more appropriate than covert observation, since it was not possible to join the workshops as a participant because it was the researcher's intention to interview participants post-workshop. It was necessary to inform all participants present at the workshops of the nature and scope of the observation and the research for which it was necessary. Given the open nature of the observation it was imperative to safeguard against potential observer effect, whereby individuals modify their behaviour when they are aware that they are being observed (Brenner, 2002). Also, it was necessary to suspend preconceptions and make objective recordings of observational data in order to offset the potential effects of observer bias.

5.10.4 Interviewer Effect and Bias

The ethical considerations of effect and bias also arose in the course of the interview process. In order to minimise the potential consequences of interviewer effect, the researcher aimed to exert no influence on interactions and the nature of responses (Centre for Health Services Research, 2003), and potentially confounding the research results (Hagan, 1989) in a number of ways. In respect of interviewer bias, at the data analysis stage it was necessary to interpret the research data in such a way that was conducive to the interviewees' understandings of their experiences, in order that the data analysis constituted an acceptable reading of their social world (Denzin, 1989). This involved objective reporting of interview statements, and efforts by the researcher to remain reflexive and abandon preconceived ideas about the research interest, in order to at least minimise their impact on the collection, interpretation and recording of data (Crosbie Walsh, 1996). In an attempt to avoid imposing one's own frame of reference on the participants, during the follow-up interviews the researcher provided summaries of what the participants said during phase one interviews and requested their further comments on the issues raised.

5.10.5 Impact of Culture

Finally, the impact of culture was a key ethical concern throughout the research endeavour. It was imperative to pursue research that was unimpeded by the potential effects of ethnocentrism and cultural relativism. Ethnocentrism is "*the inherent tendency to view one's own culture as the standard against which others are judged*" (Senior and Bhopal, 1994: 329), thwarting any alternative perspectives articulated by people of other cultures (Kavanagh and Kennedy, 1992). Ethnocentrism can have implications on every aspect of the research, influencing the development and interpretation of the research aims, design and methods, and the presentation and interpretation of results, and can potentially impede all attempts at producing value-free research (Senior and Bhopal, 1994).

The researcher's goal was to achieve 'interpretive awareness' in the conduct of this research (Weber, 2004). To this extent, the researcher acknowledged the subjectivity brought to the research process, but took steps to address the implications of this subjectivity. For example, it was necessary to show understanding of the worldviews of older people with little or no experience of ICT, and not to judge the research participants according to the culture of the researcher, as a young adult with ICT experience. To achieve this, the researcher purposefully withheld her own preconceptions when collecting and analysing the data, remained open throughout the course of the research to alternative explanations, focused first on description and then on explanation, and constantly checked the plausibility of alternative interpretations of the data (Weber, 2004). The concept of older age is saturated with popular understandings of what it means to be old (Ito *et al.*, 2001), and so it was important to prevent such popular assumptions of older age penetrating the researcher's approach to data collection and analysis. Instead, the researcher appreciated that many older people are not always typical of the stereotypical images which can portray them as resistant to technology, and that many may be making sophisticated and frequent use of the Internet. To this end, the researcher aimed to achieve an inter-subjective understanding of the data.

Finally, the researcher recognised the above concerns about culture but they were deemed insufficient to prompt a rejection of the qualitative approach. This decision was influenced by other research which shows that quantitative methods of data collection also operate within a cultural context, and are likely to be influenced to some extent by the perceptions and beliefs of investigators and data collectors (Sharp-Westat and Frechtling, 1997).

5.11 CONCLUSION

In Chapter Three, the shortcomings of the existing survey data surrounding older people's Internet adoption were described. In short, they are seen as limited in elucidating the processes through which older people may pass on their way to adopting the Internet. Mention has also been made of the limited research that focuses on older people in this context (e.g. Selwyn *et al.,* 2003), and the lack of longitudinal, ethnographic research exploring technology adoption issues in the Information Systems arena (Choudrie and Dwivedi, 2005). Given these considerations, it appears that at this stage of knowledge accrual about the Internet adoption of older people, a welcome approach would be to examine the process of adoption via a longitudinal, ethnographic research study.

The circumstances of this research were favourable for using an interpretive approach. The interpretive paradigm was selected as appropriate for guiding the investigation in terms of its ontological, epistemological and methodological bases. Given that this research was exploratory in nature, and the onus was on the collection of descriptive, rich data, a qualitative, ethnographic research approach was selected. Observational notes, transcripts of qualitative interviews and postings to the CAL discussion forum were chosen as data sources for their compatibility with the ontological, epistemological and methodological stances of the interpretivist paradigm. Interpretive research is based on phenomenology and hermeneutics, which both require the acceptance of the 'other' as a building block for the constitution of reality and the creation of meaning (Stahl,

2005). By employing the hermeneutic mode of analysis, attempts were made to interpret and present the data in such a way as to 'bring to life' the research participants and their unique situations. The result of analysis was the identification of a number of research concepts, which were derived inductively in accordance with the ontology of the interpretivist paradigm.

A number of measures were taken to gain the credibility, dependability, transferability and confirmability of this interpretive research. Finally, it was important to be reflexive and sensitive to ethical considerations throughout the research. The researcher employed a number of proactive measures in order to address these ethical concerns in the pursuit of value-free research.

6. RESULTS

6.1 INTRODUCTION

The previous chapter provided a description of the methodological underpinnings of the data collection methods used in the course of this research, and their appropriateness for eliciting data relevant to the research aim and associated questions. The aim of this chapter is to present the information gleaned from the data collection process. This chapter includes descriptions from observational data, key verbatim quotations derived from the interview data, and relevant content from the forum postings. It is split into three main sections: the workshops; workshop data, and follow-up data[31].

6.2 THE WORKSHOPS

All of the research participants on whom this research is based attended the Meet the Mouse workshops, which are explored in this section. The intention is to provide 'thick description' to develop a picture for the reader of what it was like to attend a workshop. This is done by describing the workshop set-up and the activities undertaken there.

6.2.1 Workshop Set-up

Outside the workshop venues, for a few days before the workshops were to commence, a large Meet the Mouse poster on a sandwich board was left outside the venue where the workshops were to be held. This poster board would remain in place during daytime hours until the workshops in that town came to an end. Inside the workshops, equipment was set up in such a way that all participants could see the presenter, who would

[31] Given that the workshop interviews were brief in nature due to time constraints, the information available to describe the research participants is somewhat sparse. These data do benefit from the contextual information provided by the observational notes, however. The data from the follow-up interviews, which did not suffer from time constraints, are much fuller. They are presented as vignettes in order to provide illustrative stories (Grbich, 2007) that present the research participants in context (Seidman, 1998).

demonstrate the activities at the front of the workshop. The presenter had a computer on which to perform the workshop activities. Behind the presenter, situated on the wall at the front of the workshop, was a large projector screen which displayed exactly what the presenter was doing on his own computer.

The computer workstations all faced the front of the workshop, towards the projector. They were situated in four rows, with four workstations in each row, split in the middle with an aisle so that there were two workstations on each side. Sufficient space was left between each row of workstations for the support staff and the presenter to assist and talk to participants. Seating for two people was provided at each workstation.

Various promotional materials were situated on tables against the walls of the workshops. Promotional materials included a Meet the Mouse information pack and any other promotional literature provided by local institutions, such as colleges and libraries. Also situated with the promotional materials were two large poster boards. One promoted the Welsh Assembly Government's Cymru Ar-lein initiative and discussion forum, and the other promoted the Meet the Mouse workshops.

6.2.2 Workshop Activities

The Meet the Mouse workshops were two-and-a-half hours long[32]. They were targeted at those individuals with little or no experience of the Internet and the WWW. For this reason, a number of lower-level activities were used to introduce participants to the basics of Internet use. At all times, two members of support staff were at hand to assist participants. A pre-defined structure was adopted throughout the workshop programme, which was split into five main components. First, the workshops began with relatively simple mouse manipulation exercises. The intention was to get participants familiar with how to move the mouse, how to hover over a specific object like a piece of text, and

[32] In most cases, the workshops exceeded their allotted 2.5 hour time periods due to a number of unforeseen problems. These included Internet crashes and delays caused by the loss of the satellite Internet signal. Other problems included the difficulties some of the workshop participants experienced hearing the presenter. Echo loop equipment would possibly have addressed this problem.

how to right and left click. One activity involved participants clicking on images and 'dragging' them across to a picture of a bin, where they would 'drop' the images.

The second part of the workshop involved the presenter showing participants how to use the Yahoo! search engine. To start, the presenter would search the Internet for information regarding holiday destinations. The presenter demonstrated two ways of finding on-line information: first, by entering a Web address in the address bar when the address is known; and second, by entering a number of key terms such as 'cheap flights' or 'UK caravan holidays' in the search engine, to illustrate how to access information when a Web address is not known. The presenter would then proceed to demonstrate how to use a specific Website for relevant information, including using drop-down menus and clicking on desired options. This particular demonstration would proceed to its conclusion, with a price quote for a given holiday. The second part of this activity involved participants searching the WWW for subjects or items of their own choosing, such as hobbies or personal interests.

In the third workshop activity, participants were shown how to access and use Yahoo! email. For this purpose, support staff set up Yahoo! email addresses and passwords for all of the participants. The presenter would first demonstrate how to compose and send an email via the projector, before participants would do so. The fourth workshop activity involved introducing participants to the CAL discussion forum, including how to compose and send a posting[33]. Participants were instructed to post a message each, or per 'couple' when two people shared a computer workstation, to the Meet the Mouse forum.

Fifth and finally, a 'Next steps' section was intended to inform participants of possible further routes to gaining more experience of the Internet. These potential routes were

[33] The researcher identified a particular drawback in the way that this activity was approached. Workshop participants were told to click on the drop-down menu, where the CAL Web address was already available. In the way that it was approached at the workshops, the participants accessed the CAL website on the forum page. This was instead of asking participants to enter the Web address themselves, or to access the forum via a search engine, which perhaps would have been a better way of familiarising them with Internet navigation and with the CAL forum. Instead, the adopted approach limited the participants' abilities to look through the Website for themselves.

noted in leaflets contained in Meet the Mouse information packs, which were given to all participants. The intention was for the presenter to go through the packs and to discuss the leaflets contained within them, but limitations of time often meant that this was not possible. In many instances, representatives of local educational establishments attended the workshops in order to recruit potential learners, and they were introduced by the presenter at this stage in the workshops in order to signpost participants to further learning opportunities[34]. Some of the workshops were conspicuous by the absence of representatives, however.

6.2.3 Workshop Audience

In total, 293 individuals participated in the workshops attended by the researcher. They represented a fairly even mix of men and women and were, in the main, of older age. Unfortunately, though TGG did administer a survey to participants about their experiences of the workshops and to gather data about their occupational backgrounds, they did not request information about age. Nevertheless, the researcher's observations and age estimates suggested that the vast majority of workshop participants were at least aged 50 years old. While younger people did attend, they were in the minority. Also, it was observed that those younger people who attended did so, in the main, to assist an older relative or friend, rather than to learn about the Internet for themselves.

6.3 WORKSHOP DATA

This section presents the data gleaned from the Meet the Mouse workshops, including the data from participant observation, interview and forum postings. It is first necessary to provide a description of the demographic profile of the research participants on whom this research is based.

[34] Where representatives of local colleges or libraries were in attendance, the researcher observed a lot of interest among the participants in further opportunities for learning about the Internet or computers. This was evident in the number of people approaching the representative at the end of each workshop for further information about suitable courses.

6.3.1 The Research Participants

In this section, the data that is presented was gleaned from observation of all the workshop participants and from 78 workshop interviews. Due to time constraints surrounding the interviews, the demographic data collected about interviewees was limited to gender, age and previous occupation (or occupation where the interview was with a younger companion). The researcher spoke with 43 women and 35 men. With regards to age, and inclusive of the interviews conducted with younger adults who accompanied older participants, the youngest interviewee was aged 51 years and the oldest interviewee was aged 82 years. Excluding the younger adults, the age range of interviewees was 62 to 82 years. This represented a cohort of individuals born in the twenty year period 1922 to 1942. Asking the workshop interviewees about their previous (or current) occupation revealed that the majority were from professional or semi-professional work backgrounds.

The data relating to the ages of the interviewees reflected the age demographics of the Meet the Mouse audience in general. All of the workshop participants were observed, including the younger adults, so that the researcher could witness the dynamics of younger and older generations working together. These younger adults sometimes, though rarely, offered themselves for interview. In the event, the researcher spoke with four younger adults, all of whom had attended the workshops with their parent or older friend in a companion role.

6.3.2 Workshop Observation

As part of the researcher's observation of the workshops, the seating arrangements and the names of each participant at each computer workstation were noted. In many instances, participants sharing computer workstations had the same surname. Informal talk with the participants revealed that all of these cases were of family members participating together at the workshops. Most often, participants who attended together were husband and wife, both either exploring the Internet for the first time together or

seeking assistance with tasks they had already performed on-line. They also tended to possess equal (limited) levels of skills and understanding of the Internet. There were also cases of parent-child relationships. In these instances, the parent was always the lesser skilled, and the child had attended the workshop to provide the parent with moral support. Friends also attended the workshops together. Other participants attended alone.

Observation of the workshop activities provided a lot of interesting information that was later drawn on during the workshop interviews. The 'drag and drop' mouse exercises used at the beginning of each workshop were intended to familiarise workshop attendees with the functions of the mouse. Observation of the participants during the mouse manipulation exercises, some of whom were using it for the very first time, revealed the diversity of skills among the audience. Some of the participants seemed particularly used to using the mouse. Informal talk with some of these participants revealed that they had used the Internet before, and were attending the workshops in order to build upon their existing skills. Observation also revealed that many of the participants had little or no experience of using the mouse. Many had difficulties manipulating the mouse, and some required hands-on assistance from the support staff. In this respect, observation was particularly useful, as the interviewees did not volunteer information about the problems they had with the mouse during the interview encounters.

The search engine activity was useful for observational purposes because it entailed for many of the participants their first foray onto the Internet. At this point in the workshops, many of the participants took notes as the presenter spoke and demonstrated how to search Yahoo! for specific information. This particular demonstration was always watched quite avidly by the research participants. Informal talk with them revealed that many had attended the workshops specifically to learn about using search engines. Some of these participants had newly acquired an Internet connection and hoped to use search engines.

The next stage in the search engine activity involved the participants searching the Internet for information about something of their own choosing. One participant had

never used the Internet prior to the workshop, but she conducted a search for information regarding an interest of hers, dogs. This woman was highly satisfied with the Website she found, and she mentioned that she had been unaware that the Internet contained such information. Lack of familiarity with the conventions of Internet use was apparent in the search engine, email and the discussion forum activities. Participants who had not previously used the Internet were unfamiliar with the practice of not using spaces between words when entering Web and email addresses and passwords, and were initially unaware of the function of the 'Shift' key on the keyboard. This caused confusion when participants had to enter the '@' symbol when compiling emails. Also, whereas some participants were quick to compose and send their emails and forum postings, others were slower and had to ask for assistance. Differences in typing skills were also evident. None of the workshop participants were particularly fast typists, but it was evident that some had very little or no experience of typing.

6.3.3 Workshop Interviews

With the exception of the four younger participants, all of the workshop participants who volunteered themselves for interview were retired and had gained no previous exposure to the Internet in educational and workplace settings. Those older people who attended the workshops represented a mix of Internet adopters and non-adopters, and those who had discontinued their adoption. Because the workshop interviews were brief, the quotations are not lengthy. However, they revealed a number of issues relevant to older people's adoption of the Internet.

Many of the participants had their first experience of computers or the Internet at the workshop. 62-year old housewife, Mary, said that *"Before today I had never touched a computer in my life"*. Mair, a 62-year old retired mobile hairdresser and school help also said *"I have never used a computer in my life. It was my New Year's resolution to do something"*. Others had recently acquired a computer and wanted to explore what they could do with it, like 67-year retired architect Peter, who had been given a computer by his sister and said that he was *"hooked and I want to learn more about it"*. He had

recently gone on-line at home, and had encouraged his wife to attend the workshop too, *"to get her into computers and the Internet"*. Others were using the Internet for the first time at the workshop. William, a 72-year old retired pilot who had recently acquired a used computer from his daughter, remarked *"I don't particularly want to use it, but I want to learn more about computers"*. This gentleman's wife, a 70-year old retired secretary, had recently started using the computer. She said *"I'm interested in writing letters on the computer, not the Internet"*.

Among those without household connections, financial cost was an important consideration. An 81-year old retired farmer, Gethin, who had handed over his farm to his son, said that he had used the Internet at the library once but had not connected at home because *"I want advice on the cost of using the Internet. I have visions of astronomic telephone bills."* The cost of broadband was also referred to. A 70-year old retired bus driver called Colin had a dial-up connection but felt that having broadband would be too expensive: "[If broadband was in the area] *I don't know* [if I would have it]. *It's the cost of these things."* The cost of connection also led to discontinuance of Internet connections. Peter, a 71-year old retired engineer, previously had a household Internet connection, but had relinquished this ownership because it was *"too expensive"* and provided *"no worth"* to himself and his family. For others, the cost of connection was less important, and their lack of interest was the main reason why they have not adopted the Internet. 68-year old retired hospital worker John said *"The cost wouldn't be important if I was going to use the Internet, I don't think it's worthwhile and I'm not interested* [in the Internet]."

The workshop interviews provided evidence of how some people within an Internet-connected household may not use this access. 64-year old retired shop worker Mannon said *"I'm never on* [my household connection], *but my husband is on it a lot"*. Others may not use their Internet connection on a frequent basis, like 66-year retired salesman David. *"I'm an irregular user* [of my household connection] *because I'm not sure of it."* Some had gained experience of computers or the Internet before attending the workshop. Charles, a 69-year old retired teacher with a home computer but no Internet connection

claimed to be *"25 percent computer whiz kid"*. 70-year old retired nurse Patricia had learned a lot about email before attending the workshop, having connected to the Internet at home two months previously. She said, *"When I first got email I got very excited, it was wonderful!"*

Internet adopters and non-adopters expressed their desire to 'keep up' with technology and with younger generations. 66-year old retired office worker Helen had recently had an Internet connection installed at home. She said *"I wanted to get into the twenty-first century"*, while 72-year old life-long housewife and grandmother of five Joyce, who was considering a household connection having used the Internet at her daughter's home, said *"I want to try to keep up with the grandchildren"*. A 64-year old retired businessman called Iwan was considering buying a used computer but hadn't thought about connecting to the Internet. He referred to the pace of technological change, and how he felt that despite his age he should learn about the Internet. *"I hoped I would be able to get through my* [life]*time without being Internet-educated, but it's come so fast I had to."* 66-year old retired caterer Helen, who was not connected to the Internet and who did not have a home computer, expressed her feelings of being excluded from society. *"I am feeling left out of society because so much stuff these days is on the Internet... it's a bit exclusive."*

Some of the participants had been exposed to the Internet by their family members. Teifion, a 69-year old retired accountant, said that *"I don't use* [my household connection], *but my son does when he is at home and I watch him."* 71-year old retired nurse Ann also said that *"I never use* [my household connection] *because I just don't understand it. My sons use it a lot though to try to show me what to do."* Retired office worker Helen, age 66, explained that she and her husband had attended the workshop in order to learn how to use their Internet connection so that they could help their young grandchildren go on-line at their home. *"The grandchildren want to know what to do with* [the Internet] *and* [my husband and I] *don't know."* However, others had not responded to the persuasive efforts of their family members or friends. An example is William, a 72-year old retired pilot, who referred to his three daughters, who had been

encouraging him to go on-line. One of his daughters had given him a computer but he admitted that, at the time, it was *"just an ornament at the moment"*.

Some Internet adopters saw the sharing of a connection as imposing constraints on their own Internet use. 64-year old retired teacher, Ivy, said *"I don't use* [my household connection] *because my husband is on it all the time, so I don't get the chance"*. On the other hand, for others the joint use of the Internet was perceived entirely positively. Anne, a 69-year old retired teacher, enjoyed using her household Internet connection alongside her husband. She said *"My husband is 80 plus. We* [use the Internet] *together and we enjoy it."*

Many of the workshop interviewees referred to their age to explain why they had not adopted the Internet, as did 66-year old retired caterer and non-Internet adopter, Helen. *"I'm very frightened of the Internet. I'm of the age that I find it very hard to learn about computers."* Referring to himself and his 64-year old wife, who were considering going online at home, 64-year old retired businessman Iwan remarked, *"Computers are coming in so fast, but we're the wrong age to have been involved in the Internet and computers. We're not even used to switching them on!"*

Four interviews were conducted with the younger companions of the older workshop participants. One of these was Dafydd, age 59, who had successfully persuaded his 82-year old mother Nia, a retired schoolteacher, to go on-line at home and to attend the workshop. Nia had initially not made use of her Internet connection, but her son, daughter and grandchildren had persuaded her to. *"I'm using* [the Internet] *now, after a little gentle persuasion from my family, but I don't know what all the buttons are for."* Since going on-line, Nia had used email to keep in touch with her son in America, and she wanted to learn more about email. *"My son lives in America, so when I master* [email] *I can keep in touch with him."* Nia had been accompanied to the workshop by Dafydd. He said "[My mother] *watches my children using* [the Internet] *and sometimes shows an interest, so I gave her our old computer. I told her to come* [to the workshop] *today"*. Nia had responded to the persuasive efforts of her son, daughter and

grandchildren and said *"I will use* [the Internet] *more when I get the hang of it. My son will have to sit me down and show me all about it"*. Indeed, she and her son signed up for a further Internet beginners' class at the local college while at the workshop.

52-year old homemaker, Sally, had attended with her retired 75-year old mother, Glenda. Sally had been connected to the Internet at home for a number of months, after deciding the Internet would help her young daughters with their homework. She had encouraged her mother to attend the workshop. Glenda said *"I've always felt I'm the wrong age to be involved in computers"*, but she indicated the influence of her daughter when she said *"my daughter has encouraged me to learn more, she has inspired my interest in the Internet"*.

55-year old Jim attended a workshop with his 65-year old friend, Donald, who had recently retired from his painting-and-decorating job. Donald had never used the Internet before retiring put had gone on-line at home since retirement *"because my friend* [Jim] *has got the Internet and he tells me all about it. I thought I'd like to give it a go"*. He spoke of his earlier feelings of being 'excluded' by virtue of not having had an Internet connection. He said *"It's coming to it that it will be socially unacceptable not to be on email"*. Jim had demonstrated to Donald some of the basics of Internet use before the workshops. Jim had a lot of praise for the workshops. "[The workshop is] *a great opportunity for people like Donald to get acquainted with the Internet, with people in similar situations."*

However, persuasion by significant others was not always effective. 51-year old secretary Helen attended a workshop with her 71-year old mother, Elsie, and she explained why she had gone on-line at home a couple of years earlier *"I don't want all of the palaver of driving to the Post office, getting the stamp. Email eliminates all of that."* Her mother responded *"I'd use email very little, I think. I'd rather use the telephone"*. It seemed that Helen's attempts at persuasion had been quite unsuccessful. Elsie said *"I want to keep my life as easy as I can now"*.

6.3.4 Workshop Postings

The data gleaned from the Meet the Mouse discussion forum provided evidence of how the workshops had helped many of those participants who had initially feared going on-line. 64-year old retired businessman Iwan was considering a home computer but had not given thought to an Internet connection. He admitted that the workshop had addressed some of his initial concerns about being unable to use the Internet. *"For someone with no knowledge of the Internet I think* [the workshop] *has made the idea of using it less daunting."* 62-year old housewife Mary had never used a computer before attending the workshop. She said *"I didn't feel that I would break anything, which has been a fear of mine."*

69-year old retired accountant Teifion spoke of how the workshop had given him the enthusiasm to use his household connection. *"I was afraid before I came, but now my enthusiasm is over-flowing."* 65-year old Mary, a retired nurse, did not use her home Internet connection frequently. She was keen to use the Internet outside the home with her friend, but had previously felt that she lacked the skills to do so. She said *"I was terrified of things like cyber cafes, but I don't think I am now."* The workshops were successful in helping some of the participants to appreciate how the Internet can assist them in performing established activities. 69-year old retired teacher Charles said *"I have used computers for letter writing for years but this is the first time I have really known how to use it for email and research. I am researching the family, so this is useful."* Workshop participants were keen to praise the supportive learning environment provided at the workshop, and indicated that the workshops provided a suitable early experience of the Internet. 62-year old housewife Mary had never used a computer before, and she said *"The instructors didn't look at us like* [we're] *stupid."* The workshops also gave confidence to those with existing household connections, like 70-year old retired bus driver Colin, who said *"Snippets have come up that can help me to do things at home* [on the Internet] *better. I feel I'm on the way now."* Similarly, 69-year old accountant Teifion, whose home Internet connection was only used by his sons when they visited, said *"I can do more than just lift the lid and switch on. I will practice at*

home now." Even those without household connections had been inspired to use the Internet, like 60-year old retired factory foreman Owen, who was considering a connection after acquiring a computer from his son. He said "[The workshop] *has set me up to learn more, and I feel very confident now."* 72-year old housewife Joyce had used the Internet once at her daughter's, but said that the workshop had inspired her to get connected at home. She said *"I can't wait to get on-line."*

6.4 FOLLOW-UP DATA

This section presents the data obtained from the follow-up interviewees.

6.4.1 The Follow-up Participants

Seventeen follow-up interviews were conducted, two of which provided very little data to work with[35]. Individual vignettes were developed on each of the remaining fifteen interviewees, and are presented in the following sections. The fifteen vignettes illustrate a variety of adoption behaviours and attitudes among a cohort of older people who had little or no previous exposure to the Internet. The follow-up interviewees were aged 62 to 82 years old, representing a cohort of individuals born in the twenty year including and between the years 1922 and 1942. While they all classified themselves as being retired, ten of the interviewees remained employed in some capacity having undertaken self-employment or part-time work. Two of these interviewees had started using the Internet for their work since undertaking part-time employment after the workshops. These two participants are included in this study because their narrative included interesting information about their exposure to the Internet and their subsequent (non)adoption.

6.4.2 Lorraine, 67 years old

[35] These data were not discarded. One of the interviewees (Judith) is mentioned in Hayden's vignette, and the other (Maureen) is referred to in the next chapter, in which the results and their implications are discussed.

Lorraine lives with her husband in south Wales. She was 67 years old at the time of the follow-up interview. She is a semi-retired company secretary. Since retiring, Lorraine has returned to work for two days a week at the same company she worked at before retirement. She has a school diploma, which she describes as *"probably equivalent to A-levels"*. Following school, Lorraine attended secretarial college. She has since completed a secretarial course. She has also been involved in voluntary charity work. Lorraine has a grown-up daughter who lives in a city in England. The follow-up interview with Lorraine took place in her place of work.

At the time of the workshop, Lorraine had a home computer and a word processor. She had relinquished her household Internet connection, feeling that the Internet was surplus to her needs. *"I was not using it enough to warrant the cost per month. The family was getting no worth from it. I found that using the computer as a means of typing was sufficient for my needs. I can use the computer for my needs without the Internet facilities.* [Also], *I can find enough information from books and communication through face-to-face interaction for my needs."* Notably, the decision to connect to the Internet was made by Lorraine's husband, and Lorraine had little input on the decision.

Lorraine became aware of the workshops through a leaflet posted to her workplace. She attended the workshop alone. Due to the high volume of participants, Lorraine shared a computer workstation with an elderly man. They took it in turns to perform the activities. Lorraine referred to this in the follow-up interview. She said: *"The gentleman with me at the workshop was elderly as well* [as me], *and he couldn't do what I could do because I can type. I thought 'If he can give it a go, then I can'"*. At the workshop, Lorraine was observed having initial problems using the mouse, but with practice, Lorraine overcame this problem. Observation also showed that Lorraine found it difficult to shed some of the word processing skills she had acquired over the years. Lorraine referred to this after the workshop, saying *"I was unsure of not putting in capitals and not putting spaces."*

Despite having to wait while her workshop partner performed the activities, and having initial problems with the mouse and the entering of Web and email addresses, Lorraine praised the workshops in her posting to the Meet the Mouse forum, and indicated her intention to pursue an Internet-related course: *"Many thanks for your help. I am going to attend further classes so that I can master this."* Lorraine wanted to return for another workshop that was being held at the same venue later in the week, but could not due to other commitments.

Lorraine referred to the fact that she had not seen a Webpage before attending the workshop. Having only attended one workshop, Lorraine was concerned that she would be unable to use the WWW to locate information: *"I don't know if I would remember* [how to locate a Webpage]. *I would have to do it quite a few times before I would remember."* Asked about her Internet skills Lorraine said: *"I'm taking a while to get on with it, but I'll get there...I know I can master the typewriter for the forms I do* [at work], *and I'm quite confident at that. I think it's a pity I haven't got the confidence on the Internet... I want to try, but at the moment this doesn't come very easily to me".* Lorraine perceived a gap between younger and older generations in the way that they approach technology: *"The young girls* [in work] *cannot use the manual typewriter...I believe there are differences in attitudes towards the Internet between younger and older generations... I was taught to spell correctly and* [I] *don't need to use a 'spell check'!"*

At the time of the follow-up interview, Lorraine was attending a six-week computer course. Lorraine's experience of the Internet at the workshop, and possibly the computer course she later attended, appeared to have opened her up to the potential of the Internet. She had recently suggested to her husband that they could use the Internet to search for suitable hotels for their approaching holiday. However, she said *"I haven't got that far yet"* and said that it would be her husband who would do the on-line searching. Also, despite experiencing difficulties entering email addresses during the workshop, Lorraine was open to the idea of email for contacting her daughter, who lives away from home: *"If or when I master it I could send emails to my daughter."* Whereas Lorraine's attitude towards the use of email for contacting geographically distant family was somewhat

positive, she was more sceptical of email as a means of communication in the workplace. *"I am not interested in email letters,* [because] *they cannot be signed properly."*

Lorraine also believed that younger people are better equipped to deal with the Internet, especially the youngest generations. *"This is a trial. I don't know if I'm too old for all of this... I'm very frightened of* [the Internet]. *I'm of the age that I find it quite hard to learn about computers... It's not like learning like youngsters do in school... There's no need for youngsters to go* [to Internet-related courses] *because they can have courses in work, and by the time they leave school or college they have all had courses."* In another way, age was an important motivator for Lorraine's pursuit of greater Internet experience. Keeping apace with younger generations was important to Lorraine. *"I don't want to let* [age] *beat me. I want to try to do what the youngsters do. If they can do it, I can do it. When I started I thought 'I can't do this, forget it, I'm too old to learn this'. Then I thought 'No, I should give it a go'."*

Lorraine could call upon younger members of her family to locate on-line information for her. *"If I want information on buying a new washing machine for example, I ask my granddaughter to look it up for me on her laptop."* She could also gain proxy access to the Internet at her daughter's home, but preferred her daughter to locate on-line information for her. *"I can use* [the Internet] *at my daughter's home if needed, but I mainly ask her to do it for me."* Younger family members had also tried to persuade Lorraine to re-connect to the Internet at home: *"Family members, mainly grandchildren, have tried to influence me in going back on the Internet, but I have still not decided to do so yet... I am considering it again, but not with much enthusiasm."* It was the cost of Internet connection that deterred Lorraine from re-connecting to the Internet, despite her family's efforts to persuade her otherwise. Lorraine was not interested in gaining access in the library, though. She said *"I probably won't go to the library to use the Internet. It's a little inconvenient for me."*

6.4.3 Brian, 79 years old

Brian lives with his wife in south Wales. He was 79 years old at the time of the follow-up interview. He is a retired accountant and company secretary. He has a degree in accountancy and holds other accountancy qualifications. Brian has a grown-up son who lives locally. Brian was involved in charity work, but had to relinquish this role when his wife became ill. His wife was ill at the time of the follow-up interview, which took place in Brian's home.

Brian learned of the workshops via his son, who gave him a photocopy of the Meet the Mouse leaflet. Brian's son encouraged him to attend, because *"He wants me to gain an interest in computers"*. Brian himself admitted that he *"wants to get into the world of computers because they are entirely new to me"*. He said: *"I wanted to find out what it was all about, not having explored that avenue before."* It was evident that Brian wanted to learn about computers, not the Internet: *"I attended the class out of curiosity, to find out what the basics were all about having never come across computers during my employment."*

At the time of the workshop, Brain had just been given an old computer by his son. Brian attended the workshop alone. Although he said *"It can be confusing first time* [using the Internet]*"*, he enjoyed the workshop: *"I thought it was going to be a class but it's more individual, which is very beneficial."* Observation of the workshop revealed Brian's lack of experience of the Internet and of typing. He struggled to manipulate the mouse, and he had problems locating the keys on the keyboard. He admitted himself that he found himself *"groping for the keys"*, and he described his Internet skills as *"very basic"*.

At the end of the workshop, Brian stated his intention to purchase a home computer. He was not interested in getting connected to the Internet. Brian was sufficiently interested in what he had learned at the workshop to enrol on a computer course at a local library, and had gained a certificate in Information Technology by the time of the follow-up. However, he said *"I won't go any further now... My wife hasn't been too well lately, so I*

have been taken up by a bit of everything." He also had *"no intention, no plans"* to purchase a new computer, as he had intended. His decision not to pursue his fledgling interest in computers at home was impacted by a number of issues, including his age, his preoccupation with other interests, and his concerns about addiction. *"I did not possess a computer then* [at the time of Meet the Mouse], *nor have I bought one since. If* [I was] *younger I may have made a different decision. However, nearing my 80s, my main interest in leisure time is in music... I think you slow down as you get a bit older, but I'm quite active otherwise, physically and mentally. I've been retired eighteen years and I keep on the go, I don't sit down all day...It's a bit late* [for the Internet] *now, I think. Time is limited... I want to allocate my time to my best pleasure. I have heard it said that one can become obsessed with computer viewing. I do not want to go down that road at my age."* His decision was not one influenced by affordability issues: *"Affordability is not a problem, but I would rather spend* [my money] *on other things."*

Brian emphasised that he did not experience computers during his working life: *"I'm not up with computers at all...* [Computers] *weren't in* [when I was working], *it was all books then... I'm an old pen and ink chap."* He also exhibited a preference for traditional methods of information retrieval: *"It is my preference to look up a book rather than the screen. It's age related, I think...If I want to look for something I would rather look it up in an encyclopaedia than a computer. I prefer the written word to having it on the screen."* Brian did perceive the benefits of going on-line, but reinforced his belief that he had 'missed out' on the Internet because of his age: *"I dare say that the Internet has advantages and disadvantages... On balance, I would think that the advantages come out on top. However, due to age and other interests* [the Internet] *is another dimension which has come about too late for me."*

Brian's decision to avoid the purchase of home computer equipment and to not use the Internet was made despite the persuasive efforts of younger family members. *"I have eight grandchildren and they are all on the Internet and all* [of them] *want to send me emails."* Brian often requested his son to send emails for him, and to locate information on-line: *"If I am unable to trace any point of particular interest to me through books*

[our son] *is soon able to deal with the enquiry... Sometimes I send an ordinary airmail to my pal and he calls it 'snail mail' as compared to email.* [My son] *has done emails for me to my friend in America. I have had to tape-correspond to America for nearly fifty years. Sometimes he sends an email, perhaps an urgent message, on my behalf... I can always ask my son for help. If I am looking for hi-fi equipment he will go through the Internet for me and find prices."* However, Brian has not used the Internet for himself at his son's house, nor had he used the Internet at any other venues. Brian was *"just not interested"* in gaining free access to the Internet in libraries, although he was aware of this provision. Asked about the future, Brian responded *"I can't see me advancing on any great scale."*

6.4.4 Marie, 70 years old

Marie lives alone in west Wales. She was 70 at the time of the follow-up interview. She has held various jobs, mainly as a cashier. She is retired, but works voluntarily in the local charity shop. She has no qualifications and had not engaged with education since leaving school, until recently enrolling on a 10-lesson IT course at a local college. Marie plays bowls for the local bowling club. She has previously done keep-fit. Marie has two grown-up sons who live locally but with whom she has little or no contact. The follow-up interview took place in Marie's home.

At the time of the workshop, Marie was not connected to the Internet at home. She did not have a home computer, though she stated her intention to *"get a second-hand one in due course"*, and expected to pay *"a couple of hundred pounds at the most"*. At the time of the follow-up interview, Marie had not purchased a computer but was receiving advice about used computers from the computer tutor at her local library. Marie had enrolled on a once-weekly Age Concern-funded computer course at the library. She had enrolled at Meet the Mouse, with an Age Concern representative who visited the workshops.

Marie attended the workshop alone. At the time of the workshops, Marie was also attending computer classes at the local college, but she found the course *"disjointed"* because the classes were once weekly and lasted only one hour. Marie also missed some lessons after suffering a fall. She attended the workshop because, in Marie's words, *"I wanted to brush up on what I've learned"* on the college course. She was also *"bored of other hobbies, like knitting, which keeps you indoors"*. Marie felt that *"The workshop gives an incentive* [to learn about the Internet] *to people my age. I'd inspire other people my age to come along."* One aspect of the workshop that Marie did not like was that, due to the number of participants, she had to share a computer workstation: *"I was impatient because we both wanted to use it. I felt I would have learned more if I had a computer to myself."* Nevertheless, her posting to the Meet the Mouse forum - *"Leaving to go on the Internet"* - indicated that the workshop had inspired an interest in the Internet.

Marie exhibited some pride in that she had been learning about computers and the Internet: *"I like to spread the word that I'm having lessons. It's a good achievement, and a good point because I'm older. It gives me independence."* She was unsure of how to gain household access to the Internet. Marie had an Age Concern 'Grasp the NETtle' disc with her when she asked *"Do I need to insert this* [into the computer] *every time* [I want to access the Internet]*?"* Marie also referred to her age-related retina problems, which are causing her to lose the sight in her left eye. Although she suggested that *"Age doesn't hold me back"*, she did admit that her eyesight had caused some problems when using computers and the Internet.

Having not had any workplace experience of computers or the Internet, Marie remarked that "[The Internet] *is something I never thought I'd entertain, you see"*. Her interest in researching her family tree prompted her original interest in computers and her attendance at the college course, but she found this research too difficult and her interest waned. Marie had little understanding of what the Internet can potentially offer. Asked about email, Marie felt that having no family members living away from the area precluded her interest. But she was open to the use of email if any relatives were to

move away: *"If I had family living away and they were on the computers I would be* [emailing]. *It would be a lot easier to keep in touch, wouldn't it?"* Marie also exhibited interest in on-line shopping, but said *"I have to be careful sometimes because I'm a shop-a-holic, you see".*

The idea of having a household Internet connection was dismissed by Marie, for concerns about affordability. She was not keen on the idea of having connection costs charged to her telephone bill, and said that she would be willing to pay a maximum of £10 per month for broadband access. Marie referred to her disadvantaged financial position in later life and her earlier years working in a shopping store: *"Years ago the money was smaller, you see. When I worked in Woolworths when I left school it was one pound fifteen for the week. So people think 'When you get old you'll have all this money stacked up', but there's no such thing, you see, because we were lesser paid, you see."*

Marie raised her concerns that communication in chat rooms *"is getting people to live in a fantasy... It's isolating people*". Marie felt that pressures on her time were too great for her to make use of the Internet. *"I should go to the library* [to access the Internet] *but I'm in the shop, I come back home, I have a bit of lunch, then I'm down the bowling green."* Although she had enrolled on a library-based course, Marie suggested that she would prefer to have a home-based computer, and that she would rather pursue independent learning: *"I'm a private person and I don't want to go to these places* [libraries]. *Trial and error at home is a good way of learning."* Marie also suggested that accessing the Internet at her local library would be inconvenient: *"In the evenings I could do more* [to access the Internet] *but the libraries are closed in the evenings...You can't just take off to the library in the evening... I'm a pensioner, I'm seventy... I wouldn't go to a public place* [in the evening], *not on my own, it's not a thing I want to do."*

In reference to her expectations for the future, Marie said that "[The Internet is] *too much for me at the moment...* [But] *I'm not sitting down being bored. You have to adapt yourself to change, you've got to move with the times".* This was why she had enrolled

to learn more about computers at the library. She had no other course lined up, but was interested in free courses *"because I'm not a millionairess"*. However, Marie did admit that the Internet was not a priority in her life: *"As we get older we come away from these things. When you get to a certain age you don't like to look too far into the future."*

6.4.5 Christine, 62 years old

Christine lives with her husband in southeast Wales. She was 62 years old at the time of the follow-up interview. She is a retired primary school teacher, but is currently working from home as a part-time after-school mathematics tutor. She does a lot of the computer-related office work for her husband, who also works from home. She holds a teaching certificate and a degree in Psychology. Christine has no children. She is a member of the local golf club and the Newport Floral Society. She does the grocery shopping for her mother-in-law. Christine has attended the local community centre to pursue various hobby-related courses, including computers, antique furniture, dressmaking, and sewing. At the time of the follow-up interview, Christine was attending the local college, where she was completing the European Computer Driving Licence (ECDL) course. The follow-up interview took place in Christine's home.

Christine's husband had told her about the workshops. He worked at the venue where the workshops were held. Christine attended the workshop with her husband. Because the number of participants was low, they had a computer workstation each. They asked about broadband and asked for clarification of its professed benefit of greater speed. Observation of Christine and her husband indicated that they had previous experience of computers and the Internet. They were both able to type well and were aware of some of the conventions of Internet use, such as entering email addresses. In a short coffee break, Christine and her husband mentioned that they had quite extensive experience of computers and that they had a dial-up Internet connection at home installed four months previously. Christine had hoped the workshop would make her a more confident Internet and email user.

Christine praised the one-to-one approach she received at the workshop. She said in her forum posting: *"Very helpful. Pitched to individual needs. Have learnt a lot and gained confidence, thanks to friendly, helpful people."* Christine reaffirmed her view in later discussion at the follow-up interview. *"I attended* [the workshop] *for confidence* [building]. *I did learn quite a bit to give me confidence to go on the Internet... When I went, there were so few* [participants] *and so many staff that we had individual attention. You can't beat that."*

Christine's husband had suggested going on-line at home so that he could access email as part of his role on the committee board at the local rugby club. Christine and her husband were to have a broadband connection fitted shortly after the workshop, and this also motivated them to attend. *"We knew we were going onto broadband and, yeah,* [my husband and I attended the workshop] *just to learn about the Internet all together, you know."* By the time of the follow-up interview, the broadband connection had been installed. Christine had adopted broadband *"as soon as it came into the village"*. She paid £29.99 monthly for broadband Internet access. She was satisfied with the cost and preferred paying a set price for broadband rather than a variable cost for dial-up, and said *"When it cost money I didn't use it, because it was dial-up"*. Due to her husband's heavy use of the home computer, he and Christine were considering purchasing a second computer. They planned to connect this computer to broadband, too. Christine and her husband had spoken to friends and acquaintances before deciding on an Internet Service Provider (ISP) when they had decided to change to broadband. They had also spoken to experts in the field. *"We did ask around when we declared our interest in broadband before it was* [in the area]. *We asked around, people who use it a lot, and we asked computer suppliers."* Once they were connected to broadband, Christine and her husband sat down to use it together. "[My husband] *had broadband at the rugby club* [where he works], *so he showed me the broadband bit."*

Christine's husband would often search for on-line information for her. *"My husband will sit down and play around* [with the Internet] *for some time, just for the fun of it... He enjoys it, and he finds things and prints them out for me."* Christine had a long

history of computer use, having started using computers as a schoolteacher *"when they were first introduced in schools, probably the 1980s"*. She described her computer skills as *"above basics"*. However, Christine was less sure of how the Internet fit into her to everyday life. She said: *"I can use* [the Internet] *but I just don't really... It's not that it's not interesting. I think it's probably my age. There are so many other things that I do, that* [the Internet] *isn't my main form of entertainment. I would rather make a dress, or make a cake, or sit down. Because I'm that much older I have other interests first, and* [the Internet] *takes a back seat, really."* Christine stressed the fact that she had not encountered the Internet earlier in life. *"I wasn't brought up with it. It's something you add on now. If I was your* [the researcher's] *age I would be used to it I suppose. I just never think of going on it."*

Christine said that she used the Internet *"once or twice a week, but not for long. I'm not on there for hours at a time"*. Although she said, *"I don't use the Internet much at all. I use it to check the weather and things like that, when I'm going out for golf or something. But I don't surf the Internet much at all"*, further discussion with Christine indicated that she had quite successfully integrated the Internet into her daily routine. *"First thing when I get up in the morning I put the computer on, boil the kettle, go down* [to the home office] *and think about finding out what's been going on, and it goes on from there."* Apart from catching up with current affairs on-line, Christine also used the Internet for seeking information and occasionally, for e-shopping. *"I check prices and things when I want something. For household goods, I will go and check the prices... I get Tesco Direct about once every six weeks when I need the bulky and heavy stuff."* Christine had also bought a cooker on-line, and regularly checks the bank account that she shares with her husband on-line. *"We have a separate account which is purely Internet."*

Christine also used email regularly. Her family do not live in the area, so she used email to keep in touch with relatives. She perceived email as having greater practical value than the telephone as a means of communication. "[Email] *is great for people who have friends abroad, and nephews and nieces on gap years. It's a lot quicker than*

telephoning. You can email someone and send it, but if you're on the phone you're 'How are you? How are the children?', you know? You can be an hour, whereas emailing doesn't last long from start to finish. It's sort of more casual in a way, certainly more [casual] *than writing a letter. You can just send a couple of lines and not have to spend an hour talking about things, you know?"* The ability to send and receive digital photographs was also recognised as a benefit of email technology. *"I have used* [email] *to put my pictures on, and then send them through email."* Despite having quite a repertoire of purposes for using the Internet, Christine only accessed the Internet at home. The community centre where she had undertaken a number of courses did not have Internet access. *"It's a community centre, and because it's such a small room they have very few computers...If I went to one of the big tertiary colleges they would have more computers. But I prefer the community centre because they have smaller classes."*

Asked about the future during the workshop interview, Christine had said that she was keen to use the Internet for emailing, surfing the Web, and on-line banking. In the time between the workshop and the follow-up interview, Christine had fulfilled her own expectations. Asked the same question during the follow-up interview, Christine's plans for the future were impressive. *"I hope to have finished ECDL by Christmas. I think I'll go on to do more courses...I want to continue, go into greater depth, about what I'm doing now on the Internet."*

6.4.6 Vivian, 68 years old

Vivian lives with his wife in the south Wales valleys. He was 68 years old at the time of the follow-up interview. He is a retired comprehensive school teacher who originally trained in carpentry. Before becoming a teacher, Vivian was a professional fishing rod maker. He still makes fishing rods now, but as a hobby. Until recently, Vivian was the Company Director of a fishing materials and tackle company, but has sold his shares to his business partner. Vivian has two A-levels and has done a two-year teacher training course, specialising in heavy craft for one year. He is a member of the local fishing club. He enjoys gardening, Do-It-Yourself, and walking. At the time of the follow-up

interview, Vivian was recovering from a serious heart operation. Vivian has a grown-up son, who lives locally, and a daughter, who lives further away. The follow-up interview took place at a local hotel.

Vivian was accompanied at the workshop by his son. They shared a computer workstation together. Vivian's son did not participate in any of the workshop activities himself, other than to demonstrate things to his father. An example of this was when Vivian's son showed him how to operate a drop-down menu. Vivian's lack of experience with the Internet was evident in other ways, also, such as when navigating the Internet. Vivian was unsure of how to navigate backwards through Webpages already viewed. His son showed him how to use the 'Back' button, and explained its purpose.

The year before the workshop, Vivian had won a computer in a competition. *"I won it, one of those things that drops out of a magazine: 'Ring us up because you have won one of... ', and it was a computer"*. He had not used computers for ten years, since he was a schoolteacher. *"There were a lot of good programs* [available to me at work before I retired]... *I used those programs and I never had any problems... But there was a ten-year gap between that and winning my computer."* He had not connected his new computer to the Internet, and he had very little time to use it because he had been seriously ill.

Vivian was motivated to attend the workshop because he felt that his existing computer skills were outdated. *"Not knowing about modern-day computers will leave me completely stranded because of my lack of knowledge."* He was satisfied that the workshop did not go as he had originally expected. *"I expected it all to be difficult and confusing"*. In the event, Vivian left the workshop feeling *"more familiar with the computer"*, and *"not stuck now, as simple things were explained to me"*. His future expectations were to search the Internet for a personal hobby of his, and to search the Internet for a holiday. His posting to the Meet the Mouse forum read: *"Excellent course, great to find a course for idiots. Well worth the effort."*

On meeting Vivian for the follow-up interview, it was evident that he had made efforts to familiarise himself with the Internet. His home computer now had a dial-up Internet connection. Vivian acknowledged that the workshop had prompted him to go on-line. *"That* [workshop] *gave me the confidence to start using the Internet at home."* He paid around £13 per month for dial-up access, which he suggested was *"worthwhile for the moment"*. Despite initial uncertainty, Vivian suggested that were he to use the Internet more frequently he would perhaps consider a broadband connection. *"I'm not quite sure what* [broadband] *will offer. You don't have to use your telephone line with broadband, do you? That will probably be its biggest asset for me. It's fast as well. I think if I started to use the* [Internet] *more, yes* [I would be interested in broadband]."

Vivian admitted that his progress since the workshop had been *"slow, but I'll get there"*. His ability to access the Internet had been impeded by house renovation work. Vivian would *"call up Websites, usually fishing...I think that's fine for me. If I use it a bit more it will probably be along similar lines* [fishing]." However, Vivian made plans to access the Internet more frequently in the future. *"I'm making a mahogany computer desk-sideboard to fit the dining room, so once all this* [renovation work] *is finished I'll be back* [to using the Internet more frequently]". He was motivated to use the Internet more in order to research his family history. *"I will be using* [the Internet] *more soon. I have the family tree programs, so I'll do a bit of chasing up on that on the Internet. I have got my father's family tree back to 1751, so I'll probably chase up my mother's side."* Vivian felt that he would then progress to using the Internet for other purposes. *"I'm quite sure that* [after researching the family history] *I'll find other things to fiddle about with* [on the Internet]."

Vivian felt that his Internet skills were *"Very low, very basic"*, and he attributed this to that fact that *"I am just getting on to* [the Internet]... *The problem that puts me off is* [my lack of] *familiarity at the moment. I've got to think about everything I do with it... As I get more familiar it will get better."* Vivian wanted to use the Internet more, but emphasised how lack of familiarity with the Internet hampered this goal. *"I'm getting*

round to the idea of unloading a lot of my fishing rods... I could [use the Internet to sell them], *but I would prefer specialised fishing magazines. I think it would be finding out how to use the Internet to sell stuff that would be the problem."* He referred to perhaps gaining support from Internet-using friends: *"I would have to have a chat with a few friends* [who use the Internet]."

Vivian had used email to contact geographically distant relatives. *"I've sent a couple* [of emails], *to my brother-in-law and my daughter. It got there as well!"* However, Vivian did not rate email as a form of communication, and stated a preference for more traditional ways of communicating with others. "[I'll use email] *very, very little I would think. If we want* [my daughter] *or brother-in-law we usually talk to them* [on the telephone]." However, he also recognised the potential of the Internet, which he had learned from friends and acquaintances. "[The Internet] *could be, well it is, a source of great good, the spreading of knowledge and so forth. I know many people who use the Internet for information. It's excellent."*

Vivian felt that he would not have gone on-line had he not won his computer. *"I use it simply because I won the thing. If I hadn't won it, I would never use it. It's as simple as that."* His lack of familiarity with the Internet was a significant barrier to his Internet use. *"What de-motivates me? When things go wrong* [with the PC or Internet] *and I can't sort them out."* However, he also recognised that *"Sometimes a lack of faith in myself* [can deter me from using the Internet]...*I've got stuck a couple of times, but I've plodded away and it's usually I've made a mistake somewhere, usually in entering something."*

However, his son, who accompanied him to the workshop, is often available to him for problem solving purposes. *"My son is very often over in the house. If I am stuck, I ask him* [to instruct me]. *He gets through everything. He uses it at work, he's a manager. He puts me right."* Vivian recalled a time when he and his son sat down to use the Internet together. *"My son came up the other day and we did quite a lot of combing* [through Internet sites], *looking for a three litre diesel Mercedes, which he eventually bought."* A

family friend is also available to help Vivian. *"There's another friend of mine, a lad I used to teach actually, and if I get stuck he comes over."* Vivian's grandchildren have also been a source of support and guidance: *"What I know* [about the Internet] *is from what I have heard and what I have seen my family do, you know, my grandchildren."* Vivian did not use the Internet access available at his son's or grandchildren's homes, however. He also suggested that he was *"not really interested"* in accessing the Internet in community venues.

Vivian's plans for the future were to find a computer or Internet course suitable for his skills level. He believed that *"If you don't use* [the Internet] *often you're going to get rusty"*. He also hoped to find a course that would fit around his other leisure interests. *"So long as* [the course] *is in the winter, not starting in the summer. I'm out in the summer...Also, I go to a class every Thursday night, cabinet work."*

6.4.7 Emlyn, 63 years old

Emlyn lives with his wife in mid Wales. He was 63 years old at the time of the follow-up interview. He is a retired bank manager, but is now the joint-Director of the local Town Trust. Emlyn has O-levels and A-levels, but left university early for paid employment. He is the treasurer of various sports clubs in the local community. Emlyn is also a member of a local golf club and a local agriculture training group. He has a grown-up daughter, who lives in another part of Wales. The follow-up interview took place in a local hotel-restaurant. Joining Emlyn at the interview was his friend Malcolm. (Malcolm is the subject of the next vignette. He attended the Meet the Mouse workshops with Emlyn. They both suggested having the follow-up interview together.)

Emlyn had used computers earlier in his career. He attended computer courses in the 1980s to learn about electronic banking with corporate customers, but learned no more after finishing his job to become a bank manager. As a bank manager, he always had other people available to do computer work, and he described this as having a detrimental impact on his computer skills. *"I would scribble letters out and fax them*

through to [my secretary]... [The fax] *takes away the need* [to use computers]... *I'm not very e-literate. I was up-to-date in about 1985-1986, but for various reasons I got staff to do things* [on the computer for me]."

Emlyn claimed that he attended the workshop out of *"desperation!"*, and he wanted to learn about the Internet and email. He attended with his wife and his friend. Emlyn shared a computer workstation with his wife, because of the high number of participants. Emlyn learned of the workshops when a promotional leaflet was posted to the Town Trust. It was evident that Emlyn had not had much experience of the Internet. He and his wife took notes as the presenter demonstrated some of the Internet activities. They required some hands-on assistance from the support staff, and they remained behind at the end of the workshop to ask about specific issues they have had with their Internet access, including when it is slow to load Websites. Emlyn and his wife were full of praise for the workshop, as their joint posting to the Meet the Mouse forum testified: *"We have had a very interesting afternoon meeting the mouse and have gained a useful insight into the operation of the Internet and the computer."*

At the time of the workshop, Emlyn had a home computer that had been linked to the Internet via a dial-up connection for three months. Broadband was not available locally at the time, but Emlyn said he would pay as much as £12 a month for it should it become available. Emlyn had used his Internet connection only twice, but he expected that *"I'll use it more often when I get the hang of it"*. He considered himself at the time to be *"20 percent skilled"*. Emlyn had only used the Internet once outside the home, at the local library. "[I've accessed the Internet at the library] *once*. [My wife] *uses the library* [to access the Internet], *I'm afraid I don't. We went together."* Emlyn had used the library access to send an email. *"I sent an email from the library the one time I went there, purely because it was ready at hand and someone could show me* [what to do]. *Sure enough, I had to call them over."*

Since the workshop, Emlyn was using the Internet once fortnightly. He was using the Internet with his wife. *"We do bits and pieces together"*. Emlyn had used the Internet

for a number of purposes since the workshop. *"I order from Tesco and eBay, not for buying but for selling things. I've looked at the Inland Revenue and employer's information."* He recognised the potential of Internet use: *"Well,* [the Internet is] *expanding my horizons. There's a lot of things on* [the Internet] *you wouldn't find otherwise."* Emlyn had emailed the researcher to consent to his involvement in the follow-up interviews. However, he was sceptical of the benefits of email as a means of communication. *"I don't use email as a general form of communication. It would be like sending it off into cyberspace".*

Since the workshop, Emlyn had attended a course for Internet beginners. *"I did a couple of sessions after the workshop but it has all faded from my memory now."* At the time of the follow-up interview, Emlyn had been attending an Internet course with the friend he attended the workshop with. The course was organised by the agriculture training group they were involved with. However, he recognised that he needed to gain more experience and knowledge of the Internet. *"I need to be more competent, so I can dive in and dive out in quarter of an hour and I can do something. At the moment I'm too slow."*

Emlyn suggested that some older people lack the capacity to use the Internet successfully. *"Our own inabilities* [hinder our use of the Internet]. *Why are we freaks?! I have total incompetence."* Emlyn perceived the Internet as *"a world of difference".* He described his Internet skills as *"very basic"*, but said *"I'm quite confident that with training and practice I'll be OK".* However, he was not particularly enamoured by the thought of practicing his skills. *"To get more familiar you're going to have to practice or play for hours, aren't you? It comes down to reluctance, I think...* [My wife and I] *talk about* [the Internet] *like it's that enemy next door, 'Oh, we'll do it tomorrow night', which is bad isn't it?"*

Emlyn was not keen on the idea of having a friend to teach him about the Internet. *"I've refused to have a friend coaching me* [on the Internet], *so I don't seem too much of an idiot."* However, he readily admitted to requesting his daughter's assistance. *"My wife uses the Internet and I hear screaming upstairs for something and I have to try to make*

things worse. We phone the daughter, 'Can you do this, do that?'." Emlyn's daughter had long been trying to convince her father to go on-line. *"My daughter said I'm pathetic. I kept on saying 'This year I'm going to do it'* [go on-line]... *Kid pressure means a lot of people have a computer".*

He hoped that he could soon retain a laptop that he had previously purchased for his daughter, and felt that having this hardware might encourage his Internet use. *"My daughter's got a laptop that we bought her two or three Christmas's ago, and she's been given one by the school* [where she works], *and her partner's got a laptop. So they have three laptops, and we're trying to persuade them to let one go, and the one we got for them back. So I'm now looking forward to this three-year old laptop. That could be useful* [for encouraging me to use the Internet], *but I don't know."* In terms of the future, Emlyn had *"wished for a spell of disciplined follow-up* [of the Meet the Mouse workshop]", so had enrolled with his friend for Internet training in a local community centre. He saw his Internet training as crucial for his future role as a Director. *"I want to do it* [learn about the Internet] *and I also need to if I'm going to carry on this role. The last Director did, so I must follow suit."*

6.4.8 Malcolm, 70 years old

Malcolm lives with his daughter in mid Wales. He was 70 years old at the time of the follow-up interview. He is a semi-retired Director of a retail company, and is now the joint-Director of the local Town Trust. Malcolm has O-levels and A-levels and a degree in Electronic Engineering. He is the Chairman of the Pavilion Management Committee. Malcolm is also a member of the local golf club and is an organist at the local Church. He has a grown-up daughter. The follow-up interview was conducted with Emlyn, and took place in a local hotel-restaurant.

Malcolm attended the workshop with his friend, Emlyn (above). Like Emlyn, he had learned of the workshops through a promotional leaflet posted to the Town Trust. He had attended because he *"wanted to get used to using the Internet"* and hoped the

workshop would *"make us e-literate"*. At the time of the workshop, Malcolm had a laptop that was connected to the Internet via a dial-up connection. He shares the laptop with his daughter. Malcolm referred to the laptop as *"an old banger for doing letters on"*. He had used the laptop to access the Internet, but described himself as an *"irregular, very occasional"* Internet user, and had only used the Internet for looking at properties on the housing market.

Malcolm enjoyed the workshop, and shared friendly banter with his friend Emlyn throughout the activities. It was evident at the workshop that Malcolm lacked experience of the Internet. He required a lot of hand-on attention from the support staff. He could use the mouse, but was less sure of Internet navigation and had to ask for help during the search engine activity. He appreciated the introductory nature of the workshop, and posted a positive message on the Meet the Mouse forum. *"Excellent presentation and support. Thank you!"*

Malcolm's typing at the workshop was good. He confirmed later that he used his laptop to type letters but preferred to write letters for himself. *"The chances of losing that pile of information, you can't do it. You just have to put it in hard copy in the beginning, and if you have a hard copy what's the point in putting it on the computer?"* Malcolm also referred to lacking computer skills because he had secretaries to perform office work for him when he was employed. *"I've always been used to passing* [computer work] *over to staff... With the fax* [machine] *you can transfer the information and you can have a hard copy at the other end."*

Malcolm had hoped that the workshop would encourage him to use the Internet more often. The follow-up interview suggested that the workshop had been successful in this regard. "[My daughter and I] *use* [the Internet] *now for bookings, we're getting to that stage now.* [I use the Internet because] *I know the information is there. I know it's there because once you access it you begin to find out where it all is... I have used it for* [information on] *local councils."* He had also used a friend's Internet access to purchase books from Amazon. However, Malcolm's daughter was a more frequent Internet user.

"My daughter uses [the laptop] *more than I do. I'm still frightened of it."* Malcolm appreciated using the Internet alongside his daughter, and he admired her skills. "[My daughter] *can get into anything, like train times across the country and house prices."* Malcolm and his daughter had also used the Internet together to research their family history. *"We have been looking at our family in Ireland in the last month."*

Malcolm saw the speed of acquiring information as a key benefit of the Internet. *"You can definitely get information quicker from* [the Internet]". Malcolm suggested that the Internet can pose a challenge for older people. *"There are frustrations with it. Especially our generation, you just feel you can't put up with it. We feel inadequate... We should be able to do it but our generation can't do it."* Malcolm indicated a preference for off-line rather than on-line information gathering. *"Sometimes it's very irritating because you get all this bumf that you don't really want. To find a subject sometimes, you have to put it in inverted commas, you can put a plus sign, but it is still difficult to pin it down sometimes... It's probably easier going to a reference library."* Malcolm did not use email. Referring to himself and Emlyn he said *"It's a boring old lifestyle we lead, we're not emailing".*

At the time of the follow-up interview Malcolm still had a dial-up connection. Broadband had recently become available in the area, but he felt that he used the Internet too infrequently to warrant having a broadband connection. *"I don't have use for* [broadband] *yet... I would have to see if I would use it first."* Malcolm stressed that he could afford to be connected to the Internet, but recognised that other older people may not have the financial resources available to afford access. *"This is what frightens old people, they don't like their telephone line connected."* He also felt that his *"busy programme"* impeded his abilities to use the Internet more often.

Malcolm had not accessed the Internet anywhere other than in his own home and the home of a friend. He had not used the library to access the Internet, and did not think he would do so in the future. *"I wouldn't go to the library for Internet access. I prefer to do all that at home."* Malcolm had hoped for a follow-up of the workshop. He had enrolled

for a course in the local community centre, which he felt was necessary for his new role as Director. Malcolm also indicated that he would be undertaking home-based tuition to improve his Internet skills, and he hoped that his daughter would assist him in the future.

6.4.9 Bryn, 71 years old

Bryn lives with his wife in south Wales. He was 71 years old at the time of the follow-up interview. He is a retired engineer. Bryn left school early to take care of his younger brothers. He later embarked on part-time education, winning a scholarship to study engineering at a local university. He has also completed a two-year, part-time Welsh language course and a four-year Welsh A-level. He is involved in training youngsters at the local ATC, where he teaches electronics, radio operating and the principles of flight. Bryn is a member of two radio clubs, and he makes walking sticks as a hobby. Bryn has two grown-up children. The follow-up interview took place in Bryn's home.

Bryn attended the workshop alone. He had learned of the workshops through a promotional leaflet in the local library. He attended because he wanted to *"learn the basics of the Internet and email"*. Although he had thirty years experience of computers at work before his retirement, Bryn had never used the Internet. *"I've been using computers for years. I use mine for letter writing and communications. I use it with RF* [radio frequency] *communicators on the telephone line."* He sent this first email at the workshop. He asked a lot of questions about the Internet at the workshop, such as what sort of information is available on-line. He was particularly interested in what the Internet had to offer in terms of assisting his ongoing family history research. He was very satisfied with the assistance and advice he received at the workshop. *"I have used computers for letter writing for years but this is the first time I have really known how to use it for email and research. I am researching the family history, so this is useful."*

At the time of the workshop, Bryn had a home computer but no Internet connection. Bryn had built his computer himself from second-hand parts. "[The computer] *does everything I want it to do, it's practical and it's cheap."* Due to a lack of space in the

house, Bryn kept the computer in the garden shed. *"We have nowhere to put a computer* [in the house] *to be honest. There's no room here."* He wanted a laptop for the house because *"it won't take up too much room"*.

Bryn had made progress between the time of the workshop and the follow-up interview. *"It all started at Meet the Mouse. I had a rough idea of what I was doing on the Internet, and it just progressed from there."* In the absence of a household connection, Bryn was using the Internet at the local library once a week *"if I get the chance"*. He said, *"Most of my Internet use is to find information, either for the family research I've been doing or for programs I use for my amateur radio interests."* Most of Bryn's friends and contacts were not on-line, so he did not use email frequently. *"I still have the* [Meet the Mouse] *email... I don't use it very often. I email two friends a week in the morning. But other than that I just don't have people to email."*

Bryn had used the library access to send an email to the researcher to consent to his involvement in the follow-up interviews. However, he was quite critical of his email response. *"If you noticed, I made a mess of that. I sent your original letter with my answer at the bottom, rather than deleting your message. It's not what I intended to do, that was ignorant. Occasionally I hit the wrong button."* He had also used the library access for purchasing goods on-line. *"I have done some shopping on-line for components for equipment I am trying to build.* [I have not bought] *heck of a lot, I can't afford to."* Although Bryn said he had *"no need"* to access the Internet at any other venues, he did indicate that only having Internet access in the library could be inconvenient. *"A friend of mine was going to send me* [an email] *today so you could see I had done something. But I said then I'd have to go down the library, download it and print it. It's not worth it... If you have got the Internet in the house you can send emails knowing full well that* [a reply is] *going to come back straight away. If you use it like I do, in the local library, then you have to wait a week for an answer. Quite honestly, it's less trouble to phone."*

Bryn experienced problems locating his Yahoo! email at the library. *"Even now I have problems trying to find my* [email] *address on the computer. Down in the library they don't use Yahoo!, they use Google. Then you have to keep swapping over. I get* [to Yahoo!] *eventually, but I don't get there straight away."* Nevertheless, using the Internet in the library had equipped Bryn with the skills to locate information on the Web. *"Once you get used to typing in the correct address, accuracy is everything* [and the Internet] *isn't a problem, you can access almost anything."*

Bryn appeared to have a good understanding of the Internet. He described his Internet skills as *"Quite good, functional. I can do what I need to do... I think, for my age, my skills are quite good"*. Bryn revealed his knowledge of computer viruses and virus protection. He displayed impressive knowledge of computer viruses and the potential means for virus protection. *"If I was on* [the Internet] *at home I would be worried, especially if I was on broadband, because you're on it 24/7. I would be worried about having Worms or* [other computer viruses] *coming through... If your computer is at home you would have to buy a firewall and buy all of the Norton* [packages]." Bryn also relished opportunities for problem-solving when he experienced difficulties using the Internet. *"I really enjoy* [using the Internet], *and if there is a problem* [with the Internet] *I either read it up or go into the information to try and solve it, which I do most of the time."*

Bryn felt that being physically mobile meant that he did not need to the use the Internet for on-line shopping and banking. *"If* [my wife and I] *had difficulty getting out of the house, I'd say yes* [to having a household Internet connection]. *We would get a computer, we'd get Internet access, and we'd get all our groceries delivered. But at the moment it's less trouble to go and buy them* [at the supermarket]... *My bank keeps writing me letters saying 'Why do you keep phoning us to transfer money or pay bills, why don't you do it on the Internet?'... Then again, I can go into* [the town] *and chat to the girl behind the counter and pay the bills. At the moment it really isn't that essential to do it because we're active enough."*

While Bryn recognised that he could benefit from using the Internet, he felt that his age was a barrier to developing greater competence. *"There's a lot of information there* [on the Internet] *if you know where to look, but then you have to find out where to look. The only trouble is, the older you get the thicker you get, and the more difficult the Internet gets! Plus the fact that when you get to my age, you're not as strong as you used to be and everything seems to take twice as long."*

Bryn regretted not having a household Internet connection. *"There is another side to amateur radio which I can't do because I'm simply not on the Internet."* He cited affordability as the main factor deterring him from going on-line at home. *"[T]here's the financial cost, of course. You are looking at a minimum of fifteen pounds a month just for Internet access. For the amount we would use it, it's not worth it... Price is everything."*

Asked about the future, Bryn had made plans to attend Internet courses. *"I have thought about doing some courses. The library is actually advertising courses for people like me, and they will be done on the Internet... apparently they have had to set a room aside for people like me to go down there, do these courses and use the Internet.* [By 'people like me' I mean] *old age pensioners. I don't include people who work for the simple reason that for the biggest part of their time they are in work, so they couldn't attend* [the courses] *anyway, nor would they need to because they probably use the Internet in work.* [By 'people like me' I mean] *someone who's available in the day."*

Bryn's concerns about the cost of connection were enough to deter him from considering future connection to the Internet. *"Age matters cost-wise... I would have to buy a new computer* [if I was to have the Internet installed] *and, as I'm retired, the cost* [deters me]... [The cost of Internet connection is] *annoying because I'm a poverty-stricken old age pensioner. If I could afford it I would have a computer in the corner, or laptop anyway... and I'd have broadband."*

6.4.10 Dennis, 70 years old

Dennis lives with his wife in mid Wales. He was 70 years old at the time of the follow-up interview. He is a retired Director of a plastics company. He holds a diploma in Plastics and a HNC in Organic Chemistry. He is the Secretary of the local University of the Third Age (U3A) and the Chairman of the mid-Wales Confederation of British Industry (CBI). Dennis has two grown-up daughters. The follow-up interview took place in Dennis's home.

At the time of the workshop, Dennis had a home computer and a dial-up Internet connection. He had gained connection three months earlier in order to contact family and friends in America who were already on-line. Dennis had first started using computers in 1985, when he bought one for his home. He had recently given this computer to a local school and purchased a new one. Dennis used the Internet for approximately three hours a month. He had used the Internet to send and receive email with photo attachments, and to book a flight with bmibaby.com. Dennis considered himself *"self-taught"*, and he had not attended any courses prior to Meet the Mouse.

Dennis attended the workshop *"out of curiosity more than anything"*. He had expected to learn more about the Internet and search engines, and was satisfied with the workshop. He said *"it was very interesting"*, and said that he intended to use search engines more frequently post-workshop. Dennis attended the workshop with his wife. They shared a computer workstation and took turns to perform the workshop activities. They particularly enjoyed the search engine activity, and used their time to look at Websites related to their hobbies. Dennis and his wife sent a joint posting to the discussion forum, which read: *"My wife and I have had a fair degree of computer experience and did wonder whether Meet the Mouse might be too elementary. We actually found it to be a most useful morning and would like to thank the course tutors. We would be most interested in any follow-up courses."*

The follow-up interview revealed the progress Dennis had made. He was now using the Internet on an almost daily basis. *"I go on most days to check emails or maybe send*

emails." Dennis used the Internet more than his wife. *"I probably use it more than* [my wife]. *She plays Solitaire on the computer a lot."* Dennis was particularly involved with email. Indeed, the opportunity to use email was the reason why Dennis and his wife had gone on-line. *"We bought a computer and then the Internet became available. We used to go to the United States a lot, but that's stopped since September 11th, because of the security there. We met these friends in America, and we wanted to use the Internet to email them."* Dennis used email to maintain contact with geographically distant relatives and friends. "[I email] *probably about three times a week. I've got a nephew and his wife who live in Seattle... I also have friends in New Hampshire who I correspond with* [through email], *and other people around the UK...The nice thing about email is I have a digital camera and I can take photos of the kids and send them on."* Dennis preferred email to telephoning. *"I don't particularly like using the telephone. I can think of things much better when I'm typing them out rather than speaking. Also, as I'm a little bit deaf I have trouble hearing* [on the telephone]."

While Dennis had quite extensive experience of emailing, he had wished to learn about search engines at the workshop. *"I want to be able to do all these things* [that younger people can do on the Internet]. *I want to be able to use* [the Internet] *to my advantage, to get the information that I want."* He had made progress since the workshop. *"I gave a talk... about the Black Death* [and] *I used the Internet as a way of getting information... I have looked at* [local] *properties... We get friends coming up... to stay with us, and it's handy to get information about the local valleys, somewhere we can go out."* Dennis and his wife had looked at properties on-line together. *"We have looked at properties in the area that have been published on the Internet."*

Dennis had also used the Internet for making travel arrangements. *"I have used* [the Internet] *for booking airline tickets, car hire and hotels."* However, he was less sure of his need to use the Internet for e-shopping. "[We live in] *a small town so it's easy to go in the car and go down* [to the superstore]. [Online shopping] *might be interesting to try. Yes, I think I would have a go. But I think part of the fun of shopping is you can browse the aisles."* Despite purchasing airline tickets through the Internet, Dennis had concerns

about entering financial details on-line. *"I'm a little reluctant to* [purchase goods] *on the Internet because you have to put in your* [bank account] *number."*

While Dennis had used the Internet quite extensively, he felt that his use was too infrequent to prompt the purchase of a broadband connection. "[Broadband is] *available in the town, but I haven't got onto it. I don't use* [the Internet] *that seriously... If I started using the Internet seriously it would be different. I'm on the AOL light-users scheme, which entitles me to three hours every month. That is usually enough... The fact that* [broadband is] *ten times faster, or whatever it is, isn't terribly important."* The cost of connection was also not an issue for Dennis. "[Affordability is] *not really* [an issue]. *Within reasonable money* [as much as £30 a month] *it's no problem. If I had the use for it, yes* [I would pay as much as £30 a month]."

Dennis was only interested in using his home Internet connection. *"I have used the local library, just to check around and to see if my Yahoo! password works there, but I don't want to have to make an appointment to use a computer at the library."* Dennis also spoke of some of the difficulties he and his wife had understanding some of the jargon associated with the Internet. *"When we were looking to buy a computer we didn't know what all the jargon was. We didn't know anything about it all. Hard disc drives, floppies. We had to ask our daughter about it all."* He also admitted that "[My grandchildren] *show me what to do"* when it comes to using search engines. Dennis's grandchildren would use his computer to play games. *"We have four grandchildren and we have some children's games on the computer, which I set up. I used to set them up, but now they set then up themselves. Kids these days know far more about computers than I do."* Dennis perceived older age as a barrier to be surmounted in terms of learning about the Internet. *"I think everyone needs to know* [about the Internet] *in this modern day and age. It's important even for older people like us, because it is important that we keep up with modern networks."*

Other members of Dennis's family were opposed to the Internet. *"My wife's sister and her husband are anti-Internet. It's strange because their son works for Bill Gates. They*

think it's something they just don't want to get involved with, which is a shame really. When [my wife's sister] *phones us it's at least a half an hour chat, whereas when you're on the Internet you can send the message and that's it. I think the Internet is so handy, the information sits there to be called up when you decide to access it. It's very convenient. I do feel that* [my sister-in-law] *misses out by not going on it."*

Since the workshop, Dennis and his wife had enrolled on a computer course, which he felt had improved his computer skills. *"I've been on a course about word processing, adding dialogue to pictures and things like that. I didn't learn anything new, but I learned how to do things more quickly or differently."* Dennis's future plan was to learn more about the Internet, but he was not interested in gaining qualifications. *"Most of us* [who attended the workshop] *are retired now and aren't interested in doing a qualification"*. Dennis also wanted to make further use of the Internet to search for information. *"I'll probably look for another topic to research.* [At one community meeting my wife and I attended recently] *we had to give an impromptu hour's talk. So it's good to have something like that up your sleeve, which can be pulled out of the drawer and presented. So yes, I will certainly be using the Internet in the future."*

6.4.11 Hayden, 72 years old

Hayden lives with his wife in north Wales. He was 72 years old at the time of the follow-up interview. He is a retired Royal Marines pilot. He attended grammar school on a scholarship and gained a school certificate. Since leaving school he has passed Marine's exams and apprentice pilot exams, and has accrued second and first class pilot certificates. Hayden is the membership secretary for the local angling club. He has three grown-up children who do not live in Wales. The follow-up interview took place at Hayden's home.

Hayden had become aware of the workshops when he saw a Meet the Mouse advert in the local newspaper. He attended because he wanted to learn more about computers. Hayden attended the workshop with his wife, and they shared a computer workstation.

Observation of them during the workshop revealed their lack of experience of computers and the Internet. They required a lot of attention from the support staff, and they were still on the email activity when the workshop came to an end. As a result, the last activity involving the posting of a message to the Meet the Mouse forum was rather rushed. Their posting read: *"A very interesting afternoon!"* Discussion with Hayden immediately following the workshop suggested that he was satisfied with what he had learned. He said *"I learnt quite a lot, especially about the keyboard."* He also said that he wanted to learn more about computers and felt that *"I will become more competent as I use* [the home computer] *more"*. In the follow-up interview Hayden confirmed that he was using the computer *"probably more"* since the workshop. *"Whereas before I used to rely on other people to do work on the computer for me, I do it myself now since I learned about the keyboard at the workshop."*

At the time of the workshop, Hayden had a home computer but it was not connected to the Internet. The computer was a gift from his children and he used it three times a week. *"I use it for fishing club business. Letters, mailing lists, printing." I'm quite satisfied with the small amounts of work I do on* [the computer]." Hayden also used gardening and Britannica compact discs (CDs) on the computer, and was satisfied with what he described as his *"minimal"* use of the computer. *"I appreciate that there's a lot more that it's capable of doing, and I can do a lot more on it, but I'm quite happy with it."*

Hayden discussed his negative views of the introduction of a computer in his workplace. *"They introduced a computer in work in the early* [19]*80s. It didn't work out well, and that put me off using computers. It was the size of two washing machines... This was in the early days* [of computers]... *About a dozen men had the sack because of this computer, because the computer replaced them.*" Hayden was similarly concerned about the impact of the Internet on society at large. *"I've got quite strong feelings about the Internet. I think it's information overload, for a start. I've heard about things that* [my wife and I] *don't want to know about... Do you know the thing that really worries me? Have you heard of the book '1984', where there's a camera in every television set? This*

is how my feelings are about the Internet. We could be taken over eventually, and the written word will no longer be important. We'll be brainwashed into doing everything we're told. In that book, they fear that the written word will no longer be important. I think so too, and libraries will go." Hayden also saw the Internet as potentially isolating its users. *"If someone was housebound I could see the benefits* [of a household Internet connection]. *But I can foresee a future when everyone will become housebound, because they've become cocooned in their own world and everything's brought to them through the Internet."* Hayden related his resistance to his age. *"I'm of that age where I'm frightened of these high-tech, modern innovations. You get to a certain stage in your life where you hate change, because a lot of change is for change's sake... I'm seventy-two years old. When you get to that age you get very set in your ways and you don't like change."*

Hayden and his wife had attended the workshops to learn about computers, not the Internet. They experienced the Internet for the first time at the workshops, and were surprised at the modern technology employed. At this point in the interview, Hayden's wife interjected. *"We were amazed when we went to Meet the Mouse how small the computer was, and the* [flat] *screen."* Other than at the workshop, Hayden and his wife had used the Internet on one occasion. They had used the free access available at the local hospital *"out of sheer boredom"*, according to his wife, while waiting for an appointment.

Hayden had not connected to the Internet at the time of the follow-up interview, and stated his intention never to do so. He was also not interested in accessing the Internet at the local library. *"I don't have the time or the inclination* [to use the Internet]. *There's Internet access in the local library but I'm just not interested...I'm not that interested, it doesn't bother me that I don't use it because I just don't have the interest there."* Hayden perceived the Internet as having limited practical value, and he preferred off-line information sources. *"I'm not that interested in the Web, no. We have plenty of books here for that."* He also preferred to shop for goods off-line. *"If I want to buy something we do a survey, and then we go and see* [the goods] *and feel them and talk to people* [at

the store].*We eventually find a model and then we find out where it's available cheapest.* [Internet shopping] *takes all the fun out of it, as far as I'm concerned."* Hayden also suggested that, while he could afford Internet access, he saw it as offering little value for money. *"It's not a question of cost, no. I can't see the value for money in* [the Internet]."

Hayden referred to some of the negative experiences he had heard of about the Internet. *"A friend of ours in the next village says he gets emails from people he doesn't know."* Hayden also spoke of a time when a friend of his inadvertently accessed a sensitive Website. *"A friend typed in something totally innocuous* [on a search engine] *and she couldn't believe what came up."* As for the future, Hayden wanted to rely on other forms of information retrieval. *"We can pick up a lot of things off the telly, from Teletext."* Hayden had no plans to connect to the Internet, or to use the technology in community venues, and he had no desire to enrol on any computer or Internet courses.

6.4.12 Judy, 72 years old

Judy lives alone in the south Wales valleys. She was 72 years old at the time of the follow-up interview. She is a retired pension's officer, but works voluntarily as a hospital helper. Her duties at the hospital include the preparation and selling of refreshments to patients and their visitors. She has O-levels but has not pursued education since leaving school. She has a grown-up son, who lives locally, and a grown-up daughter, who lives abroad. The follow-up interview took place in the cafeteria of the hospital where Judy works. (The follow-up interview was also conducted with Noelle, who is the subject of the next vignette. Judy and Noelle work together at the hospital. They attended the Meet the Mouse workshop together, and they both suggested a joint interview.)

Prior to the workshop, Judy did not have an Internet connection, or a home computer. She was convinced by her friend Noelle to attend the workshop. Judy admitted that *"I wasn't interested to come* [to the workshop]. *If it wasn't for my friend, I wouldn't have gone, and she's older than I am."* They sat together at the workshop and shared a

computer workstation. Judy wanted to *"learn the basics"* of the Internet. At the workshop, it was obvious that Judy had no experience of computers and the Internet. She experienced problems using the mouse throughout the workshop, but she enjoyed the other activities. Judy and Noelle's joint posting to the Meet the Mouse forum read: *"Surfed the Web. Sent an email. Partook in discussion forum. Excellent presentation and assistance."* One member of the support staff remained with Judy and Noelle for the full duration of the workshop, and they required assistance with every activity. Judy was grateful for this one-on-one approach, and felt that it had made *"everything clear"*. As a result, she stated her intention after the workshop to use her son's computer and to receive assistance from her grandchildren.

Following the workshop, Judy's grandsons had tried to generate an interest in the Internet in their grandmother. *"My grandsons go on it and say "It's only like this, only like that', and I think 'Oh right, okay'". They have grown up with it, everything is so simple to them. It looks great, but for me I've got to go through this process, that process, and I think 'Oh, I'll never remember all of this'."* Judy has also observed her daughter using the Internet. *"I've looked at my daughter doing it and she says "Go on, have a go", but I don't really know what I'm doing. The* [grandsons] *say "Go on, Nan", but I just don't know about it."*

Between the time of the workshop and the follow-up interview, Judy had acquired a computer from her adult children. *"My daughter brought me her old computer* [and] *my son brought me his old printer... My daughter will take me down to my son's* [computer] *shop and we'll pick out a computer that she feels I can cope with, and we will go from there."* She had also received encouragement from her daughter, who had recently returned home after a period living abroad, to get a household Internet connection. *"My daughter's trying to persuade me* [to get an Internet connection]. *At the moment I'm not doing a thing about it but, as I say, with my daughter home now I think she will push me a bit because she knows I want to do it. She won't let lie."* However, these persuasive efforts showed little sign of encouraging Judy to go on-line. *"My son sells computers.* [He and his wife] *have laptops here and laptops there, and the Internet here and the*

Internet there. It's around me in my son's home. But I just can't be bothered. It's an awful thing to say. I just can't be bothered."

While the cost of connection would be an issue for Judy, she did not see it as a barrier to her connecting to the Internet. For Judy, it was her lack of interest in the Internet that was a more significant barrier to getting connected. "[Affordability] *would come into it, but if I wanted to be on* [the Internet] *that wouldn't stop me... But I'm really not that interested. The money aspect* [is not a barrier], *it's lack of interest."* Judy also associated her lack of interest with her age. *"I do think, because of my age, I have no interest* [in the Internet]. *I'll be 73soon, and I think what do I want with all that sort of knowledge? There's no point in it all."* Judy also felt that she had no interests that she could pursue on-line. *"I don't have interests to use the Internet for."* However, she believed that while she lacked interest, she perhaps 'should' go on-line. *"I'm not really interested in the Internet, like I'm not really interested in using computers, although I should, I think. I've thought about it but I just put it off all the time."*

One of the reasons for this delay was Judy's belief that she would find the Internet too complicated if she could not learn the basics of its use. "[The Internet] *seems so complicated. It's very technical...It's complicated because I don't know what it's all about, and it might be as simple as anything. To me, it's complicated because I don't understand, at the moment, the basics...I want somebody to come and say 'Look, this is the Internet'."*

Judy did want to address what she called her 'fear' of using the Internet. "[You have] *to overcome the fear of* [the Internet], *because that is part and parcel of it, the fear of new technology. To me, that's frightening. I want to get over this fear, I want to do something about it. That would motivate me, the fear of knowing it's there but I can't do it... I think ordinary people who have never used any technology of this calibre before fear it, and therefore it's the unknown and there's always fear of the unknown. It's the unknown to me."* Earlier in her life, Judy had declined the opportunity to learn about computers. *"I remember, we did have* [a computer in the office where I worked] *but I was too busy.*

The others [working there] *could do it but I said "Oh no, I can't be bothered now". I knew I was going to retire and I thought 'No, I'd rather do the figures the way I do it, the old way'."* Judy referred to the pace of technological change during her lifetime and her feeling that she is 'missing out' by not using computers and the Internet. "[Computers and the Internet] *have come to the forefront... and therefore I feel that I'm missing out on something, and I should be doing something about it."*

Judy did acknowledge that she may derive some benefits from Internet use. *"I would like to know more about historical things. I could do that on the Internet. I would like to search for things on the Internet. It's a lot easier than going to the library."* Although Judy's only experience of email was at the workshop, and she had not used the Internet since then, she did believe that it would be useful for contacting her daughter when she returns to live abroad. *"I think I would like to contact my daughter when she's* [living abroad], *that would be useful."*

Judy had wished for a follow-up of the workshop. She said *"It wasn't long enough, the time wasn't there for us, or* [the Meet the Mouse team], *to be able to teach us an awful lot."* She wanted to practice the skills she had learned at the workshop. *"I think practice makes perfect. The more practice you have, the better you are."* To this end, Judy had made plans to enrol on a computer course with her friend, Noelle. She felt the need to 'keep up' with her friend, who was a decade her senior. *"I can't let her better me at all, I have to try!"* However, she wanted to focus on computers rather than the Internet. *"At the moment I just want to be able to use a computer for my own benefit, which isn't, at the moment, Internet orientated. Whether it will be in the future, who's to say?"* For the time being, Judy wanted a course to introduce the basics of computer use. *"I want nothing too in-depth or high-flying. It's the basics we want to get over. Step-by-step for our age group, slow and methodically."* Judy also felt that her daughter would try to persuade her to get a computer in the future. *"I know she'll take me down my son's shop and we'll pick out a computer that she feels I can cope with, and we will go from there. I think that will be in the very near future."*

6.4.13 Noelle, 82 years old

Noelle lives alone in the south Wales valleys. She was 82 years old at the time of the follow-up interview. She is a retired civil servant, but undertakes voluntary work in the local hospital. Noelle has O-levels. She is a member of a local charity and she reads newspaper articles to people who are blind or partially sighted. Noelle has a grown-up daughter and son, who both live in the area. The follow-up interview took place in the cafeteria of the hospital where Noelle works.

A promotional leaflet in her workplace brought the workshops to Noelle's attention. She was instantly attracted to the workshops, but only wanted to attend if a friend would join her. She successfully convinced her initially reluctant friend, Judy, to attend. At the time of the workshop, Noelle did not have a home computer or an Internet connection. After the workshop, she acquired a used home computer from her son, who provided it as a Christmas gift shortly after the workshop. She did not know how to operate the computer. *"I don't know how to work it, but I've got one. It's not a very modern one. I can't use it. I play around with it a bit. I'm not getting anywhere. I have to write it down how to put it on and switch it back off again afterwards."*

Noelle was keen to use the computer to assist her family history research. *"I'm doing family history, and I'm very anxious to use the computer. My son is going to show me, but he's never got time."* She said she would *"probably"* be interested in using the Internet to facilitate her family history research, but stressed that this would only happen *"when I have the time"*. However, she was only really interested in using computers. *"I am interested* [in learning more about computers]. *I would like to be able to use these things."* Noelle considered computers something of a challenge that she wanted to embrace. *"It's like a trial, it is. Yet I want to overcome it, I want to be able to do it."* As for the Internet, however, she said: *"I don't think I'm that interested, really. I'm a bit busy. I always seem to have something on."* Noelle also considered the Internet too expensive. *"It's a lot more expense* [than a computer] *though, the Internet, let's be*

honest. [Affordability is] *is definitely, from my point of view, deterring me from having the Internet."*

Noelle didn't see the Internet as a meaningful addition to her life. Asked about Internet shopping she said: *"I'm not very keen on sending away for things anywhere, I prefer to see things."* Noelle would not enter her bank details on-line. *"I feel they get to know too much about you. Personal details come up, which perhaps you would rather weren't known."* Noelle talked about her difficulties navigating the Internet. "[The Internet] *is complicated. I get so far and I don't know what buttons to press to roll it forward or roll it back and check on things. At the moment, what I'm finding most difficult is* [the cursor] *jumps all over the place."* Noelle also had difficulties understanding some of the terms associated with the Internet. *"I hear the name* [broadband] *and I think 'What's that?'"*

Noelle made a comparison between people her own age and the school children of today. *"I don't think I understand* [the Internet]... *I think when you've been educated up to it, as school children are nowadays, I think then it's probably a good idea. I think, certainly at my age, I think it's too much, too big a challenge... Youngsters do all these things. You've done it all when you get to my age. You don't think of doing all these things."* Noelle had observed her son and her grandchildren using the Internet in their home. *"They're so quick at doing it, they can all do it, my grandchildren and my son. They say "It's easy, look", and I think 'How did you get that?'"* Other than watching her son and grandchildren using the Internet, Noelle admitted to having *"done very, very little since the workshop"*. Her future plans were to focus on gaining competence using computers, but she was open to the prospect of learning about the Internet later. *"I think computers to start with, and maybe the Internet later. I want to explore* [the Internet], *I really do. But let's learn to use computers first."*

6.4.14 Peter, 69 years old

Peter lives with his wife in north Wales. They also have a home in Greece. Peter was 69 years old at the time of the follow-up interview, which was conducted five months after the workshop. He is a semi-retired bakery manager, and now works alongside his wife as an entertainer. Peter has a City and Guilds certificate. With his wife, Peter established a well-known children's charity in north Wales. He is also involved with a world-wide charitable organisation for children. Peter recently ran the London marathon. Peter has a grown-up son. The follow-up interview took place in Peter's home.

Peter learned of the workshops when he saw a Meet the Mouse leaflet in the local library. He and his wife had visited the library together, and they both agreed to attend the workshop. Peter and his wife had previously attended a computer course together in the local library. Peter wanted to build upon the computer skills he had learned. At the time of the workshop, Peter had a used home computer that had been given to him by his son ten months previously. The computer was not connected to the Internet and had not even been removed from its box. *"We brought it back from Greece. Our youngest son lives in Greece. We brought it back, and we have a friend-of-a-friend who deals with computers, so he's given it the once-over and he's repaired whatever needed doing. He's getting a monitor for it and he's going to get it all set up for us."* Peter had used the Internet access once in the local library, when he looked for information relevant to a holiday he had planned to Spain. He had never used email. Peter felt that his Internet skills were *"lacking"*, and had hoped that the Internet would help him *"advance a bit"*.

Peter and his wife sat together at the workshop. They shared a computer workstation. Peter was slow to type, and he admitted, *"I don't have any typing skills"*. Peter was keen to move on to the email activity. He took notes during this activity and asked questions about sending emails to multiple people and sending photo attachments. Questioned about his experience of the workshop he said, *"It was excellent. There were many people to help, and the equipment is really good."* The joint posting by Peter and his wife to the discussion forum was equally positive. *"Meet the Mouse: Thank you for a very enjoyable and interesting morning. We will certainly be continuing our studies."*

At the end of the workshop, Peter stated his intention to use email at the local library. His son lives in a different country and he wanted to use email to stay in touch with him and his grandchildren. He also wanted to use the Internet more and to attend another Internet course. At the follow-up interview, Peter's computer was still in its box. He spoke of the delay in getting the computer up-and-running, and suggested that while the computer was still in its box he was unlikely to motivate himself to use it. *"Once we've got the computer and we start to get into it, it becomes second nature, doesn't it? It's just taking the step."* Peter also suggested that since the workshop *"we've been lazy as far as* [the Internet] *is concerned"*. Peter hoped that, once the computer was set up, he would connect to the Internet. He felt that the workshop had given him the motivation to get the computer set up for Internet access. "[Meet the Mouse] *has been very beneficial in the sense that we got the computer and very soon it will be up and running...* [We may then have the Internet installed], *it depends on how conversant we become...* [The workshop] *was a push in the right direction."* Peter was motivated to connect to the Internet in order to keep in touch with his son in Greece. *"Our son's got his computer so we can communicate then, can't we, through the Internet? That's the prime reason* [for going on-line]." However, while Peter preferred broadband to dial-up access, he said that he would not pay more than £18 a month for access.

Since the workshop, Peter had used the Internet at the local library on three occasions, to seek information about holidays and flights. However, Peter was not keen to access the Internet at the local library on a longer-term basis, as he felt he might be a burden on the librarian. *"I suppose* [my wife and I] *should go down* [the library] *and use* [the Internet] *down there, but you don't want to be asking someone all the time 'Can you help me with this?' or 'Can you help me with that?'"* Peter was concerned that learning about the Internet would entail too much effort. *"I think it's a good thing if you want to do it, but I don't think it's a great disadvantage if you don't use it... There's going to be a lot of people who will think 'I've got to put that much effort into it to gain that benefit, and I don't think it's going to be worth the effort to get that benefit'. As for me using the Internet, I'm lazy."*

Peter perceived some of the benefits of having an Internet connection installed. He thought it would enable him to access some of the Websites advertised on the television. *"Sometimes something will come on* [the television]... *and they always put a* [Web] *address on the bottom* [of the screen]. *Once I've learned more* [about the Internet] *I can go and look at that.* [At the moment] *it's so frustrating* [since I do not have a computer or the Internet] *because they say 'If you would like to know more about this, get it on your computer', but you can't when you haven't got one."*

Peter had made plans to improve his computer skills in the future. He had arranged for a friend-of-a-friend to tutor him at home about the computer. *"A friend of ours has got somebody who will come to the house after the guy sets up the computer, and he's going to come and give us a few more lessons. We want a one-to-one situation."* Peter also anticipated that he would enrol on a course for Internet beginners. *"Once this computer is set up and we start on it, then you realise 'I would do better if I knew a bit more about this' and then you go on a course then."*

6.4.15 Dolores, 65 years old

Dolores is Peter's wife. She lives with Peter in north Wales and for part of the year, in Greece. She was 65 years old at the time of the follow-up interview. Dolores is a semi-retired administrator, and now works as an entertainer alongside her husband. Like her husband, Dolores helped establish a children's charity in north Wales and she is involved with another charity for children. Dolores has no educational qualifications. She has a grown-up son. The follow-up interview took place in Dolores's home, five months after the workshop.

Dolores attended the workshop with her husband, after they saw a promotional leaflet in the local library. Dolores had a home computer, which was not set up. She was motivated to learn more about the Internet. She had used the Internet in the local library *"but only a few times to get general information"*, and had attended a computer course about six months prior to the workshop. Dolores shared a computer workstation with her

husband at the workshop, and they took turns to perform the workshop activities. It was evident that Dolores had the better typing skills, and it was she who composed the email and the forum posting. However, she was less sure of how to navigate the Internet, and had requested assistance with the search engine activity. During this activity, Dolores and Peter used the Yahoo! search engine to look at Websites relevant to their shared interest in antiques. Dolores sent her first email at the workshop. She took notes during this activity, because she was keen to use email more often post-workshop. At the end of the workshop, Dolores said that she would have welcomed more information on formal Internet training opportunities. Her joint posting to the Meet the Mouse forum is stated above, in Peter's vignette.

Prior to the workshop, Dolores had been given a computer by her son, which was not set up. She had attended a library-based computer course, but was unable to complete the full duration of the course due to time pressures. "[The course] *was on a Wednesday afternoon and* [my husband and I] *sing on Wednesdays, so it clashed with that. We were having to go* [to the library] *and rush back. We felt that we were letting* [the other people on the course] *down.*" Dolores recounted her experiences of the computer course. She did not appreciate being part of a large class with only one tutor. *"There was just one girl teaching and about ten or twelve of us attending the classes, and she would say 'Yes, I'll be with you shortly', but she wouldn't have the time. We were wasting a lot of time, sitting there waiting for her to come over to tell us what to do next. The other people on the course would say, "I've tried this at home, can you tell me where I went wrong with this?", and we're going "Oh, blimey". We were having to compete with that all of the time."*

Dolores had requested information from the support staff about formal Internet training at the workshop. However, at the time of the follow-up interview, Dolores had not enrolled on a course. She spoke of how her fear of doing something wrong in a class was deterring her from learning more about the Internet. *"I'm frightened in case I do something wrong and the whole thing goes off. I'm not sure of it... I think I might blow it up when I get on there you know, 'crash', that's the word."*

At the follow-up interview, Dolores' computer had still not been set up, but she was keen to get this done and to connect it to the Internet. She was motivated to do this, in part, in order to sell items on-line. *"I want to get the Internet up and running because I have all of my uncle's drawings in the garage and I'm sure somebody might want them, so I can sell them off. eBay is an idea, I might try that."* Dolores also wanted a home Internet connection to make it easier to stay in touch with her son and grandsons. *"We're on the phone all the time to our son, so email will be much better. They can send us photographs and things, for one thing. We have a grandson, he's five. I think it will be interesting for him, because he likes to talk to us on the phone. He could communicate with us* [by email]. *I know he's only five but he's got one of these little toy computers that goes through the telly. Eventually he's going to come onto the Internet. And we have another grandson who's never off the computer."*

Dolores hoped that she and her husband would connect to the Internet when they moved to Greece for the forthcoming season. The desire to keep in touch with family and others in the UK motivated Dolores to consider connecting to the Internet in Greece. *"I think once we get to Greece we'll have the time then to get more interested with the Internet, and then we'll probably get it* [installed]. *But if we learn how to use it now we'll get that much better for when we get out there, because I think it will be invaluable when we get out there and we can keep in touch with people here* [in the UK]." Dolores also thought having a household connection to the Internet could benefit her, most notably in terms of booking flights and for information gathering. *"There's a lot to be achieved by booking flights and things like that* [over the Internet]... *There's so many things once you start on it, it's endless, isn't it?"*

However, Dolores felt that perhaps her husband's concerns about the cost of the Internet might mean that they will never connect to the Internet. *"My husband has concerns* [about the cost of Internet connection], *that's probably why we're hanging back and perhaps won't get connected."* Dolores agreed with her husband that £18 a month was the maximum she was willing to pay for Internet access. Dolores had also decided that,

should she and her husband connect to the Internet, she would prefer a broadband connection. Her experience of contacting her son, who had a dial-up connection, was the reason why she preferred broadband. *"My son had a dial-up connection and two telephone lines so you can get through* [on the telephone] *straight away. But sometimes when you ring up you can hear yourself coming back all the time because the computer's on, you get an echo. That's annoying. I wouldn't want that for myself."*

Despite not having a household connection, since the workshop Dolores had used the Internet access provided at a hotel that she and her husband stayed at when they were abroad. *"We had it at the hotel and I've been on it a couple of times, but only to try it out. Our son is in television, so we wanted to see if there was any biography thing on the Internet."* She had also used the Internet in an Internet café during a holiday abroad. *"We were in Tenerife, and we went to a cyber café there and emailed home* [to our son]." Dolores had also used the Internet *"a handful of times"* at the local library since the workshop. Dolores had used the Internet to look for information about holidays. However, she and her husband would rely on other people to actually book the holidays on-line. *"We book all our holidays* [through the Internet]. *We have a friend and he's on the computer right away for us. We get last minute deals.* [If our friend doesn't do it for us] *we ask our* [older] *grandson to have a look, or our daughter-in-law. They have a look for us and then we ring* [to book the holiday]." Dolores said that she would not consider purchasing anything on-line for herself, because she considered it *"too dangerous"*. However, Dolores was keen to tell other non-Internet users of its potential. Speaking to her husband, she said *"How many people have we said to "Haven't you been on the Internet?" and they say "I'm going to go on holiday and it's going to cost me X amount of pounds". We say "Try the Internet. We do it all the time."*

Dolores anticipated that she would be connected to and using the Internet in the future. She wanted to use the Internet for information on holidays, flights and interior design. The hotel near where Dolores and her husband live in Greece was soon to open an Internet café, and Dolores stated her intention to use it. *"The hotel near where we live is opening an Internet café. So when we get back out there we'll definitely go there."* In the

meantime, Dolores was expecting a friend-of-a-friend to provide at-home tuition, and she preferred this approach to learning at the library. *"We could go to the library and somebody could give us a couple of hour's tuition... but you can't do that, you have to wait around to get their attention. What's why we've arranged for a girl to come and teach us at home instead. We know that that way we'll get the attention we need to make a start on the Internet."* On completing the interview, Dolores requested from the researcher information about further Meet the Mouse workshops, and was keen to pass on relevant leaflets to family and friends.

6.4.16 Connie, 62 years old

Connie lives with her husband in north Wales. She was 62 years old at the time of the follow-up interview. She is a retired boarding school teacher. Connie has a teaching certificate. She is a marathon runner, and she intends to join a local social club. Connie has two grown-up daughters, who live in England. The follow-up interview took place in Connie's home, five months after the workshop.

Connie learned of the workshops when we she saw a Meet the Mouse advertisement in the local newspaper. She attended alone. At the time of the workshop, Connie had a home computer and a dial-up Internet connection. She was motivated to attend the workshop because, having gained experience of computers during her working life, she had little experience of the Internet. At the workshop, she said *"I wanted to come for confidence-building. I used computers at work but I've never had the time to get very familiar with the Internet."* Connie had been connected to the Internet for two years, but it was only her husband who used the connection prior to the workshop.

Due to the high number of workshop participants Connie had to share a computer workstation with a stranger, an elderly gentleman who was completely new to the Internet. As a result, Connie had to wait for quite prolonged periods to move on to subsequent activities. Connie did not post a message to the Meet the Mouse forum. However, her assessment of the workshop, provided in the workshop interview, was

positive. *"I didn't feel threatened or inhibited. It was relaxed but focused. Very good for older adults."* Connie was keen to develop the Internet skills that she had acquired at the workshop. At the end of the workshop, Connie enrolled for a computer course at the local college.

At the time of the follow-up interview, Connie had completed the computer course. Her attendance at the course had led her to use the home computer more often. *"In the last few months I've used the computer quite a lot because I attended a beginners' course at the college. At the time of the course I was using the computer about four times a week."* Connie described her computer skills as *"fairly basic"*. She described her previous experience of computers at work. *"I used computers a little bit at work, but how often I used them depended on the demands at work. It was very basic because I didn't have the skills."*

After the workshop, Connie requested her husband to sit down with her and show her how to use the Internet. *"My husband showed me how to use our Internet. I was eager to see what came up, as it were, what it produced. I was eager to see what's available and what there is to do, that sort of thing."* Connie also accessed the Internet at the local library soon after the workshop, but did not intend to do so again. *"I went to the library to look for information about the Patients Charter. I didn't go again after that. Time, I think, is the main reason. Access, you know, not being able to go, it is quite inconvenient. I'd rather use the Internet at home."*

Connie was using her Internet connection after the workshop. *"I've used* [the Internet] *quite a lot* [since the workshop] *because I am looking for soft furnishings. I've contacted various manufacturers and retailers. It was good because I could access samples of material on-screen. I found it very useful."* However, while Connie was keen to use the Internet when the need to arose, she was less interested in 'surfing' the Internet with no purpose of use in mind. *"I can see the benefits of using the Internet, yes, but I don't want to use it too much unless I need to. But if I felt that there was a need to use it, like I did last week, it's extremely useful."*

Connie discussed why she had wanted to enhance her Internet skills. *"I felt that I needed to enhance my Internet skills because I felt that I was being left behind. I felt I hadn't got the Internet skills that the majority* [of other people] *have, particularly those people younger than myself."* Connie was also considering part-time employment, and felt that she needed to enhance her computer and Internet skills to secure a job. *"I want to get more computer literate for potential part-time employment. Everything now is computers and Web addresses, so we should communicate that way."*

Connie had sent a number of emails, after sending her first one at the workshop. *"I've used email occasionally since the workshop, to communicate with families and friends. It's a useful of staying in touch with loved ones."* However, Connie had no interest in using Internet shopping, and associated her disinterest with her age. She also had concerns about the security of personal information. *"I have never bought anything over the Internet. I've never had the need to and I don't think I ever will. I think my age group like to shop. I like to see what I buy, anyway, and also one can be tempted to purchase things you don't really need. As for entering my bank details, definitely no. I'm concerned about security."*

Connie described the problems she had navigating the Internet when her husband was not available to tutor her. *"Sometimes I find it can take a while to get on the Internet when my husband isn't there to help me. Sometimes you have to go through quite a long process before you find what you want."* Connie felt that other demands on her time had de-motivated her. *"I've got to motivate myself. Sometimes I feel de-motivated because of the time factor and other things that need doing that I regard as more important than using the Internet."* The cost of connection was a further de-motivator that Connie referred to. *"Affordability has a bearing. I think that's a fair comment, because you can get easily carried away* [on the Internet]. *I'm a thrifty person, so the cost factor is always in the back of my mind when I'm on the Internet."*

Connie stressed the fact that she, and other people around her age, had not experienced the Internet until after retirement. *"For me and others my age, the Internet has come quite late. We didn't get the chance to use it when we were working. Younger people have grown up with computers and the Internet. I feel it's the unknown, not knowing the capabilities of the computer, and a fear of doing something wrong."*

Despite Connie's concerns about her lack of experience, she had made plans to get more acquainted with the Internet in the future. Connie expected to use the Internet to look for information related to a personal interest of hers, healthy eating. *"I'll use the Internet again soon to get information about healthy eating. I'm very interested in health issues and the obesity debate."* Having attended the Meet the Mouse workshop and the computer course in the local college, Connie wanted to concentrate on teaching herself to use the Internet. *"I feel now that I've got the basics* [from the workshop and the computer course] *it's up to me to develop it at home, because I have the* [Internet] *facility."*

6.5 CONCLUSION

This research is aimed at providing a better understanding of the processes by which a cohort of older people with no previous exposure to the Internet in educational and workplace settings adopt the Internet. The data presented here revealed the variable nature and extent of Internet adoption amongst older people. Some of the research participants were due to have Internet connections installed, or were actively considering their installation, while others were already Internet adopters at the time of the workshops. None of the research participants had any more than a basic understanding of the Internet when they attended the workshops, but many had made good progress by the time of the follow-up interviews. Some had used the Internet in venues outside the home; others had not. The researcher had anticipated that a number of cases of non-adoption would be revealed, however the extent of non-adoption was not expected. It appeared that many of the research participants had little or no interest in the Internet, and were instead interested in computers.

The research participants were adopting the Internet in different ways. Some were acquiring household Internet connections, while others were gaining proxy access via family and friends, and others were using the Internet in public and community venues, chiefly libraries. However, there was reluctance among many of the participants to use community venues such as libraries. Reference was made to feeling a 'burden' on the library staff, and of the inconvenience of going to the library.

Nevertheless, the older people involved in this study were willing to approach family members and friends for assistance and support. The influence of family members was most pronounced, and was evident in a variety of ways. Many had benefited from acquiring used computer equipment in an 'informal economy' with their adult children; others had observed their children or grandchildren using the Internet; some had been encouraged to attend the workshops, or to go online, by their children; while others were motivated to adopt the Internet to keep in touch with geographically distant family members, or to 'keep up' with younger generations, including grandchildren. Friendship relationships were also important in this context, though it seemed less so than family relationships. While there were no instances of an 'informal economy' between friends, the ties older people had with their friends were important in other respects. Some of the participants had attended the workshops with a friend, and others were using, or considering using, the Internet to keep in touch with friends via email.

The workshop participants were each at different stages of what Rogers (2003) calls the 'innovation-decision process'. For example, some had attended to gain knowledge of the Internet, while others attended to gain some sort of confirmation of their adoption decision by pursuing activities like email. The data revealed how regional initiatives like Meet the Mouse can potentially promote the Internet adoption of older people, by helping to address their concerns about their perceived lack of skills and by helping them to gain confidence in their Internet use. However, the follow-up interviews revealed that attendance at the workshops did not automatically translate into an adoption decision. Rather, some of the participants had decided not to adopt, and there

was one instance of discontinuance. Others had still not decided whether or not to adopt. In this sense, the time it took for a decision to be made was often long and drawn-out. Given this research evidence, it appears that the process of Internet adoption among older people with no previous exposure to the Internet can be long and complex, and can be fundamentally shaped by their social ties with other people.

7. DISUSSION AND IMPLICATIONS

7.1 INTRODUCTION

The findings presented in Chapter Six identify a number of issues that were important to the process of Internet adoption among a cohort of older people who had very little or no previous exposure to the Internet. In short, the theme that was ever-present throughout the research data was that the adoption process among older people is a lengthy and complex one, and one in which their social network ties can play a key role. The influence of strong ties was most evident, but weak ties also had influence on the adoption process. This chapter discusses the research findings and how they respond to the research aim and associated questions. Relevant literature that applies to the findings is discussed to demonstrate where the research results support or contradict existing findings.

7.2 THE PROCESS OF INTERNET ADOPTION

The research findings provide support for the argument that an innovation introduced in a social system diffuses through networks of social ties (Rogers, 2003). A social network is *"a set of individuals within a group who are connected through social relationships, such as friendship, and who thus communicate frequently and influence each other"* (Stangor, 2004: 148). Strong and weak network ties imply different positions in a network (Granovetter, 1983). Strong ties have three defining characteristics: frequent interaction, extended history, intimacy, or 'mutual confiding' (Granovetter, 1983). They are those ties that are typically shared with family or people in a close-knit neighbourhood (Liff *et al.,* 2002), and that can provide support in times of need (Putnam, 2000). On the other hand, weak ties are less involved within the immediate social network, and are those that tend to be more specialised and involve less frequent interaction (Granovetter, 1983). Also, whereas strong ties suggest a narrower, more

personal sphere of influence, weak ties indicate a breadth of social influence (Granovetter, 1983).

Although weak ties were important in some respects, it was strong ties that were of most importance throughout the process of Internet adoption among older people. Those strong ties that exerted influence on the older people in this study were chiefly those they had with their spouses, adult children and grandchildren and, to a lesser extent, their close friends. From here on in, reference to strong ties incorporates all of these people, unless where stated otherwise. The importance of strong ties represents a departure from the 'strength-of-weak-ties' theory (Granovetter, 1983) and from other research which suggests the greater importance of less close 'significant' ties, rather than 'close' ties, in the provision of help (Boase *et al.*, 2006).

The influence of strong ties could be seen in why older people were adopting the Internet, how they were adopting, and, though to a lesser extent, the influence of time on the adoption process. Strong social ties, in combination with weak ties, are also implicated here in the proposal for accelerating Internet adoption among older people. Discussion of these key issues responds to the stated research aim, which was to explore the process of Internet adoption among older retired people who were not exposed to the Internet in the workplace prior to retirement.

7.2.1 Why Older People are Adopting the Internet

The influence of strong ties on why older people were adopting the Internet was exerted in three main ways. First, older people were adopting the Internet in order to keep in touch with family members and friends. Second, older people were adopting the Internet in order to keep up with younger generations, especially grandchildren. Third, older people were adopting mainly due to the persuasive influence of family members, chiefly their adult children. These results are in accord with other research that suggests that older people *"may want to feel part of the modern world and welcome the opportunity that technology may offer to facilitate social contact with their family who have made*

computers and the Internet an inherent part of their lives" (Osman *et al.,* 2005: 17). The importance of face-to-face interaction and direct observation of strong ties was also evident in this research. This research also provided reasons for non-adoption among older people.

7.2.1.1 Keeping in Touch with Family and Friends

The opportunity to keep in touch with family members or friends via email was a major reason for why older people were adopting, or considering adopting, the Internet. The data revealed instances of, or recognition of the potential of, email use for keeping in touch with geographically distant children, grandchildren, other relatives, and friends.

The most critical determinant of using email was the total number of other people who could be reached with it (Kraut *et al.,* 1998). Dolores and Peter were keen to go on-line in order to communicate via email with their son and grandsons who were living abroad. The fact that their young grandson was keen to communicate with them on-line acted as a 'symbolic endorsement' of the Internet (Kraut *et al.,* 1998). For these people, the benefits of Internet adoption were increased because people known to them were using the Internet. These findings may be described in terms of the presence of *'bandwagon effects'*, which indicate the extent to which demand for a commodity is increased due to the fact that others are also consuming the same commodity (Leibenstein, 1950). Abrahamson and Rosenkopf (1993, 1997) argue that bandwagons are diffusion processes wherein adopters choose an innovation not because of its technical properties but because of the sheer number of adoptions that have already taken place. Thus bandwagons *"can animate cycles in which increases in the number of adopters raise bandwagon pressures, and raised bandwagon pressures cause the number of adopters to grow"* (Abrahamson and Rosenkopf, 1993: 488).

Dolores provided an example of the 'self-reinforcing loop' created by the bandwagon process (O'Neill *et al.,* 1998: 100). This feedback loop is created when more adoptions generate a stronger bandwagon pressure to adopt which, in turn, encourages more

adoptions (Abrahamson and Rosenkopf, 1997). She desired to go on-line to communicate with those family members who were already using email; after gaining experience of email, she then wanted to communicate with others. On the other hand, not knowing any significant others who were using the Internet could act as a barrier to adoption. Marie had no one in her social network to contact via email, though she did suggest that if family members were to move away from the local area she would consider using it. From a critical mass perspective, email was seen to be of little utility to Marie unless other individuals with whom she wished to communicate had also adopted email (Rogers, 2003; Markus, 1990).

There were, however, mixed perceptions of the relative advantage of email as a means for communication compared with the telephone. Whereas some of the research participants felt that the advantages of email were the instantaneous sending of messages and the avoidance of 'small talk', others preferred to make contact with others through the telephone. The preference for telephone communication among older people is noted in other research (ICM, 2002). In this research, it was also discovered that when email use was perceived positively, it was only in relation to contacting family and friends and not others, like organisations. This finding supports the contention that adopters will gain more benefit from a communication system if those other people using the system are *important* to them (Kraut *et al.,* 1998), or rather, if they constitute the 'relevant critical mass' (Rice, 1990).

Other research also suggests that email is a critical success factor and motivator for older people's adoption of the Internet (BTOpenworld, 2002; ICM, 2002). However, in this research, while email was widely perceived as particularly advantageous, recognition of its benefits did not always signal adoption. Judy, for example, recognised the potential of email in her own life but was still trying to decide whether or not to adopt. This finding is in accord with previous research on Internet use among people aged sixty and older, which has also revealed that non-users' recognition of email as beneficial for contacting geographically distant persons is not always sufficient for guaranteeing usage (Melenhorst, 2002).

7.2.1.2 Keeping Up with Internet Adopters

This research uncovered feelings of being 'left behind' by the pace of technological change, and of being less than fully included in society. There was a desire among many of the research participants to "*keep up with modern networks*" (Brian) and to "*do what the youngsters do*" (Lorraine). It indicated their desire for '*cultural currency*', which basically means keeping up-to-date (Gilly *et al.*, 2006). The ways in which the older people desired to keep up with existing Internet adopters were varied. Examples included Peter and Dolores, who were interested in using the Internet to secure cheaper flights and holidays; Connie, who had wanted to *"get computer literate"* for potential part-time employment; and Maureen[36], who had wanted to adopt the Internet in order to view cattle tracing Websites to assist in running her family's farm. Another interesting finding of this study was that family history research was often a motivator perhaps not always for adoption, but certainly to attend the workshops or other computer/Internet courses.

Christine and Dennis had been particularly successful at integrating the Internet into their day-to-day routines. Notably, they had several people in their social networks with whom they could discuss the Internet and with whom they could contact via email: Christine had gone on-line for her husband to email people relevant to his role as a committee board member; Dennis had gone on-line in order to send email messages and photo attachments to friends and family. This research finding lends itself to Granovetter's (1978: 1420) idea of *'thresholds'*, which indicate *"the number or proportion of others who must make one decision before a given actor does so"*. In this respect, Christine and Dennis can be seen as having somewhat low thresholds, because they were motivated to adopt because some members of their social network had done so. Again, it is possible to describe these finding in relation to bandwagon theories,

[36] Maureen was a follow-up interviewee who is not included in the vignettes because her interview provided only minimal data. Maureen was 66 years old at the time of the follow-up interview. She had been a childminder before retiring at 64 years old, after which she has assisted her husband in the running of their farm in mid Wales. She had no educational qualifications, but was the Treasurer of a local social club.

because adopters were motivated to adopt because of the sheer number of adoptions that had already taken place (Abrahamson and Rosenkopf, 1993).

In other instances, older people felt compelled to keep up not with younger Internet adopters but with members of their own generation who had adopted. This is consistent with the belief that an individual's decision to adopt a new behaviour or innovation often depends on the distribution of similar choices that the individual observes among his peers, be they friends, colleagues, acquaintances, or others (Kempe *et al.,* 2003). These results concur with ideas of adoption in line with structural equivalence, which presents diffusion as the result of conformity to prevalent norms for structurally similar people (Burt, 1982). The friends Emlyn and Malcolm provided an excellent example of adoption by structural equivalence. The trigger to their adoption was the adoption by people with whom they jointly occupied a position in the social structure (Burt, 1987). It therefore indicated a measure of the influence of weak ties on why some older people come to adopt the Internet, and represents an aspect of what Burt (1987) calls 'social contagion', which he argues arises when people who are proximate in social structure use one another to manage the uncertainty surrounding an innovation. However, while weak ties were implicated in why some older people were adopting the Internet, it was the influence of strong ties that was the most striking feature of the adoption process.

7.2.1.3 Influence of Strong Social Ties

Communication within social networks was an important influence on decisions to adopt or reject the Internet, and proved to be an important medium for the spread of information and influence (Kempe *et al.,* 2003). However, not all members of the older people's social networks were equally capable of influencing decision-making. Rather, older people were adopting, or were considering adopting, the Internet mainly due to the influence of their strong network ties. Potential adopters took cues from those strong ties who they knew had already adopted. In turn, these strong ties provided them with knowledge of the Internet; what it was, how it worked, and how it could be applied to

their lives. Thus, strong ties were critically important at the 'knowledge' stage of the adoption process.

The importance of strong ties in this context may be because individuals are believed to be more likely to exert effort to transfer knowledge to close personal contacts (Reagans and McEvily, 2003). The research data also suggested that the importance of adult children as communicators of Internet-relevant knowledge may have been because of their own exposure to the Internet in other spheres of their lives. For example, it was clear that many of the adult children referred to in this research had Internet-using children of their own, or had been exposed to the Internet in the workplace. Notwithstanding why they became Internet adopters, it was evident that older people's strong social ties often conveyed relevant information and knowledge, in trying to convince them to adopt. In this respect, strong ties were a resource for older people, who could use them to obtain information, share ideas, improve their knowledge base, and make more-or-less informed decisions about whether to adopt or reject the Internet.

The role of strong ties was also significant in terms of the 'persuasion' stage of the innovation-decision process (Rogers, 2003). Previous research suggests that knowledge of the Internet can lead to a greater propensity for using it (Dutton *et al.,* 2005), and that encouragement by social network members can generate interest in the Internet among older people (Sourbati, 2004). In this research, knowledge of the Internet and encouragement to use it was often insufficient for adoption. Rather, older people required more detailed information in order to reduce their uncertainty. According to other commentators, older people tend to prefer to gather as much information as possible before a purchase (Campanelli, 1991), and often actively seek and use information from various sources to make purchasing decisions, reduce risk, and avoid dissatisfaction (Balazs, 2004). This research provided evidence to support the idea that older people prefer to gather detailed information before making adoption decisions. Also, to a certain extent, older people did use information from various sources; their attendance at the Meet the Mouse workshops and further training courses testifies to this. Thus, they used both internal communication networks with household members

and external communication networks with people outside the home (Shih, 2003), though they rarely communicated with anyone outside their circle of family and friends.

Strong ties were also important in terms of word-of-mouth communication, both positive and negative. A number of research studies have demonstrated the important role of word-of-mouth communication in shaping consumers' attitudes and behaviours (Kempe *et al.,* 2003; Mahajan *et al.,* 1984; Katz and Lazarsfeld, 1955). In this research, positive word-of-mouth involved the communication of favourable and sometimes persuasive information from strong ties to older potential adopters, including information about the workshops and about the relative advantage and compatibility of the Internet. However, one research participant in particular, Hayden, had received negative word-of-mouth and had formed a negative judgement of the Internet. In combination with his own past experience of computers, the negative evaluative information Hayden had received, including that about unsolicited email, contributed towards deterring him from adoption. Other researchers have also found that negative word-of-mouth can influence consumers (Laczniak *et al.,* 2001).

The influence of strong ties provided evidence of adoption by cohesion. It supports previous research which describes diffusion as a process that occurs through interaction in cohesive social groups (Rogers and Kincaid, 1981), and which argues that social cohesion can facilitate the transfer of knowledge (Reagans and McEvily, 2003). It is also consistent with Valente's (1995) description of cohesive ties in the diffusion process, which involves those direct relations engaging in face-to-face interaction in which one actor who has encountered an innovation relays information about it to another actor.

7.2.1.4 Importance of Geographically Close Strong Ties

The importance of adoption by direct contact is supported by this research (Mizruchi, 1993; Friedkin, 1984). As has been seen, the availability of people to contact via email impacted potential adopters' decision-making. In addition to this more symbolic presence of other people in the decision-making process, there was also a more physical

presence of strong social ties exerting their influence on adoption decisions through face-to-face interaction and opportunities for the observation of the Internet in use. The research evidence suggested that while strong ties exerted a significant impact on older people's decisions to adopt, their influence was stronger the more geographically close they were to the potential adopter. The ability to engage in face-to-face interaction and to directly observe adopters using the Internet were important in this context. Other researchers, like Stangor (2004), have also suggested the importance of physical proximity between individuals, because people who are physically closer to each other in everyday environments are believed to be more likely to communicate more frequently and to influence one another than are those people who are more physically distant.

Human interaction has been described as the 'essence' of innovation diffusion (Degenne and Forse, 1999). In terms of face-to-face interaction, it was discovered in this research that when a decision-maker (i.e. the older potential adopter) had, say, two potential sources of influence, it was the source that was geographically closer that exerted most influence compared to the source that was more geographically remote. Two examples are particularly illustrative of this proposition. First, Vivian had a son who lived locally and a daughter who lived some distance away. It was Vivian's son, with whom he had greater contact and face-to-face interaction due to the relative shorter distance between them, who had been a greater source of influence on his adoption decision. The second example that demonstrates the influence of geographically close strong ties and face-to-face interaction was provided by Judy. Her daughter's attempts at getting her to go on-line had gone unheeded, but had more persuasive influence when face-to-face interaction between the two was possible.

Having geographically close strong ties was also important in providing opportunities for older people to observe others using the Internet in family (or other close relationship) environments. Several of the older people in this study saw the pervasive influence of the Internet on the lives of their children and grandchildren, by observing them using the Internet in their own environments. While the observability of the

Internet was important in terms of extending the informational influence of strong ties (Karahanna *et al.,* 1999), it did not always mean that older people desired to adopt. Rather, sometimes observability of the Internet led them to believe that the Internet was complex and difficult to use. This was evident in Judy's narrative. She said *"The* [grandsons] *say "Go on, Nan", but I just don't know about it... It seems so complicated. It's very technical."* Noelle had similar sentiments when she said *"...They can do it all, my grandchildren and my son. They say "It's easy, look, you just do this, this and this", and I think "How did you get that?".*

Marie and Hayden provided two examples of Internet rejection. They each had in common a lack of geographically close strong ties that could influence them to adopt. Marie was a widow and Hayden's wife was, like him, not interested in the Internet. For different reasons, neither Marie nor Hayden had much physical contact with their adult children and their grandchildren. None of Marie's friends had adopted the Internet, and Hayden only spoke of those friends he had who had negative experiences of the Internet. This network dynamic provided support for the research which reveals that older non-Internet users tend not to have many Internet users in their social circle, and that those who do tend to associate themselves with reference group members with minimal affinity toward technology (Melenhorst, 2002).

As a result of their remoteness from strong social ties, Marie and Hayden lacked what most of the other research participants benefited from, which was the opportunity to observe other family members using the Internet and integrating this technology into their everyday routines, and the chance to engage with them in the face-to-face exchange of information about the Internet. In this regard, Marie and Hayden provided examples of older people who are *'truly disconnected'*, in Lenhart and Horrigan's (2003: 25) use of the term, meaning that they *"lack*[ed] *social networks that would encourage them to build use of the Internet into their lives".*

7.2.1.5 Reasons for Non-adoption and Discontinuance

The research data also provided evidence of why older people may *not* adopt the Internet. It was discovered that many of the people who had attended the workshops had done so in order to learn more about computers, rather than the Internet. The reasons for non-adoption centred on the cost of connection, and perceptions of the relative advantage, compatibility, and complexity of the Internet. Instances of the persuasive efforts of strong ties going unheeded were also evident.

The cost of connection was sometimes a barrier to adoption, but was sometimes not. A review of related literature also indicates mixed opinion on the importance of affordability in the context of Internet adoption (ICM, 2002). Some of those lacking household Internet connections reported having the financial resources to connect, but had chosen not to do so simply because they were not interested in the Internet. For others, however, concerns about cost were manifest in decisions about whether to adopt, reject or discontinue the Internet, and in decisions pertaining to dial-up or broadband connections.

Lack of relative advantage and compatibility associated with the Internet were important contributors towards non-adoption. The Internet was sometimes seen as lacking relative advantage when individuals preferred other methods of social interaction, like the telephone, letter, or the fax machine, and when they had a preference for other information sources, such as books or Teletext. In terms of compatibility, the Internet was sometimes seen as incompatible with existing values, past experiences and personal needs. Some of the research participants valued their pursuit of other interests ahead of Internet use. This finding is echoed in other research which reveals that personal preferences for other pastimes and activities can often usurp the desire for Internet use (Selwyn *et al.*, 2003) and adoption (Wright and Query, 2004).

Other research participants valued opportunities for face-to-face interactions and in-person purchasing of goods. Jessome *et al's.*, (2001) idea that a visit to the bank or

paying bills in person are 'social' transactions is insightful here. They argue that at a time of life when their social networks may be decreasing due to restrictions on mobility and the ill health and deaths of network members, these social transactions can provide older people with a sense of purpose and an important social connection with others in their communities (Jessome *et al.,* 2001). Also, the Internet was largely seen as incompatible with personal needs because the older people in this study considered themselves to be sufficiently mobile to conduct daily activities like shopping in person. The fact that many of the research participants had little or no prior experience of computers may also explain the incompatibility of the Internet, because they felt it necessary to first (or only) learn about computer technology before learning about Internet technology. Other researchers also argue that use of the Internet is dependent upon people having access to and knowledge of using computers effectively (Osman *et al.,* 2005).

The Internet was sometimes seen as incompatible with previous experience of computers or word processors. Aspects of 'unlearning' established routines were highlighted (Harrington and Harrington, 2000). Some of the research participants recounted negative past experiences of computers that either they have had or someone they know have had. Hayden had a particularly negative attitude toward Internet adoption due, in part, to his previous experience of the introduction of computers in his workplace during the 1980s, which he attributed to job losses. He also recounted his friends' negative experiences of the Internet, drawing attention to the impact of negative personal influence on the diffusion process (Mahajan *et al.,* 1984). Other negative experiences that were relayed via the media, such as of pornography, computer viruses, and the security of personal information, were discussed, but as concerns about the Internet rather than reasons for non-adoption.

The perceived complexity of the Internet was another reason why the older people in this study had not adopted the Internet, or were struggling to implement it. Even Connie, who had used computers during her career, believed that she lacked the skills that she attributed to younger people. Family members, especially grandchildren, had often

attempted to reduce or eliminate perceptions of complexity among older people by demonstrating to them how to use the Internet and sometimes offering them to use it for themselves. Connie's husband, the more experienced Internet user of the two, often used the Internet alongside her, and Connie spoke of the difficulties she encountered when this support from her spouse was unavailable. Also, some of the terminology widely used, like 'broadband', was not fully understood by the research participants. Research by Chadwick-Dias *et al.,* (2003) also emphasises the difficulties many older people have understanding Web terminology and technical jargon.

Marie and Hayden provided two quite different examples of Internet rejection. Marie did perceive some of the attributes of the Internet positively, e-shopping especially. Marie also hypothetically applied the Internet to her present situation, when she considered the potential of email if she had family members living away. In this respect, Marie displayed 'active rejection' of the Internet, because she had considered its merits for her own life prior to rejection (Rogers, 2003). On the other hand, Hayden did not perceive any way that the Internet could apply to his everyday life, and he spoke of the Internet in very disparaging terms. He exhibited a degree of 'passive rejection' because he was only interested in computers and he had not considered how he may apply the Internet in his own life (Rogers, 2003).

A particular feature of diffusion theory is its implication that innovation-decisions depend heavily on the innovation-decisions of other members of a system (Rogers, 2003). This research supports that idea to a certain extent, but it also pays due attention to the exercise of individual agency in the innovation-decision process. As previously mentioned, having physically proximate strong ties who were Internet adopters could sometimes impact the potential adopter's decision-making. However, some of the non-adopters *did* have geographically close ties who were trying to persuade them to adopt the Internet. These close ties, like Brian's son and eight grandchildren, were on-line themselves and were attempting to persuade him to make an adoption decision but without success. However, Brian had made a firm and personal decision not to adopt the Internet. He had made this decision prior to having the opportunity to trial the Internet

for himself at the workshop, and reaffirmed his decision after the workshop. This finding supports other research which has shown that stories from enthusiastic Internet-using relatives and friends often fail to convince older non-users to use the Internet (Melenhorst, 2002). Turning again to Granovetter's (1978) discussion of thresholds, it seemed that non-adopters like Brian had decided to reject the Internet regardless of those family members already on-line. For them, the cost of adoption was greater than the perceived benefit which, in line with Granovetter's (1978) definition, meant that a threshold had not been attained.

Finally, one instance of discontinuance was presented in this research. In this particular case, presented by Lorraine, an initial adoption had been reversed. Lorraine cited the cost of connection, the belief that she was *"getting no worth"* from adoption, and her desire only to use the computer rather than the Internet as the reasons behind discontinuance. Lorraine also attributed greater relative advantage to books and face-to-face interaction than to the Internet, and she perceived the Internet as complex to use. To this extent, Lorraine provided an example of dissatisfaction discontinuance (Rogers, 2003). However, she was interested in using email to contact her daughter. At the time of the follow-up interview, Lorraine was considering Internet adoption again, albeit without much enthusiasm, because her family members, especially her grandchildren, were trying to get her back on-line.

7.2.2 How Older People are Adopting the Internet

Moving on from why the older people in this study were (or were not) adopting the Internet, which focused on the reasons behind their adoption or contemplation of adoption, examination of *how* they were coming to adopt moves discussion towards the ways in which they were accessing or using the Internet. It broaches the 'decision', 'implementation' and 'confirmation' stages of the adoption process. In this research it was discovered that the social proximity of older people and their strong social ties not only influenced why older people were adopting the Internet but also how they were coming to adopt. In this context, a number of issues were important, including formal

opportunities for trial, the establishment of 'peripheral family access' (Selwyn *et al.*, 2003), the acquisition of computer equipment, the use of library access, resource sharing and co-participation of use, and the availability of ongoing support. These findings provide further support for the cohesion model of diffusion, and again support the idea of diffusion by direct contact.

7.2.2.1 Formal Opportunities for Trial

The 'decision' stage of the adoption process involved potential (and new) adopters engaging in activities that permitted them to trial the Internet. Many of the participants attended the workshops and other courses in order to facilitate their choice of whether to adopt or reject the Internet. They had heard of the Internet and were possibly considering going on-line, but wanted to learn more by using the Internet prior to making an adoption decision. The acquisition of how-to and principles knowledge was important in this context. Others attended the workshops or further courses at the 'confirmation' stage of the adoption process. They had previously adopted the Internet, but were seeking reinforcement of their decision by engaging with those aspects of the Internet that they wanted to learn about or wanted to use more effectively.

The influence of strong ties was again of critical importance in this context, because in many instances it was family or friends who had recommended the workshops, or who had accompanied the older people to the workshops. Some of the workshop participants had attended together as married couples, as parent-and-child, or as friends. By attending together, these participants had the opportunity to trial the Internet in partnership with a strong tie, either with one who had a similar level of skills and experience and who was also in the process of making an adoption decision (typically with husband and wife partnerships or friendship partnerships), or with one who had more skills and experience and had already made a decision to adopt (which was always the case with the parent-child relationships).

7.2.2.2 Library Access

One way of gaining formal opportunities for trialing the Internet was via access established in local libraries. However, while some of the research participants had used the library to access the Internet, there was a general perception among them that the library was an inconvenient venue for establishing access. Bryn was the only participant who regularly accessed the Internet at the library, but even he suggested the inconvenience of accessing his email account on his library visits. He also spoke of his frustration of encountering Google rather than Yahoo! every time he went on-line. Bryn did not have a household Internet connection, but all those who did indicated their preference for home-based access rather than library-based access. A number of other research studies have shown that levels of access in public and community venues are low among older people (Ofcom, 2005; Olphert *et al.*, 2005).

On the other hand, access at the home of a family member was seen as more convenient. The findings support other research results which suggest that '*peripheral access*' amongst people aged 60 years and older is more likely to be gained from the extended family rather than at public or community sites, particularly libraries, because they feel more able to access a computer in the home of a relative rather than at a public ICT site (Selwyn, 2003). One possible reason for why family access was seen as convenient and library access less so was highlighted by Peter, who said that due to his lack of understanding of the Internet he would feel himself a 'burden' on the library staff. Another deterrent to library access, mentioned by Maureen and Dennis, was the need to book an appointment to use the Internet.

7.2.2.3 'Peripheral Family Access' and 'Access by Association'

It was often in the homes of family members where older people were provided opportunities to trial the Internet. Many non-Internet adopters gained proxy access to the Internet, achieved through indirect access to the Internet via younger family members, typically their adult children. This type of '*peripheral family access*' highlights the

central role of the family in providing the resources for those older people who lack computers and/or Internet connections (Selwyn *et al.,* 2003).

In this research, some of the older people would request others – mainly strong ties – to perform on-line tasks on their behalf, like sending email or searching for information. This delegation of specific information searches by older people to their adult children is noted in other research (Paul and Stegbauer, 2005). This '*access by association*' has been shown to be a crucial component of older people's 'proxy' access to up-to-date computers, and a key source of ICT support (Selwyn *et al.*, 2003). Rose (2006: 7) describes becoming a proxy user as a 'half-step' to becoming a user. He argues that proxy use is important in the context of Internet diffusion because proxy users are going on-line, just not through their own Internet connection, and so are moving closer to becoming Internet users in their own right (Rose, 2006). The examples of proxy use in this research suggest, however, that usage in one's own right is not always the next logical step following on from proxy use, as a disinterest in using the Internet was sometimes still evident.

This research also revealed that the lack of opportunities for peripheral family access could be to the detriment of those older people who were considering Internet adoption. Dolores and Peter had knowledge of the Internet and had developed a favourable attitude toward it but had not yet adopted a household connection. The fact that their close family members were living abroad may explain this lack of adoption, for they lacked opportunities for trialing the Internet in a family environment. They both wanted to go on-line but had been *"lazy"*, in Peter's words, about getting their computer set up and connected to the Internet. To this extent, Dolores and Peter provided an example of the Knowledge-Attitude-Practice gap, or the 'KAP-gap', identified by Rogers (2003), which refers to a relatively homophilous zone where knowledge and attitudes toward adoption are favourable but insufficient for adoption.

7.2.2.4 Acquisition of Computer Equipment

As well as gaining direct or indirect access to the Internet via their adult children, many of the research participants benefited from acquiring used computer equipment from family members, including from siblings, but usually from adult children. Significantly, from the interview narrative it appeared that the provision of computer equipment from adult children was often associated with their beliefs that their parents should keep abreast of technological change. The acquisition and use of computers through non-market means amongst older people is highlighted elsewhere (Stewart, 2002), and is revealed as unrelated to the income and socio-economic status of the recipient (Selwyn *et al.*, 2003). However, whereas some researchers suggest that the receiving of a 'gift' of ICT can impose sudden adoption (Stewart, 2002), participants in this research demonstrate that acquisition of used computer equipment will not always automatically translate into adoption of the Internet, nor will it even immediately transform into adoption of the computer itself. Indeed, it was discovered in this research that those older people who had purchased their own computer were more likely to have gone on to adopt the Internet than were those who had acquired their computers through their family.

7.2.2.5 Resource Sharing and Co-participation of Use

Resource sharing entailed the sharing of home access and resources with other household members. In a study of individuals' early Internet use, Kraut and colleagues (1998) found that participants used the Internet more during weeks when other members of their households were also using it. However, these research results suggested that when users do not co-participate in their use, usage by other household members can act as an impediment in terms of restricting the time available for Internet use. Whereas the sharing of resources was seen quite negatively, co-participating in use was reflected on more positively. Co-participation of use involved Internet users using the Internet alongside other family members or friends. All of those research participants who co-participated in their Internet use reflected positively on their experiences of joint use.

The co-participation of use indicated the importance of '*mutual discovery appropriation moves*', through which people collaborate in joint sensemaking and technology exploration (Jasperson *et al.,* 1999). Christine and Connie, for example, had both learned the basics of Internet use from their husbands. In this sense, co-participation could help them to gain access to modes of behaviour not otherwise available to them, enabling them to develop those skills relevant to the performance (Hanks, 1995).

7.2.2.6 Ongoing Support

Once on-line, many of the research participants had recourse to guidance and support from family members and friends. The provision of ongoing support was crucially important for older people who were new to the Internet, and this result has been found elsewhere (Dutton *et al.,* 2005). Examples were provided in this research of older Internet adopters calling on their adult children or friends to assist them when they encountered problems, or when they wanted to learn more about a specific aspect of the Internet. Other examples provided evidence of the research participants using friend-of-a-friend relationships. These examples provide support for arguments made by prominent scholars like Granovetter (1973) and Burt (1995), who have pointed out that network ties provide access both to people who can provide support, and to the resources those people can mobilise through their own network ties. It also demonstrates how older people may draw on weaker ties in the absence of strong ties.

Selwyn (2004) suggests that people can gain support in their Internet use from their networks of 'technological contacts', which may be face-to-face, including family, friends and tutors, or remote, including on-line help facilities and commercial helplines (Selwyn, 2004). Relatively few examples of gaining support from remote sources were evident in this research. Elsewhere, it is suggested that older people do not have access to a wide range of friends or other support to overcome computing problems (Foley, 2004), and that older people's social networks provide insufficient support for those who want to learn about the Internet (Paul and Stegbauer, 2002). This research revealed that

older people generally do have access to support from family and friends, but that this support can sometimes be limited when strong ties are not physically available to give hands-on assistance. In the event, those wishing to go on-line sometimes sought external or professional advice in the absence of strong ties.

7.2.3. The Impact of Time on the Adoption Process

Rogers' (2003) theory of the Diffusion of Innovations instructs us to understand that diffusion is a process that takes time, and that later adopters take longer to adopt than do earlier adopters. This research adheres to that view. It shows that the innovation-decision process among older people is often lengthy. The issues of most importance in this context were the uncertainty surrounding the Internet and the prevalence of dissonance, which meant that adoption decisions were continually re-negotiated over time.

7.2.3.1 Uncertainty and the Innovation-decision Process

Diffusion has a time dimension which Rogers (2003) describes as the innovation-decision process, which involves a series of actions and choices on the part of the potential adopter over a period of time. In accordance with Degenne and Forse's (1999) argument about the persuasion process, there was a delay between gaining knowledge of the Internet and the decision of whether to adopt. This delay reflected the fact that many had not convinced themselves of the positive potential of the Internet, again in accord with Degenne and Forse (1999). For these scholars, the key to final adoption is the recommendation of friends, neighbours and family to confirm and legitimise the information in the possession of the potential adopter. Thus, discussion between the influential and the influenced is believed to lead to a decision of general adherence sooner or later (Degenne and Forse, 1999). The findings of this research contradict this view, and suggest that, at least in the innovation-decision period covered by this research, recommendation by family and friends had not always led to adoption, nor, in some cases, were they likely to lead to adoption. Rather, uncertainty surrounding the Internet remained.

A major obstacle in the making of an innovation-decision is uncertainty surrounding the innovation (Rogers, 2003). The findings of this research indicate that uncertainty can result in the postponement of adoption decisions until further evidence can be gathered. This is consistent with Chatterjee and Eliashberg's (1990) contention that potential adopters integrate information about the innovation over time. Uncertainty centred on the desirability of integrating the Internet into daily routines, and the attributes of the Internet, such as its compatibility with past experiences of computer use and its complexity in use. To address uncertainty, research participants had sought innovation-evaluation information, mainly from strong ties, and they had attended the workshops and, in some cases, further computer or Internet courses. However, uncertainty was not always addressed, and in one instance, uncertainty about the Internet had led to a decision to discontinue a household connection. This example supports the argument that adoption is only guaranteed over the long term if positive decisions are made at the relatively late 'confirmation' stage of the innovation-decision process (Rogers, 2003).

A way of demonstrating the impact of uncertainty on the unfolding adoption process is to compare intentions for Internet adoption stated at the workshop, with adoption behaviours at the time of the follow-up research conducted approximately six months later. Though this may be a somewhat limited timeframe in which to assess how or whether intentions for adoption have been adhered to, it was discovered that exposure to the Internet at the workshops had generally, though not always, led to positive affirmations of intention to adopt. Many of the workshop participants stated their intention to connect to the Internet at home; some said they would like to use the Internet in venues outside the home; and others had enrolled for Internet courses while at the workshops. However, the findings from the follow-up interviews suggested that initial intentions or expectations had not always been pursued. While all of those follow-up participants who had stated their intention to attend further training had done so, this did not necessarily lead to adoption decisions. Also, many had not adopted when they had originally believed they would. There were exceptions to this finding. Maureen had a computer at the time of the workshop but had since gone on-line at home, through a

dial-up connection. She had initially adopted the Internet in order to use cattle tracing Websites, but had progressed to using email for contacting family members living in other parts of Wales, and had registered to receive monthly emails of the Welsh 'Gwlad' magazine. However, in the main, the initial interest displayed at the workshops had not, over time, later transpired into adoption. This finding may, of course, be explained by the somewhat short duration of the study, which may have given the research participants insufficient time to pursue their intentions to adopt. However, it was also discovered that the uncertainty surrounding the Internet had in many cases posed a barrier to adoption, and led to dissonance among potential and existing adopters.

7.2.3.2 Dissonance

What the research participants, with the exception of Dennis and Hayden, had in common was their state of dissonance. Rogers (2003) describes dissonance as an uncertain state of mind. It was evident that non-adopters and even adopters were in a state of dissonance about Internet adoption. It was this dissonance that can help explain the lengthy nature of the innovation-decision period, because it meant that the older people in this study were finding it difficult to make and to confirm an adoption decision. Notably, dissonance was evident among both adopters and non-adopters.

Although both Dennis and Hayden did not exhibit signs of dissonance, their situations were very different. Dennis had adopted the Internet and had confirmed this decision. He was very satisfied with the Internet. In contrast, Hayden had rejected the Internet and was very resistant to the idea of adoption. Notwithstanding their differences in this respect, both Dennis and Hayden were very sure of their adoption/rejection decisions, and neither was in an unstable mind about the choices that they had made.

Christine was an Internet adopter but her experience proved to be a direct contrast to Dennis's. Christine was connected to the Internet at home and was using this connection for a variety of purposes. She perceived the Internet as having substantial relative advantage and was confident that it was not complex. However, contrary to what

Christine had to say about why and how she was using the Internet, she was dissonant about how far she desired to integrate it into her daily routines. Rather, she preferred to indulge her other interests, and she felt that the Internet took *"a back seat"*. Notably, it was not Christine who had made the decision to adopt, but her husband. Similarly, Lorraine's husband had decided to connect to the Internet at home. Lorraine's dissonant views of the Internet following adoption had led to them discontinuing the connection.

Further evidence of dissonance was available from those who had received a computer as a 'gift' from family members. It was an interesting finding from this research, because it indicated that dissonance was greater among those who had the prospect of adoption 'imposed' on them, so to speak, by other people who had supplied them with computer equipment and had tried to encourage their adoption. For some of the older people in this study, it was their adult children who provided computer equipment and who had decided that it was appropriate for them to adopt the Internet. It was like a form of vicarious consumption, where the 'giver' was trying to encourage the non-adopters to engage with the Internet based on their own beliefs in its utility (Stewart, 2002).

Stewart (2002) argues that the receiving of ICT as a gift can impose sudden adoption when the recipient had not previously considered buying or owning the product. He also suggests that the giving of ICT can marginalise the awareness and decision stages of the innovation-decision process for the recipient (Stewart, 2002). This was not always the case in this research, because while many of the older people were recipients of computer equipment, they were still faced with the decision of whether to adopt the Internet. However, some of those who had acquired used computer equipment from family members had been expected to adopt the Internet also as a 'technology cluster' (Rogers, 2003), yet there were no cases in this research of adult children paying, or offering to pay, monthly Internet costs for their parents to go on-line. Interestingly, those who were given computers were more likely to have a lengthy decision period compared to those who had purchased a computer for themselves. The reasons for this may be explained by Stewart's (2002) ideas about the imposition of sudden adoption, because it was those who had not come to consider the Internet of their own accord and therefore

made personal adoption choices who were less sure of what the Internet could offer them.

7.2.3.3 Personal Choice

A further interesting finding of this research was that non-adoption decisions were made more rapidly than adoption decisions. Hayden had decided to reject the Internet prior to the workshop. His attendance at the workshop had not caused him to contemplate adoption, nor was he likely to consider adoption in the future. He had made a firm decision not to adopt, and was unlikely to reverse it or to consider any information that may not support his decision. This was consistent with Rogers' (2003) argument that potential adopters tend to consciously or unconsciously avoid messages that conflict with their existing predispositions. In contrast, potential adopters were still in a more-or-less active stage of information gathering in the process of deciding whether or not to adopt. Their capacity for making firm, personal choices was more likely to be limited by their state of dissonance. As a result, aside from their use of the Internet at the workshops, few of the research participants had progressed to the 'implementation' and 'confirmation' stages of the innovation-decision process (Rogers, 2003). These findings support those of Eiswirth Tisdell (2003), who has also found that adopters exercise their own logic and personal choice when deciding whether to adopt an innovation.

7.2.4 Accelerating Internet Adoption among Older People

In response to Valente and Davis's (1999) suggestion that few studies attempt to use the lessons from diffusion research in order to accelerate the diffusion of innovations, this section focuses on the potential of two separate but linked interventions for promoting the adoption of the Internet among older people. These are 'community networks' and 'intra- and intergenerational partnerships'.

It was discovered in this research that the innovation-decision period can be a particularly lengthy one among older people. The research data provided a number of

issues for consideration when thinking about ways of accelerating Internet adoption among older people. Some of these issues have been discussed earlier, but are revisited in this section in order to make more explicit the motivation for the proposal of community learning networks and intra- and intergenerational partnerships for accelerating Internet adoption among older people.

According to Richards (2006: 3), *"The challenge we face is to ensure that older people who want to use the Internet are able to do so, and that those who are unsure about going 'online' are shown the benefits which are relevant to the personal and social aspects of their lives"*. Accelerating the Internet adoption of those older people who want to go on-line, or who are undecided about going on-line, is the issue addressed here. It is not about attempting to convince those who are resistant to the Internet to adopt. It is anticipated that the initiatives described here could provide sufficient motivation for older people to adopt the Internet, or to confirm previous adoption decisions.

7.2.4.1 Community Networks and Recommendations for their Operation

The first proposal for accelerating Internet adoption among older people incorporates an informal approach to learning undertaken in a conveniently located and sociable community environment, in which access to computers and the Internet is on a 'drop-in' basis and free of charge to end users. This approach is termed here a *'community network'* approach. As the name suggests, community networks would be based in local settings, like community halls. They would be 'networks' insofar as it is recommended that they strive to attract and forge links between people of diverse backgrounds, rather than just older people, and aim to establish links with other community learning settings and social clubs.

The proposal of community networks was motivated by the findings of this research, which pointed towards the need for an inclusive, sociable environment in which to access the Internet, and also by some key lessons taken from the available literature

surrounding electronic gateways, or 'e-gateways' (Liff and Leagran, 2003; Liff *et al.*, 2002; Liff and Steward, 2001a, 2001b). This literature was seen as appropriate because it focuses on those voluntary/not-for-profit and private sector institutions, or 'e-gateways', that draw on social networks to provide Internet access in various informal and often unstructured settings[37] outside the state sectors of education or libraries (Liff *et al.*, 2002). The features of the e-gateway approach were seen as commensurate with the findings of this research, which suggest that older people can sometimes be deterred from Internet adoption due to the costs involved; that their adoption decisions are often influenced by their social networks; and that they tend to prefer more informal settings for access, like the home, rather than library-based provision. Opportunities for attracting non-users by locating the partnerships in conspicuous, inviting settings are also seen as desirable. This is also commensurate with the e-gateway approach (Liff and Leagran, 2003; Liff *et al.*, 2002; Liff and Steward, 2001a, 2001b).

Some of the lessons from the e-gateway literature are elaborated in the following recommendations for the operation of community networks. These recommendations should also make clearer the appropriateness and potential of the networking partnerships for accelerating the Internet adoption of older people, by referring to some of the findings of this research and by returning, where appropriate, to certain relevant aspects of Rogers' (2003) theory of the Diffusion of Innovations.

Provide opportunities for drop-in. There was evidence in this research of some older people simply wishing to learn about the Internet out of curiosity rather than for any specific purpose, and that they often perceived the library as an inconvenient venue for establishing Internet access when access has to be booked in advance. A more informal and unstructured approach could attract people like these by offering an environment in which to trial the Internet without financial cost. Drop-in sessions could be a particularly beneficial way of providing informal, unstructured access to the Internet. The onus would be on simply providing the facilities for users to go on-line, and on allowing users to use the Internet for their own purposes.

[37] These settings include telecottages, electronic village halls, community technology centres, cybercafes

The recommendation for a drop-in approach is in accord with Liff and colleagues' (2002) discussion of e-gateways. It is anticipated that the provision of opportunities for drop-in could enable older people to engage with the Internet at times of their own choosing, and to attend with whom ever they wish, or alone. The provision of drop-in sessions could address those concerns the research participants had about the inconvenience of booking Internet access in libraries. Drop-in sessions may also encourage existing users to attract new users to the partnerships, drawn from their own social networks. Gilchrist (2004) suggests that people tend to enter collective arrangements if they know someone who is already involved. Users should be encouraged to pass on relevant information about the partnerships to their family, friends and acquaintances, with the aim of attracting a broader user base at the drop-in sessions.

The provision of drop-in sessions broaches ideas about structural equivalence and resonates with Burt's (1987) ideas on social contagion and physical and social proximity. Specifically, the drop-ins would be about bringing examples of equivalent adoption from one part of the network to another, permitting opportunities for users to observe others using the Internet and for the transmission of significant information about use. In this way, non-adopting users could become aware of the Internet, have the benefit of a vicarious trial use, and witness the consequences of adoption for the adopter (Burt, 1987).

Be inclusive and promote a diverse user base. Some of the research participants referred to their observation of younger family members using the Internet, and how they admired the skills on display. The drop-in nature of the networks should be inclusive of all users, regardless of skills or experience, in order that inexperienced or non-users can observe more experienced users using the Internet to their advantage. Experienced users should be encouraged to provide mutual help to new users when they require assistance. The intention should be to develop the kind of friendly and helpful environment that the research participants praised about the Meet the Mouse workshops.

Foster a relaxed, 'home-from-home', sociable environment. The home was seen as a more conducive place for accessing the Internet. The research participants also praised the relaxed approach undertaken at the workshops. One way of attracting potential users to the partnership training and the drop-in sessions would be to foster a relaxed, 'home-from-home' and sociable environment for learning located in a conspicuous, attractive setting. Elsewhere, a relaxed atmosphere in which to learn is advocated as the ideal environment to help address anxiety among older learners (Glendenning, 2004).

Rogers (2003) suggests that potential adopters can more readily evaluate an innovation if they are able to observe it naturally in use and in conditions similar to their own. Where Internet connections are not available in the home, or when those who are connected want to make use of the Internet outside the home, the drop-in sessions could provide an ideal opportunity for access. The literature surrounding e-gateways suggests that such opportunities for access are most attractive if they assume something of a sociable, 'home-from-home' environment (Liff and Leagran, 2003). To this extent, the approach proposed here could do well to well to take on board the findings of Liff and colleagues, who draw on Oldenburg's (1991) ideas about 'third places', which are social spaces that are neither home nor work, to explore the provision of public Internet access venues (Liff and Leagran, 2003; Liff *et al.*, 2002; Liff and Steward, 2001a). For them, it is whether a place 'works' as a 'third place' that is most important, rather than how it operates (Liff and Steward, 2003). They argue that when awareness, anxiety and the need for new skills are barriers to Internet access, it is valuable to have *"a neutral place where people feel comfortable and can come and go at will... and that is socially inclusive in terms of the criterion for membership, stimulates good conversation, is accessible in terms of hours and location, is frequented by regulars... is unpretentious in style and mood, and has many of the characteristics of home without being one's home"* (Liff *et al.*, 2002: 83). Liff and Leagran (2003) argue that the sociality associated with a cafe environment can enhance, or complement, the experience of Internet access in cybercafes among users who could gain access elsewhere. Thus, by adopting some of the features of the 'third place', including the provision of refreshments in a café-like environment, it is anticipated that the drop-in nature of the community networks could

provide conducive environments for older Internet adopters and non-adopters alike to use and learn about the Internet.

Encourage dialogue between users. There was little evidence of the reserach participants engaging in dialogue with others workshop participants, possibly due to the one-off nature of the workshops. As a result, most of those participants who attended the workshops together only conversed with one another, and conversation between participants unknown to one another who shared computer workstations was often somewhat stifled. It is anticipated that the community networks build connections between users who may otherwise find neither reason nor means to interact (Gilchrist, 2004). Previous research suggests that dialogue and consultation between younger and older people in the learning environment has the potential to facilitate the process of learning about technology (Riggs, 2004), and that talking together, comparing ideas, discussing common experiences and undertaking joint activity has the capacity to develop mutual trust between social network members (Gilchrist, 2004). Bearing in mind these findings of previous research with Rogers' (2003) ideas about information exchange in interpersonal networks as a key influence on the diffusion process, it is recommended that dialogue be encouraged between users of the community networks. Some of the workshop participants referred to their own efforts at diffusing information about the workshops through their interpersonal networks. Exchanges like these should be encouraged by providing promotional leaflets to users in order that they can pass them on to other people in their social networks. Word-of-mouth should also be encouraged, in the hope of users recommending the community networks to their friends, who in turn could recommend it to others, and so on, creating a 'cascade' of recommendations (Kempe *et al.*, 2005).

Encourage observation of users. Observation of strong network ties, and children and grandchildren in particular, was important in raising awareness of the Internet. Making the benefits of the Internet more visible and plausible to older adults is recognised as an important factor in making the Internet more attractive to older people, and to motivate them to go on-line (Gilly *et al.*, 2006). Observation of other users could enable older

users to gain more knowledge of the Internet, and to start the process of applying its potential to their own lives. To implement this, users and staff could be encouraged to provide demonstrations to new users which could introduce them to the basics of Internet use or those specific aspects of use that they are interested in. It would also be desirable to station computers in such conspicuous areas that they can be seen from outside the venues, while also protecting the privacy of users.

Encourage group-work and mutual support. Establishing small work groups for joint activities on an occasional basis could have the potential to encourage observation and dialogue, and to foster an atmosphere of mutual support. Group projects could include, for example, the creation and maintenance of a Website or bulletin board. Group sessions are argued to have the advantage of showing people how others deal with certain issues, and helping individuals to establish new social contacts (Dittmann-Kohli and Jopp, 2007). Given these supposed advantages, group work would be indispensable to the community networks. In this way, the drop-in sessions could aim to approximate what Scott and Page (2001: 152) refer to as 'learning communities'. By this term, they mean *"a community within which to engage in a joint process of learning and developing purposeful use of ICTs... within which users are invited and enabled to engage in a shared learning process, while respecting the diversity of their learning base."*

Maximise opportunities for networking by bringing strong ties and weak ties together. The visibility of representatives of local colleges and libraries at the workshops was rather successful in attracting participants to further learning opportunities. Liff and Steward (2003) argue that in order to understand how people move from non-use to use of a technology, it is particularly important to comprehend the ways in which they gain access to social networks of users. This can include an understanding of an individual's access to members of the social networks of which they are already members, and those that exist at places where they gain Internet access (Liff and Shepherd, 2004). This is an important consideration, for it conveys a sense of how community networks may come to constitute a social network of users. At the community networks, regular users could,

over time, develop strong links with one another. When new users are attracted to the community networks, it is recommended that the networks involve the bringing together of strong and weak ties, and 'networking' between the diversity of users.

According to Gilchrist (2004: 69), networking involves *"maintaining a web of relationships that can support a useful and empowering flow of information and influence"*. This definition emphasises the centrality of network members in facilitating the process of arriving at a decision. Attracting weak links to the community networks could involve making connections with participants in other learning initiatives in the local community. This research suggested that the pursuit of other interests may sometime usurp motivation to use the Internet. It could be fruitful for the community networks to make connections with other local learning settings, and to arrange for sessions involving, say, participants in cookery classes using the Internet to browse for and print chosen recipes. Adopting this approach would have the benefit of demonstrating to non-users the potential of the Internet for pursuing their existing interests and hobbies. The merit of including weak links is that they have the potential to 'bridge' subgroups (Granovetter, 1973) and to integrate networks (Degenne and Forse, 1999). This is in accord with Liff *et al's.,* (2002) argument that both strong ties and weak ties have roles to play in fostering inclusion.

Use opportunities for boundary spanning. Supporting people's involvement in new networks and activities is likely to involve making links between different networks (Liff *et al.,* 2002), or what is known as *'boundary spanning'* (Aldrich and Herker, 1977). This is where the networking approach comes into its own, because it enables people to establish links across society, to share resources and to learn from one another (Gilchrist, 2004). The exercise of boundary spanning would need to be mindful of Rogers' (2003) ideas about heterophilous and homophilous communication. Rogers (2003: 19) argues that heterophily between communicators can lead to ineffective communication and dissonance, because heterophilous individuals *"do not speak the same language"* and may expose non-adopters to messages that are inconsistent with their existing beliefs. Liff and Steward (2001a) argue that those who fulfil the boundary-spanning role would

require the communication skills to move between social groups with different 'languages' and norms of behaviour. They draw on Conway (1997) and suggest that boundary-spanning can occur when an individual is a member of two otherwise distinct networks, where members of two distinct networks have a direct relationship, or where a direct relationship occurs through a third party. In the context of the community networks proposed here, this could be achieved by, for example, the staff at the community networks also working in other capacities, such as for Age Concern or in local colleges. Elsewhere it is suggested that such people as community care staff or home carers with basic computer skills, or with the preparedness to undergo training in basic computer skills, can be a resource for sharing skills with older people and for improving the accessibility of the Internet (Richards, 2006). These people could be employed as 'change agents' (Rogers, 2003), because they are likely to have empathy and rapport with the older users by virtue of working with them in other environments. They could also perform as boundary spanners, crossing the boundary of the partnerships, bringing back to it ideas and experiences from outside.

Another example of boundary spanning could be the involvement of users who are members of various social clubs. Many of the participants in this research were highly active in their local communities. Some of them were Directors or Secretaries of local social groups who presumably had several links to many other people. These links could potentially be used to provide bridges into other communities and to transmit information to other networks. In this vein, collaboration among people with different external contacts can bridge gaps, or 'structural holes', in the network outside the group by providing links to groups not otherwise connected (Burt, 1992). Bridging structural holes in the external network in this way could provide access to other people - weak ties - with distinct knowledge and information that can be introduced to the network (Adler and Kwon, 2002). It is an approach that could capitalise on Kempe and colleagues' (2005) ideas about maximising the spread of an innovation through a social network. To explain, the model of influence propagation that they propose suggests that a behaviour spreads in a cascading fashion according to a probabilistic rule, beginning with a set of initially active, 'contagious' nodes (adopters) towards inactive, 'non-

contagious' nodes (non-adopters) which, once activated by a contagious node, become newly activated and can influence other inactive nodes (Kempe *et al.,* 2005). To apply this logic to boundary spanning, it could involve users of the partnership networks attempting to influence the adoption decisions of their own social networks, by encouraging them to attend the community networks.

The value of such boundary-spanning would be its potential for providing opportunities to learn about the external environment and seeking to influence it (Liff and Steward, 2001a). One way to achieve this could be to hold occasional open days. The open days could be widely publicised to non-users through the distribution of promotional materials in local settings such as shops, libraries and social clubs. Existing users could also be encouraged to attend the open days for non-users to observe them demonstrating the Internet. The provision of refreshments and entertainment at the open days could also attract potential users (Gilchrist, 2004).

7.2.4.2 Intra- and Intergenerational Partnerships

The results of this research demonstrate that older people often derive enjoyment and motivation from observing or using the Internet alongside a more knowledgeable strong tie, particularly adult children and grandchildren, and that older people sometimes appreciate more formal training opportunities, or 'taster' sessions like Meet the Mouse, for learning about the Internet. The second proposal for accelerating Internet adoption among older people takes these key research findings into consideration and incorporates a more formal (though not formal in a strict sense) approach undertaken within the community networks, which offers 'tasters' or training specifically to older people and which can involve the co-participation a self-selected 'partner'. This approach is termed here *'intra- and intergenerational partnerships'*. It would involve the provision of opportunities for older people to use the Internet alongside those strong social ties who were identified in this research as having a key influence on their adoption decisions. They could self-select an individual to join them who is willing and able to participate in the partnerships. To the researcher's best knowledge, this approach

has thus far not been proposed as a means for addressing inequalities in Internet adoption. The involvement of self-selected partners in this approach suggests the importance of strong, cohesive ties. To complement the idea of networking, the partnerships would also involve weak ties. Thus, each partnership pair will be characterised by their strong ties to one another, but they will, though perhaps not always, have weak ties with the other partners involved. The partnerships would be held in the community networks, therefore benefiting from the 'home-from-home' environment and the ethos of free-of-charge use, mutual support and boundary spanning.

Attract 'partners' who are Internet adopters and who can have positive influence on adoption decisions. One way of accelerating the Internet adoption of older people could use the strong ties that were often so influential on their adoption decision making. As the name of this proposed approach suggests, it would involve training sessions with older people using the Internet alongside a 'partner'. It has been seen that strong social ties can have a critical and mainly positive influence on older peoples' attitudes and behaviours towards Internet adoption. The key to influence in this respect was their positive disposition towards the Internet and their greater levels of Internet experience and skills. Thus, it is argued here that it could be particularly useful to encourage the selection of a partner who has adopted the Internet themselves, and who has positive and useful information to provide to the older user. This would be in accord with Rogers' (2003) argument that communication between individuals with the same technical grasp of an innovation can stunt the diffusion process because there is no new information to be exchanged. These participants thus have the opportunity to learn about the Internet and its possible benefits from existing adopters, and to then, in turn, transmit information to other non-adopters within their networks.

Attract Intra- and Intergenerational Partners. This research revealed that Internet adoption among older people can be prompted by the influence of family members, and by their opportunities either to observe family members using the Internet, or to use the Internet alongside them. Most often, it was adult children and grandchildren who influenced the older people in this study, or who used the Internet either in front of or

alongside the older people. Taking Riggs' (2004) research into consideration, it appears that the involvement of younger family members may potentially be a very fruitful approach to intergenerational working. Riggs (2004: 220) argues that *"Younger people are poised now to reciprocate in a way that will allow their elders access to a world that many feel is increasingly leaving them behind"*. To this extent, the intergenerational approach proposed here seeks to maximise the potential for diffusing the skills and knowledge of the younger generations upwards to their older family members. Younger people could become, in Riggs' (2004: 209) words, *"family expert*[s] *on the future, holding an elder's hand while introducing them to the new century's communication forms"*. Similarly, Paul and Stegbauer (2005) argue that younger people hold the key to bringing older people closer to the Internet. They suggest that the 'young generation' can help older people to 'unlearn' some routines in order to better deal with technology in a process of 'generational co-operation' (Paul and Stegbauer, 2005).

However, it is also recognised that younger generations may not always be willing or able to attend the partnerships. It is recommended, therefore, that the partnerships also assume an intra-generational approach. In this way, the proposal of the partnerships takes into account the results of this research which suggest the enjoyment that older people may derive from using the Internet alongside those people of their own generation, namely a spouse or a friend. Other researchers have also suggested that older people often prefer to spend time with their peers rather than with younger people (Glendenning, 2004), and that peer support is a rich source of learner support (Oksa, 2006).

Provide for 'unskilled' partners. Thus far, it has been recommended that the networking partnerships involve partners who are existing adopters and who have knowledge and skills to impart to older users. The intention is that they can co-participate in the activities, with the partner acting as a guide and as moral support for the older user. Oksa (2006) argues that the key factor in peer training is that peers are one step ahead of the beginner in terms of their capabilities, and know how to communicate with that person. To the contrary, the recommendation here is that peer partnerships need not

necessarily involve one having more skills than the other. The results of this research showed that older people often welcomed opportunities to explore the Internet alongside strong ties who may be similarly (un)skilled, in a process of joint exploration. It is therefore recommended that the partnership networks also provide opportunities for partners lacking in skills to use and learn about the Internet together.

Attract geographically-close partners. A finding of this research was that having strong ties in relatively close geographic proximity was important in terms of the influence that could be exerted on older people's adoption of the Internet. The selection of a partner would also need to take account of the proximity of social ties, because of its implications for the time people would have available to attend and for their travel arrangements. Thus, in order to go some way towards preventing attrition, it would be best to encourage the selection of a partner who lives relatively close to the user.

Offer 'tasters' or 'training' sessions, but keep them less formal. The results of this research indicated that making an appointment for using the Internet in the library was generally seen as an inconvenience. Also, 'taster' sessions like Meet the Mouse were appreciated, and did have an impact on participants' confidence to continue learning about the Internet. On balance, an approach that can only be described as 'less than formal' (rather than strictly formal or informal) approach was seen as desirable for attracting potential users with different views on how they want their learning to proceed. There was evidence in this research of some older people wishing to learn more about the Internet in order to assume post-retirement work roles. A number of more formal, structured sessions could possibly attract those who are keen to undertake more formal training. This training could involve an instructor, who could undertake a role similar to that of the presenter in the Meet the Mouse workshops. The instructor could demonstrate to the users how to perform certain on-line activities, like sending email or navigating a Website. The partners of the older users would be on hand to assist them if they encounter problems, thereby assuming the sort of role taken by the support staff in the workshops.

The provision of more formal training with an instructor is recommended by Paul and Stegbauer (2005), who suggest that support from younger people, even those who are known to the older individual, can be a potential menace to older people's self-image and sense of being a 'grown-up' and can lead to conflict. There was no evidence of conflict between the peers and family members who attended the workshops, but it is recognised that conflict may exist. The recommendation to use an instructor in the more formal sessions is therefore in line with that of Paul and Stegbauer (2005). However, the more structured sessions could also assume a degree of informality by allowing users to set their own learning goals and to support one another in meeting them. This recommendation is in line with other research (Osman *et al.*, 2005; Liff and Steward, 2001a, 2001b). Also, more informal 'taster' sessions could be used to attract those users who may be deterred from, or who may unable to attend, courses over a structured and prolonged period, or who may simply want to learn the basics of Internet use in a one-off session, like many of those who attended the Meet the Mouse workshops.

Encourage 'learning by doing'. Many of the research participants had attended the Meet the Mouse workshops having never made prior use of the Internet. Over the course of the workshop, they had the opportunity to observe the presenter demonstrating the activities and then to perform the activities for themselves. The participants were generally very pleased with what they had learned to do at the workshops. Taking this into consideration, it is recommended that the partnerships employ an approach which would promote the idea of 'learning by doing', which describes how users could potentially *"develop a more efficient and productive way of employing technology through experience"* (Jaeger, 2001: 137). For example, the sending of an email could be demonstrated by the partner and then re-enacted by the user, or the partner could use the Internet to locate information and the user could then search for information of their own choosing. The potential of this approach is that it could allow older people to observe others using the Internet and to trial it for themselves. In line with Rogers' (2003) thoughts about trialability, it could allow older people to experiment with the Internet, to find out how it works, and to assign meaning to the Internet based on their own situations.

Take a longer-term approach. The provision of training has been found to be a critical factor in the successful adoption and use of the Internet, through the provision of skills and support (Osman *et al.,* 2005). It is anticipated that a longer-term approach would potentially address a number of concerns that the research participants had, such as about forgetting how to perform tasks like Website navigation, and could also attend to their preference for ongoing training and support, identified in this research and elsewhere (Osman *et al.,* 2005). It is argued elsewhere that positive outcome expectations occur when Internet use persists sufficiently long enough for the benefits of Internet usage to become apparent (Eastin and LaRose, 2000). The longer-term approach to the provision of access and learning opportunities could therefore support older users to persist in their Internet use.

Take learning home! This research revealed that older people may sometimes forget what they have learned at computer or Internet training courses. The provision of drop-in opportunities at the community networks would go some way towards addressing this issue, by providing an environment in which older users can come and go when desired and to build upon what they may have learned in the generational partnerships or on other training courses. In addition to the benefits provided by drop-in, it is recommended that older people persist in developing their skills by using the Internet in the home when connections are available, or in the Internet-connected homes of those strong ties who are willing and able to assist them. It could potentially extend the role of the 'family expert', to involve them in the Internet adoption process of their older family members both in the partnerships and outside, in their own or the older person's home. Chen and Chien (2006: 312) also argue for the provision of training programs for non-users of ICT in combination with the use of *'warm family experts'*.

Encourage ongoing support from strong ties. This research and the research of others (Osman *et al.,* 2005) has discovered that older people often want or require ongoing, rather than transitory, support to use the Internet. The recommendation here is to encourage older peoples' strong social ties to provide ongoing support in the home or

elsewhere. The intention would be to develop older peoples' skills to enable them to become active, self-reliant Internet adopters (Rogers, 2003). Stewart (2002) argues that the 'family expert' can act as a link to more expert groups outside the family, such as in the workplace, and assume the role of the conduit of knowledge into the family (Stewart, 2002). The recommendation is to exploit their knowledge to support older people in adopting the Internet.

Osman and colleagues (2005) argue that having support from family and friends can increase older people's motivation to use computers, and can provide an additional source of assistance in the absence of a trainer. This research supports their findings. However, whereas Osman *et al.,* (2005) suggest that support from family and friends is not essential if adequate training is provided, this research points towards ongoing support from strong ties as of crucial importance even when the older user is benefiting from adequate training. It is recommended here that those strong ties with skills and experience of the Internet be encouraged to offer support by using the Internet with the older user outside of the partnerships, when possible, and to be open to their queries and questions. This could enable older people to use the Internet more frequently, and to become more familiar with the conventions of use.

Stewart (2002) also recognises the necessity of ongoing support for older people appropriating new media products. He calls for the use of 'local experts', who are not necessarily experts but are relatively expert for those who consult them, and who can be family members, friends, neighbours, members of clubs and societies, churches or other social groups. Stewart's (2002) recommendation for local, rather than family, experts may be appropriate for those older users whose links with their family members may be tenuous or non-existent.

7.2.4.3 Summing Up the Potential of the Networks

In summary, the community networks and the intra- and intergenerational partnerships could potentially accelerate older people's Internet adoption by exposing them to

opportunities to observe and to trial the Internet in a home-from-home environment without the imposition of financial cost. Older people would be supported to explore the potential of the Internet for their own unique situations. This support would be provided occasionally by instructors, if the older user undertakes more formal training, but mainly by co-users or their 'partners'. The onus would be on enabling older users to gain experience of the Internet to assist their adoption decision making, or to complement existing household connections where they exist. The provision of the home-from-home environment with ample support in place would be intended to enhance their experience of use, and to direct their decision making towards adoption or confirmation of an adoption decision, rather than rejection, dissonance or discontinuance.

7.3 CONCLUSION

This research has focused on the process of Internet adoption among a cohort of older people who have had no prior exposure to the Internet in educational or workplace settings. However, this research did uncover evidence of Internet adoption motivated by the potential undertaking of post-retirement work roles, such as part-time employment and Directorships. It gave an indication of what Dholakia and colleagues (1996) mean when they refer to the 'migration' of technological systems from one life sphere to another.

It was discovered that the process of Internet adoption characterising the cohort of older people involved in this research was complex, lengthy and fundamentally shaped by their social networks ties, mainly their strong ties but also their weak ties. Internet adoption was not a single decision, but was a complex process, involving not just a simple option between having or not having the technical equipment necessary for connection, but including other factors such as how the Internet would be integrated into and compatible with established routines.

Adoption was a lengthy process because of the uncertainty surrounding the Internet and the dissonance that often surfaced about the desirability or otherwise of adoption.

Interestingly, it was those older people who had been given computer equipment and who were expected, mainly by adult children, to adopt who appeared to be most dissonant. This is possibly because some of the research participants had the prospect of sudden adoption imposed on them (Stewart, 2002). However, it was also discovered that potential adopters can exercise individual agency and decide for themselves to reject the Internet, despite the persuasive efforts of strong ties to encourage an adoption decision. Even those who had awareness and knowledge of the Internet, who had exchanged information about the Internet in their communication networks, and who had attended the workshops, did not always make an adoption decision. Rather, some had decided not to adopt, while others were dissonant and had not yet made a decision. Moreover, the uncertainty surrounding the Internet and the dissonance that arose during the innovation-decision period meant that adoption decisions were subject to a process of re-negotiation over time. Thus, this research supports Rogers' (2003) contention that adoption takes place over time, and that progression over time through the stages of the adoption process does not always guarantee adoption in a system.

This research also supports Rogers' (2003) thoughts on diffusion networks, which are those interpersonal networks that can exert influence on an individual's adoption, and his argument that diffusion is a process of communication by members of a system over time. A good deal of research has now been conducted on the influence of social networks on the diffusion process (e.g. Granovetter, 2005; Kempe *et al.,* 2003; Degenne and Forse, 1999). From these various research contributions, the extent of diffusion in a society is seen as depending not only on its relative attractiveness or payoff, but also on the dynamics of social networks (Degenne and Forse, 1999). This research supports the burgeoning literature surrounding social networks and the diffusion of innovations.

Strong ties were important features of influence throughout the adoption process, including their roles in fostering awareness and knowledge of the Internet, providing opportunities and/or support for trial and co-participation, and maximising observability of the Internet in use. Weak ties were of lesser importance in the adoption process in terms of the provision of equipment and co-participation, but they were especially

important in the absence of strong ties. They were also significant in terms of the desire to keep up with structurally equivalent people and to remain 'culturally current' (Gilly *et al.,* 2006). The strength of weak ties was also brought out in the proposal of community networks and intra- and intergenerational partnerships, for their potential to expose participants to information and influence (Rogers, 2003; Burt, 1983). These findings about the importance of both strong and weak ties were consistent with Liff and Shepherd's (2004: 3) claim that *"The ability to use available access, and ultimately the type of access achieved, can be affected by the social networks of which one is already a member and by those that exist at the place where one has access".*

8. CONCLUSIONS

8.1 INTRODUCTION

This final chapter provides a conclusion of the research results. It starts with an overview of this research and is followed by the main conclusions drawn from the research findings. Discussion of the research contributions and the implications of this research in terms of theory, Information Systems (IS) methodology, and policy and practice are provided. The application of this research to other settings is pondered. Finally, the limitations of the research findings and directions for future associated research are suggested, followed by a summary of this concluding chapter.

8.2 RESEARCH OVERVIEW

The stimulus for this research was discussed in Chapter One. To reiterate, the motivation for undertaking this research was to address the identified gaps in current understanding - namely, the lack of focus on older people's adoption of the Internet, how and why they may be coming to adopt the Internet in greater numbers in recent years and the impact of time on this process, how older people's Internet adoption may be accelerated, and the potential utility of focusing on cohort in this context. It was anticipated that accomplishment of these research tasks would provide an initial and incremental contribution to knowledge in these areas.

In Chapter Two, the various ways of defining age were explored. The discussion provided a rationale for focusing on *cohort* rather than chronological age, for its potential to recognise the role of social and historical context in a person's life (Pilcher, 1995). Birth cohort recognises that individuals born around the same time experience their formative years in the same historical period (Hunt, 2005). The accomplishment of this chapter was that it led to the researcher's acknowledgment of cohort rather than age *per se* as a potentially useful way to explore Internet adoption among older people.

In Chapter Three, the Internet adoption of older people was explored. The review of evidence in this chapter focused first on survey data. This was supplemented with a focus on 'technology generations', which broached ideas about differential exposure to the Internet between oldest and youngest generations. It was pointed out in this chapter that there are, to the researcher's best knowledge, no research studies which focus on the Internet adoption of those older people who, as a distinct birth cohort, have had no previous historical exposure to the Internet in educational or workplace settings.

In Chapter Four, the Diffusion of Innovation theory of Everett Rogers (2003) was discussed. This specific theory was seen as particularly appropriate in the context of this research because it can assist an understanding of the time dimension of the adoption process by paying attention to the 'rate' of adoption in a social system. It also provides a framework to assist understanding of how and why people adopt innovations like the Internet by explicating an 'innovation-decision process', and by offering to researchers concepts such as the perceived attributes of an innovation.

The accomplishment of these chapters led to the formulation of the following research aim to *investigate the Internet adoption of a cohort of older people with no previous historical exposure to the Internet*, and the following research questions: *'Why are older people adopting (or rejecting) the Internet?'*; *'How are older people adopting the Internet?'*; *'What is the impact of time on older people's adoption of the Internet?'*, and finally *'By what means can Internet adoption among older people be accelerated?'*.

The methodological underpinnings of this research were described in Chapter Five. In order to fulfil the research aim and answer the research questions, an ethnographic study was conducted with the people who attended Meet the Mouse workshops throughout Wales. Observations, interviews and on-line forum postings were used to solicit data. The ethnographic study produced quality and deep data, which was presented in the form of vignettes in order to present the participants in context, to clarify their intentions, and to convey a sense of process and time (Seidman, 1998).

8.3 MAIN CONCLUSIONS

This section summarises the main conclusions of this research, which are summarised as follows:

The process of Internet adoption among older people can be lengthy and complex. Decision-making was a long and complex stage in the adoption process, and one that was not always resolved following the workshop or subsequent Internet or computer courses. Rather, some of the older people in this study had often not formed a solidly favourable or unfavourable attitude toward the Internet. They were still seeking and interpreting relevant information, and had not always decided how the Internet may or may not be applied in their everyday lives. This was indicative of what Rogers (2003) refers to as 'dissonance' in the adoption process. It indicated that the acquiring of knowledge and information was an enduring process throughout decision-making. As a result of the long and complex nature of the decision stage, many of the research participants had not decided whether to adopt or reject the Internet. Since overt behaviour change had not always occurred, it was not always possible to see how older people were implementing the Internet. Among those who *had* adopted, implementation of the Internet was variable. Whereas some were using the Internet for a rather wide variety of uses, others were satisfied with what they saw as their minimal use of the Internet. Moreover, adoption decisions did not necessarily lead to continued use. Rather, dissatisfaction with the outcomes of adoption could lead to discontinuance.

The process of Internet adoption among older people is influenced by their social network ties. Adoption decisions were not ones made in isolation from other people. The older people involved in this study were motivated to adopt in order to keep in contact with geographically distant family and friends, or to keep up with younger generations, especially grandchildren. Their strong ties, especially those that were geographically close, often played a key role throughout the adoption process, indicating diffusion by 'cohesion'. The older peoples' attitudes towards the Internet were shaped by observation

of their strong ties using the technology, their opportunities for trialing the technology prior to adoption, and the information gleaned from others about Internet technology. These findings are compatible with Rogers' (2003) ideas of observability and his discussion of interpersonal communication channels, which can help form and change an individual's attitudes towards an innovation, thereby influencing its acceptance or rejection. The importance of weak ties was important in terms of diffusion by 'structural equivalence', and especially in the absence of strong ties.

Older people may potentially benefit from community networks and intra- and intergenerational partnerships. The research evidence suggested the desirability of utilising 'diffusion networks' (Rogers, 2003) to accelerate Internet adoption among older people. More specifically, community networks which are conveniently located, 'home-from-home' environments that offer informal access to the Internet on a drop-in basis were proposed. A second proposal was the use of intra- and intergenerational partnerships. Liff and Steward (2001a) suggest that while the importance of networking is implicit in much policy advice, its full implications are not always drawn out and are actually contradicted by some funding regimes. This proposal for accelerating older peoples' Internet adoption is an attempt to reinforce the importance of networking for access to the Internet. Opportunities for networking and 'boundary spanning' were seen as desirable for their potential to attract new and diverse users to the community networks and the partnerships. A number of recommendations were made that draw on Rogers' (2003) theory of the Diffusion of Innovations, such as opportunities for users to observe other users or 'partners' using the Internet and to exchange information within and between networks.

8.4 BIRTH COHORT AND EXPOSURE TO THE INTERNET

This research provides an initial attempt at understanding the process of Internet adoption among older people for whom the Internet has not migrated from earlier experience during the formative stage of life, due to their membership of a specific birth cohort located in historical time prior to the emergence of the Internet as a social and

leisure tool. It is a timely piece of research, because it can be expected that a larger proportion of future cohorts of older people will have greater levels of exposure to Internet technology by virtue of having been involved in the educational and working arenas following the emergence of the Internet. Also, this is an original piece of research because, to the researcher's best knowledge, this is the first study that addresses the specific research interest of Internet adoption among such an under- or non-exposed cohort. It offers to the research community the recognition of cohort and its implication of historical (non)exposure to the Internet and other ICT; an appreciation of age, period and cohort effects; and the applicability of the research results for future cohorts of older people.

8.4.1 Historical Exposure to ICT

The influence of birth cohort in the context of this research is made clearer when the pace of technological change is considered. The twentieth century represented an era of unparalleled and revolutionary technological change that is argued to have fundamentally changed the fabric of social and economic life for all people (Cutler, 2006). The cohort of older people involved in this research have lived through a time of immense technological change and had gained exposure to a number of technologies that had emerged during their lifetimes, including the television, the portable wireless, and the stereo. They have lived through the emergence of the Internet as a social and leisure tool over the latter half of the twentieth century, but had missed the opportunity to gain exposure to the Internet during their educational and working careers.

Some studies of cohorts indicate that people are likely to become less susceptible to change in attitudes, norms, values and behaviour after young adulthood (Glenn, 1974), and that experiences of technology in the formative years can shape attitudes towards similar or dissimilar technologies that emerge in later life (Paz, 2005; Docampo Rama, 2001). The research data provided evidence of older people sometimes feeling that it was necessary to adopt or to contemplate adoption, given its widespread use in contemporary society. Thus, the results provide supportive evidence of Elder's (1982)

claim that historical change can thrust people into new situations that may challenge the means, pathways and ends of accustomed life.

The concept of cohort assumes that common experience may result in common distinctive effects (Vincent, 2003). In terms of propensity to adopt the Internet, membership of a birth cohort with a common lack of historical exposure to the Internet did not automatically translate into the same attitudes and behaviours. Lack of historical exposure sometimes indicated a belief that the Internet had come about too late in life or, alternatively, it indicated a desire to overcome the barrier of having not experienced the Internet during the formative years. However, transitions towards Internet adoption followed no ordered sequence and were not closely synchronised. Thus, to reiterate Pearlin (1982), it cannot be assumed that because these individuals are at the same stage in their respective life courses that they travelled the same route to reach their present locations, nor that they are headed in the same future directions. It confirms that there are not only differences *between* cohorts in their experience of the same historical events, but that there are also discernible differences *within* cohorts (Victor, 1994).

8.4.2 Age, Period and Cohort Effects

These data cannot be explained by age or period effects. Age effects are due to the ageing process, and they impact at or about a specific age, regardless of historical time (Victor, 2005). The relative lack of Internet adoption among older people is not a phenomenon that will impact all people once they become old. For example, we cannot assume that current middle-aged Internet users will discontinue their adoption when they become 'old'. Period effects reflect historical time and events which may stimulate changed attitudes throughout all age groups and cohorts at a particular point in historical time (Victor 2005). Some of the findings of this research – such as feelings of being too old to use the Internet – are not attitudes that can be readily applied to younger cohorts who have grown up with the Internet.

Cohort effects - those that reflect the influence of historical time and events (Victor, 2005) - are a more appropriate way to describe the findings of this research. The fact that many of today's older people did not come into contact with the Internet through their working or educational lives is seen by some to be a deterrent to learning about this technology (Osman *et al.,* 2005). Older people's lack of historical exposure to the Internet is indicative of a cohort effect, because it is by virtue of the historical timing of their birth that they reached their formative years prior to the emergence of the Internet. Among the members of the cohort involved in his research, many felt that they were too old to adopt the Internet, or that they lacked the skills that they perceived were necessary for Internet use and which they attributed to younger generations who have grown up with the Internet. Thus, this research uncovered data that suggests that cohort effects were at play among the research participants.

8.4.3 Applicability of Research Results for Future Cohorts of Older People

Given the research interest in a cohort of older people with no previous exposure to the Internet, the applicability of the research results can be usefully discussed in terms of how they may or may not apply to future cohorts of older people. Today's older people will be superseded by the 'baby boomer' cohort, which will reach old age between 2010 and 2030 (Enright, 1994). Bouma and Harrington (2000: 141) draw attention to the importance of considering older people as a cohort distinct in their historical exposure to technologies, when they argue that:

> *"...* [W]*e have to remember that a seventy year old of today is qualitatively different from the seventy year old of ten years ago or the seventy year old to come ten years from now, just because of the very rapid pace of technological changes."*

Research surveys reveal that most older people are not on-line at this present time. According to Fox (2005b: 1), for the Pew Internet and America Life Project, *"...that is likely to change in a big way as the "silver tsunami" of internet-loving Baby Boomers swamps the off-line senior population in the next ten years"*. The expectation is that as

the 'baby boomers' who have often been using ICT in the workplace age, the rate of Internet use among older adults will greatly expand (Morrell *et al.,* 2004), and that the digital divide between younger and older generations will gradually diminish (Paul and Stegbauer, 2005). More long-term predictions are provided by Balazs (2004), who argues that differences between younger and older adults in their abilities and motivations to use technology should dissipate over time, because younger adults are using technology in the home and workplace, and because children, who will eventually become old themselves, are exposed to technology during their school years. As a caveat, however, Riggs (2004) suggest that the ageing of today's 'baby boomers' will do little to address the digital divide in more developing nations (Riggs, 2004).

Indeed, a note of caution is warned here in accepting the argument about cohort succession without reflecting on other issues which may be of relevance in this context. These issues also broach the applicability of the research findings. The first issue for consideration in this context is the rapid pace of technological change over recent decades, particularly associated with the Internet. This research discovered that for some members of the cohort subject to investigation, there was a feeling that the Internet had come too late in life to be of any real interest, or to be a serious contender for usurping established routines or interests. By the time currently middle-aged cohorts replace today's cohort of older people, a number of developments inherent to the Internet itself may have taken place. On a positive note, it is anticipated that the accessibility of the Web may be improved, and that devices may be more user-friendly (Melenhorst, 2002). Recent research suggests that many existing users have started making newer and more sophisticated uses of the Internet thanks to relatively recent technological developments like broadband wireless Internet technologies (Dutton *et al.,* 2005). Emerging developments include 'next generation' broadband services, like ultra-high-speed fibre-based connections (Walker *et al.,* 2008). The argument about the importance of exposure to technology in the formative years (e.g. Docampo Rama, 2001) would suggest that emergent and future developments like these could signal the persistence of 'generation gaps'. Importantly, these gaps could arise not only from the introduction of newer technologies over time, but also from the abilities or propensities of different generations

who do or do not grow up with them to successfully or unsuccessfully incorporate them into their personal, working or educational lives (Madden *et al.,* 2005).

Fox (2005) argues that the new 'grey gap' - that is, the gap between younger and older people - is one of connection speed as well as access, and argues that those social groups in the U.S., including older people, that were initially most likely to be slow in adopting the Internet are now, with the emergence of broadband, lagging in terms of access speeds. Other issues that could be pertinent in this context include differences of degree, quantity and quality of use (Liff and Shepherd, 2004), the types, age, capacity and functionality of devices, and the availability of technological and human support and resources (Becta, 2001). If we are to accept that historical exposure to technologies in the formative years of the members of a generation (or cohort) can have long-lasting effects on their adoption of similar or dissimilar technologies in later life (Docampo Rama, 2001), the rapid pace of technological change could potentially translate into the persistence of age (or cohort) based discrepancies in the adoption of new technologies.

The second issue for consideration is those baby boomers and other cohorts who may not be on-line when they become old. This research uncovered evidence of the rejection and discontinuance of Internet connections. In Selwyn's (2004) terminology, those who were 'disconnected' could be considered 'digitally excluded'. In the UK Online (2007) report *Understanding Digital Inclusion*, the effect of generational change on future levels of digital exclusion (or non-Internet use) is predicted[38]. The projections suggest that the overall proportion of the adult population who will be digitally excluded will fall from 39 percent in 2005 to 31 percent in 2015 and to 24 percent in 2025. While this is undoubtedly a smaller percentage of adults who are predicted to be digitally excluded in the future, it still represents almost a quarter of the adult population. This is essentially a question of whether inequalities of Internet adoption will be merely a temporary problem that will gradually reduce over time, or whether they prove to be an enduring

[38] In the report, the age distribution of the 2005 population is used to estimate the total number of non-Internet users in 2015 and 2025. It is assumed that mortality rate will be constant at 2004 rates and that current patterns of Internet use will continue among each age group. Also, new generations of 16-24-year-olds are assumed to have the same rate of digital exclusion as the current 16-24 age group.

pattern that will generate a persistent division between 'information haves' and 'information have-nots'. It is recognised that those who are predicted to be digitally excluded in the future will not necessarily be so because of their age. Research demonstrates that among all age groups there are a cluster of individuals who may lack interest in the Internet. If such disinterest in new technologies is carried with these younger cohorts into old age, the identification of channels of support (e.g. the community networks) is likely to remain of importance.

Fox (2005a) agrees that attention does have to be paid to those younger people who are off-line, and who will continue to be so in the future, but she suggests that younger 'off-liners' are fundamentally different to those who are aged 65 years and older and are off-line. She argues that younger non-users are likely to have lost their means of access because they have left school or have lost their job, and that they are highly likely to have first-hand experience of the Internet and a network of friends who are on-line. In contrast, those non-users aged 65 years and older, she argues, are likely to have never been on-line and probably know few people who use the Internet (Fox, 2005b). Fox's (2005b) argument implies that the idea of historical exposure to the Internet is one that will not be as relevant for future older cohorts as it is presently.

However, research on inward migration to the UK seems to suggest the more enduring applicability of historical exposure to the Internet, and the results of this research. A report by UK Online (2007) suggests that the proportion of inward migrants who have no exposure to or skills in using ICT could signal the more continuous nature of digital exclusion (UK Online, 2007). This could have implications in terms of Internet adoption among older migrants both now and in the future. Thus, it appears that the problem of 'digital exclusion' and the interrelation of ethnic- and age-based discrepancies of Internet adoption may well prove to be persistent[39]. The findings of this research – especially in terms of affordability issues, and the motivation to use the Internet in order to keep in touch with geographically-distant family and friends – may be particularly

[39] The increase in inward migration of older migrants with little or no previous exposure to the Internet is seen here as reflecting a possible continuance of age-based differences in Internet adoption. However, it can be seen as more an issue of ethnicity.

important in this context. However, the extent to which the intergenerational partnerships could apply to the situations of older migrants is questionable if members of migrant's social networks are widely dispersed.

The third issue for consideration is that which explores affordability issues related to Internet adoption. This research revealed that the cost of Internet connection was sometimes, though not always, a barrier to the adoption of household connections, whether dial-up or broadband. The proposal for community networks to provide Internet access free of charge to end users was intended to address the cost implications of Internet adoption. It appears that the importance of free access to Internet facilities may be enduring, given the recent global economic climate. A number of issues may impact the abilities of older people, now and in the future - and indeed other age and social groups - to afford household connections. Research statistics show that over the course of the twentieth century, and due to growth in real wages, successive generations have retired with better pensions and higher incomes than preceding generations (Enright, 1994), but that the poorest 'baby boomers' have benefited relatively less from real economic growth than has the cohort on average (Evandrou and Falkingham, 2006). Moreover, differences between older people with basic state pensions - which are steadily declining in real value (Coupland, 2004) - and those with additional pension savings will be stark and will reflect the complex interplay between age, gender, class and ethnicity (Victor, 2005).

The economic well-being of future generations of older people is expected to be more closely associated to work histories than has been the case in the past (Evandrou and Falkingham, 2006), but the increasing commonness of redundancy and early retirement may exacerbate existing problems of poverty for future older cohorts (Bradley, 1996). These financial constraints may impact the abilities of current and future cohorts of older people to adopt household Internet connections, and so suggest the future applicability of the proposal for Internet access to be provided free of charge to end users.

The fourth issue for consideration is the changes that are underway to social networks, and that are expected to impact on people's experience of older age in the future. In this research, strong social ties - especially those that were geographically close to the older (non)adopter - were of critical importance, particularly in terms of the co-participation of use. The importance of these strong ties was reflected in the proposal for intra- and intergenerational partnerships. While future older cohorts may not require the assistance of family or friends when using the Internet, they may still appreciate opportunities for using Internet technology alongside another person. Also, bearing in mind the previous point about technological change, future older cohorts may require or enjoy opportunities for co-participation when using newer technologies that they are less familiar with.

A number of demographic trends could signal for many older people, now and in the future, increased opportunities for co-participation. Rates of widowhood amongst women are projected to fall, and the length of marriages - provided they are not shortened by divorce - is likely to increase due to longer life expectancy (Arber, 2006). Also, despite the trends towards the delaying of childbirth, increased life expectancy means that parent-child relationships can last for a greater portion of adulthood (Pilcher, 1995), and may even involve parent-child relationships in which both parent and child are retired (Victor, 2005). However, Bond and Corner (2006) argue that 'baby boomers' tend to be less embedded in social networks, possibly as a consequence of their increased geographical and social mobility. Other emergent trends and ongoing changes in social networks may disrupt opportunities for older people to benefit from their strong ties when they are coming to adopt the Internet. Relevant issues in this context include recent trends towards the greater spatial dispersion of family members and friends (Boase *et al.,* 2006), pressures towards an extended working life which may hinder intergenerational relationships (Davidson, 2006), and the impact of migration and urbanisation which are seen to have supported age segregation and enabled aged parents to live apart from their children (Moody, 2006). While the findings of this research in relation to equipment acquisition and co-participation of use may be less applicable in

this context, the motivation to adopt the Internet in order to maintain contact with family and friends may retain its applicability.

This section has discussed the applicability of the research findings for future older cohorts, and it has shown that cohorts currently on the threshold of old age, like the 'baby boomers', may experience later life in very different ways to their predecessors (Goldscheider, 1994). This section has also raised a number of questions that could not be discovered in the context of this research, given its focus only on a cohort of older people. To sum up, the main question raised in this section was: will the issues that emerged in this research be a feature of Internet adoption among future generations, or do the findings of this research represent a cohort effect restricted to the generation of people who are now old? It is a very interesting question, and one that could be explored in future research.

8.5 RESEARCH CONTRIBUTIONS AND IMPLICATIONS

It is anticipated that this research - and associated research (Hill *et al.,* 2008) - offers a number of contributions to the research community in terms of its key audience and the existing literature, as well as in terms of what new knowledge it offers and how this knowledge may be used by others (Walsham, 2006). The key audience for this research is a somewhat broad one, including both scholars and students from diverse disciplines, including Information Systems (IS), sociology, gerontology and gerontechnology.

This research offers to IS scholars a useful way of investigating age-based technology adoption issues which focuses on age, period and cohort effects. To the researcher's best knowledge this would be a new approach in IS. The audience for this research also includes those scholars and students who are employing, or are interested in employing, the Diffusion of Innovations theory to explore adoption of technology. Using this theory, it has been possible to explicate older people's Internet adoption as a *process* and one that occurs *over time* (Rogers, 2003). In this way, it departs from survey research which tells us little about time order or causality. It is therefore suggested that the findings of

this research provide a useful and incremental contribution to existing knowledge of Internet diffusion among a specific birth cohort. Further, by drawing on the literatures from those disciplines listed above, this research may be viewed as contributing toward Becker's (1995) call for disciplines aside from sociology to contribute to the research on cohorts and generations.

Although it was not an explicit aim, this research has, to a certain extent, addressed two of the identified shortcomings of Diffusion of Innovations theory. These are its focus on adopted innovations, and its rearward orientation. Abrahamson (1991) argues that Rogers' (2003) theory suggests that innovations and their diffusion will always benefit adopters, and that it renders problematic the examination of when and how innovations are rejected. This research has highlighted that Internet rejection and discontinuance do occur, and that they may even occur despite the persuasive efforts of interpersonal networks to encourage an adoption decision. Only a relatively small number of researchers have examined the rejection of innovations (e.g. Abrahamson and Rosenkopf, 1993; Granovetter and Soong, 1986), so this research attempts to extend a relatively small research base. The findings of this research can be used by researchers aiming to gain a better understanding of why technologies may be rejected or discontinued.

The rapid evolution of Internet access has led d'Haenens (2001: 75) to describe the study of diffusion as *"rather like attempting to fire at a moving target"*. The focus of this research was on examining the diffusion of the Internet among older people while the process was still underway. It avoids a rearward orientation (Rogers, 2003) by examining older people's adoption of the Internet at two specific points in time; that is, both during and, on average, six months following the Meet the Mouse workshops. The intention was to tap into the innovation-decision process as it unfolded during the stages of knowledge, persuasion, decision-making, implementation and (in some cases) confirmation. This was a useful approach for exploring how, when and why decisions pertaining to adoption may be made. It offers to researchers a useful approach to exploring technology adoption as it occurs over time.

This research also contributes to IS methodology in so far as it moved away from the predominant use of a positivist paradigm and quantitative methodologies in the investigation of technology adoption issues, and has instead employed an interpretive paradigm and a qualitative research methodology. By employing the ethnographic research method, this research provides an effort at elucidating the adoption process from the perspectives of older people themselves. This was beneficial in accessing their own perceptions of how and why they adopted (or rejected) the Internet, and how their decisions unfolded over time. In doing so, this research has highlighted the potential benefit of adding explanation to survey statistics to gain a fuller understanding of why trends in data pertaining to technology adoption exist. It is therefore anticipated that this research provides an incremental step towards broadening the diversity of research approaches in the IS domain, and in demonstrating how IS may benefit by employing qualitative, ethnographic research as a complement to positivist and quantitative methodologies. This research describes in rich detail the motivation for the interpretive research in terms of the epistemological underpinnings of this research, its actual conduct in the research field, and how the data were analysed in terms of the philosophical underpinning of interpretive research, namely hermeneutics. It is anticipated that the detailed insights and perspectives, drawn from the research participants themselves, supplemented with the rich descriptions of the research process and setting, will provide new understanding of the profitability of ethnographic research in this context.

This research can be used by policy makers and by researchers. Explanations of phenomena that centre on age, period or cohort effects are not mutually exclusive, but they do have different theoretical and policy implications. As the results of this research suggest, future cohorts of older people are expected to be qualitatively different from previous cohorts. Thus one of the major contributions of this research is the emphasis on the need for policy makers, businesses and researchers alike to acknowledge cohort effects - and not simply age *per se* - in the surveys which reveal the reduced propensity for older people to adopt the Internet.

The results have implications for policy-making and marketing, by providing some of the reasons for dissonance among older people. This may assist marketers to design strategies for promoting the more social side of the Internet, especially the use of email for contacting family and friends. A better understanding of dissonance among older people may also enable policy-makers to understand the barriers to Internet adoption among older people.

The findings of this research could be of interest to those policy makers seeking to improve the state of their 'Information Society' by bringing on-line those groups who tend to be disproportionately less likely to adopt the Internet. It is anticipated that policy makers may find the importance of strong ties particularly interesting, given its implications in terms of promoting Internet adoption by mobilising the social networks of non-adopters. The research findings suggest that positive changes in adoption behaviour and attitudes can occur when older people are exposed to the Internet. The findings suggest that basic introductory 'tasters' like the Meet the Mouse workshops can successfully give older people a positive first (or nearly first) exposure to the Internet and that they can build confidence in users to pursue further Internet-related learning opportunities. This research also suggested that more long-term provision is often desired, though not always in a formal environment like a library. These findings can be used by policy makers to design appropriate community interventions aimed at improving rates of Internet adoption. Policy makers could also learn from this and other research (e.g. Liff *et al.,* 2002) that community-based access sites require more long-term funding to promote community-based learning.

8.6 RESEARCH LIMITATIONS

This research is not without its limitations. Due to the focus of this research on those older people attending Meet the Mouse workshops, it could be argued that this research attends only to those people who were positively predisposed towards the Internet. The researcher acknowledged this possible criticism on entering the research setting, but

accepted that it was appropriate for exploring processes of adoption; that is, why and how older people may be adopting the Internet, and how this process can unfold over time. The researcher was open to the possibility of encountering instances of Internet rejection, but not the *extent* of rejection that was displayed by some of the research participants. It was clear that many of the research participants had attended the workshops to learn about computers rather than the Internet. This limited the research to the extent that it revealed less about how they were adopting the Internet, but it also benefited this research by contributing towards an understanding of Internet rejection.

The extent to which the people involved in this research are representative of the wider workshop audience may be a limitation of this research. A sample is said to be representative if it includes the same proportion of people of different ages and gender and from the different backgrounds (including cultural, ethnic, socioeconomic and educational backgrounds) as the population from which the sample is drawn (Sugarman, 2001). It cannot be assumed that non-responders possess the same characteristics as those who do respond (Victor, 1994, 2005). There is a risk, therefore, that those who refused participation in this study may have been an unrepresentative component of the workshop attendees: for example, they may have been from lower socio-economic groups or they may have been established technology users. Knowing something about the characteristics of non-responders goes some way towards determining whether the results may be biased as a result of non-response (Victor *et al.,* 2007). However, TGG did not request sufficiently detailed information from the workshop participants for the researcher to determine the exact demographic composition of the workshop audience. Nevertheless, through the researcher's observations of and informal talk with the attendees it was clear that there was an even distribution of males and females, and that the attendees were typically from professional or semi-professional work backgrounds.

Many people from minority ethnic communities were systematically excluded from the study because attendance at the workshops was contingent on the ability to understand English or Welsh. The frail elderly were also excluded, and there were no attempts by The Glasgows Group (TGG) to recruit attendees from care homes or residential care

settings. Over the course of data collection, it became clear that the workshop audience was comprised by a significant proportion of middle class participants. The extent to which this sample over-represents those individuals who are White, healthy, and middle class, is a concern. Also, by requesting workshop participants to self-select themselves for involvement in this research, it may have meant that those who had excluded themselves from the study were different from the wider population of interest (Wright and Query, 2004). There are inevitably sub-groups of this cohort who will differ markedly from those that participated in this research. They may, for example, be more financially disadvantaged. For these reasons, the researcher has been careful not to infer observations based upon this sample as attributable to all older people, but to extrapolate the findings to the population subject to study only.

The data upon which the research findings are based constitute a rich source of current information about how this cohort was coming to adopt (or reject) the Internet, but their limitations should be borne in mind. In particular, the way that the data is presented in the form of vignettes means that this research takes more of a story-telling approach, which may be open to criticism as non-rigorous (Harvey and Myers, 2002). However, this approach to presenting the data was seen as a particularly appropriate way of 'bringing to life' (Boland, 2002) the participants in this research and the unique contexts in which their experiences of the Internet were embedded.

Finally, this research focused on a cohort of older people at the expense of including younger cohorts in the study. Nevertheless, the role of younger cohorts, especially adult children, in terms of exposing the older cohort to the Internet was a feature of this research. Emerging research evidence suggests that it makes a key difference whether a researcher examines intergenerational relationships from the perspective of an older parent or an adult child (Fennel, 1990). In this research, it is the older parent who has been the focus of study. Future associated work could perhaps address this shortcoming by examining the thoughts and actions of the adult children (or other strong ties) in this relationship.

8.7 FUTURE RESEARCH DIRECTIONS

Notwithstanding its limitations, this research has generated some profitable avenues for future associated research. Future research in this area could benefit from employing longitudinal designs, involving the examination of a given cohort over an extended period of time. Longitudinal research studies are credited as being better equipped to examine the temporal evolution of an individual's beliefs and attitudes over time (Krahanna *et al.,* 1999). Longitudinal research designs could also incorporate the analysis of adoption of new technologies as they emerge and become established over time, in recognition of how technological change can mean that individuals need to bridge the 'digital divide' several times over (Ito *et al.,* 2001). The diffusion of high speed Internet (Dwivedi, 2008) and the emergence of new on-line activities like social networking also point toward a broader area for future research.

Future research directions could include a more thorough examination of some of the issues raised in this research, but that were not elaborated due to constraints of space. One of these issues is the potential of the Internet as a social network in itself (Wellman, 2001). Online support networks are argued to have the potential to extend the size and diversity of older people's friendship networks, and to expand the number of relationships that could become potential weak-tie networks for social support (Wright and Query, 2004). Also, access to the Internet and to email is championed as having the potential to reduce isolation among older people with small social networks and to enhance their social interactions (Osman *et al.,* 2005). With a growing proportion of older people going on-line (ONS 2008a), these issues could provide an interesting research agenda, and one which could offer profitable insights to policy makers involved in the social care of older people. Another issue that could be explored more thoroughly is that surrounding social capital through the practice of networking. Putnam (2000: 19) describes social capital as the *"connections among individuals"* and Gilchrist (2004: 6) regards social capital as *"the value added through networking processes, within the web of ties and linkages that we call community"*. Research on the social capital benefits for older people – and indeed any other age or social groups – derived from participation in

community networks like those described here could provide valuable data to the research community and to policy makers on the potential of networking strategies.

It could be potentially fruitful to open up future research in this area to involve those people who were not represented in this study. This includes those younger people, like the adult children who were referred to by the research participants, who could be contacted to provide their own perspectives on the Internet adoption process. It also includes those older people who did not attend the workshops, but who may nevertheless be adopting the Internet. Developing links with community groups and with venues where older people may be using the Internet, like libraries, may prove to be a successful means of recruiting a diverse group of older people for research purposes. A more sophisticated research agenda may also be able to more adequately address the relationship and intersection of age with other demographic indicators such as gender, class and ethnicity. Finally, it may be possible to extrapolate the research findings to members of other social groups who may also be relatively slow to adopt the Internet, such as those with lower levels of educational attainment (Dutton *et al.*, 2005).

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APPENDIX 1: Venues and workshops attended for the purpose of data collection

Appendix 1 presents the Meet the Mouse workshop schedule (November 2004 to March 2005) in its entirety. In the final column, an asterisk indicates the workshops attended for the purpose of data collection.

VENUE	DATE	TIMES	RESEARCHER ATTENDANCE
Cardiff	Tue 11 Nov 2003	10.00AM-12.30PM	*
		2.00PM-4.30PM	*
	Wed 12 Nov 2003	10.00AM-12.30PM	
		2.00PM-4.30PM	
		6.00PM-8.30PM	
	Thu 13 Nov 2003	10.00AM-12.30PM	*
		2.00PM-4.30PM	
	Fri 14 Nov 2003	10.00AM-12.30PM	
Newport	Tue 18 Nov 2003	10.00AM-12.30PM	*
		2.00PM-4.30PM	*
	Wed 19 Nov 2003	10.00AM-12.30PM	
		2.00PM-4.30PM	
		6.00PM-8.30PM	
	Thu 20 Nov 2003	10.00AM-12.30PM	*
		2.00PM-4.30PM	
	Fri 20 Nov 2003	10.00AM-12.30PM	
Barry	Tue 25 Nov 2003	10.00AM-12.30PM	*
		2.00PM-7.00PM	
Bridgend	Thu 27 Nov 2003	10.00AM-12.30PM	*
		2.00PM-7.00PM	
	Fri 28 Nov 2003	10.00AM-12.30PM	
Merthyr Tydfil	Tue 2 Dec 2004	10.00AM-12.30PM	*
		2.00PM-4.30PM	
		6.00PM-8.30PM	
Milford Haven	Thu 4 Dec 2003	10.00AM-12.30PM	*
		2.00PM-7.00PM	
	Fri 5 Dec 2003	10.00AM-12.30PM	

Swansea	Tue 9 Dec 2003	10.00AM-12.30PM	*
		2.00PM-7.00PM	
	Wed 10 Dec 2003	10.00AM-12.30PM	*
		2.00PM-4.30PM	
		6.00PM-8.30PM	
	Thu 11 Dec 2003	10.00AM-12.30PM	*
		2.00PM-4.30PM	
	Fri 12 Dec 2003	10.00AM-12.30PM	
Aberystwyth	Tue 13 Jan 2004	10.00AM-12.30PM	*
		2.00PM-4.30PM	
	Wed 14 Jan 2004	10.00AM-12.30PM	
		2.00PM-4.30PM	
		6.00PM-8.30PM	
	Thu 15 Jan 2004	10.00AM-12.30PM	
		2.00PM-4.30PM	
	Fri 16 Jan 2004	10.00AM-12.30PM	
Llandrindod Wells	Tue 20 Jan 2004	10.00AM-12.30PM	
		2.00PM-4.30PM	*
		6.00PM-8.30PM	
Newtown	Thu 22 Jan 2004	10.00AM-12.30PM	
		2.00PM-4.30PM	*
	Fri 23 Jan 2004	10.00AM-12.30PM	*
Dolgellau	Tue 3 Feb 2004	10.00AM-12.30PM	*
		2.00PM-4.30PM	
		6.00PM-8.30PM	
Welshpool	Thu 5 Feb 2004	10.00AM-12.30PM	
		2.00PM-4.30PM	*
	Fri 6 Feb 2004	10.00AM-12.30PM	*
Ruthin	Tue 10 Feb 2004	10.00AM-12.30PM	
		2.00PM-4.30PM	*
	Wed 11 Feb 2004	10.00AM-12.30PM	*
		2.00PM-4.30PM	
		6.00PM-8.30PM	
	Thu 12 Feb 2004	10.00AM-12.30PM	
		2.00PM-4.30PM	

	Fri 13 Feb 2004	10.00AM-12.30PM	
Llandudno	Tue 17 Feb 2004	10.00AM-12.30PM	
		2.00PM-4.30PM	*
	Wed 28 Feb 2004	10.00AM-12.30PM	*
		2.00PM-4.30PM	
		6.00PM-8.30PM	
	Thu 19 Feb 2004	10.00AM-12.30PM	
		2.00PM-4.30PM	
	Fri 20 Feb 2004	10.00AM-12.30PM	
Wrexham	Tue 23 Mar 2004	10.00AM-12.30PM	
		2.00PM-4.30PM	*
	Wed 24 Mar 2004	10.00AM-12.30PM	*
		2.00PM-4.30PM	
		6.00PM-8.30PM	
	Thu 25 Mar 2004	10.00AM-12.30PM	
		2.00PM-4.30PM	
	Fri 26 Mar 2004	10.00AM-12.30PM	