Gender Dimensions in the Appropriation and Use of ICT-Technology

A Qualitative Study in Great Britain, Germany and the Netherlands

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Abstract

This thesis focuses on the roles that gender, age and culture play in informal knowledge acquisition in the field of everyday communications and entertainment technology. It concentrates on four such technologies: personal computers, mobile phones, digital cameras and MP3 players and was conducted in three countries: Great Britain, the Netherlands and Germany. It explores the strategies and networks that people develop and use to get the knowledge they need to acquire to be able to use newly available technology. The research was carried out using a qualitative approach and involved conducting 24 semi-structured interviews. The main body of analysis concentrates on three core topics: a) understanding the respondents' childhood experiences with technical artefacts compared with the available technology, b) the different strategies developed by each individual to gain media literacy, and c) the interrelation of identity and technology, which includes the interviewees' emotional relationships with technical artefacts. The first topic centres on the experiences of two different generations with technology and explores whether parents with technical interest conveyed this to their children. Further it investigates gender differences in these early encounters with technology. The second analysis chapter engages with the process of domesticating technical artefacts and the associated stages of knowledge acquisition. It explores the available knowledge sources for technical information in each country and which of them were used by my interviewees depending on age, gender and country. The third analysis chapter analyses the close connection between identity and the use of technical artefacts in everyday life. It examines the different perceptions respondents expressed about different generations and their use of technology, with younger generations often being dismissive of the technical competence of the older ones. The interviewees referred to their artefacts as though they were friends and described their relationship with them in terms that echo those used in object-relations theory. One important result of this study is that the perceived limitations stemming from individuals' gender roles influenced their own attitude towards technology and technical competence. In summary, a picture emerged of interesting contradictions to some of the established stereotypes regarding the interplay of gender, age and technology.

Keywords: Gender, knowledge acquisition, new technology, mobile phones, gadgets, technical knowledge, media literacy, identity, artefacts, age, generations, femininity, digital camera, computer, informal learning, everyday life, stereotypes, women, men.

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Author's declaration

I, Gitta Victoria Brüschke, hereby declare that I am the sole author of this work, and that it is my own work.

No proportion of work contained in this thesis has been submitted in support of any application for another degree or qualification of this or any other university or institute of learning.

1 Introduction

In 1997, when I was head of a private educational institute, we taught hundreds of adults how to use computers and the internet and how these new technologies worked. We observed that women in general were more cautious and doubtful about their ability to understand how computers and the internet worked than men. Many women were afraid to make mistakes, or worried that they might destroy the computer or do other 'silly' things, while men in general pressed buttons without being asked to, messing up the training process and needing our trainers to help them get back to the point where they had left the guided training. This used up a lot of time in our computer classes. During the next few years, digital devices such as digital cameras, MP3 players and mobile phones were acquired by more and more individuals and I remember that we considered offering courses for these appliances as their functions were often almost as manifold and complex as those of a computer, certainly from the perspective of the user. However, we never did. And nobody else did either, as far as I could see. So I started wondering how individuals actually learn how to use these technical devices. Based on my experience with the different learning behaviours of women and men in our computer courses, I wondered especially how women would cope with this challenge.

My concern was also driven by my own experiences as a girl growing up. While I and my sisters got dolls and stuffed toys for Christmas, my brother got an electrical toy train and technical toys. Although he wanted a doll to be able to play with us older sisters he was strongly encouraged by aunts and my mother to stick to his toy cars. It was a mystery to me why girls and boys were treated differently for no apparent reason. When I asked my parents I got the supposedly self-explanatory answer that he is a boy and I am a girl. And that was that. Later I wondered whether I graduated in mechanical engineering with a very good mark only to show my parents that women were capable of understanding technology just as well as they thought boys should. The normative power of gender stereotypes was and still seems to be very influential. Men are credited with an innate ability to understand how technical devices work while women are regarded as incompetent with technology. However, authors such as Judy Wajcman (1991b), Cynthia Cockburn (1983) and Tine Kleif and Wendy Faulkner (2003) have dedicated many years of research to exploring these assumptions. Judy Wacjman argues:

> the gross underrepresentation of women in engineering and allied industries and the lack of confidence often felt by women faced with technology are evidence of a deeper problem. Official plans to rectify the underrepresentation of women in engineering often proceed as if the problem were to improve women's self-confidence. But male dominance of technology has largely been secured by the active exclusion of women from areas of technological work. (Wajcman 1991b: 35)

The active exclusion of women from technological areas in the past might be one of the most significant reasons why the 'unwritten rule book' of gender stereotypes includes a section on technology, where men are assigned an interest and proficiency in technology whereas women are 'allowed' (or even expected) to be uninterested and have only limited knowledge about it. Kleif and Faulkner (2003) argue that the fact that men take more pleasure in technologies than women may be due to childhood experiences:

> boys and girls are socialized to play with different types of toys such that boys are more likely to acquire and so enjoy skills in hands-on tinkering and problem solving geared to the creation or mending of technological artifacts. In general, parents tend to give more encouragement to boys' interests in technology than to girls'. (310)

Technology has intrigued me for as long as I can remember. I always wanted to know how things work and in my youth I took many appliances apart to see their inner components. These key experiences in childhood may influence an adult's attitude towards technical items as this story reveals: a friend of mine described how a single incident in her childhood manipulated her general relationship to technology with lasting effects even into adulthood. A broken alarm clock aroused her interest when she was about ten years old. She wanted to open it and explore its inner world and then try to reassemble and fix it. When she asked her father which tool she needed to open it, her father was instantly terrified and forbade her to tamper with it. She could see the fear on her dad's face but could not understand why she was not allowed to open it as it was broken anyway. She described her fear of anything technical in her adult life after this incident and was convinced that she was not able to do DIY or anything that involved technical gadgets. This story underpinned my interest in the possible correlation between childhood experiences and interest developed later in life in technology and technical competency. Donald MacKenzie and Judy Wajcman argue that

childhood experiences lead to different levels of technical competence in women and men:

> Different childhood exposure to technology, the prevalence of different role models, different forms of schooling, and the extreme gender segregation of the job market all lead to what Cockburn elsewhere describes as 'the construction of men as strong, manually able and technologically endowed, and women as physically and technically incompetent'. (MacKenzie and Wajcman 1985: 22)

Here MacKenzie and Wajcman point to the different reasons for the assignment of different levels of technical prowess to women and men through gender stereotypes. They also describe the effects of these stereotypes and how they affect women's confidence in relation to technology.

The relationship between an individual and technology is not only influenced by gender stereotypes but is also continuously formed by experiences with technology in everyday encounters. Erving Goffman (1959) argues that an individual's perception of her technical proficiency is to a great extent influenced by judgements about her technical know-how made by people who are involved in a situation where technology plays a part. This intra-action, to use Karen Barad's term (2007), starts in early childhood. As Wajcman (1991a) argues, the kind of exposure to technology that one experiences in childhood is one component of how this intra-action develops, which I describe as 'artefact identity' in this thesis. I will explore this further in Chapter 6.

These considerations led to my three research questions:

1. In what ways might the acquisition of technical knowledge be more difficult for women than for men?
2. It is often assumed that the 'digital generation', those who grew up with computers, automatically know how to use ICT gadgets. Among my older interviewees, this was a common belief as interviewees from all three countries repeated this phrase. Did the 'digital natives',[1] the younger generation I interviewed, develop different strategies from the 'digital immigrants', as older people are often called? Is the perception true that the older generation is engaged in a desperate struggle to catch up with the younger one? In my interviews, these questions and beliefs were picked up and commented upon. I will explore them in Chapter 4 where I discuss my interviewees' cultural and family background.

[1] See Marc Prensky (2001) on 'digital natives' and 'digital immigrants'.

3. Which kinds of strategies do individuals develop for acquiring technical knowledge? Are these strategies the same for everyone or do they differ in the case of users from different generations, cultural and gender contexts? (I cover these questions in Chapter 5 on knowledge acquisition).

The first research question arose because I was interested in the strategies women might have developed and the obstacles they might encounter during their search for the information they need to be able to use their technical devices comfortably. However, this did not seem to be enough as I did not know whether women faced more or other difficulties than men in acquiring technical knowledge. When I decided to do interviews as a way of accessing individual perceptions of people's experience with acquiring technical know-how I therefore decided that I had to interview men as well as women so that I could compare my findings. When I thought about the age of the people to interview, I reflected on the different decades in which people had grown up and what technical items were commonly available at different times. I decided that it might make a big difference whether people grew up with computers and the internet or not and so in my sample I chose to include people over 50, who grew up without computers and the internet, and people under 30, who had computers from early on in their lives.

As experiences with technology in childhood influence later interest in and competence with technology in adult life according to Kleif and Faulkner (2003), I wondered even more how women and men managed to cope with all the everyday gadgets that were common at the beginning of the 21st century. Therefore I decided to include questions about childhood experiences with technology in my interviews to see whether I could detect any connections between childhood and adult interest in technology.

I also wondered whether different cultures might influence people's attitudes towards technology. As a German living in Great Britain, I had encountered more cultural differences than I had expected and began to wonder whether people in Great Britain would react differently to new technical devices than people in Germany. Therefore I decided to do interviews in different European countries and chose Great Britain, Germany and the Netherlands for my research. As these countries are all members of the European Union they are subject to the same directives from the EU government and, being partly governed by EU laws, the market conditions should be similar. The same brands of technical gadgets were available in all three countries and I chose to focus on four key gadgets: mobile phones, computers, digital cameras and MP3 players.

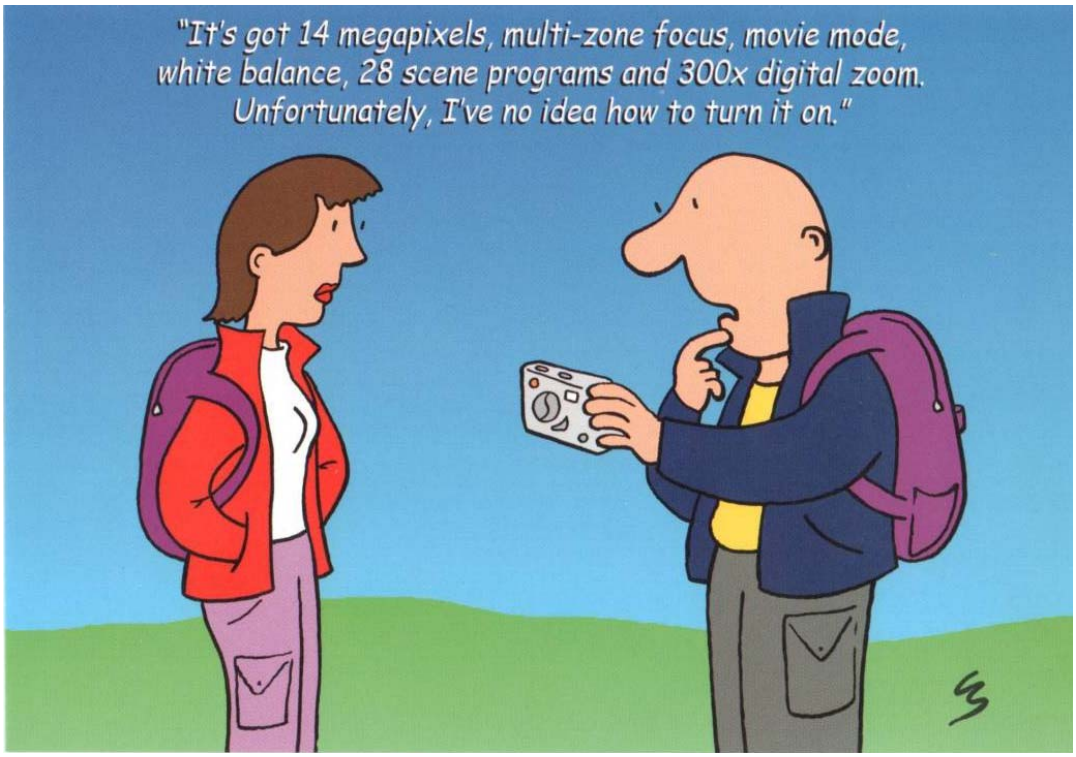
These were the major gadgets used in private contexts at the time of the interviews, between December 2007 and December 2008. As Eurostat data demonstrate, these information and communication technology (ICT) devices have become mundane in the private lives of millions of Europeans of different ages, genders and social backgrounds (Eurostat 2005). Indeed, as MacKenzie and Wajcman point out:

> Technology is a vitally important aspect of the human condition. Technologies feed, clothe, and provide shelter for us; they transport, entertain, and heal us; they provide the basis of wealth and of leisure; they also pollute and kill. For good or ill, they are woven inextricably into the fabric of our lives, from birth to death, at home, in school, in paid work. Rich or poor, employed or non-employed, woman or man, 'black' or 'white', north or south – all of our lives are intertwined with technologies, from simple tools to large technical systems. (MacKenzie and Wajcman 1999: 3)

As the choice not to engage with technology is no longer a viable option in contemporary life in western European countries, I sought to investigate whether gender stereotypes stymied women in their attempts to achieve technical proficiency. The data I utilized came from two main sources: statistical household surveys on the one hand and my own findings from my qualitative study on the other. This latter study involved in-depth interviews in three countries with 24 interviewees from different cultural backgrounds, both genders and two generations.

As knowledge is a vital part of technology use, I became interested in the question of how women and men acquire their knowledge about technical devices in general, and in particular what they do when they want to buy a device, and how they then acquire the knowledge about how to use it. In general, as mentioned, there are no formal courses on how to use a mobile phone or what to do when one wants to buy a digital camera. The shared cultural understanding of the 'normal way' to be knowledgeable about modern ICT technologies is that one 'just knows.' It is seldom asked where this knowledge comes from or how it was acquired because of the unobtrusive and elusive process by which technical information is picked up from informal sources, as I shall elaborate upon later in this chapter. The fact that modern technical devices provide a lot of functions means that they require extensive knowledge about how to use them. This is nicely illustrated in the following postcard.

Illustration 1.1: Cartoon about Media Literacy.



Source: Picture Postcard, publisher unknown.

Technical proficiency is part of media literacy, which is considered by national governments and the EU to be a crucial ability for every citizen. The EU authorities are concerned about the media literacy rate of their countries. Vivian Reding, EU Commissioner for Information Society and Media, has argued:

> In a digital era, media literacy is crucial for achieving full and active citizenship (...) The ability to read and write—or traditional literacy—is no longer sufficient in this day and age (…) Everyone (old and young) needs to get to grips with the new digital world in which we live. (EU Press Release IP/07/1970, 2007)

In a later publication she adds:

> However tall the order might be, media literacy is a paramount goal of public policy if all European citizens are to enjoy the benefits of the Information Society fully. (Reding 2009: 7)

As these quotes make clear, the subject of media literacy is very high on the agenda of the EU government and is seen as a vital skill for the future success of the European economy: 'The availability of adequate skills for developing, implementing and using

information and communication technology (ICT) is an important condition for the competitiveness and the innovation capabilities of the European economy.'[2]

Scholars (e.g. Aufderheide 1997, Livingstone 2004, Potter 2005, Baran 2006) and government bodies are involved in an ongoing discussion about which skills citizens should develop and maintain. David Buckingham (2009: 15) lists some crucial ingredients that involves:

1. Developing skills in handling technology;
2. Promoting the inclusion of hitherto excluded groups in using technology, and in the 'knowledge society';
3. Promoting creative and artistic self-expression through the use of new media, and enabling people to communicate with audiences;
4. Helping people to make informed economic decisions as media consumers.

Buckingham criticises the unclear expectations placed on citizens, since this list is not at all complete:

> Media literacy, it seems, is a skill or a form of competency; but it is also about critical thinking, and about cultural dispositions or tastes. It is about old media and new media, about books and mobile phones. It is for young and old, for teachers and parents, (…) It is about creativity, citizenship, empowerment, inclusion, personalisation, innovation, critical thinking (…) and the list goes on. (Buckingham 2009: 15)

To be able to search for specific information on the World Wide Web does not necessarily include the ability to be critical at the same time about the information found or to be able to evaluate it. However, as my interviews show, my participants were concerned about the validity of the information they found on the internet, about the dangers of new ICT technologies and about their own ability to cope with this responsibility for judging media content. Chapter 6 in this thesis, about identity and technology, will show which strategies my interviewees developed in order to get to grips with this responsibility.

[2] http://ec.europa.eu/information_society/eeurope/i2010/docs/benchmarking/wp6_digital_literacy_and_ict_skills.pdf, p.9, accessed 08.02.2011.

1.1 The transformation of information into knowledge

The terms 'information' and 'knowledge' are used interchangeably in many discourses, but this thesis distinguishes between the two and I want to explain the difference between information and knowledge. Many authors distinguish between the two. The philosopher Gilbert Ryle (1949) distinguished 'know that' or 'know about' from 'know how.' 'Know that' or 'know about' covers data, facts or information. 'Know about' can include information about anything from lionesses to women's soccer or the stars and the universe. But, to put information into use, 'know how' is needed. 'We learn *how* by practice' (Ryle 1949: 128). In Chapter 5, this distinction becomes visible through the ways in which information was gradually incorporated into my interviewees' lives and was converted into knowledge. Roger Silverstone and Eric Hirsch (1992) describe this learning by practice as the process of domestication. As my interviewees started to look for information about new gadgets, they were situated in an information context since they were dealing with 'knowing about.' Only when they started to apply that information, as Ryle argues, and encountered the responses of the gadget, did they incorporate that information and turn it into knowledge.

B. Genova and Bradley Greenberg (1979) introduce a similar distinction to Ryle's between structural and factual knowledge. Factual knowledge centres on information about specific items such as names, dates, places, facts and figures, whereas structural knowledge comprises subjacent intentions, agendas and long-term consequences. In this thesis, factual knowledge about technical devices was marginal and the main concern was with structural knowledge as I tried to discover the subjacent intentions and agendas of my participants regarding the use of technical devices. Some of my interviewees were concerned when I asked if they would consent to being interviewed. They said: 'I don't know much about technical devices.' But they were reassured when I emphasized that I was not interested in their factual knowledge about technology or their media literacy but rather in their experiences with information gathering.

John Brown and Paul Duguid (2000) identify three differences between information and knowledge. Firstly, information exists without being attached to a person, whereas knowledge entails a knower. Secondly, knowledge is harder to detach than information, which can be picked up and stored, passed around and lost, whereas knowledge is mainly attached to a person who turns information into knowledge by adding her life experience and common sense. The third difference is that the status of information is neutral and people may have conflicting information, for example. Knowledge, on the

other hand, is individually digested information that a person has assimilated and associated with life experiences from her past and thus converted into something meaningful to her. This implies that different people may gain different sets of knowledge from the same pool of information. Information taken up by an individual becomes personalized knowledge. The assumption that a piece of written instruction, such as a manual, is processed in the same manner by everyone is therefore wrong.

As my interviews show, different people have completely different experiences of the usefulness of a technical manual. As individuals mix their past experiences, their perceptions and their expectations with the information they pick up, the range of the knowledge extracted differs considerably. Nina Degele (2000) and Peter Fleissner et al. (1996) emphasise that knowledge is processed and applied information and therefore on a higher level of pragmatics than information itself, confirming the argument of Brown and Duguid (2000). Degele defines information as a carrier of new facts and thus a supply of new knowledge (2000: 45). She also points out that meta-knowledge (*Wissen 2. Ordnung*), about where to get relevant knowledge and how to use it, might nowadays be more important than the actual information itself. This is relevant for the knowledge sources my interviewees used, since all of them had to find knowledge sources they could trust.

In general, knowledge acquisition is perceived as learning, even if it is not acquired in a formal setting. For my study it was important to look at informal learning as this is the main process by which my participants gathered their technical knowledge. Informal learning is about acquiring knowledge in everyday life in contrast to formal education on courses in schools, colleges and universities, for example. As will be explained in the literature review (Chapter 2 of this thesis), informal learning happens unintentionally and therefore everywhere and all the time. Whenever one reads an advertisement, a magazine or a newspaper, one takes in information consciously and subconsciously. When I asked my participants about when and where they had acquired certain bits of information, they mostly could not remember where they had picked it up. As Simone said: 'It's like the information you absorb without knowing you're absorbing it' (Simone, GB, 67)[3].

This kind of informal learning that Simone described happens unintentionally, while intentional learning in the context of technology is often not formal but self-directed learning. With self-directed learning and access to knowledge sources such as books, the

[3] Throughout the thesis I identify participants in the following way: (name, country, age).

internet and experts, people become independent from educational institutions, which are often slow in adapting to the new requirements of teaching subjects such as new technologies.

As there are usually no formal courses on 'how to work with your mobile phone or other gadgets' on offer from private or public educational institutions, self-directed learning is the only method participants can use in order to acquire the necessary knowledge about their technical devices. As my sample consisted of people with no specific technical expertise (to make sure that their interest in technology was not governed by professional need), the decision to become more or less proficient with technical devices and engage in self-directed learning was an individual choice, sometimes of course triggered by peer pressure or needs stemming from a work context.

Technical information is no longer necessarily confined to experts. As ICT appliances become mundane objects, knowledge about these gadgets and their functionality trickles out of the domain of expertise to ordinary people and is published in books, journals and advertisements. Much of the former technical knowledge of experts has thus turned into common knowledge, some of it even shared by everyone.

Technical knowledge can indeed be picked up in very different settings. A friend of mine went to the theatre to see a play about issues regarding digital identity. This play used the fact that we have two identities in 2012: a personal identity marked by our passports, identity cards and the way we dress and use identity markers (see Chapter 6), and a digital identity marked by all the traces we leave in the digital world, such as online shopping, and of course data that we provide on purpose in blogs or on social websites such as *FaceBook*. The play focussed on the dangers connected with using the digital identities of other people for personal advantage or committing digital crimes. Information about new technologies can also be gained by watching television, as many TV series and movies such as *The Matrix* contain information about digital literacy and the possibilities of new technology.[4] The boundaries between expert knowledge and common knowledge are becoming blurred and it can be difficult to determine where one starts and the other ends.

[4] The 11-year-old daughter of some friends of mine has a Nintendo games console and she proudly showed me what she can do with all the games, but it also has a camera and she could manipulate the photos she took, create animations out of scenes she sketched and create a piece of music. I was astonished by all these features and the level of media literacy that she had already achieved by playing with a games console that in 2010 is so much more than just that.

Uwe Flick (1996: 124) has argued that technical knowledge used to be perceived as expert knowledge and thus access was restricted, for example medical knowledge which for centuries was monopolized by a small group. Due to the ubiquitous nature of technical gadgets, technical knowledge about how to use them had to be made accessible and computer scientists, who were previously the sole possessors of this particular knowledge, lost some of their previous status. Technical gadgets are used by everyone nowadays, amateur and expert, old and young, beginners and experienced users. Using a technical gadget begins with switching on the power button. Although doing this sometimes becomes the first barrier to be overcome, most people manage the basic functions with their common knowledge. Common knowledge is general knowledge that has been gathered through one's life experience and know-how from other people. Flick (1996) defines common knowledge as knowledge that is about all kinds of subjects and not clearly defined, such as expert knowledge or the knowledge needed for a certain profession. Instead common knowledge is needed by everyone, even experts, because this knowledge is necessary to be able to deal with everyday life. Since new technological devices are part of everyday life, knowledge about how to use them has permeated common knowledge.

The US conducts a survey every year to discover how much knowledge the average citizen has about technology and science, in other words, how much knowledge of technology has become part of common knowledge. In their survey: 'Science and Engineering Indicators: 2010 - Public Understanding of Science and Technology 2010', they try to assess the knowledge that 'a technologically advanced society requires (either today or in the future) to compete in the world economy and enable its citizens to better take advantage of scientific progress in their own lives' (US Survey 2010, Chapter 7, 'Science and Technology: Public Attitudes and Understanding': 44). This survey indicates that knowledge about science and technology is spreading.

The idea of the citizen as a well-informed member of a society is not new. In his essay, 'The Well-Informed Citizen', Alfred Schütz (1964) constructs ideal types of knowledge holders: the expert, the man (woman) in the street and the well-informed citizen (to whom it falls to determine which experts are competent). He emphasises that these three ideal types are only constructed in order to separate different aspects of ourselves, since in real life we are all experts, well-informed citizens and women in the street in different areas of knowledge. Schütz argues that everybody should become a well-informed citizen instead of merely being the man or woman in the street or the

specialist expert. He pictures a society where people who actively keep up-to-date are the preferred citizens. He assumes a knowledge-pool to which everyone has access. This vision has become true in certain ways today as the internet provides vast amounts of knowledge about many topics and is accessible to many people. And, as Schütz pictured it, the responsibility to keep informed was placed increasingly on the individual. This normative expectation of policy makers places pressure on the individual to achieve and maintain media literacy without being offered appropriate support.

Implicit in these questions is the perspective of the user, which I will take further by investigating the agency of the user as a powerful force in the process of the social shaping of technology, as described by Donald Mackenzie and Judy Wajcman (1985). They argue that the user has to adapt to the needs of the artefact if it is to work properly but that the user also has an influence on technology by how, when and where they use it. In this thesis I will take the perspective of the user and expose the dual life of technology as an object in everyday life on the one hand, and as an embodiment of social relations on the other. This thesis addresses these less clear-cut, difficult to quantify, but much more interesting questions by drawing on both quantitative and qualitative research on acquiring media literacy in everyday life. The format of this thesis will involve switching between macro- and micro-perspectives on countries and the respondents' lives. The qualitative research will allow a 'zoom in' movement, revealing how statistically established trends play out in micro-settings and from the standpoint of actual users. The goal is to capture the numerous small ways in which people deal with these devices in everyday life and thus how they define and shape the adoption of new media through the choices they make.

So far, little research on the phenomenon of the massive diffusion of digital devices into our private lives has gone beyond counting heads and sales, to ask how users manage to become media literate. There are several reasons why filling this gap is important. In private life we can observe the user as a socially situated individual and interpret her behaviour in relation to the larger picture of her life: how new technical devices affect her social relationships and how these social relationships affect her relationship to the gadget. She has to find a way to acquire the knowledge to buy, use and relate to a new device.

Roger Silverstone and Leslie Haddon (1996), Nelly Oudshoorn et al. (2004) and Nelly Oudshoorn and Trevor Pinch (2005), among others, have argued that, in understanding the cycle of the social shaping of any technology, both the user and the adoption

process of a technical device are important aspects. Maria Bakardjieva concludes that the technical object 'becomes what it is through the daily practices of its users' (Bakardjieva 2003: 227). These meaning-making procedures involve changes which Buckingham describes as follows: 'technological change is always also about cultural, social, economic and political change. Current changes in the media environment are not just about technology, but also about how identities are formed and lived out in modern societies' (Buckingham 2007: n.p.). Many of these issues, such as technology as an identity-forming aspect, are addressed in this thesis. I shall therefore outline the structure of the thesis in the next section.

1.2 Structure of the thesis

This is an interdisciplinary thesis which involves several academic disciplines: gender studies, sociology, technology, education, psychology, cultural studies and market research. My literature review in Chapter 2 will give an overview of the topics relevant to this thesis and of the ongoing discourses in each field. Chapter 3 centres on my methodology and outlines the methods I used for data generation and analysis, as well as giving detailed information about my sample. I shall describe how I found my respondents and conducted the interviews, as well as the obstacles I encountered and how I solved them. I shall outline my approach to the data analysis and which tools I used for that.

The analysis of my data will begin in Chapter 4, where I delineate the history of the uptake of technical appliances in the three countries from the 1950s to the 1990s and correlate this with my respondents' childhood experiences of technology. I shall do this separately for each of the two generations examined. For the older generation, whose childhood was in the 1950s and 1960s, the technological situation at home was quite different from that of the younger generation whose childhood was in the 1980s and 1990s. I shall point out differences in experience between female and male children in the two generations and within the three cultures. This information prepares the ground for Chapter 5, in which I shall discuss the degrees of media literacy my interviewees displayed. As Chapter 5 focuses on knowledge acquisition, I will utilise domestication theory (Silverstone and Hirsch 1992), which is one of the most commonly applied frameworks for understanding the integration of ICTs into everyday life. It is a useful approach for structuring my findings as it follows the 'natural' stages of adopting a new

technical device into a person's life. Each phase contains its own challenges for the user-to-be because, in the process of adopting a new technical device, user and device become actants in a wider socio-technical network within which the components influence each other. Ruth Schwartz Cowan has argued that, in order to recognize these networks of user and technology, they should be examined from 'the consumption junction, the place and the time at which the consumer makes choices about competing technologies' (1987: 263). This, according to Cowan, is 'the interface where technological diffusion occurs, and it is also the place where technologies begin to reorganize social structures' (1987: 263). Taking the standpoint of a technology user who has agency, instead of viewing her as just a consumer of technology, enables the researcher to focus on the relationships that are established within the socio-technical network. The analysis in Chapter 5 uses the narratives of my respondents to track the social interactions of technical device and user in her social network. A comprehensive account of the strategies people use on their way to technical proficiency and media literacy[5] should also consider the social circumstances in which technical knowledge is delivered and whether these are gendered in any way. Domestication studies use qualitative methods in order to extract these unquantifiable data and focus on the influence of the technical gadget on the individual's life.

While Chapter 5 does exactly that by concentrating on knowledge acquisition and the strategies my interviewees developed in order to achieve their level of media literacy, Chapter 6 covers the emotional relationship that develops between the user and the adopted technology. A technical gadget can be seen as just a piece of moulded plastic and metal bits but for most respondents in my interviews it was far more than that. As a recent documentary on BBC4 pointed out:

> One in every two human beings has a mobile, and this inanimate lump of plastic and minerals is made privy to people's innermost secrets – conversations with friends, lovers and family. It holds family photos, plays favourite music and yet, as an instrument of communication, it has its paradoxes. People are dumped by text, some pretend to be deep in a telephone conversation to avoid speaking to real people and others are affronted when their bellowed conversations on public transport are overheard. Then, at the end of a strangely intimate relationship, it becomes one of the one billion phones discarded every year – reconditioned for

[5] Technical proficiency and media literacy are not the same. I use the term technical proficiency to mean the ability to use technical devices with their many functions, whereas media literacy, as mentioned before, also covers the evaluation of information, a critical mind and the ability to act as a contributor to the ongoing discussions.

re-use or smelted down for the precious metals it contains. (*The Life and Death of a Mobile Phone,* 2009)

As technical gadgets have become smaller and more personalized in design and functions and are carried closer to the body, they have begun to be used as identity markers, which develop into an artefact identity, as I shall show, from our first encounters with technology in childhood onwards. Through this development of one's artefact identity, starting in early childhood and continuing as a lifelong process, an individual acquires a sense of how interested in and knowledgeable she is about technical gadgets compared to others. This process of positioning and identifying ourselves within the social-technical community manifests itself in the extent to which people are seen or see themselves as tech-savvy, early adopters of new technology or, at the other end of the scale, laggards not interested in new gadgets and adopting them only when they feel they no longer have any other choice.

When the process of domestication and adoption is completed, a new phase begins where the gadget becomes an integrated part of everyday life and sometimes a friend. As I shall discuss, users develop emotional relationships with their gadgets. The technical device is assigned a more or less important function and role in the everyday life of the user, almost like a human being. This is not a stable position as the importance of the device changes over time, but this process might also evoke emotions when the device has the assigned role of a friend. My participants displayed a variety of different emotions towards technology in general and their gadgets in particular. Different emotional dispositions to different gadgets are possible. I will analyse how my respondents represented different adopter types and provide examples of how they relate to their gadgets and technology in general. Individuals develop patterns of consumption which are influenced by their identity and self-image as I shall investigate in Chapter 6.

In Chapter 7, the conclusion, I shall draw the findings together and provide an overview of the most significant results of my study. The questions asked in this introduction serve as a red thread, which I will pick up in the last chapter. I shall also look at what kinds of further research might be useful in order to deepen our understanding of the relationship between users and technical devices.

2 Literature review

Technology in all its aspects and pervasive influences on society and individuals is a well-researched subject. This chapter maps certain well-theorized fields on the subject and less-explored facets that emerged from my research data, such as emotions and technology. By using the coding method from grounded theory, the following key topics emerged out of my data and became the themes of my three analysis chapters and thus my literature review: 'different generations and their experiences with technology' (Chapter 4), 'individual strategies for technical knowledge acquisition' (Chapter 5) and 'identity and technology' (Chapter 6). I shall concentrate on these fields and my literature review follows these themes.

> The map of the world shows no country called Technopolis, yet in many ways we are already its citizens. If one observes how thoroughly our lives are shaped by interconnected systems of modern technology, how strongly we feel their influence, respect their authority and participate in their workings, one begins to understand that, like it or not, we have become members of a new order in human history. (Winner 1986, preface)

As early as 1986 Langdon Winner remarked on the strong connection between human beings and technology in the modern world. But from the 1990s onwards more and more personalized micro-technological gadgets such as mobile phones, MP3 players and digital cameras emerged on the market and with their small size, many are carried on people's bodies. Not only have these gadgets themselves changed rapidly (and continue to do so), acquiring more functionality with every new model, but the use of those gadgets too has changed and continues to do so. When computers came onto the market, they were often used as games consoles, especially by white, male adolescents (Semmens and Willoughby 1996, Green and Adam 2001). This was also the group that engaged with the internet first (Yates and Littleton 2001), leading to the typical internet user in 1998 being white, male and aged 18 to 24, university-educated and with a high income (Eisenstein 1998). This has changed. In 2008 the internet user community consists of females and males to nearly the same percentage – in the UK 2008, women constituted 48.9% and men 51.1% (Sri Nivasan 2009). Other countries and non-white ethnicities are catching up in accessing the internet and all its possibilities around the world (Green and Adam 2001).

The purpose of usage of computers and the internet has changed since the late 1990s. In 2012 it is more extensively and widely used for networking and communication purposes by email, social networks such as *FaceBook* and work-related document exchange. With access to the internet and the possibility to publish and share experiences, women have gained more influence in society and this is recognized by marketing companies. 'Moms visit parenting and family websites, but they also regularly view news, weather and political content online. They shop for their kids—and themselves. And when they find something great for their family, they talk about it, not only with their family and friends, but often with a much broader online audience. Social media channels such as blogs, social networks and *Twitter* give them platforms to extend their influence' (Emarketer.com 2009).

These developments have occurred over a fairly short time. The mobile phone was quite new for most of the western population in 1997, but it was considered a must in 2008, even for people who are not interested in it. The emergence of personal technical devices such as mobile phones is a global phenomenon which has spread over this planet with enormous speed, although the saturation rates are different in each country (Giddens 2006). The world closes in; 'the planet is close to achieving complete connectivity in the form of basic access to mobile phone telephone networks' (Minges 2006: 138). The number of mobile phone subscribers in the world grew from 215 million in 1997 to 3,305 million in 2007 and the number of internet users climbed from 117 million to 1,344 million between 1997 and 2000 (ITU 2008). As part of this, people get the news more and more from online sources. Globescan conducted a survey in 2006 in various countries around the world and found that for a fifth of people in the generation of 18-24 year olds online sources were their first choice for news (Hopper 2007: 71). Mobile phones are also the first communication technology to have more users in the developing countries than in the industrialized ones (Hopper 2007: 68). In 2007 more than 300 million people had high-speed broadband internet connections worldwide (Wray 2007).

Although the spread of communication technology is fast, it is still uneven. Many studies about internet use and computers in general are concerned that, instead of enhancing social inclusion, these inequalities of access can lead to new forms of exclusion, creating so-called 'digital divides'. Governments all over the world are aware that access to information and knowledge is nowadays provided by the internet and that people who are excluded may experience disadvantages. Anthony Giddens warns: 'There are

concerns that those who are not computer literate, or who do not have access to new technology, may suffer from a form of "information poverty"' (2006: 735). Therefore research has been done in this field to determine what causes the digital divide and how it can be closed. 'There are two notable senses in which a digital divide is said to exist: The first is internationally or globally between states, and the second is within states' (Hopper 2007: 73). There have been numerous studies which have highlighted the existence of a digital divide between those who have access to the benefits of new digital technologies and those who do not. In fact, Pippa Norris (2001) suggests that there are several different kinds of digital divide: a global divide, which refers to differences in levels of internet access between industrialized and developing societies; a social divide, which refers to the gap between the 'information rich' and the 'information poor' in each nation; and lastly a democratic divide, between those who do and those who do not use digital resources to engage, mobilise and participate in public life. Erik Bucy (2000), Carsten Fink and Charles Kenny (2003) and Sylvia Korupp and Marc Szydlik (2005) have all distinguished between the first digital divide as the gap in access to new technologies and the second digital divide as the gap in types of use and intensity of new technologies. And Henry Jenkins et al. (2009) argue that the digital divide is shifting from a split in access to a split in participation.

There are also other digital divides and that run along gender and age lines. This thesis contributes to the debate about these digital divides through exploring alleged obstacles in acquiring technical knowledge in terms of gender, age and nationality. It is not only the physical access to technology such as computers and the internet that may close those digital divides, but studies (e.g. Norris 2001) show that it takes more than that to engage in a meaningful way in the worldwide internet community. There are various factors that cause or contribute to partial or full digital exclusion; some of these are social in nature, such as the perceived difficulty of entering and engaging with new technology and/or the self-image of the individual her/himself.

Steven Martin and John Robinson (2007) comment on the fact that the diffusion of the internet in the US is becoming more polarized by income. Although the numbers of connected people have risen for all income levels, the increase is more rapid for higher income individuals and slowest for individuals with a low income. This is not the case in European countries. What their study also states is that the income gap is now bigger than the gender gap, which was biggest around the start of the internet. But there is still a gender digital divide that reflects the under-representation of women in ICT-related

fields and this is important here because of my focus on gender. Women and technology are seen as not closely connected and various reasons have been proposed to explain this. I shall now briefly discuss the relationship between women and technology.

2.1 Overview of feminist approaches to technology

There exists a wealth of research and theories regarding gender and technology. As Maria Lohan argues, technology is not a neutral machine, but part of the social fabric of the world. 'Technologies gain gender identities when they enter into our everyday structural relations and our cultural meaning systems' (Lohan 2001: 158). This means that technical devices are genderized, as evidenced in the pink and black mobile phones that aim at different genders. Many technological areas are covered by feminist debates. In all these, e.g. biotechnology, ICT and domestic technologies, gender plays a role. An interesting discourse about the question: 'who determines which technology is to be developed?' ended in the realization that technology is not invented by a single person but is shaped by social influences as well as gender relations (Cockburn 1983, 1985, 1991, 1994, Cockburn and Omrod 1993, MacKenzie and Wajcman 1999). Ruth Oldenziel and Karin Zachmann (2009) state 'that artefacts are the materialized outcomes of the "small" politics of interest groups.' (3) This means that technology emerges within social contexts, and interest groups push or hinder certain developments of technical artefacts. For example, it was not necessary to develop faster sewing machines back in the 1930s, because women were working with them and were paid low salaries. So it did not matter whether they were slow or fast. The machines that men worked with were improved all the time to make them faster and easier to use, so men could work faster because they were paid higher salaries (Cowan 1985: 54).

In the 1980s, feminist scholars were concerned with the impact of technology on women's lives (Cockburn 1983, Faulkner and Arnold 1985). Women were constructed as close to nature and therefore perceived as distant from technology, whereas men were associated with culture and therefore with the development of technology (Gilligan 1982, Griffin 1984, Wajcman 1991a, Fox Keller 2000). Technology was viewed as inherently masculine and as just another tool to subordinate women. One effect of this discourse was the rejection of technology for women as a product of masculine culture, which Judy Wajcman criticized as the 'tendency to treat women as the passive victims of technology' (Wajcman 2000: 450).

Astonishingly, a large array of technological products, namely domestic technology, is not perceived as technology at all, despite the fact that during the 1920s and 1930s, the period of the most intensive industrialization of the home, the domestic area was the target of advertising campaigns from electric companies with the aim of furnishing the household with more and more electrical gadgets such as washing machines, refrigerators and electric irons (MacKenzie and Wajcman 1999: 271). But as those technologies, even if they contain computers nowadays, are seen as being part of female domains, they are not considered high technology or technology at all (Gray 1992, Silva and Bennett 2004). Thus cultures that associate the domestic sphere, and specifically the kitchen, with women, take women's expertise and knowledge of domestic technologies such as washing machines for granted, whilst assuming that entertainment technologies such as video recorders, camcorders, etc. are men's prerogative, therefore perceived as high technology (Wajcman 1991a, Silva and Bennett 2004), and hence as less accessible to women.

For my study it is important to recognize the intertwining of the male gender role with technical competence, although Judy Wajcman is right when she points out 'that there is nothing natural or inevitable about the ways in which technology is identified as masculine, and masculinity is defined in terms of technical competence' (Wajcman 2000: 447). I explore this expectation of male technical competence further as part of my empirical research. Grint and Gill (1995: 15) emphasize that 'Women and men are conceived differently in relation to technology as a result of their different roles which they had to take on in a sexist society.' These different roles associated with women and men and their technical competence are a key feature in my research when I compare the expected technical competence with the reported technical competence of my respondents.

In my analysis I first researched the technical history of each country, its cultural implications and the experiences of my respondents in their childhood with technology. I was concerned to explore how these operated for women and men, in the different countries and across generations. The next section summarizes research on this theme.

2.2 Literature on different generations and their experiences with technology

When I did my literature search on age and technology, I found that three main topics seemed to dominate: the reluctance of older people to use new technology, 'assistive technology' to help older people with disabilities, and health issues when using technology. Scholars have only recently become interested in older adults as new media users as a target group for research and there is not much research other than in the three areas mentioned above. However, this is a fast-developing field of work.

Wendy Olphert, Leela Damodaran and Andrew May (2005), for example, plead for taking measures to include older people in the digital world since they notice a high percentage of non-users among the older population in comparison with the younger generations. They emphasize the fact that involving older adults is not only about access to technology or a matter of cost. A certain percentage would not engage with these new technologies even if it was free and easily accessible. There are psychological barriers, such as the perception that it is too difficult or that interactions on the internet are not safe and people might lose money or be unsafe in other ways. Rob Salkowitz (2008) has investigated how managers can make sure that their older employees stay up to date with new technology. He remarks that:

> Retirees who never learned or used computers in their working lives have taken to the internet as enthusiastic 'silver surfers' in increasing numbers. The cause of older workers' rejection or slow adoption of technology and technology-related practices often has more to do with sociological issues and workstyles than with the willingness or ability to learn later in life. (Salkowitz 2008: 12-13)

Bo Xie (2003) addresses the situation that older people are often excluded from the digital world because of poverty, disability, poor health or social isolation. Others discuss how to involve older people in the design of technical devices, for example Roos Eisma et al. (2004). In 'Grandparents use of new communication technologies in a European perspective' Tatiana Quadrello et al. (2005) explore the extent to which grandparents use technologically mediated communication channels (email and texting) to contact their grandchildren. Technology and its influence on health have also been researched, for example, by Anke Huss, Matthias Egger, Kerstin Hug, Karin Huwiler-Müntener and Martin Röösli (2007) who state that they found at least one significant connection

between mobile phone usage and brain activity that led them to the conclusion that there may be a risk in using mobile phones.

Health and body issues are also addressed by research which is done on 'assistive technology' (Askham 2001, Heywood 2001, Heywood, Oldman and Means 2002). This assumes that technology can help the elderly to live a pleasanter life as the life circumstances of elderly people are increasingly compared with disabled people. The items of 'assistive technology' which elderly people need are congruent with most of the needs of disabled people, for example walking support, domestic help and dressing aids. Many of these authors consider older and younger generations to be far apart in terms of ICT knowledge, with the younger generation having an advantage. In my study I compare young and old generations and their experience with technology. My respondents, too, expressed opinions and prejudices about the other generation, especially the students about their parents, but how old and young respondents used technology contradicted some of the assumed stereotypes about older people and ICT.

When investigating my respondents' childhood experiences with technology I asked myself whether the culture of the country they lived in might have had an influence on their stance towards everyday technology. In this sense Chapter 4 of my thesis implicitly explores the cultural dimensions of the three countries where I did my research as cultural values impinge on individuals' choices and judgement of technical gadgets. Cultural differences between the three countries have been explored in some interesting studies that were mostly conducted for marketing purposes to advise companies how to sell products effectively by taking into account the cultural backgrounds of each country. The laposte-solution website states, for example, about the Dutch consumer:

> Dutch consumers tend to value quality to a high degree, they are willing to buy something when they see that the price relates to the quality. They usually do not favor Dutch products over their foreign counterparts. Dutch consumers are sensitive for *[sic]* advertisements and a good advertisement campaign is bound to [have] a big effect on the sales. The Dutch consumer has a lot of money to spend but will not spend it easily. By nature they tend to resist change and this also means that they prefer products that they already know over new products. Recently there has been a lot of publicity about the environment which has

> increased the willingness of Dutch consumers to buy environmental-friendly [sic] products.[6]

The same company characterized German consumers as follows:

> The German consumer shows a strong propensity to compare prices and patronize 'discount' stores. He is very aware of special offers, and readily goes to different shops in order to get better prices. He has very strict criteria when making a choice, according to the type of goods he wants to buy. For consumer durables, the criteria are in order safety and quality, prestige, comfort and convenience and price. For everyday goods, the only determining factor is price. For professional capital goods, the obsession with safety leads to buying criteria based on quality, reliability, the supplier's follow up and after sales service. Price is not one of the dominant criteria for this type of product. On the other hand, for minor equipment or industrial supplies, the price factor predominates. Consumer credit in Germany has grown little over the last few years. Many factors have contributed to this, especially the present low economic growth, persistent unemployment, lower consumer confidence, a culture hostile to debt, etc.[7]

Comparing prices and using discount stores is definitely a characteristic of most Germans. The good old retail store, preferably run by a family for generations, is a trusted place for purchases, especially more expensive durables. Germans want to buy high quality appliances. Therefore brands which have proven good quality and longevity have a good reputation in Germany. Compared with the British there is another big difference: the attitude towards debt. It is quite true that German culture is hostile to debt. According to laposte export solutions[8] British consumers

> respond well to advertising and will buy if they see an advantage such as price, quality, superior design, branding or environmental benefits. After-sales service is important as consumers do not hesitate to complain and defend their rights. Consumer loyalty has weakened due to increased mobility and easy accessibility to product information. Thus, consumers are increasingly shopping around for the best deals and stores offer loyalty schemes to keep their custom. UK consumers have a well-established 'buy now, pay later' culture and borrow commonly,

[6] Source: http://m.southafrica.smetoolkit.org/sa/en/content/en/7370/Netherlands-selling, accessed 23.11.2011.
[7] Source: http://www.laposte-export-solutions.co.uk/uk/markets/country-profiles/germany/consumption-trends, accessed 12.06.2010.
[8] http://www.laposte-export-solutions.co.uk/uk/markets/country-profiles/united-kingdom/consumption-trends, accessed 12.06.2010.

> whether through mortgages (housing), personal loans (cars) or credit cards (everyday purchases).

British purchasers' disposition, then, fits the new online markets and possibilities.

To market products it is important to address the implicit values of the target group and country, as many studies confirm (Pollay 1983, Belk and Pollay 1985, Albers 1994, Albers-Miller 1996, Caillat and Mueller 1996, Albers-Miller and Gelb 1996, Cheng and Schweitzer 1996, Ji and McNeal 2001, Lin 2001). Numerous studies of this kind were conducted after Theodore Levitt proclaimed in 1983 that one global advertisement campaign could serve all countries and that what is successful in one country will be successful in all others.

> In Levitt's view, globalisation is transforming the world into a 'homocultural' market place where all customers can be persuaded by the same advertising appeals and values, irrespective of the culture they belong to. (Dahl 2004: 1)

But research done in many countries around the world compared the effect of advertisements on viewers and found that, depending on the values of the country and culture, the reception was different. An advertisement that is successful in one country or culture can be perceived as having no effect or even have damaging effects for the product's reputation in another. Most of these studies compared dissimilar countries, such as the US and an Asian country. Culturally closely-related countries such as Britain, Germany and the Netherlands were rarely compared. However, when Stephan Dahl (2004) investigated differences between these countries, he found that despite these countries being perceived as closely related, there were differences in cultural attitudes that were reflected in advertisements. He argues:

> Most researchers have still selected the countries because they are culturally dissimilar (e.g. Katz and Lee, 1992; Cutler and Javalgi, 1992; Cheng and Schweitzer, 1996, *[sic]* Al-Olayan and Karande, 2000; Ji and McNeal, 2001). This bias was also pointed out by Frazer, Sheehan and Patti (2002), who called for a closer examination of culturally close countries, precisely because of a lack of research in this area. (Dahl 2004: 4)

Marieke de Mooij (1998) found different advertising styles across Europe due to cultural differences even in countries assumed to be culturally close. Dahl emphasized that comparative research done in culturally close countries is more rewarding since 'Although research in culturally very distant countries was useful for exploring the field,

observed differences may not be so surprising, precisely because the researched countries are extremely different'. (2004: 22)

Culture is difficult to study since there are many sources of heterogeneity such as age, ethnic background, religion, gender roles, individual variation within groups and regional differences within countries. Cultures are also subject to change over time and there is always the danger of ethnocentric stereotyping. Culture itself is a diffuse term which various scholars have tried to define. I like Helen Spencer-Oatey's definition, since hers is very comprehensive:

> Culture is a fuzzy set of attitudes, beliefs, behavioural norms, and basic assumptions and values that are shared by a group of people, and that influence each member's behaviour and his/her interpretations of the 'meaning' of other people's behaviour. (Spencer-Oatey 2000: 4)

This definition of culture implies a core of values and basic assumptions including 'beliefs, attitudes and conventions', and resultant behaviour. Culture is learned and consists of a shared system of meanings, values and practices. Lee Gardenswartz et al. (2003) developed a model of three cultures, two of which are relevant to my study. Mary Connerley and Paul Pedersen describe these as follows:

> Personal culture is the shared combination of an individual's traits, skills, and personality formed within the context of his or her ethnic, racial, familial, and educational environments. Everyone has a unique personal culture. National culture is a shared understanding that comes from the combination of beliefs, values, attitudes, and behaviors that have provided the foundation for the heritage of a country. (Connerley and Pedersen 2005: 40)

Culture happens on different levels, following Gardenswartz, for example, national culture is cultural behaviour shared by most people of one country, corporate culture consists of the customs developed by employers and employees in big companies and professional culture describes which behaviour is appropriate to display in certain professions. In this study I focus on the differences between national cultures.

One important study of cultural differences was conducted by Simcha Ronen and Oded Shenkar (1985), who clustered countries into four groups according to their similarity. Geert Hofstede (1991), Shalom Schwartz (1994), Fons Trompenaars and Charles Hampden-Turner (1997) and the GLOBE research project (House et al. 2004) all also developed typologies of culture. The GLOBE research is the most recent study of cultural values. They placed several nations into various clusters, for example Germany and the

Netherlands went into the cluster of Germanic countries, so differences between individual countries cannot be distinguished.

These frameworks for cultural differences are not completely independent from each other. Many categories overlap or are identical as later research drew upon the findings of earlier studies. Some of the categories they produced proved to be inadequate for my research since they described differences between Asian and European countries such as displaying individualistic values instead of collectivistic ones and low-context cultures versus high-context cultures, meaning that primary meaning is derived from spoken and written words instead of non-verbal cues. The three countries in my study have low-context cultures with individualistic values. In applying the cultural dimensions of the above-mentioned frameworks to the three countries of this study, I found the following five categories most promising to identify differences between these culturally closely-related countries.

2.2.1 The gender gap or masculinity versus femininity

One of the categories central to my research is what Hofstede named masculine and feminine countries. This criterion describes the gender gap in society.

> (...) masculinity pertains to societies in which social gender roles are clearly distinct (i.e., men are supposed to be assertive, tough, and focused on material success whereas women are supposed to be more modest, tender, and concerned with the quality of life); femininity pertains to societies in which social gender roles overlap (i.e., both men and women are supposed to be modest, tender, and concerned with the quality of life). (Hofstede 1998: 82-3)

This category refers to the separation or integration of gender roles. I think the title for this category is in some ways problematic as it implies that in 'feminine' cultures, such as the Netherlands, men would behave in what is defined as feminine ways and engage with feminine-ascribed domains while women stick to their gender role. In fact what is meant is that in feminine cultures the gender gap becomes smaller and both genders are able to choose more freely among different careers, behaviours, clothes and life choices, whereas in masculine countries the gender roles are stricter and life choices for women and men are limited. However, all cultural studies found this category useful for explaining differences between cultures.

Hofstede found that gender egalitarianism was highest in the Netherlands and equal in Britain and Germany. As Hofstede's research (1991) was done 20 years ago, this classification might be somewhat out of date. However, Hofstede views this category as an important factor that influences consumption:

> Mas–Fem [Masculine-Feminine] separates countries in an entirely different way from Ind–Col [Individualistic-Collectivistic]. For example, in Europe it separates Austria (masculine) from Sweden (feminine); in Asia, Japan (masculine) from Thailand (feminine); and in Latin America Venezuela (masculine) from Costa Rica (feminine). Cultural differences between these countries can hardly be explained by other factors. Among European countries Uncertainty Avoidance and Masculinity–Femininity are crucial for understanding differences in consumer behavior. (Hofstede 2006: 894)[9]

The second useful category for my research turned out to be 'Uncertainty Avoidance'.

2.2.2 The level of uncertainty avoidance

A moderate score on the uncertainty avoidance index (UAI) may indicate a cultural tendency to minimize or reduce the level of uncertainty within the population by enacting rules, laws, policies and regulations to cover most situations or circumstances. Following Hofstede, avoidance of uncertainty can be defined as the extent to which people in a particular culture feel threatened by ambiguous or unknown situations. In cultures with weak uncertainty avoidance people feel more comfortable in ambiguous situations and in taking unfamiliar risks. Uncertainty avoidance was highest in Germany, medium in the Netherlands and low in Britain. People in countries with weak uncertainty avoidance like Britain tend to buy, for example, more used cars instead of new ones, drive their cars for a longer time and repairs in general are usually done on a do-it-yourself basis. People are more mobile, they move more often within towns and within the country whereas people in countries with strong uncertainty avoidance tend to buy new cars and repairs are done by experts. They tend to stay for longer with employers and in their homes to avoid unfamiliar situations. Further, it is argued that the acceptance of new products and technologies is faster in countries with weak uncertainty avoidance and slow in strong uncertainty avoidance countries.[10] If this

[9] See Marieke de Mooij 2010 for more on feminine and masculine defined countries.
[10] http://old.eurochambres.eu/academy/upload/4b66b8228740e.pdf, accessed 13.07.2010 and http://www.geert-hofstede.com/hofstede_netherlands.shtml, accessed 18.06.2010.

cultural difference had an effect on my interviewees' acceptance of new technical devices, then it should show up in the adoption rate of new gadgets, which should be faster in Britain as there the uncertainty avoidance is supposedly lower than in the other two countries.

2.2.3 Neutral versus affective cultures

Trompenaars and Hampden-Turner's (1997) discussion of 'neutral versus affective' cultures is relevant for my research since Britain, like Japan, was categorized as a neutral country where emotions are not displayed and where losing face is an issue, whereas Germany and the Netherlands are affective countries where emotions are openly displayed, direct questions are asked and criticism is seen as a helpful way to improve things. There are more expressions of joy, anger and criticism in public in the Netherlands and Germany compared to the UK, people greet each other with enthusiasm and handshakes, for example, and if someone is asked something and does not know the answer it is easily admitted.[11] This difference between the three countries might impact on the degree to which people relate emotionally to their personal technical gadgets, which I shall discuss in Chapter 6, and whether they ask other people for help, exposing their lack of knowledge.

Two other categories of Hofstede's are related to my research which address private space and power distance and are important for the ways in which my respondents acquired their knowledge as this task is a social undertaking. According to Hofstede's research (1991), cultures can be specific or diffuse. A culture described as specific guards its private space and privacy is highly valued and mostly only family is allowed to use this space, whereas diffuse cultures open their private and working lives to colleagues and friends and share more information about both areas. In this respect Britain is a specific culture where people have small private spaces which are closely guarded and open public spaces to meet others. Diffuse cultures such as Germany have work and private lives which spill over into each other.[12] This difference in cultures might be important in

[11] http://www.strategy.sauder.ubc.ca/vertinsky/baim502/lecture03.ppt, accessed 28.06.2010.

[12] http://www.chairt.com/schwartz.html, accessed 18.06.2010; Trade Culture Dimensions: Distinct Cultural Values, Attitudes and Trade Behavior http://internationaltrade.suite101.com/article.cfm/trade_culture_dimensions#ixzz0rVj1Zrf8, http://internationaltrade.suite101.com/article.cfm/trade_culture_dimensions, accessed 21.06.2010 and Dahl, Stephan (2004) Intercultural Research: The Current State of Knowledge (January 12, 2004). Middlesex University, Discussion Paper No. 26. Available at SSRN: http://ssrn.com/abstract=658202, accessed 16.06.2010.

the process of gathering information and in which ways and to what extent human knowledge sources are used.

The last category relevant to my research is called power distance and influences socially accepted behaviour patterns, which vary from culture to culture. Hofstede's dimension of 'power distance' describes the hierarchy found in work contexts and the 'extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally'.[13] Privileges and status symbols are popular and desired in cultures with large power distances such as Germany, whereas they are frowned upon in Britain and especially in the Netherlands. Countries with a small power distance, such as the Netherlands, prefer flat hierarchies and the use of first names in work contexts. Britain has a medium rank in power distance[14] as class is important but first names are used and titles are not emphasized. This is different in countries like Germany with high power distance where the forms of address are formal.[15] This dimension ties in with the previous one in determining how easy it is to get access to peers and how closed work and private areas are, and might therefore influence one's perception of how easy it is to ask a colleague or friend for advice about technical gadgets.

These classifications of culture are a simplification of the complexities of all country specificities and can only refer to subtle differences. They provide models for cross-cultural differences and point to factors that constitute and distinguish one culture from another to predict possible outcomes of, for instance, advertisement campaigns. Hofstede's categories have been found useful for marketing purposes and other researchers distinguished similar categories and differences between countries. Nevertheless, I want to remark that in this thesis Hofstede's work is only introduced as a means to shed light on cultural differences with the knowledge that they have to be used carefully as the categories are broad and simplified and applied to my sample, results are too vague for generalisations.

Laura Milner and James Collins (2000), for example, researched the link between gender egalitarianism and the portrayal of gender roles in TV advertising in the US, Russia, Sweden and Japan. Their findings suggested that countries with a smaller gender gap feature more depictions of relationships between women and men, whereas countries

[13] http://www.geert-hofstede.com/, accessed 25.11.2010.

[14] It has been pointed out to me that hierarchies and job status are also very important in Britain. White collar jobs have much higher status than blue collar jobs, for example, and it might be better described as a country with a medium power distance.

[15] http://old.eurochambres.eu/academy/upload/4b66b8228740e.pdf, accessed 13.07.2010.

with strict gender roles put more emphasis on achievements in advertising. As the Netherlands is categorized as a country with a small gender gap, it follows that Dutch advertising would use more relationship contexts.

Terence Tse et al. (2004) argue that 'culture has played a decisive role in determining and developing the ICT uptake' (Tse et al. 2004: 1). They point out, for example, that countries which are accustomed to mail order, such as the UK and Germany, are more likely to take up online shopping earlier than other countries without such a history, such as Italy, since online shopping is 'simply a modernized version of the habit' (Tse et al. 2004: 6). However, since credit cards which are useful and often necessary for online purchases, were not widespread in Germany, unlike in the UK, the uptake of online shopping in Germany was slower. They also argue that the Netherlands, which is 'traditionally technology oriented', has 'placed a strong emphasis on computer-based education at both schools and universities' (Tse et al. 2004: 6), which may have helped to develop a greater and faster acceptance of computers. I know from my own experience that Germany was late in the adoption of computers in schools. When I founded the first children's computer school, named 'ComputerKids' in 1996, there were no computers in schools or kindergartens. We had a lot of interest from children aged 4 to 16 and their parents and our courses were fully booked for years. This changed when in 1999 the German government launched a big campaign called 'schools online' to equip schools and kindergartens with computers and internet access. But even when computers were available in schools, teachers, pupils and parents were hesitant about embracing the new technology and there was a lot of discussion about when and whether children should have access to computers. So Germany was hesitant about adopting computers on a large scale. While countries each had their own history of adopting technical novelties, I now come to the personal level of coping with innovations on an everyday basis.

2.3 Literature on technical knowledge acquisition

The responsibility of acquiring media literacy in a self-directed manner is encouraged by the discourse of lifelong learning and the learning society. Torsten Husén (1974) argued that states should turn into 'learning societies' - where knowledge and information would be the base of their activities. Knowledge in general is seen as a valuable good and to have or not to have certain information can give an advantage to the holder.

> Among all the ‘explosions’ that have come into use as labels to describe rapidly changing Western society, the term ‘knowledge explosion’ is one of the most appropriate. Reference is often made to the ‘knowledge industry’, meaning both the producers of knowledge, such as research institutes, and its distributors, e.g. schools, mass media, book publishers, libraries and so on. What we have been witnessing since the mid-1960s in the field of distribution technology may well have begun to revolutionize the communication of knowledge within another ten years or so. (Husén 1974: 239)

Although this quote is quite old it describes well how important knowledge and the access to knowledge sources such as the internet have become. Free access to the internet via broadband is a right for people living in council accommodation in the UK to give them access to the worldwide information base. This is important as the possession of knowledge and being well-informed is a sign of a modern citizen. As knowledge acquisition is no longer limited to formal education there is a necessity to learn throughout life and keep up to date.

In this context John Field (2000: 35) has argued that there has been a change in the behaviour of 'ordinary citizens', 'who increasingly regard the day-to-day practice of adult learning as routine, perhaps so routine that they give it little explicit attention'. Anthony Giddens (1990, 1991) and Ulrich Beck (1992) conclude that modern industrialized societies have turned into 'knowledge' or 'informational societies' that have strong individualizing tendencies and a requirement for permanent learning. As a result, learning goes on throughout one’s lifespan and informal learning permeates daily life and is valued (Field 2000: 38-49). Lifelong learning is characterized by individuals, who are responsible for their own keeping up to date with, in this case, technical knowledge which requires a continuous process of acquiring new information. Stewart Ranson (1998) summarized lifelong learning as education that is going to be a lifelong process and will not have any fixed points of entry and 'cut-off' exits. Keeping up to date with cutting-edge knowledge requires time, access to knowledge sources and foremost it requires the desire to spend time and possibly money on this kind of activity. This desire to go on learning is described as 'self-directed learning'. It is not a group learning experience, but a highly individualized and lonely process where individuals take the initiative. According to Malcolm Knowles (1975: 18), 'self-directed learning' is a process:

> (...) in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human

and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes.

These much-defined stages of knowledge acquisition are blurred in real life. Although my participants had to evaluate their findings and decide whether the knowledge they came across was valuable and good enough to serve their purposes, their learning stages were not explicitly passed through. My participants' different informal learning needs occurred chiefly out of the necessity to be able to use a technical device such as a mobile phone or their digital camera or certain functions on those devices. None of them had probably thought consciously about learning goals or appropriate learning strategies. But all of them had to identify information resources and cope with the vast body of information available. The new, informally picked up information also entails new skills, as Patricia Greenfield (2009) points out. She argues that a new profile of cognitive skills is produced by the informal learning environment of computer games and browsing and chatting on the internet.

As learning is such an important factor throughout life, the question is: how do people learn? Quantitative studies about learning new technologies have shown that people prefer particular learning methods. In his study of pre-service teachers, Robin Kay (2007) found that collaborative methods, such as working with a colleague or friend and being able to ask face-to-face questions, were the preferred techniques to learn new technology skills. Second came an explanatory learning strategy using a trial-and-error approach. In gender terms there was a significant difference here: women used a hybrid of learning tools whereas men mostly used a single type of learning style. And although the manual was always available, it was perceived as not helpful and was often resorted to as a last resource. Heather Dryburgh (2002) notes that there was a gender difference in learning strategies in that women preferred collaborative methods and men the trial-and-error approach. Dryburgh (2002) also points out that men self-rated their computer skills higher than women did, although the results of the study showed no significant difference. In addition, several research teams (Turkle 1988, Jones and Wheatley 1990, Henderson and Dweck 1993) have found that women tend to attribute difficulties to their own lack of ability, while men tend to place blame for problems on the computer or the software.

Veronica McGivney (1990) argued that people have the desire to learn new skills and it is astonishing how particular knowledge spreads rapidly without being taught at school or in formal classes. John Carroll (1982) conducted interesting research about this on

people who were confronted with new computers and examined what they do when no coaching or training is provided. Carried by the enormous success of computer games in the early days of computers, where some fearless users explored them on their own and the knowledge of how to play spread tremendously fast, the idea was that there is a kind of discoverer in everybody that can be used to learn new software. The research demonstrated that most users are willing and able to learn by exploration, with differences in the degree of exploratory aggressiveness. In a similar study, John Rieman (1996) noticed that participants would choose a learning strategy that they believed would help them acquire the necessary skill with the least possible investment of time. Exploration was the first method if people ran into difficulties, followed by asking others for help and finally resorting to a manual. Interestingly, the manual was in general not considered helpful as it provides too much information. Accordingly, Marc Rettig (1991) named manuals as the 'bestsellers that no one reads'. However, Dryburgh's (2002) study of over 25 000 users noted that manuals were used 60% of the time at least at some point in the learning process. Rieman (1996) argued that the more advanced features of technical gadgets remain untouched without resorting to a manual. Maria Bannert (2000) also observed that acquiring new software skills with a manual was significantly faster and more productive than tutor-guided instruction. Although the manual is a valuable information source, it is not a popular one.

As this thesis is concerned with technical competence and the knowledge required to achieve a certain technological proficiency, the activity of acquiring knowledge is mostly considered as learning. Learning in turn is associated with what takes place in formal education, for example at school. However, knowledge acquisition in this research was mainly achieved through informal learning, as explained above. Marcia Conner (2008) gives a comprehensive account of informal learning as learning that occurs serendipitously in everyday life and accounts for 75% of the learning that takes place in organizations. Her definition of informal learning is: 'Informal learning describes a lifelong process whereby individuals acquire attitudes, values, skills and knowledge from daily experience and the educative influences and resources in his or her environment, from family and neighbors, from work and play, from the market place, the library and the mass media' (Conner 2008: 1). Connor pleads for more attention to such learning, especially at the workplace where companies could benefit from knowledge sharing through peers. In one of her articles she argues: 'Still think learning means school? Expand your definition of learning to include conversations with your peers and your children, from books, articles, informal networks, internet searching, television, and

what you learn through trial and error. Use everything that happens in your world as a resource to learn more now' (Conner 2008: 1). This is a rather broad and bold account of what informal learning includes but it is the case that nearly everything in daily life contains knowledge that we pick up unwittingly from peers, advertisements, billboards or newspapers.

The literature on informal learning is immense and concentrates mostly on adult learners over the age of 25 to distinguish them from younger people who are still bound into some kind of formal education. Several research projects focussed on the subject of informal learning. Tom Bentley (1998) has explored 'learning beyond the classroom'; Victoria Marsick and Karen Watkins (1991) and Margaret Dale and John Bell (1999) explore 'informal and incidental learning in the workplace'; Frank Coffield (2000) 'the necessity of informal learning' and McGivney (1999) 'informal learning in the community'. Despite these studies, informal learning is still seen as not important enough to be considered for politicians to find ways to encourage more people to participate in informal learning. As Coffield (2000: 1) notes, 'for all the talk of "lifelong learning" and the "learning society" the focus remains on formal provision, qualifications and accountability'.

However, some politicians are aware of the implications of lifelong learning and its requirements. David Lammy for the Department for Innovation, Universities and Skills in his speech in Central Hall, Westminster, on 06 May 2008 said:

> We are here today to discuss the consultation to gather views on the future of informal adult learning (IAL). (…) We want to understand the reasons why people learn and what they would like to learn. We need to further improve synergies across informal adult learning funded by Government departments. And we want to find out how we can improve equality of access to informal adult education using technology. (Lammy 2008)

Informal learning exists on the base of daily activity and can encompass many dimensions. McGivney (1990), quoted in Mark Smith (2008), used the following description for informal learning: 'Learning that takes place outside a dedicated learning environment and which arises from the activities and interests of individuals and groups, but which may not be recognized as learning' (n.p.). Because of the latter fact, incidents where informal learning occurs without the individual being aware of acquiring knowledge or expanding her knowledge stock are later mostly not traceable to their origins.

A more comprehensive definition is that of Coombs and Ahmed (1974), who made a similar distinction between education and informal learning. For them, the latter is:

> (…) the lifelong process by which every individual acquires and accumulates knowledge, skills, attitudes and insights from daily experiences and exposure to the environment – at home, at work, at play: from the example and attitude of families and friends; from travel, reading newspapers and books; or by listening to the radio or viewing films or television. Generally informal education is unorganized, unsystematic and even unintentional at times, yet accounts for the great bulk of any person's total lifetime learning – including that of a highly 'schooled' person. (Coombs and Ahmed 1974: 8)

This informal learning includes all kinds of media such as magazines, newspapers, TV, internet, advertisements, and especially one's own peer group, who have a distinct influence on individuals' use of technology. Bakardjieva (2005) found that the learning experiences of new internet users 'exhibit a profoundly social character' (102). She goes on to explain that friends and relatives had taught her respondents not only how to use the different functions on the internet 'but also what they themselves had discovered the internet could do for them as a communication medium. They were passing along their understanding of the relevance of the new technology, crystallized from their own experience' (Bakardjieva 2005: 102).This was true for my interviewees as well. Coming together with friends to share technical knowledge and showing gadgets around was especially common amongst my young respondents. Neeltje (NL, 22) and Craig (GB, 29) in particular, emphasized how much they had learned from their friends, while others shared their difficulties in asking other people for help.

According to McGivney (1990), the motivation for engaging in learning is also governed by the self-image of individuals. If individuals perceive learning as easy for themselves they are motivated to get involved. This is important for my assumption that the perception of oneself is crucial to the level of engagement in technical knowledge acquisition. As socially learnt gender roles divide people in our society into those who are expected to be keen on technology and those who are supposed to be uninterested and therefore not knowledgeable, this may have an effect on an individual's decision whether or not to engage in technical knowledge acquisition. Self-perception definitely plays a role in the different degrees to which people acquire knowledge, but also regarding the ownership of specific personal technical items. This is chiefly a question of identity and social context and is expressed through the kind of technical devices people

use. Identity, self-awareness and social relationships in relation to technical devices are the third core topic of my analysis and I shall concentrate on these in Chapter 6 of this thesis.

Depending on self-perception and their identity, my respondents preferred different strategies for information acquisition. One strategy, asking other people for help and knowledge, and thereby using a social strategy, was not always straightforward. Riemann (1996) reported several obstacles to asking, such as that there is simply nobody around who can be asked or at least nobody with more knowledge. Or people reported feelings about bothering experienced users too much, or the time spent on finding someone appropriate, and being simply too proud to ask. This topic is explored in Chapter 5, where I shall discuss my findings regarding the knowledge resources and strategies that my participants preferred, separated by countries, gender and age.

2.4 Literature on identity and technology

The intertwining of human beings with technology is an increasing factor in everyday life and technology is creeping closer to everybody. Giddens observes: 'Our bodies are being invaded by the influence of science and technology, ranging from machines to diets' (2006: 254). Bruno Latour and Steve Woolgar (1979) and Donna Haraway (1991) conclude that wearing glasses, hearing aids and even personalized communication technologies such as mobile phones are technical extensions of the human body. This fact opened a major discourse about what is human and where technology starts and humans end. As Roger Salerno concludes:

> According to the Cyborg Manifesto [Haraway], we are all part machine. Once we have entered into the realm of being assisted by a machine, it becomes part of us. Machines can range from prostheses, such as eyeglasses, to automobiles and drugs. Sometimes it is difficult to ascertain where the body leaves off and the machine begins. (2004: 205)

As people carry more technology close to their bodies, the body is seen as a human/non-human hybrid, part human, part machine, the 'cyborg' popularized by Donna Haraway (1991). She explains that 'a cyborg is a hybrid creature, composed of organism and machine' (Haraway 1991: 1). In the section about feminist technology I described how feminists in the 1980s rejected technology as a male domain. Salerno summarizes:

> Unlike some feminists who retreat from technology as a realm of patriarchal dominance, she [Haraway] views it as a site for liberation for all, especially women. She attacks the artificial distinctions between people and machines. She sees the distinction that one is natural as the other is not as misguided and reactionary, since each is a social construction. (Salerno 2004: 205)

Haraway emphasizes the dependence of humans on technology, although more on technological interventions in the body such as implants or plastic surgery (Balsamo 1997). Through the simple circumstance of using a technical item, people are networking in a social-technical environment. 'Cell phone use is a ritual event that changes participants from mere humans into compound beings that are both social and technological. The compound human that results from the participation in the ritual of mobile communication can be termed a technosocial being' (Case 2007: 8). In consequence, every person who uses a mobile phone or any other technical item turns into a cyborg, or in Latour's definition, becomes an actant in an actor-network - consisting of humans and non-humans. The possibility to create an actor-network at any time by combining technology with human abilities provides the freedom to extend human capability in several directions. As Salerno argues: 'By fusing flesh and machine, people become capable of expanding themselves' (2004: 205).

In 2012, information about what every individual does and where they are is exchanged at high speed (sometimes in several conversations simultaneously, for example by chatting on the computer, texting on the mobile phone and a face-to-face conversation), and allows people to be more omnipresent and omniscient. 'To not have a keitai (Japanese for cell phone) is to be walking blind, disconnected from just-in-time information on where and when you are in the social networks of time and place' (Ito 2003: 1).

In her study about taking pictures with a mobile phone, Anna Reading (2008) connects to the arguments mentioned before when she speaks of 'wearable phones' because mobile phones are carried on the person and therefore become part of the socio-techno system that our body already is. 'With mobile camera phones, because they are wearable (rather than simply portable) and, increasingly, always carried, like door keys, watch or wallet, then what is captured and recorded is different from the camera, notebook or laptop' (Reading 2008: 362). Other scholars point out that the internet too, although not yet always at hand (while G3 mobiles with internet access are getting more common), should be included in the hybrid construct of the modern human being. Søren

Petersen (2007) argues that 'Broadband offers an opportunity to be online all the time at an affordable price, which results in the internet becoming an integrated part of everyday life' (Petersen 2007: 81). Internet and mobile phones have become ubiquitous devices in everyday life and provide a connection to the World Wide Web and its vast body of information at all times. As such, the internet and mobile phone with all their services are mundane, integrated into everyday life like the refrigerator and the television. For many people it has become a habit to check their emails several times every day and read the news online.

Many scholars are concerned about the impact of new communication technologies such as the internet and mobile phones on social relationships. Gill Valentine (2006) is one amongst a number of researchers who have explored possible changes to intimate and social relationships due to using modern technologies. In the early internet days many people shared a general concern that use of the internet would be addictive, creating socially isolated loners disconnected from their surroundings. Jim McClellan (1994, 10) for example predicted that 'on-line culture creates mouse potatoes, people who hide from real life and spend their whole life goofing off in cyberspace' (quoted in Valentine 2006: 367).

In Chapter 6, my respondents talk about the dangers of technology where the power of technical gadgets to change everyday life is expressed by both older and younger interviewees, who not only observe their own use of technology but also that of the people around them, whose actions they judged as not always being appropriate. Valentine examined the complex ways in which new technology can impact on family life and love relationships and found that the fear of the 'mouse potato' was overstated. She also discussed technical knowledge in families, for example that children teach their parents and that this strengthens the bonds amongst family members. Altogether she summarizes some negative effects such as fewer face-to-face conversations, but at the same time there are also positive sides to new communication technology as for example the possibility to maintain contact with more people and bridge distances to reach them wherever they are.

Zygmunt Bauman (2003) considers the mobile phone to be the archetypal item of the globalized 'liquid modern' age. Stored in the memory bank of each mobile phone is a phone book containing a summary of the individual's significant social others. This 'community of numbers' offers a semblance of security in times of need; indeed mobile phones are increasingly marketed as essential items for those who would brave the

dark, threatening streets of the local. If the mobile is the medium, then it is the text message that conveys the essence of 'liquid modern' relationships. What is written is often banal - abbreviated to be sure, truncated to speed up the circulation – but being enveloped in a web of messages is the cocoon within which 'liquid modern' individuals shelter from the storm of global insecurity. It is the act of messaging, therefore, and not the message itself, which keeps one within this network of security. Bauman explains: 'Stop talking – and you are out. Silence equals exclusion' (Bauman 2003: 35). He also stresses the fact that it is seen as a *faux pas* not to answer a text message at all or quickly enough and how that fact can have the consequence of no longer being considered an equal, serious counterpart or a member of the community. In general, Bauman views globalisation as an entirely negative phenomenon and concentrates mostly on the negative aspects of modern life.

It cannot be denied that modern communications technology can also have bad influences on people, as many of my respondents argued. Kaveri Subrahmanyam and Patricia Greenfield (2008), for example, examine the influence of communication through online media such as mobile phones and computers on adolescent behaviour and conclude that there are both benefits and dangers. They also address the issue that parents might not be knowledgeable enough to watch over their children's activities. They point to the challenge for schools, parents and all institutions responsible for children and youth, to eliminate the negative uses of the internet and mobile phones while preserving the benefits of education and social connection.

While people who enter the world of new technologies choose the way in which they want to participate in the new communication possibilities, some people choose not to get involved at all. An interesting quantitative survey was done to explore the reasons why people use the internet and mobile phones. Ronald Rice and James Katz (2003) present the result from a representative national telephone survey of Americans in 2000 that showed that internet and mobile phone usage was very similar throughout the country, whereas they ascertained several digital divides between users and non-users, veteran users and recent users, and continuing users and dropouts. Interestingly, dropouts were likely to be younger when compared to current users, with lower incomes and education levels and without partners. Their two main reasons for stopping their usage of the internet or mobile phone were that they were too complicated and wasted time. So the perceived complexity of the technology was an important factor in retreating from the technical world. The gap between internet users and non-users was associated with age and income but not with gender. Along with the rise of female users

of the internet discussed at the beginning of this chapter, this fact gives hope that women are an active part in shaping the new media.

Caroline Haythornwaite (2001) has explored in some detail what people actually do when they use the internet. As most studies mainly concentrate on the numbers of people who use the internet or other facilities but not what people in fact engage in, Haythornwaite is an exception. She found equal numbers of women and men participating on the internet and using it for the same types of online activities. However, other studies show gender differences in the internet applications that are used once people are online. New ICT technology is often used in the same way as similar devices were used before. This is evident for the telephone, especially as it was discovered that women are using it more, for longer calls and more for maintaining social networks than men.

> Women's domestication of the telephone into family and friendship networks is said to have subverted the designer's interpretation of the telephone as an instrument of telegraphic business information. (Lohan 2001: n.p.)

Jeffrey Cole et al. (2000) found that men use the internet more to read news or financial reports or in relation to their hobbies, which may include pornography (Philaretou et al. 2005), and women spend more time emailing to manage relationships with friends and families whereas men use email less frequently (Boneva et al. 2001). It seems that gender roles influence the use of new technologies.

For communications technologies, past research on the telephone suggests that gender may also be a relevant factor in shaping the adoption and use of mobile telephones. For example, studies of telephone use have documented that women are heavier users of residential phones than men (Frissen 1995), as mentioned above, but Valerie Frissen argues that men may show increasing interest in new communications technology because research documents that men use phones to access ever-increasing numbers of erotic services, such as 900 numbers, party lines and chat lines. Yet other studies suggest that old gendered patterns may be reinforced through updated telephony, whereby female mobile phone users use their phones to aid them in managing both work and domestic responsibilities (Rakow and Navarro 1993, Frissen 1995).

If the decision is made to get involved with new communication technology, the second question is: which technical device is the best to get? This decision depends not only on the price-value ratio, but is also associated with the identity of the individual. Pierre Bourdieu (1984) has shown that individuals seek to gain social status and power via the

careful presentation and display of consumer goods. He does not discuss how gender may influence these accounts. Beverley Skeggs (1997) shows how women seek respectability through the appropriate display of homes and bodies (see also Casey and Martens 2007). As Bourdieu has classified and grouped people into certain classes of consumption, it is possible to group people and their choices of technology into certain types. This has been done by John Horrigan (2009), who in his quantitative study, categorized nearly 3 500 participants into categories of technology users. He identifies eight different types, depending on which technological gadgets and services they use, how they use it and their attitudes towards the technology they use in their lives. His detailed categories range from the enthused digital collaborateur, via ambivalent networkers, media movers and roving nodes to mobile newbies, desktop veterans, drifting surfers to eventually the less enthused information encumbered, tech indifferent and off the network people. The criteria for putting people into these groups change profoundly and swiftly with time. As he remarks, in his earlier study (2006) people with broadband internet connections at home were seen as cutting edge but in 2008 (when I conducted my interviews) mobile connectivity in the form of G3 networks with emailing from mobile phones had replaced the former. Every technology type described in Horrigan's work has a distinct self-perception in relation to everyday life technology. Their attitude towards technical items is part of their identity.

To predict whether technology is easily adopted by people, several models have been developed, such as the Technology Acceptance Model (TAM) by Fred Davis et al. (1989). TAM is a quantitative theory that models how users will accept and use a new piece of technology. The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it, notably: perceived usefulness (PU), 'the degree to which a person believes that using a particular system would enhance her or his job performance', and perceived ease-of-use (PEOU), 'the degree to which a person believes that using a particular system would be free from effort' (Davis et al. 1989).

When a technical item is adopted into a person's life, this might change their self-perception, while the technical item might be used as an extension of the self or act as a means to create a certain identity. This identity is further influenced by one's gender role, peer groups and their innate attitudes to technology. In Chapter 6 this is discussed further.

Covering the three main areas of my research, in this chapter I have outlined important discourses in these fields of research which are relevant to the findings in my thesis. My work is in dialogue with these studies and I shall intertwine my own findings with the literature in each analysis chapter. The next, Chapter 3: Methodology, provides a discussion of my methods of data generation and my approach to the analysis of the data.

3 Methodology

This small-scale qualitative study was designed to explore the perceptions and views held by individuals from two age groups, both genders and three countries about their strategies for acquiring technical knowledge of how to choose and how to use modern communication and entertainment technology in their everyday lives. Many technical artefacts have become part of our modern life and identity. Technical knowledge is needed to purchase and use these devices in the everyday.

Researching issues about everyday life makes mundanity one of the main tropes of this study, since the uptake of technical knowledge is not necessarily a self-conscious process. Analysing daily life assumes that our actions are social performances and therefore valid subjects for social research. As Erving Goffman (1959) and Peter Berger and Thomas Luckmann (1967) describe, what seems mundane and ordinary used to be overlooked in research and was seen as 'unmarked' while extraordinary occurrences were widely researched. As Wayne Brekhus states: 'The study of social life often neglects the ordinary in favor of the extraordinary' (Brekhus 2000, n.p.). Brekhus further emphasizes that the unmarked is seen as normal and as the basis from which the 'marked' is distinguished. As people often acquire knowledge without consciously thinking or deciding about it, it is part of these mundane actions.

The desire to do research on a mundane subject arises from my personal experience. As Knut Sørensen emphasizes, each researcher has a history and brings her own perspective into the research process and is encouraged to bring to her research 'an open mind, not an empty one' (1997: 16). My interest in this topic was generated by my personal biography. I pondered the question of whether the ascribed performative gender roles in society, which assume a low interest in and a low knowledge level about technology amongst women, would lead to disadvantages in acquiring technical knowledge. As a feminist, I take the view that gender is a key analytical category. This feminist perspective forms the core of my research. Gayle Letherby states: 'feminism does aim to deconstruct the taken for granted' (2003: 53), which I planned to do by questioning the taken-for-granted assumption that women were not interested in technology.

Agreeing with Flis Henwood (2000), I take a social constructivist point of view of the world, which presupposes that meanings are not given, but socially constructed. As already indicated, in our society, technology is constructed as a masculine domain (Cockburn 1983, Lohan 2000, Wajcman 2000). This perception is mirrored in advertisements for certain technical tools and gadgets, which are presented by men, or in everyday life where men are generally considered to be more technically knowledgeable than women. And, as Maria Lohan (2000) remarks:

> The symbolic dimensions of technology have entered the vocabulary of feminist studies of technology as 'the masculine culture of technology' whereby masculinity and technology are symbolically intertwined. (…) That which is considered technological is also perceived to be masculine, emphasizing the cultural association of technology/technological virtuosity with men, hegemonic masculinity and status. By contrast, women's everyday encounters with technologies are rarely recognized as representing technological competence. (Lohan 2000: 902)

However, as Lohan also emphasizes:

> it is important to draw attention in our research not just to the 'masculine culture of technology', but to move beyond this into exploring diverse and contradictory masculine cultures of technologies - such that the seemingly natural relationship can be further questioned. (Lohan 2000: 905)

My aim is to explore the 'lived experiences of technology' (Henwood 2000: 43) in order to interrogate the cultural association of masculinity and technology. As a female mechanical engineer I have my own experiences with gender and technology in many areas that left me questioning common perceptions about the appropriateness of technical knowledge[16] for women in general and feminine women in particular, and how women perceive themselves and other women and men in terms of technical expertise. My experience, gained from computer courses I gave in the company I owned between 1994 and 2007, showed that women would downplay their knowledge about computers and men would appear confident, even when they did not know how to get a certain result on the computer. I therefore started to question the assumptions made in our

[16] Appropriateness of technical knowledge refers here to the common perception in society that technical knowledge is, as Lohan (2000) has pointed out, connected to the male gender role and increases the status of men, if they have technical expertise, but is not included in the female gender role. It might even be that having technical expertise is seen as not appropriate for a 'real woman'.

society about technical competence assigned to each gender role. My reason for focussing on gender was to explore whether there was a difference in the perceptions of women and men in how easy they think it is to acquire knowledge about technology in a society where it is believed that women are not interested in technology and are technologically incompetent (Wajcman 2000, Cockburn 1983). Building upon these concerns resulted in the following main research question, as mentioned in the introduction:

Which strategies do people develop to cope with the necessity of acquiring knowledge about technical gadgets used in everyday life?

In order to be able to answer this question, I planned my research carefully since:

> In research-specific contexts the demand to be explicit regarding the research process has become increasingly pronounced, prompted by the recognition that the process itself exerts influence on the research outcome and therefore needs to form an articulated aspect of the research. (Griffin 2005: 178)

In theory, every method has a perfect setting. However, the real world seldom provides perfect research conditions. For example, in my case one interviewee did not turn up, another participant had a slightly lower age than I had intended in my research design and three participants were not born in the country where I was conducting my research. I shall therefore describe my research design in terms of how it was planned and, in the section on the research process, I depict what happened when I was in the field conducting my research and tried to map that plan on to the real world. A gap between these two is a common feature of qualitative research as described, for example, by Robin Legard et al. (2003), Jane Lewis (2003) and Uwe Flick (2006). Through the differences between how research is planned and how it unfolds in practice, the research process itself becomes an exploration of best practice rather than a rigid step by step guide that one follows. As Hugh Mackay et al. suggest:

> Within the social sciences there are numerous perspectives and methodologies. (…) Social research, however, is a much more complex process than following a cook book, commonly involving negotiation, judgement and compromise in the collection and analysing of data and the development of argument. (Mackay et al. 2001: 128)

3.1 Research methods

With my ontological position, which assumes 'that people's knowledge, views, understandings, interpretations, experiences, and interactions are meaningful properties of social reality' (Mason 2002: 63), generating data by talking interactively with people to explore their perceptions of their experiences in acquiring technical knowledge was an appropriate method to employ. As Steinar Kvale (2007: 10) states: 'A semi-structured life world interview attempts to understand themes of the lived daily world from the subjects' own perspectives'. The decision to choose interviews as my data-generating tool was therefore grounded in the mundane nature of the information I wanted to generate. Most of it was not readily observable from the outside and so I decided that observation methods were inappropriate. Interviewing is one way to enter the worlds of others. Glassner and Loughlin (1987) named interviewing 'a methodology for listening' and a possibility of 'seeing the world from the perspective of our subjects' (1987: 37). Burgess (1984) called interviews 'a conversation with a purpose'. Because my focus was on the users of technology and not on the technical devices themselves, interviews were a useful methodology to explore the perceptions of my interviewees. My chosen method of semi-structured interviews comprised the use of a prepared interview guide (see Appendix I), relevant to the research question, and active listening.

I was especially interested whether women and men had developed different strategies or faced different challenges in the process of knowledge acquisition. This focus on gender made it necessary to include both women and men in my sample. I also decided to compare older women, who encountered computer and communication technology such as mobile phones only when they were already adults, with younger women from a generation that grew up with ICT. Renate Möller (1990) points out that older individuals find themselves in a life situation where they were biographically overtaken by the development and implementation of ICT technology in their work and private lives and experienced a fast-developing technical environment that takes the know-how of how to use it for granted. The adult new user has to learn how to use the new technology at a stage in her life when her formal education phase is more or less completed. Thus the advanced age learner is confronted with a sudden increase of new technical knowledge that appears in her everyday life. This suddenness of the need to acquire technical knowledge that occurs when a technical device is adopted into an individual's life may influence her perception about how easy it is to achieve technical expertise.

In comparing not only men and women in their experiences with modern technology but also people at different stages in their lives and different childhood experiences with technology, I wondered whether their experiences would differ from country to country. Being German and living in Britain, and having completed an MRes in Britain, I found more differences in my own life than I had expected. For example, I observed the vast range of pink mobile phones available in Britain, which was not the case in Germany at the time in 2008. To investigate differences between countries, I chose to extend my research to cover Britain, Germany and the Netherlands as those countries seemed much alike in terms of technological progress, gender equality and economic background.

When I planned my research methods, I considered the guidelines of feminist research. Mary Maynard and June Purvis (1994) point out that feminist research takes into account special issues, such as the power dimensions between the researcher and the researched, the ethics of research practices and the subject of exploitation of the interviewees. To comply with feminist research practices, I made sure that I was in line with the ethical requirements of the University of York[17]. For example, I treated each interviewee with respect from the first to the last contact. The participant was my co-investigator rather than my research object. Although my research topic was not a sensitive one, the ethical issues of how to protect the interests of my participants and myself had to be considered. Ethical research practice refers especially to informed consent since this 'means that research subjects have the right to know that they are being researched, the right to be informed about the nature of the research and the right to withdraw at any time' (Ryen 2004: 218). As informed consent requires the explanation of the research topic and the agreement of the participant to contribute to it, I told my participants about my study at the first contact, either in person or by email and that their names and other personal data would be anonymized. One participant, who was a head of department, asked especially for this before we started the interview and it sounded to me as if he would otherwise not have agreed to do the interview. As soon as I confirmed that pseudonyms would be used throughout the research, he was relieved and concentrated on the interview. I then asked the interviewees to give their permission to use their interview for my study and for publication by presenting a consent form that I asked them to sign (see Appendix III). Their consent was based on knowing what would happen in the interview and with what they told me.

[17] See http://www.york.ac.uk/staff/research/governance/policies/research-code/, accessed 29.12.2011.

The code of ethics formulated by the British Sociological Association (BSA)[18] highlights the need for everybody's safety, both the participants' and the researcher's. As described later, there were safety issues for me in my research when I had interviews with male participants whom I did not know beforehand. I solved those problems by using an office at the university for some of my interviews, by trying to use public spaces for interviewing purposes and taking a friend to one of the Dutch participants, who invited me to his apartment to conduct the interview.

3.2 Sampling strategies

After deciding to use the interview method as my research tool, the next step was to specify the criteria for appropriate participants. As Flick argues:

> Sampling strategies describe ways of disclosing a field. (...) In sampling decisions, the reality under study is constructed in a specific way: certain parts and aspects are highlighted and others are phased out. Sampling decisions determine substantially what becomes empirical material in the form of text, and what is taken from available texts concretely and how it is used. (Flick 2006: 133)

As I wanted to understand how women and men perceived their ability to cope with new technology and their strategies to acquire the necessary technical knowledge, I had to include both women and men in my research. Secondly, I wanted to find out if there were any differences across different age ranges, associated with the prevalence of ICT in people's lives. Consequently I chose two different generations, one who grew up without computers in their childhood and one who did. I decided to fix the age range for the older generation between 50 and 70 and for the younger generation between 20 and 30. Since the personal computer appeared on the market around 1985, the younger members of the older generation were already 27 years old and adults at that time whereas the oldest of the younger generation was seven years old and grew up with computers as they were becoming more and more popular every year.

Thirdly, I wanted to find out whether there were differences in perceptions about ICT knowledge acquisition in different countries. Therefore I chose three countries and interviewees in these countries using the same criteria. Flick points out that in order to

[18] See http://www.britsoc.co.uk/equality/Statement+Ethical+Practice.htm#_rela, accessed 29.12.2011.

be able to pin down differences across cultures, one has to make sure that as many life circumstances of the participants as possible are similar.

> To be able to emphasize cultural differences it is necessary that the interview participants live in as many respects as possible (big city life, comparable professions, income and level of education) under at least very similar conditions in order to be able to relate differences to the comparative dimension of 'culture'. (Flick 2006: 142)

The three countries I focussed on: Great Britain, Germany and the Netherlands were selected because of their similarity in terms of technological progress, wealth and availability of the same technological gadgets. In order to fulfil the demand of similarity in my participants' backgrounds, I decided to focus on a comparable educational level, such as a university degree, being aware that this meant including mostly people from the middle class. With the aim of limiting the variables I chose to focus on the dominant ethnic group in each country. I also selected similar locations: a middle-sized university town where the social life was influenced by the large numbers of students. In all three countries I also chose towns that were in the north of the respective country, not the capitals, and which had a well known, large and high-ranking university with social sciences and gender studies: York in Great Britain, Bielefeld in Germany and Utrecht in the Netherlands. An advantage in my choice of countries was that I had some familiarity with all of them and spoke their dominant language. Linda Hantrais and Steen Mangen (2007: 11) emphasize that

> it is desirable for researchers undertaking comparative studies to have an intimate knowledge of more than one society, their languages and cultures, and this would seem to be almost a prerequisite for embarking on scientifically grounded cross-national research projects.

As I conducted all the interviews in the three countries myself, there was a consistency in how they were conducted, which according to Richard Rose and William Mackenzie (1991: 455) is desirable.

My overall sample was thus composed as detailed in Table 3.1.

Table 3.1: Sample structure.

Participants	Age group 20-30 female	Age group 20-30 male	Age group 50-70 female	Age group 50-70 male	Total
Germany	2	2	2	2	8
Great-Britain	2	2	2	2	8
Netherlands	2	2	2	2	8
Total	6	6	6	6	24

Source: Background questionnaire.

A more detailed overview about my individual participants, including their pseudonyms and ages, is included in Table 3.2[19]. I put the women first, starting with the oldest and finishing with the men in the same order of ages. I also apply the same colour scheme throughout the thesis. Britain appears in green, data from Germany is in purple and Dutch references are in turquoise.

Table 3.2: Interviewees' names and ages.

British	German	Dutch
Simone, 67	Annette, 64	Iris, 58
Phoebe, 53	Sabine, 48	Corrie, 53
Kathy, 23	Katrin, 26	Maaike, 24
Maureen, 23	Claudia, 20	Neeltje, 22
Henry, 71	Wolfgang, 64	Jan, 62
Robert, 63	Michael, 50	Matthys, 57
Craig, 29	Folkert, 26	Arjan, 27
Vincent, 23	Christian, 25	Niklaas, 23

Source: Background questionnaire.

The people I interviewed, and my sample as a whole, were characterized by certain specificities. First, this was a very small sample. It was also a convenience sample in the

[19] More information about the interviewees can be found in the mini-biographies in Appendix IV.

sense that I chose my respondents randomly at the campus of each of the three university towns whilst always ensuring that each of them fulfilled my criteria in terms of gender, age, educational background and country of origin. A small sample means by definition that the data cannot be generalized. Findings might therefore be better characterized in terms of their relatibility to the context in which they emerged.

Second, the people I interviewed were highly educated and this has implications for my findings. Rogers (2003 [1962]: 288-9) suggests that highly educated people are more likely to have the resources (both educational and economic) to enable them to appropriate new and emerging technology earlier than less wealthy and less educated people. This might influence my findings as one might assume that my well-educated and relatively well-off respondents might reveal early adoption behaviour in line with Rogers' point.

Since my interviewees were highly educated people, one has to assume that they were skilled learners. In other words, they might have acquired more advanced learning techniques than people with a lower level of education. Finally, my interviewees operated in what could be described as an 'ideal' learning environment, not least in relation to technology, that is in universities with significant learning and technology facilities. People without access to those facilities may have a very different experience when it comes to appropriating and using ICT.

Overall, my intention had been that all my interviewees should be natives of their respective countries. Further, all of them should own a mobile phone and use a computer as well as having an educational background in the social sciences, humanities or related disciplines, but excluding any technical subjects. Against this ideal background the next section describes how my carefully planned research worked out when confronted with the challenges of the field.

3.3 In the field: Finding participants

My research started with the search for interviewees who conformed to my criteria. In the framework of studying individuals who cannot be approached as employees or clients in an institution or as being present in a particular setting, the main problem is how to find them. As Flick (2006) has pointed out, finding participants is not always an easy task, especially when working cross-culturally. As I started my PhD in Germany I was already immersed in an appropriate field at my university and could contact people

there. When I moved my PhD to Great Britain, I found another suitable field there. For the Netherlands I had to contact people while abroad and it was therefore the most more challenging to find appropriate participants. I was looking for eight people with the following criteria: four participants (2 women, 2 men) from the generation between 50 and 70 years and four (2 women, 2 men) between 20 and 30 years old. All of them should preferably have a university social science or humanities background. As older citizens often have families, jobs and a busy life in general, my assumption was that it would be more difficult to find people in this age group. This proved to be the case. To find four younger people amongst the students was easier because they were more flexible with their time and I was more confident in approaching them.

When researching in Germany I had relatively ready access to interviewees. After having conducted a pilot interview, I did my first interview with a female student who had the right age and educational background (sociology) to fit my sample. I then used snowballing to find more students by asking her for friends who would be likely to agree to be interviewed and she referred me to her boyfriend who was a music department student. As no other contacts emerged, I used an ad hoc method of gaining interviewees and asked students in the common room of the sociology department. Through that method I found three other students with a social science background. Tim Rapley (2004) points out how participant recruitment is often not as straightforward as it is theoretically designed. He confirms: 'the actual practice can deviate from this – like many things, recruitment routinely happens on an ad-hoc and chance basis' (Rapley 2004: 17). He also emphasizes that it is vital to report the process of recruitment, as it 'can be central to understanding the "outcomes" of the research' (Rapley 2004: 17). This is the reason why I shall describe how I arranged the interviews in the different countries in some detail.

As mentioned, I was more concerned about finding participants in the older age-group. So I started cautiously by asking the secretary of my German supervisor, with whom I had already worked on other projects, and she was immediately prepared to be interviewed and invited me to her home. As the second older female I asked a friend of mine who is a manager of a Chamber of Industry and Commerce. She also agreed. As for the older male participants, my supervisor made contact with a male interviewee in the right age range and the last interviewee I approached in the cafeteria, after he had enjoyed a cake in the afternoon. This was a professor of sociology whom I knew by sight and said hello to when working for my supervisor. To my surprise he agreed to my

request, telling me that most social research is done by interview and he had done this a lot, so he wanted to give something back to the scientific community by being used as an interviewee. As it turned out later, in all three countries I had a professor (Robert, Michael and Jan) and a secretary (Phoebe, Annette and Corrie) as interviewees and in Great Britain (Simone and Henry) and the Netherlands (Iris and Matthys) a married couple in the older age range. I conducted the German interviews in two phases: the first three interviews were done in September and December 2006 and the other five in April 2008.

When I transferred my PhD to the University of York, I started with an MRes and gave a presentation about my thesis in a seminar. Three women from this event offered to be participants in my research afterwards. That was a big relief to me because they were the first interviews in a foreign language I was planning to do and those women were friendly and familiar. My supervisor facilitated contact with another interviewee. Subsequently I used the snowballing technique. This was an effective method to reach other participants. The coordinator of the sociology department also sent an email with a brief description of my research to undergraduate students and more than five students responded immediately. I got my final mature female participant in the sociology department with a bit of persuasion because she was not sure whether she would give the 'right answers'.[20] All British interviews were conducted in December 2007 and January 2008.

To find Dutch interviewees, I got in touch with a senior teacher whom I knew from a summer school held in 2006. She was very helpful and sent my proposal to the students of the department for gender studies. A female and a male student responded immediately. Both sounded enthusiastic and the female student described herself as addicted to modern technology. (In the interview she did not seem especially 'addicted' in her behaviour towards her technical gadgets.) My first interviewee was the male student who had responded to the request from the gender department. When we discussed the location for the interview, he invited me to his apartment that he shared with his wife and their dog Gertie. In a later email he announced that we would be alone in his apartment as his wife had an appointment. As a safeguard I took a friend with me, and it was a productive encounter as he was interested and engaged in my topic. It

[20] See Kvale, Steinar and Svend Brinkmann on right answers (2009: 146).

became apparent that there was no issue for me here but literature has shown that researchers have to be aware of possible dangerous situations.[21]

Other participants from the older generation were found by asking the couple who ran the B&B where I stayed. They seemed to be in the right age range, and both agreed to be interviewed. I approached participants amongst the younger generation in cafeterias or on campus, coming out of seminars or standing in groups talking. But I still needed one older woman and one older man and a male student with the right background. I therefore visited the Gender Studies department where I knew a few people. But when I arrived, nobody had time because the whole department was moving. They directed me to other departments such as history, languages and law. Despite some rejections from students and older staff I went on to ask more people until I had fixed a date, time and location with enough people of the right age and sex who were willing to participate. As one of the participants did not turn up at the time and location we agreed and I sat there waiting, I decided to ask another student who came into the cafeteria spontaneously. I asked him whether he would be interested in being interviewed and when he accepted, we did the interview there and then. It turned out to be a student from the law department and we had a useful interview, although the shortest one, partly because I felt bad for 'pouncing' upon him without any warning. All Dutch interviews were conducted in December 2008.

Overall it was quite an adventure to find my participants and it was different in each country. In Germany it was easiest, as I felt familiar with the language. Great Britain was easier than the Netherlands as I already knew some people from both generations to have a starting point for asking. But in the Netherlands I was confronted with total strangers, and asking them for an interview was a challenge for me. In this respect it was exactly as Flick (2006) stated: finding interviewees can be a problem.

My original intention was that all of my participants should have been raised in the respective country. As it turned out, two of my British interviewees were raised outside Britain (South Africa and Bermuda) and one of the Dutch interviewees came from the United States. Table 3.3 shows the age, profession and sex of my participants grouped by nationality. It shows that my planned older age range of 50 to 70 was not quite realized in practice as I did not feel able for reasons of politeness to ask for the older interviewees' ages before the interview took place. As Agar confirms, 'there were

[21] See Lee-Treweek and Linkogle (2000) on dangerous situations while interviewing.

certain things one did not ask questions about, things that were defined as ''personal"' (Agar 1980: 45). Because the variation was only two years and the individual who fell outside that range was near enough to the generation who grew up without computers in their childhood, I decided to keep those interviews. All of my participants in the younger age group fitted into the planned age range as I made sure by simply asking them before I arranged the interview.

Table 3.3: The age and profession of the British, German and Dutch interviewees.

Britain	Simone	Phoebe	Kathy	Maureen	Henry	Robert	Craig	Vincent
Age	67	53	23	23	71	63	29	23
Profession	Student	Secretary	Student	Student	Retired	Professor	Student	Student
Sex	F	F	F	F	M	M	M	M
Germany	**Annette**	**Sabine**	**Katrin**	**Claudia**	**Wolfgang**	**Michael**	**Folkert**	**Christian**
Age	64	48	26	20	64	50	26	25
Profession	Secretary	Manager	Student	Student	Teacher	Professor	Student	Student
Sex	F	F	F	F	M	M	M	M
Netherlands	**Iris**	**Corrie**	**Maaike**	**Neeltje**	**Jan**	**Matthys**	**Arjan**	**Niklaas**
Age	58	53	24	22	62	57	27	23
Profession	Teacher	Secretary	Student	Student	Manager	Consultant	Student	Student
Sex	F	F	F	F	M	M	M	M

Source: Background questionnaire.

3.4 In the field: Interviewing

The interview guide for my semi-structured interviews was worked out in Germany where I started my PhD in April 2006 under the supervision of Prof. Ursula Müller at Gender Studies, Bielefeld University. The questions for my interview guide and the background questionnaire were designed within a framework of colloquia and seminars where I was able to present my work to other PhD students and professors. The process of refining the interview guide included discussions, new ideas and always the core question: what is it that I want to know? This process enabled me to cut down the interview guide from a list of 50 into one with five essential areas and just 25 questions (see Appendix I). It became clear that it was important to scrutinize the guide for too much emphasis on marketing issues because in the beginning the questions

concentrated excessively on factual data. Although I started the interview with a question about the brand and age of the mobile phone of my participant, I was not mainly interested in those data and shifted during the interview to my core topic of experiences of knowledge acquisition. Starting with the mobile phone offered an easy entry into the interview as it focussed the interviewee on an object, the mobile phone, which all but one of my participants had in their pockets or bags, and not so much on the interviewee.

In September 2007 I conducted the first pilot interview and discovered a method of engaging the interviewees with my topic and changing those first minutes of an interview, which can sometimes be awkward as both participant and interviewer may feel uncomfortable (Legard et al. 2003, Rapley 2004). When I planned to start with a gadget that everybody is likely to have, namely the mobile phone, I decided to ask for a certain task. This would not only employ my interviewees in a specific activity but would give me the opportunity to observe how they approached the task. I asked whether they could show me the currency symbol for use in a text message. Of course there was no manual to resort to or the internet available at that moment, so my interviewees did not have the full range of possible knowledge sources at hand. (Nobody said for instance: 'Oh, I would like to look at the manual or ask a friend'.) But whether people were comfortable starting to try things out, or were stuck and did not know what to do, told me a lot about their level of confidence about using that particular method.

The request that my interviewees do something practical had several effects on our relationship as researcher and interviewee. First of all, it drew the attention away from the somewhat forced conversation of an interview to a gadget and people happily pressed buttons and tried to find the currency symbol. (Only a few people knew where it was right away.) Sometimes I could feel that this task put pressure on people to come up with the right solution. On several occasions it ended up with a broad smile on the face of my interviewee as they proudly announced that she or he had found it. To know where the currency symbol is on a mobile phone can be a useful piece of knowledge as many people use texting for maintaining their social contacts. I had given them the incentive to search for a new thing and I had the feeling their self-confidence grew with being able to complete the task. Afterwards those interviewees were more open, more active in participating and more interested in the interview itself.

Few participants did not have a successful experience with this task. Before I had the chance to ask him, Henry (GB, 71) told me that he could only, if that, call certain

numbers on his mobile phone and did not know how to text. So I decided there was no point in asking him to show me the currency symbol. Craig (GB, 29) did not find the symbol and accused me of putting him on the spot. As he was a keen technology user, he found the dollar symbol but was certain he could change it into the euro or pound sterling symbol, if necessary. A few days later I saw him on campus, where he came straight up to me and exclaimed that he had found the function and proudly showed it to me. Others were not interested in searching for it, while some were so engrossed in the task that I had to interrupt them in order to resume the interview. Overall this hands-on task at the beginning of the interview was a good experience for me as a researcher because it broke the ice between me as an interviewer and my respondent and made the interview from then on a more pleasurable experience for me and hopefully for the interviewee.

Interviewing is a skilled job and has to be learnt. Each interview can take different and unexpected directions. As Flick argues:

> The interviewees must be given the chance to introduce new topics of their own in the interview. The interviewer's double task is mentioned here at the same time: step-by-step to cover the topical range (contained in the interview guide) by introducing new topics or initiating changes in the topic. This means as well that they should lead back to topics that have already been mentioned but not detailed deeply enough, especially if they have the impression that the interviewee led the conversation away from a topic in order to avoid it. (Flick 2006: 151)

To give the interviewee the freedom to introduce new topics and emphasize themes that she or he was interested in, was a challenge to my interviewing skills, but these improved with every interview I conducted. Sometimes I found it hard to pursue a subject that my interviewee was apparently not at ease with. 'One of the hallmarks of the in-depth interview is probing for reasons – asking "why?" Explanations are repeatedly sought for views, feelings, behaviours, events, decisions and so on. There is often a reluctance to do this among new researchers since it seems to be contravening social norms, to be impolite, to do so' (Legard et al. 2003: 151). Robin Legard et al. also point out that:

> This kind of iterative probing involves asking for a level of clarification and detail that can sometimes feel unnatural or artificial. It goes far beyond what is usual in

> everyday conversation. The researcher is putting aside their own knowledge and their own intuitive understanding, and asking for explanations of things they might think they comprehend. (Legard et al. 2003: 152)

Moreover, I asked questions about personal information that probably only friends normally ask. My ability to sense when I could probe and when I should stop so as not to offend my interviewee increased dramatically with the number of interviews conducted. Although I used an interview guide to enhance the comparability of the interviews, I tried to give each interviewee the freedom to develop a conversation. As a conversation has a natural flow and people are more used to it, interviewees are more relaxed and will feel more comfortable in a conversational mode than in a rigidly conducted interview. My attentive listening was intended to make my interviewees aware that their opinions were valued. This in turn might encourage them to share their experiences.

I started all interviews by informing my interviewees about the purpose of my study and all agreed that I could record the interview. As other scholars have experienced: '[p]eople do not always feel comfortable with a tape recorder' (Schostak 2006: 51). Therefore I made sure that the digital recorder was open to sight on a table between us and as it looked like a memory stick it was unobtrusive. I also controlled the position of the recorder in order to attain good quality recordings. Starting with easy-to-answer questions like what brand their mobile phone was, I eased the participants into the interview situation, which was new for most of them, in order to make them feel comfortable as the start of the interview is important for the interview process.

> The first few minutes can be crucial for establishing the relationship between researcher and participant which is a prerequisite for a successful in-depth interview. The researcher therefore needs to be aware that the participant may be feeling anxious or even slightly hostile initially. (Legard et al. 2003: 145)

In applying the hands-on task, as described above, I created a smoother start to the interview. I then started to guide my interviewees to the main topics of my research, namely their perceptions about how they experienced the technical knowledge acquisition phase, which needed a bit more reflection from their side due to the mundanity of that process and the consequent lack of awareness thereof.

Given the delicacy of interviewing, it was not always easy to get the subtle subjective information I wanted. Sometimes I found that we were talking about more peripheral

topics before I could lead us back to one of my main topics or that I had to introduce a new theme to come back to my research subject. As Legard et al. emphasize: 'The role of the researcher is that of a facilitator to enable the interviewee to talk about their thoughts, feelings, views and experiences. However, the role of the facilitator is an active, not a passive, one. It does not mean sitting back and just letting the interviewee talk' (Legard et al. 2003: 147).

Overall, it was much easier to ask about factual data such as 'how old is your mobile phone?' than to ask about processes people do not usually reflect on (Michael 2003, Galloway 2004), like how did they get to know about new technologies such as the digital camera. Since, as mentioned earlier, this kind of information is picked up without a necessarily conscious process, my participants sometimes had difficulties in recalling certain events I asked about. I am aware that what they reconstructed in their memory might not have reflected the actual experience they had in the past. But as I wanted to know how people perceived the process of acquiring technical knowledge, I was mainly interested in that rather than whether they remembered it 'correctly'.

Often I found that my interviewees were hesitant at the beginning of the interview but then enjoyed it as it progressed. They were much more relaxed and in one case, an interviewee (Robert, GB, 63) made me switch the recorder on again, because he wanted to add some more points to what he had said before. So, I found myself asking some more personal questions at the end of interviews when my interviewees were at ease. Sometimes I could feel a deep relaxation on the part of the interviewee at the moment when I announced that we were coming to the end of the interview and I had only a few questions left. Most of my respondents became attentive and volunteered that I could ask them more questions if I wanted and that the interview was a rather enjoyable experience.

In my effort to capture the memories of my participants about how they proceeded when they bought their last technical device and acquired the knowledge of how to use it, I observed that the interviewees needed a bit of time to recall their experiences, as if they had to find the specific piece of memory in their chronological life history. This psychological act is described by Deepak Chopra as follows: 'Simply asking a question or trying to recall an event converts a virtual memory into a real memory' (Chopra 2003: 88). On a number of occasions during my fieldwork I had to trigger participants' memories by asking more definite questions, for example: I asked whether they bought particular appliances for special occasions such as birthdays or Christmas. And suddenly

my respondents remembered and could easily describe the entire experience of purchasing the gadget, including the information acquisition.

At the end of the interview I used a questionnaire to obtain demographic and background information. This questionnaire permitted me to reduce the number of questions in the interview. The background questionnaire was to be given out after the interview in order to prevent its structure and content from imposing itself on the interviewee (see Appendix II). After the distribution of the questionnaire and while my interviewees filled it in, I wrote my field diary. All 24 participants filled in the questionnaire and signed the consent form (see Appendix III) that I had provided to get their permission to use the interviews in my research and also to assure them of their anonymity. All names were anonymized afterwards and only pseudonyms are used in this thesis.

My femaleness played a role in the interviewing process. 'Gender filters knowledge' (Denzin 1989: 116) by influencing female and male participants, including the researcher. Operating from within a paternalistic social system, I could not avoid certain assumptions made by my interviewees about my person. When I asked a male interviewee whether he would ask female friends for help with technical things he said: 'I'm ashamed to say I'd ask male friends' (Vincent, GB, 23). The word 'ashamed' implied that he felt uncomfortable about admitting this fact, possibly because I was a female interviewer, whereas he might not have felt ashamed to tell this to a male interviewer. My age and ethnic origin may also have had an influence on my interviewees' responses, although I cannot readily judge that.

3.5 Cross-national research and its challenges

My thesis involves comparative research. Linda Hantrais (1995) remarks that there is no special method for doing comparative studies. Conducting cross-national research brings its own challenges. The three countries I researched in – Great Britain, Germany and the Netherlands – were similar in terms of economic level of development and availability of technical gadgets. But they have different languages, different histories and different cultures. People from those countries would not have shared the same nursery rhymes or the same popular TV series as children for example. Even Christmas is celebrated in a different way and on different dates in each country. There are also differences in the use of technology. For example, in Germany all movies are dubbed into German. In

contrast, in the Netherlands people watch movies in the original language with Dutch subtitles. Therefore knowledge of the English language is much better in the Netherlands than in Germany. English is the main language in most Dutch universities. German universities are only gradually starting to offer courses in English. In the Netherlands academic scholars publish in English to reach a wider audience. In Germany, because of the larger size of the country and the possibility to succeed in an academic career in German-speaking countries (Germany, Austria and Switzerland), the necessity to publish in English is not as pressing as it is in the Netherlands. Britain is significantly oriented towards other anglophone countries such as the United States, Australia and New Zealand.

> British researchers, with their undoubted advantage of possessing an international language as their mother tongue, are likely to hold an Anglocentric view of the world and to expect other research communities to adopt their *modus operandi* in international networks. (…) This is what help(s) to explain the preference in many of the cross-national studies carried out by British researchers for cross-Atlantic or Antipodean, rather than cross-Channel, partners. (Hantrais and Mangen 2007: 13)

English students are reluctant to go to other European universities, whereas in the Netherlands or Germany, Erasmus fellowships are very popular. Due to its colonial history, Britain has a relationship with particular countries such as India and through its position as an island a certain attitude towards the European continent. The Netherlands as a small country is self-conscious about its position and its language is mainly restricted to its own country and a part of Belgium. Therefore they encourage people to speak foreign languages and leave the country to gain experience of other cultures. The relative sameness among these countries in terms of technological and economic development suggests that differences in personal attitudes among their citizens, if researched comparatively, are related to cultural factors.

These differences are part of every nation. Sometimes particular regions within countries have historically developed specific norms and practices. Therefore the terms and phrases I used in my questions may have had somewhat different connotations in the three countries where I worked. Researching cross-culturally invariably involves a certain compromise in that there might be implications in what my interviewees say that I might not get and cannot analyse because their background is foreign to me (Hantrais and Mangen 2007). Because I asked questions about similar gadgets in all three

countries and the participants from all countries used broadly the same brands of technical appliances such as the mobile phone, digital cameras and MP3 players, this issue may, however, not have been so significant.

To choose nations as a contextual unit is a convenient frame of reference for comparative studies 'since they possess clearly defined national borders and their own characteristic administrative and legal structures' (Hantrais and Mangen 2007: 8). All three countries are closely connected because they are members of the European Union, governed by the European Parliament in which every member state is represented and legislation is enacted across borders for all member states. Sharing this membership commits the countries to similar goals at the level of government policy while they maintain cultural and social diversity at the micro level. This made my research initially feasible since it was dependent on the distribution of the same technological devices for use in everyday life in each country.

Other cross-national studies compare the cultural and economic level of their chosen countries. Cong Liu et al. (2007) used qualitative methods to clarify and investigate in greater depth culturally-specific job stressors as an addition to their quantitative results. To set the backdrop, they compared the economic and cultural history of both countries. They point out that the qualitative approach is rarely used in cross-national research, which was confirmed by my literature search. Amos Hatch et al. (2001) used a qualitative approach in cross-national research with open-ended questions in questionnaires, comparing Australian and American teachers who use child observation in class. The analysis was done by comparing the Australian and American data sets and searching for patterns. They explain: 'Once potential domains were identified, the data were read again with only these domains in mind. A systematic search for disconfirming evidence was then undertaken, giving us confidence that the patterns we draw in this report are well grounded in our data' (42). In my analysis I used a similar approach.

The level at which cross-national comparison is done can vary. In general, cross-national research may entail three different approaches: a particularistic (close-up) one at the micro-level, a societal (medium) and a universal (long-distance) view, comparing for example welfare states, which will reveal different social realities (Hantrais and Mangen 2007). Given that mine was a small-scale qualitative study, I chose a particularistic approach to include certain aspects of the interviewees' social background, such as their family history and childhood experiences with technology and at the same time, focussed on individuals. However, as I aimed for certain comparable dimensions among

my interviewees, for example in terms of educational background, class, ethnic origin and made sure all of them were owners of a mobile phone, this means that my findings may have relevance beyond the particular individuals concerned.

Doing research on everyday life placed me in the position of an insider as I have encountered many of the issues discussed with my interviewees in my own life since I am a user of the same technical appliances. Therefore I empathized with my interviewees and recognized many of their experiences as my own. To this extent I felt like an insider. However, as a researcher one can never be a proper insider because of the position one inhabits. Michael Agar (1980: 50) introduced the metaphor of the researcher as the professional stranger in the field. Whereas individuals no longer reflect on certain routines, especially in everyday life, as they take them for granted, the researcher steps back and maintains the perspective of an outsider by posing questions about mundane issues that people usually do not think about.

> As an outsider I am more able to look from a distance at the society of my research, maybe able to see patterns and phenomena that an insider wouldn't notice. (Hantrais and Mangen 2007: 13)

Researching the mundane has many connotations. However, Melissa Gregg (2004:375) describes it as 'an exceptionally productive level from which our studies might arise'. And she later states: 'This, to my mind, is the key strength of studying the mundane: it is focused on the new experiences emanating *from* the everyday, rather than imposing upon it a second-order, and often foreign, hermeneutic' (Gregg 2004: 375, emphasis in original). Paul Dourish (2000: 96) suggests that an understanding of phenomena of everyday life demands a 'concern with the *mundane* aspects of social life, the background of taken-for-granted everyday action' (emphasis in original). This was my task during the interviews: standing back and maintaining the outsider perspective even though this field of research is also part of my own everyday life. As Anne Galloway (2004) argues:

> Ubiquitous computing seeks to embed computers into our everyday lives in such ways as to render them invisible and allow them to be taken for granted, while social and cultural theories of everyday life have always been interested in rendering the invisible visible and exposing the mundane. (Galloway 2004: 385)

Mike Michael (2003) calls attention to technologies such as Velcro and the ballpoint pen. 'These are technologies that have become utterly mundane' (Michael 2003: 127). As artefacts are incorporated into everyday lives, they are becoming part of the mundane

and taken for granted. This is a feature of my research on technical artefacts that have become mundane devices in my participants' lives.

3.6 Language issues in researching cross-culturally

According to Steen Mangen (2007: 21), in dealing with interviews from countries with different languages, 'the ultimative challenge is to make sense of cognitive, connotational and functional meanings'. This is also emphasized in a useful article about cross-national interviewing in different languages by Catherine Welch and Rebecca Piekkari:

> The data obtained from interviews is 'inter-relational' (Kvale 1996) and 'contextually grounded' (Mishler 1986), jointly produced by the interviewer and interviewee in a specific time and place. While the production of meaning is localized in this way, interviewers and interviewees also selectively draw upon their shared knowledge of the social world to make sense of each other. From this perspective, which tends to be combined with a social constructionist or critical epistemology, language is a form of construction rather than a mirror on reality. (Alvesson 2003) (quoted in Welch and Piekkari 2006: 420)

My respondents used language in the interviews as a means to express themselves and construct their past experiences and views of technology. Thus language was the basis of our mutual construction of reality and therefore set the parameters of how we were able to express our views. Welch and Piekkari (2006) point out that language is not only a translation issue while doing research. They argue that: 'The dynamics within the interview itself are likely to be influenced by the language used for the interview' (Welch and Piekkari 2006: 422). Although some scholars emphasize that researchers should be capable of 'communicating in the respondent's language' (Tsang 1998: 511) to be able to 'fully express themselves' (ibid) and attend to the interviewee's statement with 'cultural understanding' (ibid), others contradict this view and credit the interpreters with the ability to establish a deeper rapport than they as foreigners could have achieved. I was happy not to use an interpreter, as this can slow down the interview and make the whole process stilted.[22] Not using an interpreter was possible because my knowledge of the English language was sufficient for conducting the interviews with

[22] See also Ian Wilkinson and Louise Young (2004) on the use of interpreters.

British native speakers and the Dutch respondents were fluent enough in English to understand and answer my interview questions. Welch and Piekarri argue:

> The selected interview language may also have power implications for the researcher-interviewee relationship. Marschan-Piekkari and Reis (2004) categorize interviews into three different types depending on whether the researcher or interviewee has the linguistic advantage (i.e., uses a mother tongue), disadvantage or whether both parties face a mutual linguistic challenge by operating in a non-native language. (Welch and Piekkari 2006: 422)

All three situations occurred in my research. During the British interviews I was the foreign interviewer who conducted interviews in her second language with native English-speaking participants. Therefore my British participants were in the place of power. They could use colloquialisms and idioms that I only understood later by resorting to a native speaker of English. This is confirmed by Welch and Piekarri: 'Even if interpreters are not used, it is common for researchers to draw on the skills of native speakers when transcribing, translating and analyzing interviews' (Welch and Piekarri 2006: 427). In Germany I and my interviewees were native speakers and could use our mother language with the full range of colloquialisms and choice of words. In the Netherlands, I was again in the position of interviewing in a second language and all but one participant were using a non-native language themselves. This positioned me in an equal status with my participants in Germany and in the Netherlands and in a disadvantaged position in Great Britain.

Since I was a foreigner in the Netherlands and in Britain and was speaking in a second language, people could have perceived me as an outsider. As I am clearly not Dutch or British, this marked me as a stranger, which can be perceived as a 'neutral platform' (Welch and Piekarri 2006: 431) where interviewees open up more as the interviewer can be perceived as not having an agenda and is probably a better listener as she has to concentrate not only on the topic but also on the language. Therefore the interview can be more intensive and possibly richer than interviews in one's native language, where many meanings are taken for granted.

In the Dutch interviews there was also the issue of understanding, as some Dutch participants were more fluent in English than others. In the Dutch case both my interviewees and I had to use a foreign language and, I would argue, that limited at least some of my participants significantly in what they could express. Jan (62) had difficulties

expressing more complicated issues in English and started to mutter when he was unsure of the language. He seemed sometimes a bit reluctant with his answers, but instead of assuming that this was non-communicative behaviour, it might also have been a lack of confidence in the interview language. Some Dutch interviewees used Dutch expressions when they did not know the English word and with my knowledge of the Dutch language I was able to help them to find the English equivalent. But because neither of us was a native speaker of English, I as the interviewer and my Dutch respondents were on the same side and the power was equal between us.

Welch and Piekarri indicate that researchers interviewing in a non-native language facilitate the interviews, for example by supporting actions such as less complex questions and frequently clarifying questions. This is exactly what I did in my interviews in Great Britain and the Netherlands. Afterwards it was much easier to transcribe and understand the Dutch interviews as my participants used 'an "international" English devoid of idioms, dialect and colloquialisms' (Welch and Piekarri 2006: 429).

> Interviewing in a second language is strenuous, because it quickly exposes any weakness of linguistic or cultural competence. Requesting clarification of colloquianisms, (…) can prove tedious and can antagonize respondents by interrupting the flow of their discourse. (Mangen 2001: 27)

Fortunately I could understand the English transcripts except for the colloquialisms which I checked with a native speaker, for example when an English interviewee said she would buy a washing machine and would not want something 'with too many bells and whistles' (Phoebe, GB, 53).

3.7 Transcription

After completion of the interviews I entered the next stage of my research, transforming the spoken, recorded word into text for interpretation.

> After generating the data through interviewing there has to be the documenting of the data which comprises mainly three steps: recording the data, editing the data (transcription), and constructing a 'new' reality in and by the produced text. All in all, this process is an essential aspect in the construction of reality in the research process. (Flick 2006: 284)

As Flick describes here, the interviews have to be processed. The exactness of the documentation of the data has an influence on the later stage of analysis because the latter is done on the basis of this newly constructed reality that derives from the transcription of the interviews. All British and Dutch interviews were conducted in English, the German interviews were done in German. The transcriptions mirror those languages. I transcribed the recorded material verbatim. My first transcription followed in detail the transcription rules for conversation analysis[23] which took a long time since I transferred many details, such as length of pauses and emphasis on words or syllables into the transcript. This made the transcript quite difficult to read. Since I was not going to do content analysis, I simplified the rules and in consequence the time to transcribe an interview went down significantly. The transcription rules I followed were a variation on conversational analysis, here especially Paul Drew (1995: 78). In the main I used the following markers:

(inaudible)	inaudible passages in the interview.
/	if the interviewee or the interviewer was interrupted by the other party.
[GB laughs]	Paralinguistic features in square brackets to indicate who is laughing or expressing other emotions during the interview.
(. . .)	significant pause

These rules were sufficient to get the depth and exactness I needed for the subsequent analysis. Ruth Wodak (2004: 175) reminds us that '[t]ranscription is indispensable' but also notes that there are practical limits (ibid). Wodak emphasizes one particular important advantage by deviating from the detailed transcription rules for conversational analysis: as my transcriptions are not broken up by signs which indicate overlapping speech, breathing and pauses, the transcripts stay orthographic and it is possible to search for certain words and phrases.

During the transcription I anonymized my data and introduced pseudonyms for my participants. I also discovered that it was easier to follow my own words than to concentrate on somebody else's speech, although after listening to an interviewee for a while it became easier to follow their speech. Most people used certain phrases several times and I got to know their speaking habits. Although transcribing was tedious and time-consuming, it had the advantage that I listened to each interview many times and

[23] For more detail on CA and its transcription codes see Gail Jefferson 1988, Paul Ten Have 1999, Celia Kitzinger 2000, Anssi Peräkylä 2004.

thereby started to analyse them by recognizing certain similarities and contradictions. I got a feel for the personalities of my interviewees and their concerns. Each time I found an interesting point in the interview, I made a note during the transcribing process and these notes were valuable for the subsequent analysis.

3.8 Analysis

My data analysis had two dimensions to it:

1. My research participants and how I categorized them.
2. The interview data that I generated and how I analysed these.

In relation to my interviewees, I analysed them in terms of four categories of information:

- Demographic data, in particular gender, age, education and country (Chapter 3: Methodology)
- In terms of the relation to technology they displayed relative to their natal families (Chapter 4: 116)
- In terms of which strategies they developed to acquire technical knowledge for appropriating and using technical artefacts (Chapter 5)
- In terms of their technology consumption patterns (Chapter 6)

In relation to people's consumption behaviour I used Rogers' adopter categories and shall explain how I applied the criteria in Chapter 6 which is the relevant one here.

In organizing the interview data I used the demographic categories to understand what differences emerged as a function of these categories. This is clearly delineated in the analysis chapters; I shall expand on how I arrived at the categories in Chapters 4 and 6.

Analysis is ‘what the researcher does with data in order to develop explanations of events so that theories and generalisations about the causes, reasons, and processes of any piece of social behaviour can be developed’ (Hitchcock and Hughes 1989: 43). Amanda Coffey and Paul Atkinson (1996: 6) point out the two-fold process of analysing as the ‘task of coding, sorting, retrieving, or otherwise manipulating data’ and the ‘imaginative work of interpretation’. Some sorting categories in my research were fixed and I determined them beforehand, such as my sampling categories: age, gender and nationality. But as I familiarized myself further with my interview transcripts, new and more subtle categories gradually emerged. Certain topics cropped up more or less

repeatedly in all interviews, when for instance my interviewees expressed emotions towards technical devices, gave descriptions of an altered self-image attributed to the use of technology, and articulated feelings of anger or fear about situations where technology was involved and was seen as a source of danger.

As Welch and Piekkari suggest: 'The process of analyzing interview data commenced during the interviewing phase and continued throughout transcription and data coding' (Welch and Piekkari 2006: 423). This was true for my research as I noticed the recurrence of particular themes while I conducted more and more interviews. The more profound analysis of the data began during the transcribing process when I started to look systematically for these similarities in the interview transcripts. In this I used my empirical data as the foundation for my analysis and did not approach my field with a pre-formulated theory that I wanted to test. Instead I tried to use each interview transcription as a source for new insights and traced the experiences of my participants while acquiring knowledge for appropriating and using technical devices. Analysing and coding meant that I discovered new topics, differences and similarities in the transcripts. As David Stephens points out:

> The analysis process is systematic and comprehensive, but not rigid; it proceeds in an orderly fashion and requires discipline, an organized mind and perseverance. The analysis ends only after new data no longer generate new insights; the process 'exhausts' the data. (Stephens 2009: 104)

I used some of the tools of the grounded theory approach since it allows the adaptation and changing of questions during the research process when it becomes evident that revised questions prove to be of more value than the original ones. When it became apparent that I had asked a question spontaneously in several interviews I added it into my interview guide. For example: 'Have you ever attended a computer course?' Or for the Dutch interviews: 'Do you think Dutch people are different from Germans or British people in their way of using new communication technologies?'

As Ian Dey (2004) describes, using these tools from the grounded theory approach encourages analysis to take place not only after fieldwork is completed but as a dialectical process between data generating and evaluation. Jaqueline Fendt and Wladimir Sachs emphasize the intertwining of data collection and analysis:

> Both its key concepts, that of 'constant comparison', in which data collection and analysis are an iterative process, and that of 'theoretical sampling', in which data

> collection decisions are progressional and subject to the theory in construction, are invaluable to the determination of quality in research on how individuals construct meaning from intersubjective experiences. (2007: 431)

In my case too, these new questions, obtained by analysis of the already generated data, proved useful in enriching my data.

Having categorized my results into several key themes, I created a separate table for each of the three countries containing the findings of the key categories of all interviews. These tables were more than 50 pages long, giving an overview and summarizing the relevant information for each key category. The categories, listed below in the order of the analysis chapters that follow, were:

Background-related categories:

- Family history related to technological appliances.
- Technical equipment of parents and their usage of gadgets.
- Older people and technology.
- Availability of technical appliances at the time of the respondents' childhood.
- Perceptions about other generations.

Knowledge-related categories:

- Handling of the task of finding the currency symbol.
- Narratives of finding out about new technologies.
- Use of general knowledge sources.
- Use of particular human knowledge sources.
- Strategies of knowledge acquisition in order to buy a gadget.
- Strategies of knowledge acquisition in order to use a gadget.
- Motivation to go and search for new information.

Identity-related categories:

- Reasons why interviewees got a mobile phone.
- Importance of design and functions of the gadget for the participant.
- Knowledgeability as an aspect of self-image.
- Ways to keep up to date with the development of new technologies.
- Expressed gender perspectives.
- Identity performance in using technology.

- Dangers of new technology.
- Gadgets perceived as helpful.
- Future views of technology and personal wishes for the future.

In this sense, I was open to what would emerge from my findings, rather than imposing categories in advance. Flick points out that different kind of data emerge in interviews (Flick 2006: 160). In my case it was mostly:

1. Narration of experienced concrete situations
2. Opinions, fears, critique and enthusiasm about technology
3. Stereotypes and references to the media

For example, while extracting the relevant data from the interviews, I discovered that the subject of identity was expressed in many different ways. Sometimes it included emotions about technical gadgets, sometimes critical comments about the use of particular functions of technical appliances and at other times it was just a passing mention by an interviewee of how she or he felt about having technical knowledge. As this information was scattered across each interview, I did a second phase of analysis to find the above-noted expressions of identity related to technology. These findings became important for my Chapter 6 about identity and technology. Thus I connected certain pieces of similar information from my interviews by following the emerging patterns in the search for a bigger picture. Stephens explains:

> The result of the analysis is some type of higher-level synthesis. While much work in the analysis process consists of 'taking apart' (for instance, into smaller pieces), the final goal is the emergence of a larger, consolidated picture. (Stephens 2009: 105)

While doing my analysis I also used feminist critical discourse analysis (CDA), as described by Michelle Lazar (2004), to scrutinize the interviews for more subtle expressions of expectations according to gender roles. As she points out, people are often not aware that their perception of others or themselves is shaped by societal gender role expectations. The feminist standpoint aims to deconstruct such reflections of society that are taken for granted and seem 'natural', for instance that women are not interested in technology, especially older women. As Bourdieu points out:

> The effectiveness of modern power (and hegemony) is that it is mostly cognitive, based on an internalisation of gendered norms and acted out routinely in the texts and talks of everyday life. This makes it an invisible power, 'misrecognized'

> as such, and 'recognized' instead as quite legitimate and natural. (Quoted in Lazar 2004: 10)

This perspective formed the basis of my analysis of certain indirectly expressed gendered views that my interviewees had about others and themselves. Although there were many openly articulated opinions about their own or the other sex, some interviewees were hesitant about expressing their views, probably because they knew I was a researcher from Women's Studies with a feminist stance. For example, some participants left long gaps when I asked about gender issues. They looked at me as if evaluating what might be best to say and apologized even before they expressed an opinion about gender. Therefore CDA was a valuable tool to explore gender notions in spoken language.

The first analysis chapter, then, is concerned with background-related issues. To set the scene for my research, I shall explore the historical development of technical consumer goods and their diffusion in households that my respondents experienced during their childhood and their personal family histories as well as the cultural differences and similarities between the three countries I discuss.

4 Different generations and their experiences with technology

My interviewees came from different backgrounds and grew up in diverse cultures and countries. Therefore their viewpoints of everyday technology were derived from different life experiences. Some came from families with an interest in technology and thus had early experiences with technical gadgets. But others were raised in families that ignored or even feared technology, where mothers and/or fathers struggled with technological innovation. Bourdieu (1984) argues that social origin and family background is the strongest influence on identity formation in life and forms the consumer type. He calls this influence 'markers of "class"' (Bourdieu 1984: 1) as for him class is the determining factor for the social development of an individual, establishing her likes and dislikes. In this chapter I shall investigate what the connection is between family background and interest in technology in later life.

As technology in general and domestic technology in particular is continuously developing, new technical devices are not a new phenomenon but were introduced, for example in the form of the car, 100 years ago or even further back in time. And although in this study I mainly focus on communication and entertainment technology, I shall also refer more widely in this chapter to electrically powered technology for domestic everyday use such as washing machines, radios and telephones since these were the appliances that my older interviewees experienced as technical innovations in their youth. As I shall show, the history of technology uptake in different times and countries is mirrored in the lives and stories of my interviewees.

The two generations in this research came from very different technological backgrounds. Whereas the older generation, with an age range of 50 to 70 experienced the beginning of the wide distribution of domestic appliances in the 1950s and 1960s such as washing machines, refrigerators and telephones as well as the first entertainment devices such as television sets, radios and record players, the younger generation, aged between 20 and 30, took the appliances introduced during the time of the older generation for granted. Some of the earlier technologies, such as open-reel tape recorders, had already vanished again when they were growing up in the 1970s and

1980s, while some devices, such as mobile phones, had only been introduced since they were born. Strauss and Howe (1992) have conventionalized names for specific generations. Their genealogy is: **Gen Y (Millennials):** born 1977-1990, **Gen X**: born 1965-1976, **Younger Boomers**: born 1955-1964, **Older Boomers**: born 1946-1954, **Silent Generation**: born 1937-1945, and **G.I. Generation**: born before 1936. This terminology is widely used, mostly without giving age ranges. I relate my two generations to it, as the younger participants are all members of the so-called Generation Y or Millennials, born between 1977 and 1990, while my older respondents were from three generation clusters: the younger boomers (1955 – 1964), the older boomers (1946 – 1954) and the silent generation (1937 – 1945).

People usually take for granted technology that was around in their early childhood. This taking-for-grantedness happens anew in every generation and includes all the technology that has been available since they 'can remember'. Simone described vividly how excited she was when they got their first telephone landline when she was already an adult, while her grandchildren take it for granted that they can reach any person via mobile phone anywhere at any time. To set some markers for the technological context for the older generation in the three countries, I shall compare four major changes during their childhood: the start of television broadcasting in each country, the number of television sets in certain years, the diffusion of washing machines and other domestic appliances and the availability of telephones at home. For the younger generation I will compare access to computers and the internet in the three countries in the 1990s, and the distribution of mobile phones and other modern communication technologies. In the conclusion I shall summarize my findings about the influence of culture and family on my respondents' attitudes towards technology and compare their experiences, differentiated by gender, age and country.

The childhood experiences of my interviewees with technology were quite different. This was indicated in the incidents with technical appliances that they told me about and showed how the disposition in the natal family towards technical products impacted on the interest and confidence in technology in my participants' later lives. In discussing these issues, I focus on the micro-level of technology uptake. Through the narratives of the respondents a picture develops of the range of technical equipment they experienced in their childhood, which may be juxtaposed with the statistical data about the general uptake of certain technical inventions adopted at national level (macro-level).

4.1 Typical domestic appliances in British, German and Dutch households in the 1960s

Data about domestic appliances as well as numbers of television sets and telephones in private households are scarce. The literature contradicts each other in terms of the figures and the development rate. Sometimes the definition of an appliance in the statistics was unclear: for example, in some statistical surveys a washing machine was any appliance that helped with the laundry, electrical or not, while the German statistics counted only automatic washing machines that included spin dryers. In the 1950s, a typical British home had a cooker, a vacuum cleaner and a plug-in radio (Silva 2010).[24] By 1960, 44% of homes also owned a washing machine. The adoption rates of these appliances grew steadily. In 1975, 90% of homes had a vacuum cleaner, 85% had a fridge and 70% owned a washing machine. Furthermore, 52% had a telephone.[25]

> So many things changed in people's lives in the fifties and sixties, but if one thing stands out as defining the age more than any other, it is the coming of television. At the beginning of the fifties, television was a luxury item. (…) For every generation born since the 50s, television has been taken for granted as part of our lives.[26]

The official date for the first broadcast of BBC 1 is 2 November 1936. Germany started to broadcast TV in 1935, similar to Britain. The number of TV sets in German households developed from 100 000 in 1955 to a million in 1957 and to 2 million in 1960. In 1959 the diffusion reached a peak with 5 000 TV sets sold every day as it became a mass medium. A third (34%) of households in Germany had a TV in 1962/1963 (Abramson 1987, Hickethier 2004). The moon landing in 1969 could already be watched live by 73% of the German population on their own TVs. By 1978, 93% had their own television set. The Netherlands started to broadcast in 1934 in low resolution until 1939, stopped during the war and re-started with a higher-resolution television broadcast in 1949 (Hickethier 2004). On 24 May 1960 the one millionth Dutch telephone was installed, which meant that about 9% of the Dutch population had one.[27] A technical adoption rate can be influenced by national events; for example, in 1953, when it was announced that Queen Elizabeth II's Coronation would be televised, sales of TVs surged. The

[24] http://www.woodlands-junior.kent.sch.uk/homework/war/1950s.html, accessed 12.01.2011.
[25] http://www.localhistories.org/britain1948.html, accessed 11.01.2011.
[26] http://www.retrowow.co.uk/television/television.html, accessed 11.01.2011.
[27] http://www.historyorb.com/date/1960/may, accessed 14.01.2011.

coronation was broadcast live in many European countries such as Germany, France, Belgium and the Netherlands. Many people watched the event on a friend's set. The Coronation really sparked off an interest in television, together with another, later event: the first landing on the moon in 1969.[28]

Because of all the contradictory figures I found in the literature, I decided to use the Unesco data shown in Table 4.1 to compare the numbers of television owners in the three countries since this data included the three countries discussed in my study.

Table 4.1: Diffusion of television sets in Britain, Germany and the Netherlands in 1953 and 1960.

Television sets	**1953** (Total numbers)	**1953** (In %)	**1960** (Total numbers)	**1960** (In %)
Britain	2 957 000	5.8	11 076 000	21.1
Germany	12 000	0.02	4 635 000	8.3
Netherlands	8 500	0.1	801 000	6.9

Source: http://unesdoc.unesco.org/images/0003/000337/033739eo.pdf, accessed 11.01.2011.

These figures show that Britain was significantly ahead of the Netherlands and Germany in the adoption of television sets by 1953. When it comes to telephone landlines, by 1964, 21.6% of British households had fixed-line phones. Lynne Hamill (undated) remarks upon the unusual adoption cycle of landlines in Britain.

> This percentage peaked at 95% in 1999, after which it started to drop as mobiles were substituted (…) Thus phones took some 80 years to spread from virtually no households to around 20% and almost 120 years to reach 95%. (…) The slow adoption of phones for the first 80 years followed by a fast rise to saturation can be explained as follows. About 1 in 20 geographically and socially close affluent households were early adopters. These households had average personal networks of about 30 and they persuaded one member of their network to adopt each year. (2, 10)[29]

It seems as though many people were cautious about new technologies and waited to see if the technology would become a necessity which they had to have.

German families experienced similar conditions, although domestic appliances seem to have entered private homes later than in Britain, especially in the early 1950s and

[28] http://www.retrowow.co.uk/television/television.html, accessed 11.01.2011.
[29] http://www.hamill.co.uk/pdfs/dwompa__.pdf and 1964-93: CSO: Family Spending. HMSO London (1994), accessed 11.01.2011.

1960s. This might have to do with the Second World War, which disrupted the continuous development of domestic and entertainment devices and slowed other technical advancements down as well. This was especially the case in Germany, as the country was governed by the Allies after the war and they controlled the technical development of Germany. At the beginning of the 1960s, 36% of German households owned a spin-dryer and 9% had an automatic washing machine.[30] With a diffusion ratio of 62% in Germany in 1962, vacuum cleaners achieved the highest ratio of ownership among all electrical household appliances.[31]

However, telephone diffusion was more gradual in Germany.

> The reconstruction of the telephone service was accomplished by the end of 1951, but installation of new private telephones was slow. By 1952, there were still only 5% in Germany, compared to 11 % in Britain. By the 1960s, however, Germany's communications network had been fully restored, and telephone subscribership was on a par with other industrial countries.[32]
>
> 14% of German households had their own telephone in the early 1960s.[33]

The Netherlands were fast in adopting domestic technology. In 1947 approximately 14% of Dutch households already owned a washing machine. This developed to 16% in 1951 and 30% in 1957 (Oldenziel and Zachmann 2009). Three years later, the numbers had nearly doubled. In 1964 nearly 75% had a washing machine and in 1972 more than 85% (Van Dorst 2007). Vacuum cleaners, radios and TVs were also common goods in Dutch households. In terms of the percentage of households owning a washing machine, at 60% Dutch private homes were significantly ahead of Germany (9%) and Britain (44%) in 1960. Britain was in the lead for TV sets, followed by the Netherlands. Britain was also in the lead for telephone subscribers (21% in 1964), followed by Germany (14% in the early 1960s) and the Netherlands (8.7% in 1960).

Overall, this comparison of adoption rates of electrical appliances in the 1960s across Britain, Germany and the Netherlands shows that the differences in adoption rates are small. This is important as I chose the countries for my study for their similarity in

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[30] http://www.destatis.de/jetspeed/portal/cms/Sites/destatis/Internet/DE/Presse/pm/2004/01/PD04__044__632.psml, accessed 14.01.2011.

[31] http://guillaumevdb.net/DeutscheDisc.pdf, accessed 12.01.2011.

[32] http://www.destatis.de/jetspeed/portal/cms/Sites/destatis/Internet/DE/Presse/pm/2004/01/PD04__044__632.psml, accessed 14.01.2011.

[33] http://www.referenceforbusiness.com/history2/68/Deutsche-Telekom-AG.html, accessed 11.01.2011 and http://www.destatis.de/jetspeed/portal/cms/Sites/destatis/Internet/DE/Presse/pm/2004/01/PD04__044__632.psml, accessed 14.01.2011.

technological advancement. As described in Chapter 3, this is important in order to allow differences in attitudes and challenges among my participants to emerge regarding the same kind of gadgets. Having looked at how the ownership of certain consumer durables expanded into the households during the time of my respondents' childhoods, I shall now discuss this in relation to their specific experiences.

4.2 Technologies in the British respondents' families in the 1960s

I specifically asked my participants how many and which technical devices and domestic appliances they had had in their family household and which technological gadgets they first owned as a child. In comparing their responses I shall focus on one female and one male participant. Together they represent what was quite typical for my interviewees of a specific age in their country.

Simone (GB, 67) remembered that technology in her childhood consisted of a radiogram, a radio and a camera. She remembered the camera as one that 'would have been one of these old Box Brownies'. The radiogram was a popular gadget that was mentioned by all the older British participants. Simone described it as follows: 'It's this long piece of furniture people used to have that took pride of place in their home that had a radio in and a record player.' Her family got a television in the late 1950s when she was 15 or 16 years old. As is typical for Simone's generation, they did not have many domestic appliances such as a fridge or a washing machine.

Simone's family was quite interested in technology, with a mother who was a dressmaker and her father a blacksmith. Her father could put plugs on any electrical equipment (which was a necessary skill in Britain as appliances then came without plugs) and he could mend fuses in the home and wire up lights. Simone said proudly that her mother had always fixed her own sewing machine when there was anything wrong with it. She said: 'If it was the bolt on the sewing machine, or needles jammed or the foot pedals, she could see to all that herself' (Simone, 67). It seems that her parents were capable people, able to maintain the technology they needed for their everyday lives.

Simone witnessed the arrival of many technologies that later generations took for granted. She was one of the older participants in the age range from 48 to 71. The memories of her childhood when she was about 10 years old were from the 1950s. She

remembered well, for example, when she got her first landline telephone when she was 23 and already married.

> I came from an area where we didn't have a phone in the house for a long, long time. And then when we did have a phone in the house it was what you called a party line, because you shared the line with somebody else, because there weren't enough lines to go around. So you might share it with a neighbour. You could pick up the phone and hear their conversations, so you'd, etiquette said you dropped it down again quickly, and so we, and after I was, about 23, after I was married, both my children were born before I had a phone in the house at all. We used to have to go to the kiosk at the end of the road to make any phone calls. So for me to be able to contact anybody [nowadays], I know that most people can contact me should they need to in an emergency, and I can contact them. And, but I don't think, my grandchildren think that's the norm. They can't think that it was ever any other way. (Simone, GB, 67)

Simone referenced a different kind of sociality for the early use of shared landlines – one did not listen in to others' conversations on the phone – from that prevalent in 2012 when outsiders are often coerced into listening in to others' phone conversations since people are frequently not aware of (or do not care) about their surroundings when talking on their mobile phone. Technical items were shared, for example here the telephone. Others remembered too that only a few in a village had a telephone and neighbours were called over to come to the phone when somebody rang for them. The same is true for TVs: neighbours would watch TV together at the few homes that had such a gadget back in the 1950s.

I found that most of my older interviewees had one particular gadget that they desired in their youth and were proud of. For Simone, it was a typewriter that was not even electrical.

> My first one that I was so proud to own was a portable typewriter which wasn't electrical (laughs). But I loved that, and I'd bought it and I took an extra part-time job to pay for that.

When I asked why it was so important to her, she answered:

> I don't know. I suppose it gave me a bit of independence really. I knew that I could, I mean, in those days people didn't have typewriters, and people didn't have word processors. So I knew that I could always get work, if I wanted to, if I had something, something like that. (…) I didn't need it for my professional career

> because I went out to work, but I knew that in the future perhaps I'd get married and have children, but I'd perhaps do some typing at home. I never did it, but I've always typed letters at home.

Simone had a typewriter early on, which made her feel special and prepared for the future. Robert, another British interviewee, also had a technical item that made him feel special when he was young:

> Actually, I persuaded [my parents] to buy what we called a radiogram. A radio with a gramophone that could play vinyl records. I must have been around 16 when we bought that. And I bought a tape recorder. They were just coming in, I got my own tape recorder when I was at university as a student in South Africa. I must have been about 19 or 20. That was quite advanced technology. Not many people had tape recorders. (…) I had a camera, that would have been the second, and I was very proud of my tape recorder. I started getting interested in classical music. None of my family was interested in classical music. And so I recorded off the radio with my tape recorder. (Robert, 63)

He used the same word as Simone, 'proud', when he talked about his tape recorder, his special item. When comparing the two it becomes clear that Simone's device was meant to be used for work in order to care for the family and to be independent, whereas Robert's tape recorder was for personal enjoyment and leisure time. Marilyn Waring (1989) found that men in general have more leisure time than women and were therefore more interested and engaged in leisure activities.

When Robert grew up in South Africa in the 1950s, they had no TV, not even when he was a teenager.

> About all I can remember: we didn't have television, because I was in South Africa then. There was no television. And a camera. An old stand camera of course, as I was saying. We didn't have a washing machine. We had an oven. We didn't have whatever kinds of technology. We had phones. Old-fashioned phones. And when I was growing up you had to pick up the phone and do the handle and then they would get you through to the exchange and then you'd say what number you wanted and the exchange would plug you into the right number. But then phones developed, so you didn't have to do that anymore. (Robert, GB, 63)

His natal family was not much interested in technical items but his older brother developed an interest in radios and motorbikes.

One might argue that the level of technological advance in these two interviewees' childhood homes was roughly similar. At the time of the interview Simone was very interested in technology and had all the technical gadgets such as computer, laptop, digital camera, iPod, MP3 player and mobile phone. She was using a Mac computer and was highly proficient. Her parents were interested in technology when it concerned their working tools, which they fixed themselves. Maybe that was the reason why she developed an interest and achieved a high level of technical knowledge later in her life. The same is true for Robert. He, too, was interested in technical items and used many different gadgets. His brother's interest in radios and motorbikes might have influenced him more than his parents.

These two examples from the British (South-African) older generation are typical of the kind of technical devices adopted by their natal families. Domestic technology such as washing machines and refrigerators and new devices for entertainment such as radiograms and televisions were still novelties in their childhoods.

4.3 Technologies in the German respondents' families in the 1960s

Wolfgang, 64, a retired teacher, remembered clearly the technical situation in his natal family:

> It was the end of the 1950s, early 1960s, and it was a big event when we got our first fridge. My sister worked at *Bosch* and had the opportunity to get it cheaper; that is how our big family could afford it. And my other sister, that was already in the 1960s, she lived with her husband in the States, she brought us a 5-litre hot water boiler. We had a little radio but no TV. It wasn't the time yet. (…) Yes, we had a camera. But we only took photos for celebrations. When I was going to be confirmed I asked for a camera. All my siblings had got a bicycle for their confirmation, so there were enough bicycles when it was my turn. So I wanted a camera and with my own savings I bought a reflex camera. That was something special in those times and I took photos of the family and my teacher in school developed the pictures in black and white, and most people like pictures. (…) it gave me a special position in this big family. So I was proud and I had my advantages. That was nice. (Wolfgang, G, 64)

This narrative is reminiscent of Simone's and Robert's accounts of their family background. And again there was one device that was special and made this respondent feel unique. Importantly though, it was about standing out from the crowd, rather than joining in. The latter is possibly more important in the current younger generation.

Sabine, 48, was the youngest of the older participants. She remembered having quite a lot of technical appliances at home when she was a child aged ten since this was in the 1970s when such appliances had become more common.

> We had the usual things such as a vacuum cleaner, fridge, stove, washing machine, toaster, freezer and for entertainment: TV, turntable, radio. My older brother had a tape recorder. (Sabine, G, 48)

What Sabine designates 'usual things' had been quite unusual just 15 years earlier. When Wolfgang was ten in 1954, Simone in 1951 and Robert in 1955, many of these appliances were not widely adopted. Sabine said that her parents were not interested in technology but she sneered at her older brother whom she described as incompetent in relation to technology. She emphasized that she knew more about technology than he did despite describing her own abilities as only average. This outburst of emotion might be caused by the fact that she was the only girl in the family and her two older brothers might have had the advantage of being seen as more technically competent than her. She was annoyed that her brother was given privileges such as technical appliances, for example an open reel tape recorder that she did not get because she was a girl. Wajcman (1991a) confirms that girls and boys are treated differently in childhood, especially in relation to technology as they get different toys to play with and are encouraged to follow gender stereotypes, which means that girls are encouraged to care for and nourish others and boys are encouraged to build and construct items and play with technical artefacts.

4.4 Technologies in the Dutch respondents' families in the 1960s

The older Dutch participants like Iris clearly remembered which technology they had in their families as a child. Although Wolfgang (G, 64), Simone (GB, 67) and Robert (GB, 63) were a bit older than Iris (NL, 58), I was surprised when I learnt that they had a washing

machine at home in her family when she was about ten years old, which would have been around 1960. Iris (NL, 58) explained:

> my father was someone who always was very into new things. We always had the newest gadgets. And my son is a copy of him. In Brussels, once a year, there was a great exhibition of all new things that were invented and he went there. And he always came home with very strange things. He was really into new things.

When I asked whether her mother shared his interest in technical things, she said: 'Not that much. Sometimes she was forced to use it because he bought it. [She laughs]' (Iris, NL, 58). Like Wolfgang, Iris came from a big family with seven children. She herself and her brother were interested and excited when her father came home with strange new gadgets. Her other five sisters did not care much and saw them as 'another one of those'. As a child she had a record player, a tape recorder and a camera. She was quite proud of her father and his technical interest.

> My father was seventy when he bought a laptop and started to teach himself how to use it.(...) They had a little house in the garden and he was thinking about getting this on, difficult to explain, on a kind of wheel, so he could turn it in the sun. (...) He was always thinking about things like that.

When I asked whether her mother was using technology now that she was elderly, Iris sounded disappointed:

> No, no, no, no, no. But she does know about email addresses and things like that. I think she could easily do it, because she knows a lot about it because she wants to know things and she goes to her grandson and she sits next to him when he searches for things [on the internet]. So she knows how to do it but she doesn't do it. (Iris, NL, 58)

So, maybe triggered by the interview and my questions, she valued her father in that sense more than her mother. Iris herself was interested in technology and was convinced that everyone should know the basics of new communication technology such as the internet. She encouraged her neighbour to get her own computer and internet and showed her how it worked.

> I have a friend who lives across the street and I said to her: 'Why don't you buy a laptop?' It's that easy because she always asks me about exhibitions, where and when they are, and I say: 'OK, I'll go on the internet for you and look for it.' I think, it's a bit strange when someone doesn't have a laptop. (…) people say: 'I don't

> know how to send an email,' I say: 'OK, well, I can teach you that in two minutes. It's that easy.' So I am a bit confused or upset, is that too strong a word? I can't imagine that people don't use a computer. It's part of my life. (Iris, NL, 58)

Her perception of the usefulness of the internet was strongly shared by Matthys, who needed it for his work as a consultant. But Matthys was not terribly interested in technology. He used his mobile phone, which he got from his employer, to read emails from work. But he was not interested in spending time on finding out about more functions. He appreciated modern technology, especially for his health, as he was wearing hearing aids and had had a bypass operation only a few years earlier.

Matthys (NL, 57) could also remember his childhood family life well.

> Yes, I do remember that, I was born in '51, and I think in '58 or '59 we had our first television. (…) That was very early. I think '58, '59. And we had a, we also had a telephone, and I do remember that people in the neighbourhood came to us to make a phone call. And other people phoned to us to tell the people next door that they were arriving on the railway, other kind of things like that (laughs). (...) I lived in a very small village in the Netherlands, the south of the Netherlands.

Interestingly, his mother was the most interested in technology in the family.

> She was not interested in technology as an aim itself, but she was, she said that time moves and television and telephone, they become important so we have to buy it, we ought to buy it, so we did.

His father obviously agreed since he went on:

> Well, he didn't stop it anyway (laughs). But I think that my mother was the motor in that kind of thing. (Matthys, NL, 57)

Matthys recalled more of his childhood and technology when he said:

> And I do also remember that children in the neighbourhood came to our place to watch television. So I think we were one of the first in that village. Maybe in Utrecht other people were earlier.

They also had a car in the late 1950s, which was unusual. They needed it to take their home-grown vegetables to the wholesaler. Even more unusual was the fact that neither his father nor his mother did not have a driving licence but his two older brothers and three older sisters and himself did. The first gadget he owned was a portable radio,

which was made by his eldest sister's boyfriend in a cigar box. Radio Luxemburg was one of the first to play popular music and he loved to listen to it.

Although Britain was ahead of Germany and the Netherlands in the 1950s and the 1960s, especially with TV sets and telephone landlines, it seems that the Dutch households caught up rapidly and were technologically more advanced than the German and British ones after the 1960s. They had many more appliances and the interest in new technology seemed high.

The memories of my female participants about their technical experiences in childhood were not much different from the memories of the male interviewees. Sabine mentioned her anger towards her older brother and his ownership of a tape recorder. This implies that there was an issue of gender inequality in the family. Simone had a technical device that was meant to be used for work, whereas all the men and Iris had devices such as cameras, tape recorders and radiograms that were used for leisure activities. Only Matthys remembered that his mother was more interested in technology than his father; most of the other interviewees experienced no difference between their parents, except for Iris who had a father with a particularly high level of interest in technology that his wife did not share.

Many of my older interviewees clearly remembered the arrival of new domestic appliances such as fridges and washing machines as well as entertainment devices, such as radiograms and cameras. As the domestic appliances would have mostly been used by their mothers and the entertainment devices more by the male members of the family, both parents must have experienced the challenge of finding out how to use new technology and learning how to operate new appliances.

When comparing the interest in technology that my interviewees experienced as children with their interest in technology at the time of the interview, there is some evidence of a correlation within the older age group. Iris was raised in the family with the most pronounced interest in technology and she herself was still fairly interested and open to new inventions when I interviewed her. The same was true for Simone, Robert and Sabine. Other interviewees, such as Wolfgang and Matthys experienced little interest in technology in their natal families and did not develop more interest in later life.

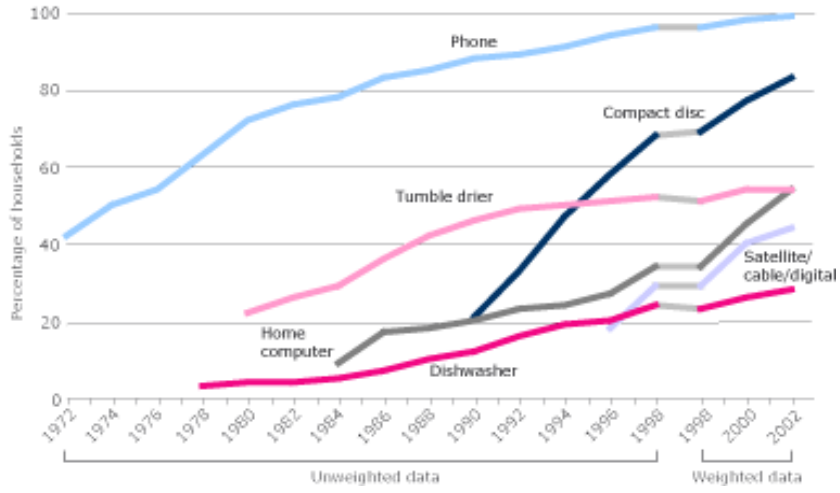
In general, my older participants gave the impression that the arrival of new technology in their families was experienced as a relief. New inventions were perceived as easing hard work, enhancing life in the domestic arena and making life more interesting with the devices used for leisure. The connections between neighbours seemed to be stronger than nowadays as they watched television together or shared a telephone line. This was not quite the same for my younger generation of interviewees.

The participants aged younger than 59 did not mention a particular item that they owned and were proud of like the three older participants. Maybe when technical items become more widely diffused, the specialness of owning a particular gadget is reduced.

4.5 Typical technical appliances in British, German and Dutch households in the 1990s

My younger respondents were ten years of age between 1989 and 1998. By that time, many electrical appliances had entered the domestic and entertainment realms at home. Telephones, TVs, stereos, washing machines and fridges were ubiquitous. Figure 4.1 shows the adoption rate of selected technical devices in Britain from 1972 to 2002. It shows that domestic technologies such as dishwashers were adopted at a steady pace while entertainment technologies such as compact discs and computers spread in exponential leaps.

Figure 4.1: Percentage of households with consumer durables: Great Britain, 1972 to 2002.



Source: http://www.statistics.gov.uk/cci/nugget.asp?id=823, accessed 02.06.2008.

Figure 4.1 shows that the 2002 General Household Survey records a steady increase in the ownership of certain consumer durables from the early 1970s onwards. Ownership of a refrigerator rose from 73% of households in 1972 to 95% in 1985. Other household amenities that were available only to a minority of households in the early 1970s were also much more widespread after 2002. For example, the percentage of households with central heating rose from 37% in 1972 to 95% in 2008. By the mid-1990s, most homes had access to a freezer, a washing machine, a telephone and a television. The proportion of households with access to more recently-introduced items (such as a dishwasher, tumble drier and microwave) continued to rise. The percentage of British households with modern consumer durables in 2006 is shown in Table 4.2.

Table 4.2: Main consumer durables in British households in 2006.

Main consumer durables as % of households owning them in Britain 2006	
Telephone	99.0%
Washing machine	96.0%
Central heating	95.0%
Microwave	91.0%
CD player	88.0%
Mobile phone	80.0%
Digital receiver	71.0%
Home computer	67.0%
Tumble dryer	59.0%
Internet connection	59.0%
Dishwasher	37.0%

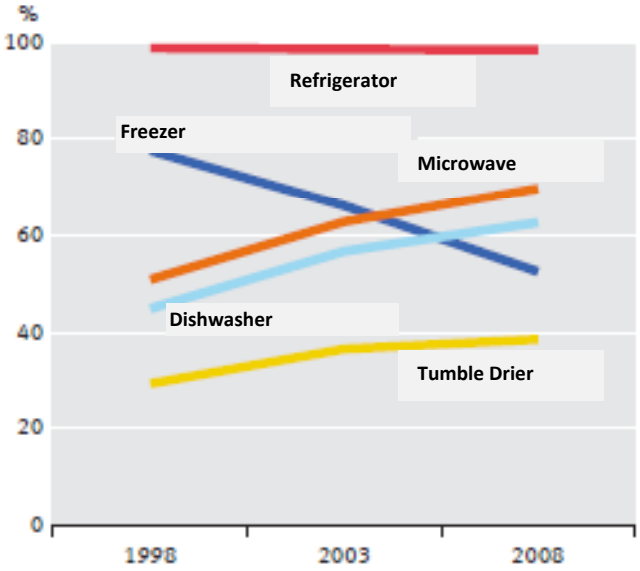
Source: http://www.laposte-export-solutions.co.uk/uk/markets/country-profiles/united-kingdom/consumption-trends, accessed 12.06.2010.

Entertainment items have become much more widely available. Access to a television has been widespread in Britain for a long time (93% of households in 1972, rising to 99% in 2002).

In Germany certain domestic appliances such as the dishwasher were adopted earlier than in Britain. Domestic appliances are adopted at a steady rate until a saturation point is reached where 100% of households own one and growth can slow down, as is the case with the refrigerator in Germany. Figure 4.2 shows the distribution of white goods for Germany in 2009. The fridge (red line) has reached the 100% mark, whereas ownership of the microwave (orange) and dishwasher (light blue) are still growing. The

freezer (dark blue) is declining. And the adoption of tumble driers (yellow) was still growing slowly.

Figure 4.2: Distribution of white goods in German households in 2009.



Source: Statistisches Bundesamt, Zuhause in Deutschland 2009, accessed 14.06.2010.

In terms of ownership and saturation of households with the most common appliances, Germany was fairly similar to Britain, as Table 4.3 shows. The dishwasher was adopted earlier in Germany while Britain adopted the tumble dryer at a quicker pace.

Table 4.3: Main consumer durables in German households in 2006.

Refrigerator	99.4%
Telephone land line	95.2%
Mobile phone	80.6%
Freezer	73.6%
Microwave oven	68.7%
Home computer	64.5%
Dishwasher	62.4%
DVD player	59.0%
Internet	57.9%
Tumble dryer	40.0%
MP3 player	23.0%
Laptop computer	21.3%

Source: Federal Statistic Office, http://www.destatis.de/jetspeed/portal/cms/Sites/destatis/Internet/EN/press/pr/2007/02/PE07__051__631,templateId=renderPrint.psml, accessed 11.06.2010.

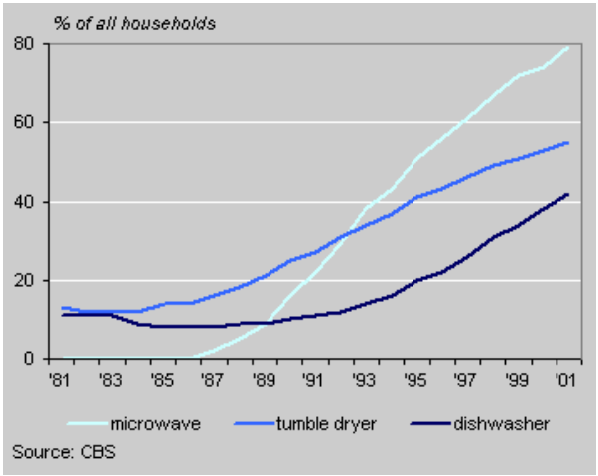
These figures have increased since 2006 as 75% of all German households had a desktop or mobile computer and 86% a mobile phone in 2008. 16% of all households had new flatscreen TVs and 37% had an MP3 player in 2008. The distribution of DVD players increased from 27% in 2003 to 70% in 2008.

The Netherlands have comparable adoption rates. In 2003 Het Centraal Bureau voor de Statistiek (CBS), the official Dutch government statistics website, stated that:

> Household appliances which save people time and work are becoming more and more popular in Dutch households. The presence of microwave ovens in Dutch kitchens showed the strongest increase. Tumble dryers and dishwashers follow at a distance. In 2001 55 percent of all households had a tumble dryer and 95 percent had a washing machine. Ownership of tumble dryers doubled every ten years. In 1981 only 13 percent of households had a dryer. Initially, the presence of dishwashers in Dutch kitchens did not increase much. Both in 1981 and in 1991 one in ten Dutch households had a dishwasher. After that, though, the rate increased sharply and by 2001 more than four out of every ten households had a dishwasher.[34]

This development is shown for selected items in Figure 4.3.

Figure 4.3: Ownership of selected household appliances 1981 – 2001, Netherlands.



Source: http://www.cbs.nl/en-GB/menu/themas/inkomen-bestedingen/publicaties/artikelen/archief/2003/2003-1163-wm.htm, accessed 13.06.2010.

Table 4.4, an overview of the diffusion of domestic appliances in 2004, shows that the percentages of Dutch households possessing certain appliances seem similar to those in Britain and Germany. As the Dutch statistics in Table 4.4 are from 2004 compared to the British and German tables, which are from 2006, the percentages of the Dutch

[34] Source: http://www.cbs.nl/en-GB/menu/themas/inkomen-bestedingen/publicaties/artikelen/archief/2003/2003-1163-wm.htm, accessed 13.06.2010.

ownership of devices would have risen by 2006. With this in mind, the Netherlands have a higher adoption rate of technological appliances than the other two countries. This should be borne in mind when considering my participants' comments about their childhood experiences with technology.

Table 4.4: Main consumer durables in Dutch households in 2004.

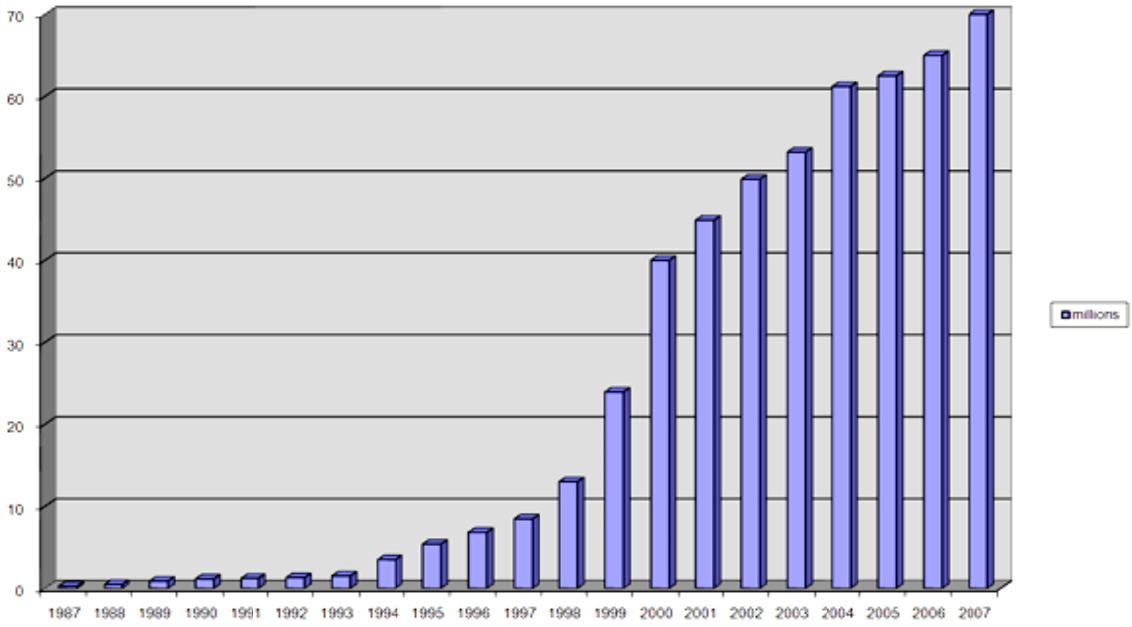
Main consumer durables in Dutch households in 2004	
Colour Television	98.0%
Washing machine	96.0%
Microwave	84.0%
Freezer	79.0%
Personal Computer	74.0%
Tumble Dryer	59.0%
Dishwasher	47.0%
Big Screen Television	23.0%

Source: Dutch Statistics Agency, last available data, http://www.laposte-export-solutions.co.uk/uk/markets/country-profiles/netherlands/consumption-trends, accessed 12.06.2010.

4.5.1 Entertainment technology

In order to understand the situation my interviewees found themselves in, it is important to note when mobile phones became widely available and how strong the saturation of the market was when my interviewees got their first mobile phone. As Figure 4.4 shows, the ownership of mobile phones in Britain has grown rapidly. During the period from December 1999 to December 2000 a total of 46 000 new users joined the UK mobile phone network every day. 5.1 million mobile phones were bought in the UK during the 1999 Christmas period alone. With a total estimated population in Britain of 60 million, that means 8.5% of the population of Britain got a mobile phone during the Christmas period of 1999. Figure 4.4 shows the numbers of mobile phone subscribers for the last 20 years. Their number rose exponentially between 1997 and 2001.

Figure 4.4: Number of mobile phone subscribers in Britain, 1987 – 2007.



Source: http://www.statistics.gov.uk/cci/nugget.asp?id=823, accessed 02.06.2008.

The data from Figure 4.4 lead to the conclusion that in 2007 the saturation of mobile phones was 100% whereas only 10 years before, in 1997, only 13% of the population had a mobile phone.

There are a range of functions available on mobile phones and these are continually being developed. Eurostat[35] statistics show that by July 2005, 66% of adults in Great Britain had sent a text message and 68% had received one, while 28% had sent a picture or photo using their mobile phone and 27% had received one. By April 2006, 30% of households possessed a mobile phone that could access the internet, up from 20% in April 2003.

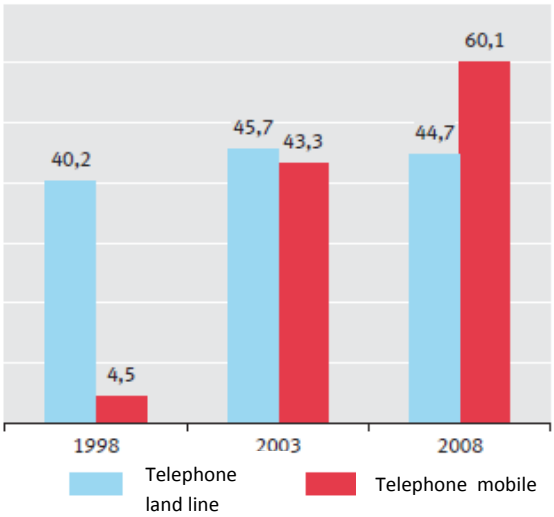
There is a strong link between the age of a mobile phone user and the reason for owning it. Adults aged 55 and over are most likely to have a mobile phone for use in an emergency; those aged under 25 are most likely to have one to text their friends and family. In 2005, 94% of adults aged from 16 to 24 had sent a text message compared with 17% of those aged 65 and over.

As in the other two countries, the number of mobile phones has started to exceed the number of landline telephones in Germany and young people do not see the necessity

[35] Eurostat http://www.statistics.gov.uk/cci/nugget.asp?id=1715, accessed 10.06.2010.

of having a landline when they possess, and are reachable by, a mobile phone. Figure 4.5 shows the development of telephone ownership in Germany from 1998 to 2008.

Figure 4.5: Telephones in private households in millions in Germany.

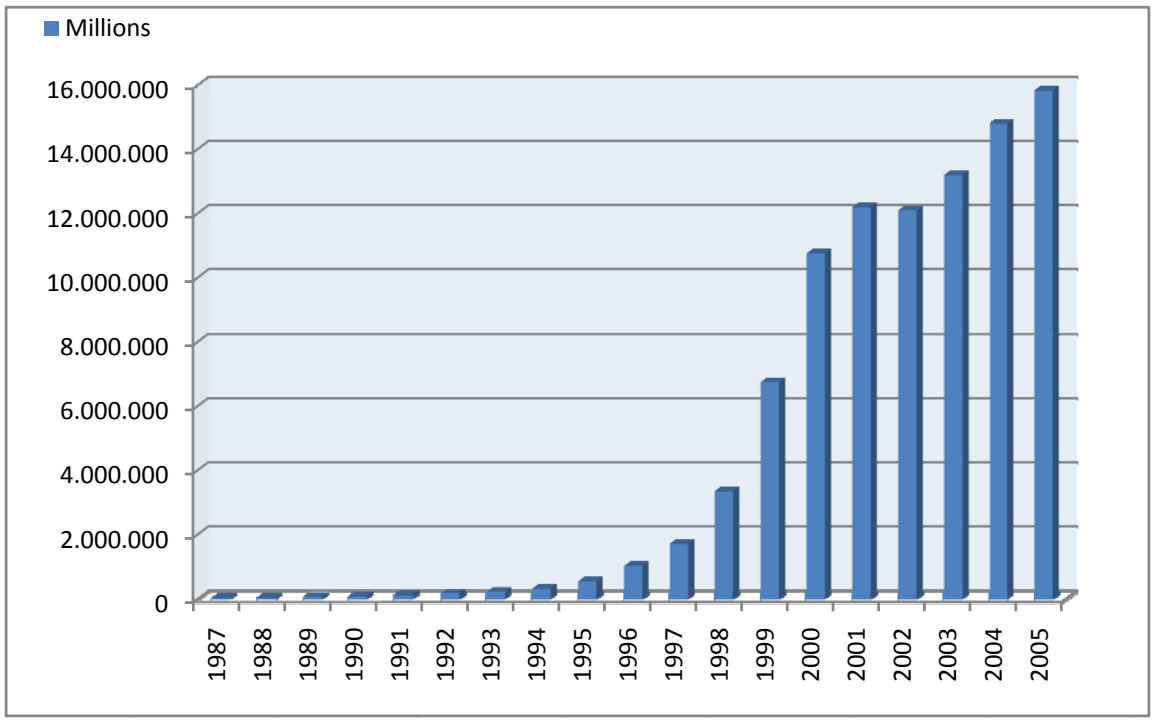


Source: Statistisches Bundesamt, Zuhause in Deutschland 2009, accessed 14.06.2010.

People over the age of 80 tend to keep their landline telephone (97% have a landline) while not even half of them have a mobile phone (47%). 97% of people under the age of 35 possess a mobile phone and only 65% of those under the age of 25 have a landline. Looking back, the history of the telephone shows a remarkable rate of expansion. Although a telephone is now taken for granted it was a rarity only 50 years ago. In 1962/63, only 14% of all households in West Germany had a landline. This rose to 50% by 1972 and 93% of all private households in 1988.[36] The data for the Netherlands is similar.

[36] Statistisches Bundesamt, Zuhause in Deutschland 2009, accessed 14.06.2010.

Figure 4.6: Number of Mobile Phone Subscribers in the Netherlands.



Source: http://www.nationmaster.com/time.php?stat=med_mob_pho_sub&country=nl, accessed 14.06.2010.

If one compares the numbers of mobile phone subscribers in the three countries, the diffusion of new technological artefacts such as mobile phones is similar and comparable. The fastest growth of subscriptions can be observed during the period 1998 to 2001. The prices came down during that period and mobile phones became more affordable. Also, enough people had a mobile phone to generate some peer pressure on the rest of the population. My respondents reflect this data back in owning and using mobile phones, often even the same brands, which are available across countries.

Most of my participants used the four key gadgets I asked about in the interviews. As illustrated in Table 4.5, some surrounded themselves with many technical gadgets (especially Craig and Simone), and others used only a few. However, the non-users of MP3 players were mostly from the older generation: two older women and two older men (one British, two German and one Dutch participant) and one young woman from Britain.

Table 4.5: Gadgets used by my interviewees.

Britain	Computer	Mobile phone	Digital camera	MP3 player
Simone, 67	✔	✔	✔	✔
Phoebe, 53	✔	✔	✔	✔
Kathy, 23	✔	✔	✔	✔ (in phone)
Maureen, 23	✔	✔	✔	✘
Henry, 71	✘	✔	✘	✘
Robert, 63	✔	✔	✔	✔
Craig, 29	✔	✔	✔	✔
Vincent, 23	✔	✔	✔ (in phone)	✔ (in phone)
Germany	**Computer**	**Mobile phone**	**Digital camera**	**MP3 player**
Annette, 64	✔	✔	✔	✘
Sabine, 48	✔	✔	✔	✔
Katrin, 26	✔	✔	✔	✔
Claudia, 20	✔	✔	✔	✔
Wolfgang, 64	✔	✔	✘	✘
Michael, 50	✔	✔	✔ (in phone)	✘
Folkert, 26	✔	✔	✔	✔
Christian, 25	✔	✔	✔ (in phone)	✔ (in phone)
Netherlands	**Computer**	**Mobile phone**	**Digital camera**	**MP3 player**
Iris, 58	✔	✔	✔	✘
Corrie, 53	✔	✔	✔	✔
Maaike, 24	✔	✔	✔	✔
Neeltje,22	✔	✔	✔	✔
Jan, 62	✔	✔	✔	✔
Matthys, 57	✔	✔	✔	✔
Arjan, 27	✔	✔	✔	✔
Niklaas, 23	✔	✔	✘	✔

Source: My background questionnaires and interviews.

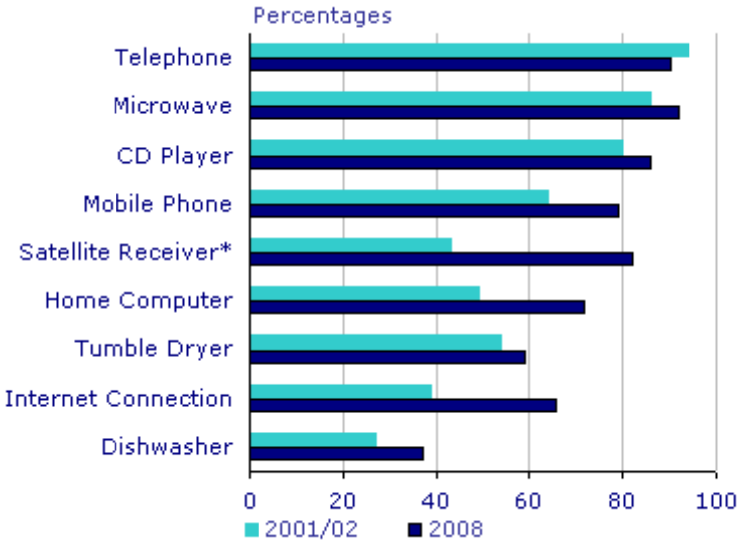
When identifying the gadgets used, I had to be careful, as in 2011 many gadgets are combined into one device with several functions, such as the mobile phone with camera and MP3 player. Of the ten gaps, seven were down to male participants and three to women, so in general women used more of my four key gadgets. Eight were down to the older generation and only two to the younger. Thus, the younger generation used more of the key gadgets. The latter seems to be the norm, at least in western countries. Reynol Junco and Jeanna Mastrodicasa (2007), for example, found that in the US 97% of college students owned a computer, 94% a mobile phone and 56% an MP3 player.

There were four gaps among the British interviewees, two among the Dutch and four among the Germans. So if there is a difference at all, one might argue that the Dutch use more gadgets than the Germans and British and that women and the younger generation used more gadgets than the older generation and men. All of my interviewees used mobile phones, only one did not use a computer, three of the 24 did not use a digital camera and five did not use an MP3 player. This indicates that the degree of saturation of gadgets among my participants was quite high and they were living in 'eco-systems of technology'.

4.5.2 Computers and the internet

The Communications Report 2007 shows that at the end of 2006 two-thirds of UK households had internet access and that the majority of active internet users were women in the 18-34 age range, whom they called 'digital mums', and women and men over 50, called 'silver surfers', in terms of time spent. And although use falls with age, the over 50s (who make up 41% of the UK population) are responsible for nearly 30% of all time spent on the internet. Over 65s spend more time online per active user than any other age group, with nearly 42 hours per month; this age group also has the highest percentage of male users (79%).

Figure 4.7: Use of selected ICT and consumer durables in British homes.

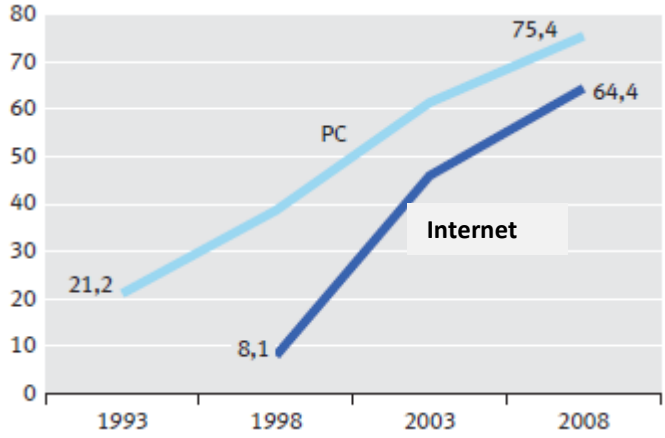


Source: Living Costs and Food Survey, Office for National Statistics
http://www.statistics.gov.uk/cci/nugget.asp?id=868, accessed 11.06.2010.

The proportion of households owning a home computer in Britain rose from 70% to 72% between 2007 and 2008; up from 67% in 2006. E-Commerce has also increased among business enterprises across the EU. In 2006, the UK had the second highest proportion of enterprises receiving orders over the internet in the EU at 30%, which was well above the EU-25 average of 14%.[37]

In 2007, an average of 42% of households in the EU-27 had internet access at home (by 2008 it had increased to 49%). The UK was above the EU average at 54% (which increased to 56% in 2008) and Germany followed with 47% in 2007 and 54% in 2008, while the Netherlands had the highest proportion of internet access at home (80%, which increased to 86% in 2008). Computer and internet access in private German households rose sharply between 1993 and 2008 (see Figure 4.8).

Figure 4.8: Percentage of private households with computer and internet access in Germany.



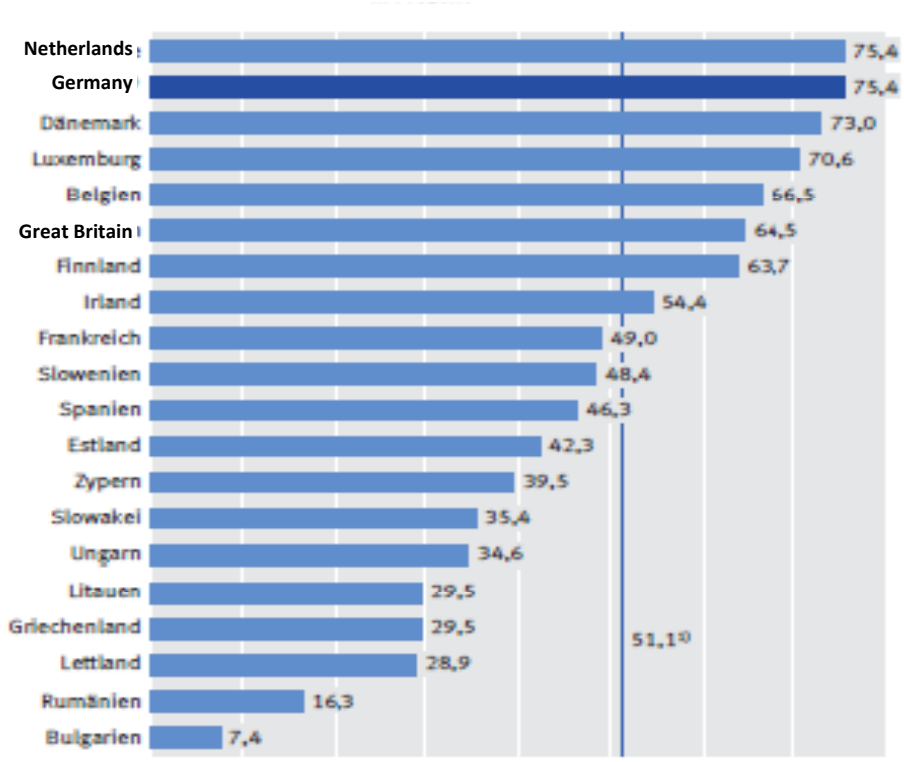
Source: Statistisches Bundesamt, Zuhause in Deutschland 2009, accessed 14.06.2010.

These figures are similar to the British ones. They are also comparable for the functions used on the mobile phone. In 2009 78.2% of the German population had sent a text message, 47.5% used their mobile phones to take photos, 26.7% had listened to MP3s, 23.5% had send a picture or photo using their mobile phone and 13.4% could access the internet and read their emails.[38]

However, overall, as Figure 4.9 shows, the Netherlands are the most technologically advanced country in Europe. They have the most computers in private households.

[37] Eurostat http://www.statistics.gov.uk/cci/nugget.asp?id=1715, accessed 10.06.2010.
[38] Source: http://kefk.org/bilder/handynutzung_ind_deutschland_2009_bitkom, accessed 14.06.2010.

Figure 4.9: Overview of private households with computers in selected European countries, 2005.



Source: Statistisches Bundesamt, Zuhause in Deutschland 2009, accessed 14.06.2010.

Data from 2009 for internet and PC diffusion in the Netherlands show that 80% had a broadband internet connection. Fewer households had desktop computers than laptops, and notebooks and netbooks were replacing them. In 2009 more than 60% already had a mobile computer with internet access.[39] The CBS describes the situation of the Netherlands:

> The Netherlands is the leading EU country in terms of computer ownership and percentage of households with broadband internet. Nine out of ten internet users looked for information online in 2009 (…). More and more people are also using the internet to listen to the radio and watch television. Nine out of ten internet users aged 25 to 45 years use online banking services, as do 64 percent of the over-65s. The share of e-shoppers grew strongly in 2009, to 74 percent of internet users. (…) The share of internet users booking transport, holidays and accommodation online grew significantly in 2009, to almost 60 percent.[40]

[39] http://www.cbs.nl/NR/rdonlyres/E4311D6B-6BE6-4996-A4AB-804FC0A07A4C/0/2009p38pub.pdf, accessed 16.07.2010.
[40] http://www.cbs.nl/NR/rdonlyres/E4311D6B-6BE6-4996-A4AB-804FC0A07A4C/0/2009p38pub.pdf, page 18, accessed 16.07.2010.

Digital technology is relatively new, yet it is already approaching the near universal ownership levels of older technologies. Growth in DVD player ownership has been rapid in recent years, with the proportion of UK households owning one rising by one-and-a-half-times between 2002/03 and 2005/06, to 79%. In 2005/06, 88% of UK households had a CD player and 79% a mobile phone. In April to June 2006, 26% of people aged 15 and over owned an MP3 player. In January to April 2006, 56% of households in Great Britain had a desktop computer, 30% had a portable or laptop computer, and 7% had a handheld computer. During this period, 87% of people aged 16 to 30 had used a computer in the previous three months compared with 45% of those aged 50 and over.

With these saturation levels of modern technical equipment, my younger respondents experienced a completely different technical world in their childhood than my older respondents.

4.6 Technologies in the British respondents' families in the 1990s

Craig, (GB, 29) remembered:

> I remember we, we swapped over from using a telephone that has a cord on it to the digital handset phone, cordless. And also, video games, we always had them, the new systems. So the first kind of game I had was a regular Nintendo. And then when Second Genesis came out I bought the new Second Genesis and, you know, every time a new games console came out I always had to buy the new one. But when I was ten years old I think that was about it, that was all, we just had the, you know, the video recorder, TVs, the [unclear] phones, not the hands, the hand-free phone. (…) When I was about, maybe, 14, I got, you know, the film camera, and then all of a sudden probably when I was, like, the age of 18 cell phones started coming out and DVD players and flat-screen TV started coming out.

As there was no necessity to buy a new games console as soon as a new model was released, this behaviour seems to have had not so much a practical value but to be more connected to the self-image of the person. In Craig's case this character trait was apparently already part of his self-concept when he was ten years old. His consumption behaviour was still the same at the time of the interview when he was 29 years old. Craig's behaviour points to a particular kind of consumer type, named 'Geek God' by

Ron Rentel and Joe Zellnik (2007). They delineate new consumer types, which have emerged in the last ten years and which differ from previous classifications, such as the ones put forward by Rogers (1962), which I shall explain in Chapter 6 where I discuss types of technology users in more detail. The authors argue: 'It's safe to say that most consumers have a love/hate relationship with technology. Not Geek Gods. These are the guys (…) who live for the latest gadget, systems upgrade, or other technological advantage. (…) They want to maintain their position atop the technological power pyramid'. (Rentel and Zellnik 2007: 212)

Craig was born in 1979 when technical devices were already rolling into households in big waves. What he did not mention was any domestic appliance such as a washing machine or a tumble dryer. This might be because those machines were standard in households then, or because it was a domestic household appliance, which was a female gendered domain, so he might not even have thought of it as technology. He also expressed strong opinions about his parents' abilities to master modern technology. While the older generations thought more respectfully about their parents and their interest in technology, when I asked Craig whether his parents were interested in technical items, he answered:

> Probably my Dad. My Dad does, he works at a, in a hardware store, in like, in an electric section, so he knows quite a lot about new technology, and he also watches a lot of programmes on TV and he does a lot of reading, like *Reader's Digest* and other magazines that tell you about the new technology that's out and those sort of things. I mean, he doesn't go out and buy it, but he knows about it and he's interested, and he'll always say something at dinner about, 'Oh, have you seen what this new computer can do?' or what this new object can do.

Leon Schiffman et al. (2008) argue that children are influenced by their parents' consumption patterns:

> Many pre-adolescent children acquire their consumer behaviour norms through observation of their parents and older siblings, who function as role models and sources of cues for basic consumption learning. In contrast, adolescents and teenagers are likely to look to their friends for models of acceptable consumption behaviour. (Schiffman et al. 2008: 330)

These authors point to studies which confirm that the consumer behaviour of the natal family influences the perceptions of adult children regarding their own consumer behaviour. The interest that Craig's father showed in technical gadgets might have

influenced Craig's consumer attitude. However, there is a difference in his father's and his own: while his father was interested and informed about new technologies, he was not purchasing them, whereas Craig had to have the newest available gadgets. In this respect, Craig might have been influenced by his peers more than his father, which confirms Schiffman's argument that older children look for orientation to the consumption behaviours of their peers. Apart from being a different consumer type, Craig's father supported his son's attitude by pointing out new technologies to him.

Although Craig presented his father as generally interested in technology, he dismissed his father's abilities to handle it: 'He doesn't know so much about his phone. He just knows how to make calls and text message and that's all he basically uses the phone for'. His perception was even more biased when he talked about his mother:

> She's not interested at all. She's just, I guess, old school and just goes with the flow, you know. Her company gives her a laptop to use for business and gives her the cell phone to use and, she was actually given a Blackberry and found it very hard to use at first. So she had to go and get, like, me to help her, to show her, like, all the functions and also the ones she uses at work, the people in IT to show her how to use the phone properly, and so.

Craig presented his mother as unable to manage new technology without help. He seemed to imagine that technological knowledge did not require extra input and seemed to interpret the fact that his mother used his knowledge and the knowledge provided by the IT department of her company as proof of her incapacity. Craig's perception that someone who asks others for knowledge is incompetent is interesting. He did not regard the seeking of help as a sign of competence. Seeking help confirmed his perception that women are incompetent users of technology.

Maureen, (GB, 23), also talked about technical items in her home but her narrative was marked by a sense of economic limits:

> We never had many gadgets as children. My parents were quite strict about that sort of thing. I don't know. I suppose it's interesting, you know, that my brother is so keen on them and I've gone the other way. I don't, I'm quite frightened of them really. We don't have many gadgets. There wasn't an awful lot of money around, so gadgets were very much seen as a luxury, not, something, a necessity really (…) I remember getting the first computer and it was a huge big deal because we'd never had one, or expected to have one. I must have been about 11

> or 12, maybe a little bit younger. So it's quite a long time ago now, but it was a big thing, and it was an enormous machine. I remember it sat in the living room, and we all looked at it in awe, wondering what it did.

The difference between Maureen as being nervous about machines and her brother who was so keen on gadgets points to the fact that parents' behaviour has different kinds of influence on the technical interest of their children. Brigid Barron et al. (2009) note: 'Because minors typically do not have the financial means to purchase hardware or software, parents are important gatekeepers in their children's access to the tools required to spark an interest in technology-based activities' (Barron et al. 2009: 67). Their findings show that the more interest a child shows in technical gadgets the more likely the parents are to support her or him in various roles. They emphasize: 'Parents do not need to provide direct technical expertise in order to support their child's acquisition of digital media skills. Roles such as collaborator, non-technical supporter, learning broker, resource provider, learner, and employer all provide crucial support for the child's self-directed learning' (Barron et al. 2009: 67).[41] They also found that parents played a greater range of these roles in their child's endeavour of learning about technology when the child was a boy. For example, parents were more inclined to lend their own resources to a male child than to a female child in the role of resource provider. That Maureen was frightened of gadgets and her younger brother was keen on them, potentially points to a gendered raising in childhood and might have been caused by her parents and their lower encouragement of her as a daughter in relation to technology.

Despite this, Maureen was quite competent in her ability to use the same functions and gadgets that her peers used. When I asked her whether she could transfer photos from her mobile phone to the internet to share with friends, for example, she confirmed this enthusiastically.[42] But, like Craig, Maureen did not mention domestic appliances although washing machines, tumble dryers, microwaves and dishwashers were very likely part of their homes. Craig and Maureen did not see them as technology. Only communication and entertainment devices were viewed as technology.

[41] http://www.fi.uu.nl/en/icls2008/557/paper557.pdf, accessed 05.01.2011.

[42] A good example of parental influence on their children's interest in technology is Iris, the Dutch woman from the older generation who was interested in technology. She was raised by a father who shared his interest in gadgets with his children and Iris herself has a son, Steven, who is a 'Geek God' like Craig.

Maureen's natal family experienced a power struggle in terms of technology at home. When I asked her who used the computer, she said: 'My Dad initially used it, but he didn't use it for anything in particular, but I think because he paid for it that he felt that it was very much his thing'. She went on:

> My Dad bought this ridiculous TV, and we all were just appalled, 'cos we said, 'What is this TV? It's enormous.' No, it's completely pointless. What does it do? It doesn't enhance the viewing experience. I, when we first got it, it was in the living room, and I remember I had to ring my Dad at work, 'cos I couldn't work out how to turn it on. 'Cos I couldn't find the button, I thought, it does so many things, but I can't turn it on. (…) and my father has also bought this dreadful surround-sound system so you can hear the TV from (…) I don't know why he's done it because we don't watch films. All he ever watches is golf, so I don't think golf on surround-sound is very rewarding. It dominates the room a bit more, seems to consume more family life, 'cos it's so big and scary. (Maureen, GB, 23)

These narratives give the impression of a dominant father who made the decisions about which technologies to buy all by himself without consulting the rest of the family. He was apparently quite interested in new technology and bought new gadgets early on. Maureen experienced this as being dominated not only by her father but also by the technology itself, which took centre-stage in the living room.

Maureen, like Craig, was disdainful of her parents' abilities to use new technology:

> My Dad, I think, likes to pretend that he is, because that's the, sort of, he feels that's, you know, the modern and fashionable way to be. He doesn't want to feel like an old man, but really he's not very involved with it at all.

This attitude positions parents as people who basically do not know how to operate their technology except in a very limited way. The younger generation might compare their own use of gadgets and functions with that of their parents and as their parents do not necessarily use their technical gadgets in the same way that the young generation does, the latter tend to assume that the former are unfamiliar with contemporary ICT. It would be worth investigating, for instance, to what extent Maureen or even Craig pushed the boundaries of their gadgets. In general the parents of the younger generation were more interested in technology and used more technical devices than the parents of the older generation. This is partly because more technology was available but also because it has become increasingly necessary to use technical gadgets

for work and, among the parents of the younger generation, the dual-earner model, and hence employment of both parents, prevailed.

4.7 Technologies in the German respondents' families in the 1990s

Katrin (G, 26) said that she was the only one interested in technical devices in her family. More recently her brother had developed an interest in new ICT and entertainment gadgets, but when it came to everyday domestic appliances, such as microwaves or video recorders, it was she who found out how they worked. Her parents were not interested. If at all, her mother was more interested than her father who was proud when he successfully drove a nail into the wall. Again this belittled her parents and their ability to use modern technology.

The male participant in this category, Folkert (G, 26), was very critical of technology although he used all the gadgets that the other students used as well and the possibilities it offers to spy on people. Folkert's childhood home had been equipped with modern technology and he got his first electrical device, a games console, when he was under ten. They also had an old computer with floppy disks which had some games. A TV, a radio and a computer for his father were the entertainment appliances that he could remember. He confirmed that all his family had been interested in technology: his mother and sister, his stepfather and especially his grandfather who had a mobile phone before the rest of the family did. Both parents had mobile phones and both could text. When he talked about his parents he said:

> Yes, my mother can text but, I believe, it takes a bit longer. She is not very proficient in technical things. My stepfather is. It is rare that I get a text from my family, they prefer to call. My grandfather [father of the mother] texts more often than my immediate family. (Folkert, G, 26)

He emphasized that they still had the old-fashioned TVs at home and no flatscreen TV and seemed proud of this fact. Because he was critical of technology, Folkert travelled to China, for example, without his mobile phone and did not miss it. His account of his use of technical devices was distanced and functional. When I asked him what kind of technology he would wish for in future, he answered:

> I would wish for a little switch to unplug myself from the whole technology thing, from this construct which runs all the time and I can't say: I don't want anymore, 'cos it is constantly streaming towards me. (Folkert, G, 26)

This kind of critical distance towards one's gadgets was expressed much more often by the German interviewees, old and young, than by the British ones. Especially the younger German generation seemed to be very aware of the negative aspects of technology and presented their relation to gadgets as driven by necessity rather than desire, and avoided being too influenced and changed by it. Although Folkert admitted that he had played computer games a lot when he was younger, he emphasized that this was no longer the case and distanced himself from it, as though playing games was something negative. It seemed as if these younger Germans viewed their own consumption of technology critically and tried to keep it to a minimum. This kind of technology fatigue has been documented in the literature for some years. John Dvorak (2001) posed the question in his article: 'Are endless technological innovations wearing you out? You may be suffering from TFS' and recommended technology-free time to recover from it. My young participants applied this advice by deliberately switching off their mobile phones or travelling without them.

Gender differences between the German students in terms of their childhood experiences with technology were not observable. Many of them gave the impression that understanding and using new gadgets was self-explanatory and easy.

4.8 Technologies in the Dutch respondents' families in the 1990s

Neeltje was a 22-year-old Dutch student and eager to be part of the research as she was one of the two students who contacted me early on. Born in 1986, much technology was already a standard part of the household when she was about ten years old. She recalled:

> We had a television, telephone, we had a stereo. Music is very important in our family so we had, like, a stereo. And we had a computer. I think I was around 13, we got the internet, and that was through the telephone line, so we were allowed to use the internet, like, half an hour a day because you were not able to use the internet and make telephone calls at the same time. (Neeltje, NL, 22)

Household appliances did not play a big role in her memory, but the internet did. I wanted to know who in the family used the new computer and internet and she answered:

> Erm, well everyone tried it as it was something new and special. At that time I was, for example, me and my sister, we were starting to use MSN and as well you had, like, those chat rooms, where you could talk to other people. That was very interesting. That was very popular in school. It was pretty special for us so we used it a lot. And then I started using it for school. And my mother, she was using it for her work, mostly. And my father he, well, he started to use it later on. Now he's using it every day. (Neeltje, NL, 22)

Peer behaviour seems to be a big motivator in using new technologies as Neeltje here indicates. She got a mobile phone because of her friends when she was 15 years of age. But her father did not like the idea and got one much later than Neeltje. Her little sister and brother both had mobile phones. When I asked whether theirs were fancier than hers she answered:

> Erm, actually not my sister, who always used to take our old phones, like my mother. She had a contract, which was quite high because she had to use it for her work, and therefore she could, every year, if she kept the contract she could get a new mobile phone. Then she chose a more fancy phone with more functions, like navigation, a GPRS or something, which is very handy if you're a lot in the car. And then my sister used to take over her old mobile phone, so she got it. (Neeltje, NL, 22)

This handing down of used technical devices was a common practice amongst my interviewees. In Neeltje's case the mother was at the top of the pyramid and her younger sister at the bottom. In most other cases it was the mother who would get the oldest mobile phone after the father and son had used it. A gendered hierarchy prevailed in this handing down of gadgets which revealed the power structures in the families, with mothers mostly at the bottom end.

Neeltje's grandmother was still alive but refused to engage with new technology. Neeltje sounded a bit disappointed when she said:

> No, she doesn't want to know, she doesn't. She's not really interested in how it works, and she doesn't want to find out. And then she is the mother of my father, so I don't know if there's a relation between them about that. I think she finds herself too old for those things. Which is different from, like, other friends, she's

> on Amazon or something with her grandmother and she's on an online friend network, like Facebook, and she's doing that with her grandmother.

Interestingly Neeltje assumed a connection between the hesitation of her father in getting involved in new technologies and the attitude of his mother. As suggested earlier, there is evidence that parents' attitudes to technology influence the development of technical interest in their children.

Niklaas was a 23-year-old Dutch student from a family where the mother was not interested in technology but his father and his older brother were. He had a sister too, who was only one year younger than him, but when I asked whether she was interested he said that she heard about things from her two brothers and then she would engage with them. So she was not a source of new knowledge for them. When he talked about his parents, he said they both used mobile phones and could text. But it took time for them to learn this and their children taught them how to do it. His father owned a company; therefore he used modern technology more than his mother. Niklaas belittled his parents' slow learning. When he was ten years old, they were already surrounded by new communication technology since they had: 'Computers, laptops, mobile phones' (Niklaas, NL, 23). His family also had television and domestic appliances when he was a child which he mentioned when directly asked about them. But he remembered clearly the first gadget he had owned: 'I had "My First Sony" and that was a radio' and when he was 12, the family got their first computer.

4.9 Summary

I found that my older participants mentioned domestic technology as being relevant more often than the younger ones. This is probably due to the fact that these were the first technological appliances they were familiar with and, as Wolfgang described in relation to the special event of getting their first fridge and Simone with her first phone, their acquisitions were quite memorable experiences that changed the everyday life of the family significantly. They constituted a radical change from the manually or mechanically operated appliances of the previous era but were taken absolutely for granted by the younger generation who grew up with them and no longer noticed them. The lower number of technical devices in the homes of my older participants might be one reason why the older participants were more respectful when they described their own parents' technical interest.

In comparison to the younger generation, the older generation in general connected new domestic appliances with relief from hard work in the 1960s and welcomed new technology as an enhancement of their lives. The subject of affordability was a strong parameter for adopting a certain appliance. The older participants also expressed curiosity towards new technology. The older German interviewees, similar to the participants from the younger generation, were quite critical about technology and pointed to various kinds of risk associated with new technology, whereas the Dutch and British participants referred to new technology more as an opening up of possibilities.

As mentioned above, the younger participants in my study often belittled their parents' competence in coping with new technologies. Craig was a good example of this. He thought well of his father since he was up-to-date and interested in technology and talked to Craig about it. Craig's mother did badly in his eyes since she used his knowledge and the knowledge of the IT department at work to help her get to know her new Blackberry. Craig's view of older people in general concerning modern technology was quite prejudicial. When I asked him whether all people should have some knowledge about modern technology, he answered:

> Maybe not, you know, I mean not older older people, like people over 60. They may not care about it, just as long as, like I said, if a TV, they don't care if it's flat-screen as long as it works and they can watch programmes on it. Or a telephone, they don't care that it's a digital phone or a, you know, it has a wire on it, they just wanna speak to their grandchildren on it, call their doctor's office. I don't think it really matters to them. But, for younger people, like younger than 60, you know, technology may save time, it may save money, it may save space in their houses, you know, technology helps us with everything these days. (Craig, GB, 29)

The notion of older people as not interested in or not capable of coping well with new technology was not restricted to certain young people in my sample. Even older people themselves seemed to share this perception that old equals non-proficiency in modern technology. Reeves and Nass (2003) made an interesting discovery when they tested the effect of different computer voices on various target groups. They assumed that older people might prefer a computer voice that sounded like an older person when giving an introduction to using computers and the internet, but they found that their target group of pensioners rejected the older voice of the computer. They perceived the older voice as not proficient enough to educate them about computers since older people are assumed to lack knowledge of ICT technology.

Nonetheless, the perception that people older than 60 are not interested in technology was contradicted by many of my interviewees, such as Neeltje, who mentioned her friend's grandmother who used the internet and email at the age of 84 and Folkert, who had a grandfather who had the first mobile phone in the family and the most fancy one.

As Schiffman et al. (2008) argued, the consumption patterns of the natal family influence the attitudes of their children. To explore whether or not this was true for my sample, I compared my respondents' description of the attitudes of their natal family towards technology with their own professed attitudes to technology and drew the data together in the following Table 4.6.

Table 4.6: Comparison of interviewees' descriptions of their own and their natal family's attitudes to technology.

Britain	Simone	Phoebe	Kathy	Maureen	Henry	Robert	Craig	Vincent
Family interest in technology	Low	Medium	Medium	High	Low	Medium	High	High
Own attitude to technology	High	High	Medium	Low	Low	High	High	Medium
Germany	**Annette**	**Sabine**	**Katrin**	**Claudia**	**Wolfgang**	**Michael**	**Folkert**	**Christian**
Family interest in technology	Low	Low	Medium	Medium	Medium	Low	Medium	Medium
Own attitude to technology	Medium	High	Medium	Medium	Low	High	Medium	Low
Netherlands	**Iris**	**Corrie**	**Maaike**	**Neeltje**	**Jan**	**Matthys**	**Arjan**	**Niklaas**
Family interest in technology	High	Medium	Low	High	Medium	Medium	Medium	High
Own attitude to technology	High	High	Medium	Medium	High	Low	Medium	Medium

Source: Interview data and background questionnaire, 2008-2009.

'High' in this table stands for a high interest in technical gadgets and the ownership of many devices. It also denotes high proficiency in technical knowledge and confidence in dealing with new gadgets or when problems arise. 'Medium' indicates a position where people use modern technology but did not seem attached to it and were often critical of technical gadgets and/or technology in general. 'Low' signifies that the participant used only a few technical devices and the user was concerned about their negative impacts, such as addiction, loss of social contact, surveillance problems and being hassled by technology.

In certain respects this table is of course subjective but it was constructed or derived from what my interviewees actually said in the interview and what they wrote in the background questionnaire about how many devices they used. Typically highly interested respondents would say that they were interested in technology and enjoyed using devices. They also used many devices. Participants with medium interest would say: ‘Yes, I use modern technology but...’. This 'but' signified some form of expressed criticality. Those with low interest used only very few devices and said things such as: ‘I have to use them but I don’t want to’.

The family interest was derived from what my respondents answered in their questionnaire about whether their mother or father was interested in technology and from the interviews where I asked about the interest in the family specifically.

Within my small sample there does not seem to be a correlation between the level of family interest in technology and the interest in technical devices the interviewees themselves had. This may, of course, be an effect of the small number of people I interviewed. It also was not possible to pinpoint any crucial incidents in my interviewees’ life course that might have had an influence on their interest in technical gadgets.

Family background was thus not an obvious predictor of interest in technology - but peer group was. People to some extent assign themselves to peer groups and try to conform to their values and rules. This is true for consumption patterns. Families serve as a peer group for the child and Wolfgang gained recognition within this peer group because of his camera, which made him special and enabled him to stand out. The peer groups of younger people and the peer groups of older people have different characteristics. Older people have the world of work, the hobby world, family and relatives, which all make up a network of peers who influence them. Wolfgang, for example, was intrigued when a friend of his age showed him that one can book a particular room in hotels across the world online and can find photos of the room including the view. Thus, both the younger and older generation in my sample were influenced by peers, but as older people may have more diverse peer groups and thus more choice in conforming to the technical standard of one or none of them, the variety along the scale of enthusiastic user to non-user was more pronounced within the older generation, whereas the younger participants spent most of their time with their immediate peers at universities, which put more pressure on them to conform to their technical standards.

The Dutch students were not as critical of their gadgets as the German students. However, Niklaas critiqued the consumption of pornography which he observed among his mates and others criticized the amount of time they spent on the internet or on social websites. The Dutch students also talked about the advantages of new technology. Watching TV on the internet, skyping and texting were much-appreciated new activities. In general, the younger generation was surrounded by technical gadgets, and felt they had no choice but to use them. As some pointed out, school and university expect essays to be submitted online and contact with tutors and teachers is often via email. Whereas some of the older generation (who were not forced to work with it) still had a choice whether to engage with new ICT technology, the younger generation did not. They were not only forced to use various electronic communication channels by their work context or peers, they were also expected to be competent in dealing with new technology. Some older respondents, such as Michael and Jan, argued that young people just know how these devices work. Parents turned to their children for information and help with technical gadgets and the pressure to know was probably higher for boys than for girls since the boys had to conform to their ascribed gender role and its implied expectation of technology proficiency.

The reason for the critical attitude among some of my younger participants might also be that they were much more involved in using technology to maintain social contacts and felt more dependent on it than the older generation, who had a life before certain modern technologies appeared. However, some older interviewees too remarked on the dangers inherent in modern technology. Simone, Henry and Annette made critical remarks and warned, for example, about young people who expose themselves on *FaceBook* and other social websites.

Despite the stereotype of older people, and especially older women, as not being interested in technology, the older women in my study were as interested in technology as older men. Actually two of my older male participants, Wolfgang and Henry, might be classified as 'refusers' of technology or even 'off the network' to use Horrigan's (2009) terminology. Older women such as Simone, Phoebe, Corrie and Iris, as well as Annette and Sabine, were not only interested in technology but used various technical devices to a greater or lesser degree. For the younger female participants the use of modern technology was so much part of their everyday lives that they were mostly not aware of how many functions of their mobile phone they used and how many technical devices had become incorporated into their lives. This fact was true for all students across all countries.

As shown in the earlier section in this chapter, the speed of uptake of household appliances in all three countries was fairly similar. Focussing on ICT, all three countries have similar percentages of access to the internet and computers at home and in the workplace. Looking at the family backgrounds of my interviewees, it seems that in the 1950s and 1960s the Netherlands adopted household devices faster than Britain or Germany. In order to pinpoint which cultural or historical settings might influence the adoption of technology it is hard to put a finger on actual facts. There is a sense that 'the Netherlands has a long-standing reputation for technological innovation'.[43] Not only consumption attitudes and habits of families and peer groups but also cultural values can influence the adoption of technology and the approaches towards technology, as I shall discuss in Chapter 6 on Identity and Technology.

In the next chapter, on knowledge acquisition, I shall explore how my participants acquired the necessary knowledge to choose, buy and use new technical devices in their everyday life. The chapter will show which knowledge sources they used, which strategies they employed and whether there was a difference between the younger and older participants, their genders or their national background.

[43] http://www.overseasdigest.com/country/netherlands.htm, accessed 28.07.2010.

5 Individual strategies for technical knowledge acquisition

The question of how people achieve media literacy is a core subject of my thesis. In this chapter I explore in detail how my informants acquired their technical proficiency and outline the differences in acquisition techniques.

In order to operate everyday technologies, an individual needs to know how to use technology. As MacKenzie and Wajcman state:

> Technology refers to what people *know* as well as what they *do*. (…) Technological 'things' are meaningless without the 'know-how' to use them. (1985: 3, emphasis in original)

As I discussed in the introduction, media literacy is an important skill to ensure that an individual gains agency and can make use of the possibilities that new technologies offer. My participants were all more or less aware of their need to achieve media literacy, although they expressed it in different words. Robert wanted to keep informed because, as he said: 'I guess, I am just interested. What new gadgets are being developed and what I can do – [with them]' (Robert, GB, 63). Corrie (NL, 53) saw media literacy as part of everyday life:

> I wish I wouldn't have to say that, but I think for a normal life you need the internet. (. . .) background information, product information, common knowledge, everything you can find there. I think when you have it, you can't count it out of your life again, it's a part of your life. I regret, for example, my mother, she's 83, but she, I always tell her, ma, buy a laptop and then we can talk to each other. 'No, I'm too old for that,' she says. 'I don't think I want to get acquainted with that technology.' Then I bought her a mobile phone, after a few months she gave it to someone else [laughs]. I think it's a pity because, well, one disadvantage is you have to keep up, once you start you have to keep up more and more, that's a disadvantage I think. But the advantage is that the whole world is open and it is comfortable to do things from your home. (Corrie, NL, 53)

Corrie mentions an important aspect of knowledge about mobile technology: the difficulty with technical knowledge is that it is not static; rather, it is fluid in terms of its

newness, relevance and appropriateness. This fact turns acquiring technical knowledge into a continuous, lifelong process of evaluation of one's existing knowledge, the elimination of obsolete knowledge and the acquisition of new knowledge. As Rentel and Zellnik (2007) put it: 'The cycle of must-have to who-cares spins mighty fast' (217). Maaike placed a lot of emphasis on the importance of being media literate:

> technology is dictating almost most of our lives. And you notice that when there is a power breakdown, how important it is. And if you don't get at least some basic knowledge, you lose power, you lose agency I think. You need to at least have some basic knowledge of technology if you want to be able to be in control of the way you use it in your life. Or not use it, that's your choice, but you have to at least know about it because it is such a big thing. (Maaike, NL, 24)

Nearly all my participants expressed a sense of needing to stay up to date with new technology since the fear was that they might miss out and lose control or agency, as Maaike argued.

I asked my interviewees not only how they achieved their level of media literacy, but also about the strategies they applied in order to gain it and the external and internal challenges they encountered on the way to media literacy. As Kenneth Gergen (2001) argues, individual knowledge is socially constructed, always affected by culture, time, place and the social experience of the knower,[44] 'it is the individual who observes and thinks, and who is challenged to acquire knowledge. It is only by virtue of the individual's possession of knowledge, it is held, that he or she can survive or thrive in a complex world' (Gergen 2001: 128). Gergen rightly points out that knowledge acquisition is a personal endeavour and the level of knowledge possession a personal achievement that is dependent on the individual's decision about how profoundly she wants to engage with technology and how well her level of technical proficiency fits in with her perception of herself, as I shall discuss in *Chapter 6: Identity and Technology*.

The complexity and the continuous development of new technical objects are two reasons for the necessity of acquiring knowledge in order to be able to use them in the first place. As people use more technical devices in their everyday lives, the amount of necessary knowledge multiplies. David Morley (2007) emphasises the 'technological saturation of domestic life' (Morley 2007: 206), acknowledging the complex world of technology that people encounter in their everyday lives. Jan English-Lueck (1998) was

[44] See also Donna Haraway (1991) and her notion of 'situated knowledge'.

astonished when she found in her research with families in Silicon Valley 'that people don't just own or use individual devices, but ecosystems of technologies at home' (English-Lueck 1998: 9). Because of this complexity in handling not only one single device at a time but these 'ecosystems of technology', a new profession has appeared: the technical knowledge broker. In 2005, the famous Dorchester Hotel in London, UK, proudly announced a new service for their guests.[45] In their suites they provide the following technical devices:

- Access to high speed and WiFi internet
- Printer, fax, scanner and copier
- *Bang&Olufsen* plasma television
- CD/DVD Player
- An extensive selection of local and international television channels
- Multi-line telephones

Since guests may feel overwhelmed by all this, the hotel installed a new support service, an 'e-butler'. This service was new, but became necessary because of the fast life-cycle of technology. In Junior suites 'each has access to a tech-savvy "E-Butler," on call daily to solve any Internet or plasma-screen-TV issues'.[46] As the media ensemble grows, more knowledge is necessary to handle it and, as people may find it difficult to cope with all the requirements of modern technology, this new service became a feature in some hotels. It is also described as a means of customer retention: 'maybe loyalty hinges on amenities, such as the Dorchester Group's e-Butler service that lets travellers handle business without battling unfamiliar technology'.[47] *Abcnews* recommended this new service as a time-saving alternative, instead of reading manuals or experimenting with gadgets.

> If you're technically challenged but still need to stay connected on your vacation, then you're going to love the new e-butler service at the famed Dorchester Hotel in London. Known as THE place to stay, the Dorchester is ahead of the game with this new service. Instead of spending precious time trying to figure out how to get

[45] http://www.thedorchester.com/hotel-services-amenities, accessed 19.03.2010.
[46] http://www.travelandleisure.com/hotels/dorchester-london-london-home-counties, accessed 19.03.2010.
[47] http://www.docstoc.com/docs/16975381/MAXIMIZING-CUSTOMER-POTENTIAL, accessed 19.03.2010.

> your e-mail to work you just need to call your e-butler and everything will be set up for you.[48]

When I gave a paper in the Netherlands, Marta Kirejczyk from the audience commented that it might be worthwhile to stay one night in a Dorchester suite and treat it as a personal lesson in technology, saving the time and effort it would take to learn it on one's own.

The quantity and complexity of new technology requires more than individual effort. The possibility of resorting to different forms of help becomes more and more necessary with the growing numbers of technical devices. The professions of e-butler and technical knowledge broker seem necessary because people are expected to know how to use technical appliances straight away, since advertisements suggest that every gadget is self-explanatory. However, becoming familiar with a new electric appliance requires a significant learning process. Learning on one's own can be time-consuming and confusing as there is no obvious starting-point. Modern devices provide many functions, of which some are useful to an individual while others are not. My respondents were concerned about getting confused by the massive amount of information that is around for all the devices they use and afraid of wasting their time on functions they did not want to use anyway. Thus people avoided learning if possible. All participants had a cut-off point where they stopped their learning process, some earlier, some later. They made a decision to stop acquiring new information while at the same time realising they did not know all the functions the gadget provided. Some were happy when they knew how the basic functions worked, such as Annette and Robert, while participants at the other end of the scale were knowledge brokers or the so-called Geek Gods, such as Phoebe, Corrie and Craig, who had to know more than average to be able to explain functions they did not use themselves to interlocutors.

As knowledge acquisition for technical gadgets is a personal decision in terms of time and extent, Kenneth Gergen (2001) argues:

> To view knowledge as the possession of single minds is consistent with other propositions holding individuals to be the possessors of their own motives, emotions or fundamental essences. Within this tradition, people are invited to see themselves as the centre of their actions – as lone choosers, searchers, finders – confronted with the challenges of survival and success. (128)

[48] http://abcnews.go.com/Travel/story?id=5566744&page=2, accessed 19.03.2010.

Knowledge acquisition can be viewed as an individual person's endeavour, as Gergen argues, but for technical knowledge this is not quite the same. The decision about which and how many devices a person wants to adopt into her life is partly influenced by her work, social context and peers and each adoption of a technical appliance requires the acquisition of certain knowledge in order to use it. This means that the wish to learn and acquire more technical knowledge is not only governed by the personal interests of the individual but by the requirements of the technical artefacts she adopts.

In order to make the acquisition process easy and fast, individuals devise strategies by establishing a knowledge network that includes certain sources of information and is built upon experiences of how knowledge was acquired in the past. These might have been successful or unsuccessful undertakings. Both cases deliver useful information which in part determines future actions in relation to the knowledge network. The level of technical proficiency my participants had achieved when I conducted the interviews was obtained from a variety of knowledge channels. When I asked the interviewees directly about where they had found technical information they referred to many knowledge sources, which I shall discuss in the next section of this chapter.

5.1 Technical information and knowledge sources

> The rapid development of information technology has made a vast range of knowledge accessible, so that all aspects of knowledge are available to a person who wishes to learn and there is a great opportunity for the self-directed learner. (Griffin and Brownhill 2001: 76)

Since the technological environment in which we live changes rapidly (access to emails via mobile phones, high-resolution cameras in mobile phones, etc.), knowledge databases have to change quickly and adapt to the newly-arriving gadgets on the market and their new possibilities. Strategies to keep up to date and manage new information can include use of websites, magazines or certain people who have proved to be or are thought to be reliable in terms of technical expertise. These 'assets' might even get special treatment, such as websites that get bookmarked or friendships that are cultivated to keep specific people available. I found some differences among my interviewees regarding these strategies and I shall now outline the knowledge sources available in each of the three countries and which my respondents thought they had used the most. I shall analyse the characteristics of the knowledge networks developed

by my participants and highlight differences in age, gender and country. I shall introduce domestication theory in relation to adopting a technical gadget into a person's life and analyse my data following the four stages of that theory. In the conclusion, I compare the different approaches to knowledge acquisition between the generations, countries and genders.

5.2 Non-human technical knowledge sources

During my MRes research on British people and technical knowledge acquisition (Brüschke 2008), I found that people searching purposefully for technical know-how used a limited number of knowledge sources. These could be divided into non-human sources, mostly text-based, such as books, conferences, trade fairs, advertisements, the internet, magazines, TV, radio, etc., and human knowledge sources such as friends, colleagues, family members and acquaintances. Table 5.1 shows the non-human knowledge sources used by my participants, by country.

Table 5.1: Non-human knowledge sources used by my interviewees.

Britain	Internet sites	Magazines	Newspapers	TV
Simone	Google, Reviews, Product information	No	Newspapers online and technology section	No
Phoebe	Product information	No	Not mentioned	No
Kathy	Google, Comparing prices, Product search	No	Newspapers online	Gadget show
Maureen	Product search, reviews	No	Newspapers online	No
Henry	Product search, comparing prices	Car magazines	Newspaper	No
Robert	Product search and prices	Computer magazines, *Which*	Newspapers and technology section	No
Craig	Product homepage, Amazon, BestBuy, Prices	No	No	No
Vincent	Google, Reviews, Product search	Computer magazines	Newspapers and technology section	No
Germany	**Internet sites**	**Magazines**	**Newspapers**	**TV**
Annette	Google, Reviews, Product information	*Spiegel, Hör zu*	Newspaper NW, no technical article	No
Sabine	General information about products and prices	Car, *Stiftung Warentest*, Testing of organic products	Newspapers online: Spiegel online	Car shows
Katrin	Google, Comparing prices, Product search, prices	*Brigitte, Galore, Stiftung Warentest*	No	No
Claudia	Google, software information	No	No	When found accidentally
Wolfgang	No	*Stiftung Warentest*	Newspaper, but no technical article	No
Michael	Product search and prices, rankings, tests, reviews, general information about	No	Newspapers and always the technology section	No
Folkert	Product homepage, Google, Comparison, Prices	No	No	No
Christian	Google, Reviews, Product info, comparisons	Music magazines	No	No
Netherlands	**Internet sites**	**Magazines**	**Newspapers**	**TV**
Iris	Brand websites, Product information	Reads magazines online on a need to know basis	Newspapers online	No
Corrie	Product information, reviews, comparison of gadgets	No	Newspapers and technical articles	Radar
Maaike	Google, Comparing prices, Product search	No	No	No
Neeltje	Product search, reviews	No	No	No
Jan	Product search, comparing prices	Multimedia, Video and Audio magazines	Newspaper online	No
Matthys	Product search and prices	No	Newspapers and the technology section	No
Arjan	Product websites, prices, music websites	*Consumer Report*	Newspapers online and technical articles	No
Niklaas	Product search	Car magazines	Newspapers online	Kassa and Radar

Source: Interviews and background questionnaire.

This table shows at a glance that, across all countries, the internet was used the most. Magazines and newspapers were used by some of my interviewees but TV rarely. The content of magazines, newspapers and TV is fixed, but can be read or watched nowadays at any time and in any place. The internet is the most extensive information source, comprising many different sources and opinions. Everybody can use it whenever she wants and as it is interactive each person can search and look up information at her own speed and liking. Therefore it has become the most important knowledge source.

5.2.1 Internet

All my respondents used the internet as a source of information. Except for Wolfgang (G, 64), who had just bought his first computer at the time of the interview and had not engaged with the internet, all my other participants were experienced internet users. Many used it as their primary source of information about detailed products, prices or background information. The younger participants used a greater range of different websites for comparison of products and prices, whereas the older generation liked to look at specific magazines and the websites of their favourite brands.

The strategies for a successful internet search varied and I shall just discuss the most common ones. Everyone, apart from Wolfgang, seemed to be confident enough to find the information they were looking for on the internet. The British interviewees were all comfortable with searching on the internet regardless of their age or sex. Simone used the internet a lot and knew exactly what she needed to do to find out more about mobile phones: 'I would google it. And then I would go to the manufacturers. I would try Motorola, Nokia, Sony. I would go directly to them' (Simone, GB, 67). Even Henry, although an inexperienced technology user, was happy to look for car features, for example, on the internet:

> Well, I compared, you could compare one car with another or, more you could compare what, you know, the difference between the cheap one and the dear one. You know, you get this much for your money, and that bit more and you get heated seats on that one and alloy wheels or whatever, you know. So I like to do that. (Henry, GB, 71)

Among the German interviewees, Sabine had a detailed plan of what to do on the internet to get the information she wanted:

> *Bang&Olufsen* have of course their own website and I looked for the product lines, which are available and the hi-fi and loudspeakers. I looked at all this to get an impression of the sizes, the ranges and what would be appropriate for me. (Sabine, G, 48)

Michael also had a clear idea about where to look for the information he needed:

> I inform myself via the internet and, not too much, but I look at rankings in the magazine *Focus* and what products they present, but I don't waste too much time on it. (Michael, G, 50)

The Dutch interviewees also used the internet. Corrie used it as a casual tool but in a directed way: 'I knew which brands I was interested in, so I went to this website and tried to compare the prices of website shops. And then I thought, well, I can buy it through the internet'. (Corrie, NL, 53)

Studies[49] show that young people use the internet for different purposes than older people: 'Compared with teens and Generation Y, older generations use the internet less for socializing and entertainment and more as a tool for information searches, emailing, and buying products'.[50] The Forrester Research Group (2009) confirms that younger adults use a wider range of platforms and are competent users of different media: 'The vast majority of European teens are comfortable with multitasking across different platforms' (Forrester research group 2009: n.p.). The older generation (45 and older) made more use of offline media such as books, magazines, shops and printed newspapers. My participants confirmed this divide as the younger interviewees mentioned a range of fast-moving information sources, such as YouTube, blogs and chat forums. As Vincent said:

> I do look on the internet, to keep in touch with certain technologies, 'cos I do find things interesting, I look on, you know, YouTube and things to look at what's here and now, what's being advertised or what are the new innovations and how things are working, you know. I do find it fascinating. (Vincent, GB, 23)

Amazon was referred to because it provides many reviews of gadgets from other users and is cheap, as Craig pointed out. Google proved to be a useful site as a starting point for finding the knowledge my interviewees were searching for.

[49] http://www.thematuremarket.com/SeniorStrategic/Older_generations_use_the_internet-10674-5.html, accessed 20.03.2010.

[50] http://www.pewinternet.org/~/media//Files/Reports/2009/PIP_Generations_2009.pdf, accessed 20.03.2010.

5.2.2 Magazines

As Table 5.1 above shows, relevant magazines were read by half of my respondents (12). The magazines mentioned were car, music, video and above all consumer report magazines such as *Which*, *Stiftung Warentest* and *Consumer Report*. Interestingly, the use of magazines as an information source was mostly mentioned by male participants. Among them were three British participants. Henry (GB, 71) read car magazines, Robert (GB, 63) computer magazines and the consumer magazine *Which,* and Vincent (GB, 23) read computer magazines. Not many people were interested in *Which,* a consumer magazine that tests gadgets on an independent basis. The target audiences for computer magazines such as *Computeractive* and for gadget magazines such as *Stuff* and *T3*[51] are obviously still the male British population. The style of writing and the cover illustrations (some of the more low-key[52] cover illustrations are shown as examples here) suggest that they want to attract men since they rely on scantily-clad women to appeal to the reader.

Illustration 5.1: Cover illustrations of *Stuff*, *T3* and *Computer Active* magazines.

Source: http://www.myfavouritemagazines.co.uk/tech-gadgets/, accessed 18.08.2011.

On the internet, gadget magazines can be found under the heading 'men's lifestyle', not under 'technology', and as shown have woman in porn-style poses displayed on the cover. And although the magazine *Computeractive* had no people on the cover, their website had porn material right next to the articles.[53] One of my female interviewees made it clear:

> (…) it depends on the angle the magazine is taking. Say, it was in a magazine for young men interested in technology, I'd say, 'Well, they're going to favour this really high-tech thing because it will improve their image and it will go along with

[51] http://www.magazine-stand.co.uk/magazines/lifestyle/mens-lifestyle/, accessed 18.09.2008.
[52] I call it low-key because these were the least offensive covers.
[53] http://storemags.com/computeractive-07-january-2010-pdf/, accessed 7.10.2010.

the image of the publication if they are fans of this latest thing'. (Maureen, GB, 23)

Magazines seemed to be a male domain, whereas newspapers were read by both the women and men I interviewed; Simone (GB, 67), Robert (GB, 63) and Vincent (GB, 23) also read the special technology supplement in the *Guardian*.

The four German participants who mentioned magazines read them regularly. Both Annette (64) and Katrin (26) referred to gossip and TV listings magazines. Therefore I investigated whether the so-called women's magazines had a section on gadgets and technology. Of the three most popular women's magazines in Germany, *Brigitte*, *Cosmopolitan* and *Freundin*, only *Freundin* featured articles about new gadgets and technology in general. Three German participants (Sabine, Katrin, Wolfgang) referred to *Stiftung Warentest*, the German equivalent of the British consumer magazine *Which*. In Germany there are also two other consumer magazines, *Test* and *Ökotest* (for ecological products). The gadget and computer magazines seemed rather similar to the British ones. They were mainly targeted at a male audience, with the difference that in Germany the covers presented male users of technology or only the gadgets themselves instead of half-naked women. Most magazines with technical content are dedicated to computers only. The magazines *c't* and *Connect* were among the few magazines that also focussed on new media gadgets such as digital cameras, flat screen TVs, mobile phones and notebooks.

While I was conducting my research on gadget magazines in Germany I came across an interesting magazine, launched in December 2006, specifically for women interested in technology. The title of the magazine: *play vanilla* was vaguely suggestive with its phrase 'play vanilla' (as in vanilla sex): It seemed to refer to a milder form of computer game playing rather than an addictive, aggressive form of gaming performed mostly by men. The target audience for this magazine was chiefly women who like to play games. They were described as women between the ages of 19 and 40 and the press release mentioned that the male editor-in-chief was looking forward to giving women, whom they claim make up half of computer gamers, a deeper understanding of technology in a subject that is supposed to be a male domain. Unfortunately this magazine ceased to exist a year later. Figures 5.2 and 5.3 show the covers of the first and last issues.

Illustration 5.2: Cover of *play vanilla,* Dec 2006.

Source: http://www.pressetext.de/show_attach.mc?pte=061127006, accessed 25.03.2010.

Illustration 5.3: Cover of *play vanilla,* Dec 2007.

Source*:* http://www.zeitschriftenblog.de/?p=384, accessed 27.03.2010.

The attempt to establish a gaming magazine targeted at female gamers but also containing information about gadgets had a short lifespan. Whereas the first issue had the gadget in the foreground on the cover, the last issue looked more like a fashion or gossip magazine, with just a picture of a model on the cover and no gadget at all. It may have been too early for the targeted female audience to pick up this knowledge source. In 2011, five years later, everyday life is more permeated by technology and a new generation of adults has entered the consumer market. But, as indicated earlier in this chapter, generation Y seeks information more online than offline. This might mean that print media are simply not the right way to reach the younger adults at whom this magazine was directed. As technical magazines are more often read by men and were in the past directed more towards a male audience, a female audience may not be as likely to read a technical magazine.

When I researched the computer magazine landscape of the Netherlands, I found that there were similar titles available as in Britain and Germany. The German computer magazine *c't* was also available in the Netherlands. But in the Netherlands there were more women on the magazine covers; women who looked like business women or at least like ordinary women interested in technology. The magazine *troubleshooter*, for example, featured a woman on the cover and so did many other computer magazines.[54] Among the Dutch participants, three referred to magazines. Iris read magazines online when she needed more information (perhaps instigated by her technically proficient son). Jan read magazines that were available in his department at work about audio, video and multimedia topics and Niklaas read car magazines.

[54] http://www.hubstore.nl/secties.asp?SC=PC, accessed 25.03.2010.

The Netherlands also has the only gadget magazine especially for women, which is still running and obviously successful. Titled *Savvy,* it was launched on 22 November 2008: 'For Women Who are Not Afraid of Technology' as the launch website states. The website explains further:

> Savvy Magazine, a 'Women's Guide to Gadgets' will publish about mobile phones, digital camera's [sic], mini notebooks, navigation and other electronic gadgets but spice cover design and fashion too. The magazine is written by women who know what other women want to read about: Personal experiences and opinions by women. Editor in chief Mireille Rameau explained that the magazine is a result of the desire of women to know about gadgets from a 'usage' point of view. She said: 'Women have been getting more successful financially over the past years, but also busier. Modern electronic gadgets can help women to communicate easily and efficiently'.[55]

Savvy presents various gadgets, from intelligent vacuum cleaners to netbooks and hi-fi systems. Many of the devices have interesting designs, including a wide colour range or flowery designs to give the gadget a more 'feminine' look. I bought the first edition of *Savvy* in 2008 and was delighted with the format (small), their articles (interesting and informative) and above all their critique of pink-coloured gadgets. The editor-in-chief, Mireille Rameau, assumed that the idea behind the decision by Motorola in 2005 to design the first pink mobile phone targeted at women must have been that women like pink, therefore they would like pink gadgets. I agree when she points out that the majority of women prefer other colours and that glitter and crystals on technical gadgets are not necessary either. However, Motorola's decision set a trend towards a gendered segregation of the market for technical gadgets. Other companies followed and in 2010 there are gadgets such as mobile phones, notebooks, computers and other devices available in bright colour ranges, including pink, and black and darker colours are presented as designs for men.

The position of the model on the cover of the first issue of *Savvy* (Fig. 5.4) suggests a strong woman who is in control, using many different gadgets such as a notebook, camera, mobile phone and other accessories. She is dressed in a casual manner and but her image is reminiscent of the leading characters in *The Avengers* and *Charlie's*

[55] http://thenextwomen.com/2008/11/22/gadget-magazine-savvy-launched/, accessed 23.03.2010.

Angels.[56] Both TV series were popular because of their powerful women who used technology in a savvy way.

Illustration 5.4: Cover of the first issue of *Savvy* magazine, November 2008.

Source: http://liekevoermans.com/2008/11/17/savvy-the-magazine-ive-been-waiting-for/, accessed 18.08.2011.

I like *Savvy*. From a woman's perspective, it is nice to browse a magazine where all the presenters are women of different ages, and gadgets are shown in 'female' contexts. The visual material takes an integrative approach by showing gadgets within the contexts in which they might be used. This highlights the domestication process, which is represented by women using gadgets at work, home, in the university, with friends and on their own. Although facts about the functions of gadgets, electricity consumption, novelties and other technical information are detailed in the magazine, the focus is on how and where to use the gadget in order to make life more comfortable and more enjoyable. This is new compared to men's magazines as the focus there is on the gadget itself, not on how it might be integrated into everyday life. *Savvy* also presents new gadgets for the household: new fridges with an internet connection to order refills, a screen near the cooker for online cookbooks, new domestic appliances such as rainbow shower heads, a vacuum cleaner robot that does the cleaning automatically. It thus takes a more holistic view of technology, seeing the domestic as being as important as entertainment technology. The magazine *Consumer Report* is the Dutch equivalent to the British *Which* magazine. Only Arjan said that he would use *Consumer Report* as an information source.

Altogether 12 participants mentioned magazines as knowledge sources for technical products. Three British, five German and four Dutch respondents used them. Four were women and eight men. Five were from the younger generation. I would suggest that the participants who resorted to those magazines were the more cautious ones, such as

[56] *The Avengers* began broadcasting in 1961, *Charlie's Angels* in 1976.

Henry, Wolfgang, Annette, Iris, Katrin, Robert, Sabine, Michael, Christian, Jan, Niklaas and Arjan. This group consists mostly of older interviewees – the younger generation preferred online media.

The magazines were packaged in different ways in the three countries. Whereas Britain had many half-naked women on the cover, this was not the case in Germany, where the magazines mostly showed technical devices, or the Netherlands, where mostly competent-looking women held technical gadgets. The latter may make it more likely for women to identify with that kind of person and buy this magazine.

5.2.3 Newspapers

Newspapers were often mentioned as regularly-used (normally daily) information sources. As *The Guardian* has a special issue dealing with technology every Thursday, and two of my participants regularly read it, I decided to take a closer look at the knowledge that this magazine provides in relation to my research. I therefore undertook a short content analysis (Carley 1990) of the weekly supplement *TechnologyGuardian* which in 2011 is provided on the internet, trying to ascertain how much technical knowledge about everyday gadgets like mobile phones and digital cameras, washing machines and computers can be found in this supplement and what was covered in general. I collected six consecutive editions, between 29.05.2008 and 10.07.2008. The supplement consists of eight pages in Berliner format (slightly larger than tabloid). The front page was chiefly covered by a picture that took half the space and was related to an article on this page. Then there was a column with leading articles. The five middle pages contained several long articles and some regular sections, such as a question and answer section, readers' letters, game reviews, pithy news called 'Newsbytes' and certain regular comments. The last two pages featured advertisements for jobs and charities.

In these six issues of *TechnologyGuardian* there was only a small amount of knowledge that could be used in everyday life. Approximately 10% was associated with gadgets like those described above, mostly computer related, rarely about launches of new everyday technologies such as the *iPhone*. The main body of the newspaper contained general stories such as new technologies for energy suppliers, new developments to deal with garbage and laws against data fraud. *TechnologyGuardian* centres on ICT and not, for example, domestic technologies such as washing machines. The most useful section was

the Q&A one, where people asked about their problems with new technology. From this, one could learn much for one's own use, but my content analysis showed that most of those who wrote letters and the experts who answered the questions were male. Overall there was not much useful information in this supplement for people wishing to learn informally about how to use their gadgets. The supplement clearly did not aim at teaching the user of everyday technology about their gadgets; it was not designed to support informal learning for the four key gadgets I deal with here. It provided news stories and features about technology in general and dealt with everyday technical gadgets only occasionally. Nonetheless, it would be possible to use it as a starting point for finding out about newly-released technology.

Every national newspaper in Germany, such as the *Frankfurter Rundschau*, *Die süddeutsche Zeitung* and *Die Zeit*, has a technology section with presentations of new gadgets, articles about new developments and the dangers of technology. This section is often called 'Digital' or 'Digital life-style' and is found among other columns such as international news, careers or the economy. Only two of the German participants, Sabine and Michael, both from the older generation, referred to technical articles they might read in newspapers.

The larger and most widely read newspapers in the Netherlands: *De Telegraaf*, *Algemeen Dagblad*, *De Volkskrant* and *NRC Handelsblad*, all have an ample section on digital news, which may cover single new gadgets, developments in the contest between *Google* and China in terms of censoring internet content, etc. On NRC online[57] one could find detailed articles for a lay audience about how a particular new technology works and what its advantages and disadvantages are.

Overall, in 2011 there was a technology section in most newspapers, so readers could not read a newspaper, whether in print or online, without encountering some technology information. But in general, more participants from the older generation referred to newspapers in all three countries.

[57] http://www.nrc.nl/international/article2506686.ece/3D_TV_on_verge_of_breakthrough, accessed 23.03.2010.

5.2.4 TV

Although there are TV programmes in all three countries that feature new upcoming technology and give consumer advice, television had a much more limited appeal as an information source than the internet.

In Britain, for example, *The Gadget Show*[58] (Channel 5) presents new technical devices. Only Kathy (GB, 23) referred to a TV series about technology that she had watched for a while. Others said they did not tend to watch TV at all or only very little. This medium was thus not much used as a source of knowledge. I personally found *The Gadget Show* quite interesting and amusing and just from one episode I learnt quite a lot about gadgets I was interested in buying. In Germany there are several TV shows that give advice about new technologies, such as *Markt*[59]. Only two German interviewees mentioned TV shows. Sabine liked to watch car shows and Katrin said she would watch consumer shows when she accidentally came across them. The Netherlands has two main TV shows that advise consumers about new developments and their functions: *Kassa*[60] and *Radar*[61]. They present gadgets and give purchasing advice. Corrie (53) and Niklaas (23) said they watched those shows regularly.

Thus it would appear that, although consumer TV shows featuring technical gadgets were available in each of the three countries, they were not used much as a knowledge source. Only five participants out of 24 (four women, one man; two from the older generation and three from the younger; two from Germany, two from the Netherlands and one from Britain) mentioned them.

5.2.5 Manuals

As each technical appliance has to have a manual as a legal requirement, this knowledge source was always available and it was often lengthy. This is sometimes due to the fact that it contains the same explanations in several languages. Despite the fact that a manual comes with every gadget and many advise the user on the cover to read it before using the gadget, it was the most unpopular information source among my participants. People complained that the writing style was incomprehensible, German

[58] *The Gadget Show* is broadcast on Mondays on Channel 5 from 8 to 9 pm. The team consists of three female and three male presenters.
[59] Broadcast every Monday evening from 9 to 9.45 pm.
[60] *Kassa* is broadcast live Saturdays from 6 to 7.30 pm. The presenter is a man.
[61] *Radar* is broadcast live Mondays from 8.30 to 9 pm. The presenter is a woman.

interviewees complained that some were only in English and others found the font too small to decipher. Although some people read it cover to cover and others resorted to it later in their learning process, Rettig (1991) is probably right when he calls the manual a bestseller that no one reads. This was nicely illustrated in a James Bond movie, *Die Another Day* (2006), where Q, the head of the technical department, shows Bond his new, camouflaged car. He unfolds two machine guns from the bonnet and then hands Bond a thick manual. He says: 'If you want to find out how it works, read the manual. It will take you about 2 hours.' Bond takes the manual, glances at it, then tosses it into the air in front of the car. The new guns track it and blow it to pieces. So, ironically, Bond does use the manual to find out how the guns work – by experiment, not by reading.

My participants covered the whole spectrum of manual use from reading it cover to cover before touching the gadget to loathing and avoiding it. Simone (67), for example, never read the manual. She tried to find out things by herself, which drove her husband Henry (GB, 71) crazy as he always read the manual cover to cover first. This fact shows that this married couple had different learning styles. Phoebe had a third approach: 'I read the manual if something's not intuitive but I know it's there. Then I read the manual and get straight to it' (Phoebe, GB, 53). Maureen gave a good explanation for why she did not read the manual:

> I get very confused with the manuals because often all I want to do is the simplest thing, and it seems too, they rarely start with the most straightforward thing, they seem to, instead of identifying the key features and telling you how to do those first, they seem to assume that you want to know, from A to Z, everything that the phone does, starting from, you know, the top end and all the way through. (…) So I don't bother with the manual 'cos I get bogged down in all the information. I should read the manuals though. (Maureen, GB, 23)

Robert (GB, 63) could not find the time to look at the manual and therefore did not know how some functions of his appliances worked. As Craig was an experienced user of technical devices, he considered himself proficient enough to find out by trial and error. 'But if I can't, you know, if I'm puzzled at the very end of the day I go to the manual last'. (Craig, GB, 29)

One or another of these three different approaches illustrated by the British interviewees above was used by all my participants:

1 reading the manual cover-to-cover before trying to use the device;

2 starting with the trial-and-error method and using the manual on a need-to-know basis;
3 never reading the manual, either because of lack of time or on the assumption that one would not understand it anyway and accepting that one might miss out on some functionality.

Maaike explained the possible disadvantages of refusing to read the manual:

> half of the functions that are on the camera, I don't even know about because you only know about them when you read the manual. I think trying it out only leads you to so many, like you'll never get all the options. But no, I don't read manuals, no. When I see someone else take pictures that are really great like with Sepia or black and white that is really cool and then I want to know how to do it but I would ask them and not read the manual. (Maaike, NL, 24)

Matthys reassured himself that the functions he did not know about he did not need anyway. He admitted: 'So many pages. That's why I'm not trying to explore all the possibilities. I don't think it's easy for me, and I find it easy when they can call me and I can call someone else, and the rest is not so important for me' (Matthys, NL, 57). Information overload was clearly one of the issues for those who avoided the manuals.

Among my interviewees, one can distinguish between comprehensive manual users (Henry, Iris and Corrie), selective manual users who used them on a need-to-know basis, and those who combined the different approaches. Dryburgh's (2002) report on over 25 000 users noted that manuals were used 60% of the time at least at some point in the learning process about new devices. As Michael said:

> I experiment and when I am stuck, I resort, disgruntled, to the manual, which I normally don't touch. I am aware that I don't use all the possibilities, but I don't like it. (…) I don't use many functions, with the camera, I got to know the functions in a few seconds and with the mobile phone I don't listen to music, I don't text, so it boils down to calling and that is not too complicated. (Michael, G, 50)

In Michael's case, a feeling of disappointment and resentment became apparent when he could not figure out for himself how particular functions worked and had to resort to the manual. He might have expected that he as a man should know about gadgets without resorting to help such as a manual.

In relation to manuals, the difference between the countries was very apparent. Six British and seven Dutch participants used the manual, in contrast to only one German who turned happily to this knowledge source. Why did the German interviewees reject the manual? It might have to do with language. As manuals are often translated from other languages, their style of writing and the content is frequently incomprehensible. The problem of badly-written manuals is well known.[62] My interviewees cited various reasons why they would not use the manual. They either found them too confusing (Maureen) or stressful (Christian), or too time-consuming (Robert and Henry), badly written (Annette) or not covering all the functions and therefore of no use (Michael).

The non-human sources of information that my participants resorted to the most were the internet, then advertisement leaflets (especially in the Netherlands), newspapers and manuals. The internet is more interactive and extensive in its provision of information, and my interviewees found it the most useful non-human knowledge source. However, the most important source of knowledge was the human one – other people.

The NSF survey 2010 for the USA found that, for specific scientific issues, 54% of the surveyed population would look on the internet, 21% reported that they got their information from television, 5% from newspapers and magazines, 7% from books and 2% would acquire their knowledge from family, friends and colleagues. The rest fell into the 'others' and 'don't know' categories.[63] This is quite similar to my findings as the internet was the most resorted-to knowledge source. In other ways the European results are different; friends and family were more important for advice, for example, and the TV was less so.

5.3 Human sources of technical knowledge

All my interviewees across the three countries reported that their most important source of information was the people they knew: friends, colleagues, knowledgeable acquaintances, partners and family members. They were the most trusted information source as people believed that they knew best what one's personal needs were, and

[62] On this website are some examples of badly-formulated manual content, probably translated from Japanese: http://www.spiegel.de/wirtschaft/0,1518,406043,00.html, accessed 06.08.2010.

[63] http://www.nsf.gov/statistics/seind10/pdf/c07.pdf, accessed 09.08.2010.

especially friends with whom one already had previous good experiences constituted a cornerstone in their knowledge network.

When my interviewees resorted to people for information, they followed certain patterns. Some, such as Simone, liked to be self-sufficient. She preferred to ask an online helpdesk rather than friends. If she asked friends she assumed she would decide on people in terms of their skills and not their gender. Others, such as Phoebe and Sabine, would ask anybody whom they assumed had the knowledge that they needed, including people they didn't knew very well, and they were not bothered about the gender of the interlocutor. Sabine (G, 48) emphasized that people whom she had known for a long time and whose skills and expertise she knew were especially important to her. Often, she said, they were pursuing a profession in that area.

Some of my respondents had a specific person to whom they would always turn first, as they had helped them before. Maureen, for example, would always ask her younger brother since he studied informatics and was happy to help. He would inform himself about gadgets that she wanted to use. Iris (NL, 58) always asked her son, never anybody else. Craig would always ask his mates and even buy the same models of gadgets as his friends. Vincent too asked his friends first because as he said: 'They know what they are talking about' (Vincent, GB, 23). He would also ask his parents as they had a great influence on him.

A few of my participants, young and old, distinguished between the genders when approaching someone with a technical question. Annette (G, 64) preferred to ask a woman about domestic technology such as washing machines but for cameras she preferred a man. Neeltje (NL, 22) asked people who were interested in technology and those, in her experience, were mostly boys. As she used internet reviews a lot for advice on gadgets, she noticed that the reviews were mostly written by men, which confirmed her belief that men are more interested in technology than women. Arjan (NL, 27) explained that because he mostly had female friends he would ask women, especially for gadgets such as cameras and mobile phones, which he associated with women. For technologies which are coded male, such as a drill, he was more likely to ask a man. Younger Dutch and British women were more likely to ask male friends for help with technology than the German students. Niklaas (NL, 23) asked family members and close friends and males rather than females, because in his opinion and experience, women used fewer functions and gadgets. But he observed that women knew more about costs

and reliability whereas men wanted to be early adopters and did show new gadgets to each other, which he assumed women did not. He explained:

> Female friends, they have more knowledge of costs, I think, which is the cheapest and which is reliable and things like that. And male friends, well they want to be early adopters, well they often use more functions, newer functions that you see around. Yeah, they get their phones and they are showing you something. They do not, female friends together. (Niklaas, NL, 23)

This highlights the perceived different behaviours displayed by women and men in relation to their technical gadgets. Niklaas' observation was confirmed by British interviewee Craig, who also described how his male friends showed their new gadgets to each other and bragged about their functions. Rentel and Zellnik confirm this as a common behaviour amongst men: 'everyone whips out their cell phone and puts it on the table. If some guy has the latest phone, it's the first five minutes of conversation. It's as much a part of their identity as the suit or tie they are wearing' (2007: 217).

Neeltje, too, said that she got to know about MP3 players because her cousin, who had one before her, bragged about his gadget to her. Showing new gadgets to friends was mentioned by several men (Niklaas, Craig, Michael, Jan, Matthys, Arjan, Wolfgang, Robert), old and young, but only by one woman: Neeltje. This displaying of new technical gadgets seems to be a male behaviour; men let their friends play with their gadgets and wanted to hear their opinions. One young female British participant told me that when she was meeting friends in a pub with her boyfriend, one of her boyfriend's friends showed his newly purchased iPhone to his male friends. They all played with it but when she wanted to touch it, he did not permit it. Maybe the showing off and sharing of new technical gadgets is a feature of a core masculine culture and women are not invited into it. J. Gregg Robinson and Judith McIlwee (1991) found that men can become possessive of their creations and gadgets. And Kleif and Faulkner (2003) add that men do not share their knowledge easily as they can become identified with it and possessive of their knowledge. This is an interesting finding and indicates a difference between the genders. Although only three out of 24 interviewees mentioned this fact in particular, they provided this information without being prompted. This might be worth exploring through further research.

However, amongst all the advantages that were mentioned by my participants about human knowledge sources, Katrin (G, 26) also mentioned a disadvantage:

> I have a former friend with whom I shared a flat and he knows a lot about technology. But the problem with him is that he can talk and talk for hours and doesn't stop. That is why I am cautious with him and would rather ask other people first and only turn to him when no other is of any good to help me. (Katrin, G, 26)

She mentioned the balancing act between asking a friend for a favour and exploiting a relationship with a particular knowledgeable person because of the benefits. (This was mentioned by other interviewees as well. Sabine said that her friendships meant that they could ask each other any time without feeling used.) For example, if she considered asking someone who was only a passing acquaintance, she felt she should rather go for professional help. There was also a friend who gave the impression of knowing everything but later it turned out that some of his advice was not correct. Since then she had become cautious about his opinion. All my respondents who used human knowledge sources benefited from the time and effort that other people had spent on acquiring knowledge, but knew or assumed that they enjoyed keeping up to date anyway, like Christian (G, 25), who appreciated people who had passed through the phase of choosing and buying and now owned working technology. And although Michael (G, 50) asked friends spontaneously when he saw that they used gadgets he wanted to buy, interestingly, he would ask his oldest daughter about functions on mobile phones since he assumed that it was just normal for her to be knowledgeable about those gadgets as she and her friends used them more often than he did.

The people most often approached for technical help are certainly friends in the knowledge network, closely followed by family and relatives. Some people made no distinction as to whether the person they wanted to ask was a close friend or a distant acquaintance, female or male. For others this was a significant feature. All my interviewees would ask people whom they thought of as technical experts in the field because of their profession or hobby. A gender difference showed up that I first found in the research I conducted for my MRes (Brüschke 2008): men, old and young and in all three countries, like to ask only close friends for technical advice (Michael, Robert, Craig, Vincent, Matthys, Niklaas, Christian). As their gender role involves the expectation of being knowledgeable about technical appliances, it seems that they did not want to show ignorance except to other, trusted males. As some specifically referred to other men, if they would ask at all, it may be that they wanted to keep up the façade of technical expertise, especially in front of women. Viswanath Venkatesh and Michael

Morris (2000) found this behaviour typical for men who were particularly invested in strict gender roles.

Apart from Annette, the older generation did not differentiate between the genders when asking for advice. The fact that the younger generation is more gender-aware is in a way alarming as I had assumed that gender roles were fading with the younger generations, especially since the sexes among the younger generation use the same gadgets in exactly the same way. Jane Wheelock reported a similar result when comparing younger and older respondents.

> However, when we look at how computer knowledge is acquired and transmitted via the social economy, a much more contradictory process seems to be at work. Use of networks of friends and relatives shows no gender differentiation in the older generation, yet a very strong bias towards boys in the younger generation. This also increases boys' socialising, and shifts its locus towards the home; traditionally both are features of girls' experience. (Wheelock 1992: 111)

In a previous study (Brüschke 2008), I found that mothers and sometimes female users of technology in general tend to ask male family members (especially sons) or male friends for help with technology in order to perform the feminine role of not knowing too much about technology, since that is seen as unfeminine (Wacjman 1991a, Gray 1992). This might mean that women do not ask out of necessity but out of courtesy in order to maintain ascribed gender roles. Female adults who ask male children and teens for help in technical matters are encouraging them to conform to the male gender role by asking them to take up an interest in technology and giving them credit for having the knowledge.

Twelve of my participants from all countries referred to their children or to their parents as sources of knowledge. Schiffman et al. explain: 'Because children are often more comfortable than their parents with digital and electronic media, they are often the ones in the family who do the teaching' (Schiffman et al. 2008: 331). They add that children who have a good relationship with their parents might teach their parents internet skills or even act as the parents' internet broker by shopping for them or searching for information on the internet. Rentel and Zellnik emphasise that: 'These Geek Gods in Training have the advantage of never having known life without their beloved technologies. (…) This bunch is growing up with the most technologically sophisticated gadgets in human history' (Rentel and Zellnik 2007: 223). They also noted

that electronic toys doubled in sales from 1999 to 2005 while sales of non-tech toys remained stagnant.

> This early fascination with technology quickly becomes mastery, and in many households it is the children who become the teachers. Parents are placed in the awkward position of going to their kids when they need help. In fact, one survey showed that over 80% of youths (ages 12 to 17) said they have been asked to help an adult do something online that the adult wasn't able to do. (Rentel and Zellnik 2007: 223)

Kathy (GB, 23) said she would teach her grandma in the Christmas holidays about Skype, so they could chat or phone and Neeltje (NL, 22) explained how she and her sisters had taught their mother how to text. Robert (GB, 63) was waiting for his daughter to come back for her Christmas break from university to be shown how Skype works. And Annette (G, 64) was proud to have been taught by her son how to text. Wheelock (1992) found that teaching one another was a common way of knowledge diffusion in families. Whereas the older generation learned mainly from their partners or their own children, the younger generation were bound into a peer network from whom they obtained their knowledge. Some children were also taught by their parents.

Overall more women than men (Kathy, Annette, Craig, Sabine, Katrin, Claudia, Wolfgang, Folkert, Christian, Phoebe, Neeltje, Iris, Matthys, Arjan, Niklaas) used human knowledge sources such as friends, relatives and retailers and more men tried to use only non-human sources (Simone, Maureen, Henry, Robert, Vincent, Michael, Christian, Maaike, Jan).

There are also cultural differences in how much people rely on impersonal versus personal information. Niraj Dawar et al. (1996) showed that northern European countries are characterized by the use of impersonal information, such as consumer magazines, in contrast to southern European countries where opinion leaders have more status and importance in the decision-making around a purchase. Opinion leaders and reference groups influence a person's purchasing decisions. C. Whan Park and V. Parker Lessig (1977) distinguish three types of influence: informational, utilitarian and value-expressive influence. Informational influence describes the limits of available kinds of information an individual can acquire from their surroundings. Utilitarian influence refers to the knowledge that can be obtained through a peer group. Value-expressed influence is wielded by the advertisement and brand reputation of the gadget. All three kinds of influence were experienced by my respondents.

Human knowledge sources were an important source of information and advice for my participants. They were valued and trusted but also different issues, like overusing a source, had to be considered. Knowledge sources are organized in a kind of network which every participant carefully developed and sustained.

5.4 Knowledge networks

As my participants got their phones at different times in their lives, under different circumstances, at different ages and for different reasons, they resorted to a network of knowledge sources for information that they developed, sometimes over years, without being consciously aware of building it. This knowledge network is unique for each individual. It consists of both non-human and human knowledge sources and is exploited whenever the initial knowledge, the knowledge people already have, is not sufficient to deal with the task at hand. Those knowledge networks have to be continuously rearranged and maintained. Maaike, a Dutch student, explained why she had to rearrange her knowledge network.

> I think it changes a lot when I went to live by myself, 'cause then you need other people to do it for you. I mean my father is not going to drive over every time I have a problem. Neither is my brother. So you need people who are closer to you geographically. You make new friends and you find out their skills. So it has changed over the past years. Yes this is this thing I think the network I have now to fall back on it if I have a problem with anything to do with electronics, (…) It's something that I built up over the past six or seven years, I think. (Maaike, 24)

Maaike described a well-known problem: if a person moves to another location she has to adapt her human knowledge network and find new people to fill the gaps left by persons in the network who are no longer available, or at least not easily. The structure of the human technical knowledge network has to be adapted under certain circumstances even if people stay where they are and do not move away. A valuable figure in the network may no longer prove knowledgeable. Interests change over time and, since technical knowledge becomes obsolete very fast, people have to make an effort to keep up to date and they may stop doing so at a particular time. This implies that these knowledge networks are unstable arrangements that remain stable only on a temporary basis.

But some people are lucky. They rear their own technical adviser, meaning that they have a personal technical expert such as an older Dutch couple I interviewed, who used their son's knowledge whenever there was a technical question or a technical device to buy. He did not decide for them, but advised them to look at special websites, asked them what they expected from this device and in which form they would use it. These are questions that everybody has to answer for themselves, but individuals often go through this process in an unstructured manner. So this couple's knowledge network consisted of only one human knowledge source. This son was performing the role of knowledge broker, similar to the e-butler, acting as 'a kind of information agent that can autonomously search, gather and integrate information on behalf of a user'.[64] People such as the son of the Dutch couple transfer knowledge that they have gathered from various sources to others who ask for help. This saves time and effort for those seeking help, since experts and knowledgeable people can find information faster because they know where to look and what for.

Maria Bakardjieva (2003) introduced the notion of the 'warm expert' and reported similar findings in her study about how people are introduced to the internet:

> My respondents had traversed a complex path to pick up such knowledge and skills in both formal settings (…) and their own homes with the help of more experienced friends and relatives. (…) The computer/Internet literate friend was a recurring character in all the respondents' initiation stories. An even more important role that the friend's character has played in these stories, however, was one that could be dubbed "the warm expert". The warm expert is an Internet/computer technology expert in the professional sense or simply in a relative sense vis-à-vis the less knowledgeable other. The two characteristic features of the warm expert are that he or she possesses knowledge and skills gained in the world of technology and can operate in this world, but at the same time, he or she is immediately accessible in the user's lifeworld as a fellow man or woman. The warm expert mediates between the technological universal and the concrete situation, needs, and background of the novice user with whom he or she is in a close personal relationship. (Bakardjieva 2003: 235)

'Geek God', 'knowledge broker' and 'warm expert' are in fact different names for the same category of people, who are part of everybody's knowledge network. A 'warm

[64] University of Toronto, Canada. http://www.cs.toronto.edu/km/xib/document/broker_tutorial/definition.html, accessed 31.03.2010.

expert' is the most reliable source of information my respondents turned to. As mentioned in Chapter 4, the Geek God is a type of technology consumer who makes sure to have the latest gadgets. However, this consumer type has another dimension that makes her/him very valuable in social relationships. Rentel and Zellnik (2007) explain: 'Who is the person you turn to when you need to make a decision about buying a new computer, flat screen plasma TV, or PDA? Most likely, your friendly local Geek God' (3). They add to their description of this consumer type that 'the rest of us, rather than begrudge Geek Gods their superior knowledge, love them for the fact that they are so inclined to share it with us' (212). All my informants turned to someone who in their eyes was more proficient with technology than they were. They retained the responsibility for their decisions but apparently the decision about which, whether and when to adopt a technical device was easier if supported by someone else. Even proficient users try to ask someone else because the more knowledgeable person mediates between the enormous amount of data available about a device and the concrete needs of the user-to-be. This acquisition process intensifies social relationships between certain people.

The knowledge networks delineated here resemble social networks as described in social network analysis (Barnes 1954, Granovetter 1973, Wellman and Berkowitz 1988, Scott 1991). The latter uses notions of network analysis and categorises social relationships into individual actors, called nodes, and relationships between the actors, called ties. In my research, a knowledge network contains the individual who searches for knowledge at the centre of this complex structure and ties that go out from that actor to various people and non-human knowledge sources. Those ties can be strong or weak. Weak ties are links to acquaintances and strong ties lead to close friends and family. My interviewees mainly used strong tie networks, such as friends and families. However, strong ties might not have the information that people are searching for. In the knowledge networks I explored, weak ties were often more successful for finding particular information than strong ties, although generally people first use strong ties and only later turn to the weak tie actors. Mark Granovetter (1973) highlights the importance of acquaintances in social networks. He explains that the experts one needs are often found in other social networks that are connected only by a weak tie (in other terms, a friend of a friend). This suggests that people who also ask people they do not know very well are more likely to find more experts and more relevant information. As some of my interviewees preferred to ask only very close friends for advice, especially the British men, this led to small networks not linked to others. In contrast, participants

such as the younger Germans or Dutch, who also asked people whom they knew only slightly, had access to a wider network of human knowledge sources.

Maintaining and using an expert network may be done in different ways and more or less efficiently. Rob Cross et al. (2001) differentiate effective and ineffective knowledge-sharing relations by applying several criteria, such as 'knowing what other persons know and thus when to turn to them' (102). This was mentioned by several of my interviewees (e.g. Maaike, Folkert), who emphasized that one gets to know which people know what. Cross et al.'s second criterion was 'being able to gain timely access to that person'. This is of course important and interviewees (e.g. Katrin) said that they would contact another person if the first choice was not available. Their third criterion, also mentioned in some interviews, was: 'willingness of the person sought out to engage in the problem solving rather than dump information' (Cross et al. 2001). Katrin in particular, but also Sabine and Folkert, described how people, especially acquaintances and thus weak tie relations in the network, might be treated with caution as they may not be willing to give time and effort to someone who is not a close friend of theirs. This is supported by Granovetter who argues that: 'Weak ties provide people with access to information and resources beyond those available in their own social circle; but strong ties have greater motivation to be of assistance and are typically more easily available' (Granovetter 1983: 209).

Whilst various knowledge sources and knowledge networks functioned as information sources for my interviewees, they also had to familiarise themselves with their new technical gadget. I shall now turn to explain these strategies, utilising domestication theory as a framework for discussing their strategies.

5.5 Domestication theory

The stages of adopting a piece of technology into somebody's life start with a gradual interest in the device. Consultations with friends and family, who can act as 'warm experts', might follow. When the device is purchased, the initial period of living with new technology necessitates a mutual adaption of the already-existing network of technical and human actors and the incomer. As Turo-Kimmo Lehtonen argues:

> Crucial here is Serres's idea of reciprocal change: 'domestication' does not suggest one-sided control, but rather entails a state of becoming affected, as the term

> refers to a learning process whereby things and people reciprocally influence each other. (Lehtonen 2003: 364)

The time period during which people live within a stable ecosystem of technology can vary enormously. However, after integrating a device into one's life, people take its existence for granted until it becomes less and less important and is finally replaced by a new technology. This process of integrating a technical device into a person's life has been called domestication, using a term from animal adoption. While the new member of the technological family is being incorporated, new knowledge is created and relationship issues around technology are negotiated.

Domestication theory (Silverstone and Hirsch 1992; Lie and Sørensen 1996) seemed to be the most useful framework for structuring my data when describing the embedding of technical devices into an individual's everyday life. There seems to be a 'natural' process that people experience when they encounter new technical gadgets. I thus follow this process chronologically, from getting to know about a technical invention, through the decision making process of choosing and buying a device and then learning how to use it and finally actually using it and living with the gadget. The relation to a device is dialogical. User and device communicate with each other with satisfying or not so satisfactory results.

A technical device also has its limits in the ways in which it can be used. Technological determinism assumes that, through design, designers allow technical artefacts to be used only in certain ways. From the 1980s onwards, scholars from several fields (gender and technology studies, cultural studies and media studies) criticized this approach by emphasising that users have agency and play a crucial role in shaping technologies (MacKenzie and Wajcman 1985, Cowan 1987, Silverstone and Hirsch 1992, Lie and Sørensen 1996, du Gay et al. 1997, Oudshoorn and Pinch 2005, Saetnan, Oudshoorn and Kirejczyk 2000). The Social Shaping of Technology (SST) approach considers the user as a co-designer of technology and gives her the possibility of choice, for example, in finding new ways to use the artefact, in using only parts of it or completely rejecting it and becoming a non-user. SST regards society and technology as equal partners in the process of mutually shaping and designing each other. The notion of such interactivity has been elaborated by Wiebe Bijker et al. (1987) in the 'Social Construction of Technology (SCOT)' framework and Bruno Latour's Actor-Network-Theory (Latour 1993).

As a strand of the social shaping of technology approach, domestication theory highlights the role of users in the practice of adopting technology into their life.

Developed as a way of comprehending the adoption of new media in households, it has been expanded to include micro- and macro-levels of technology adoption, for example technology transfer to different countries and new media consumption in the workplace (Lie and Sørensen 1996, Punie 2000, Berker et al. 2006). The domestication process views both the meaning given to technical artefacts and their material quality as important notions in understanding how they become integrated into people's lives.

> New technologies have to be transformed from being unfamiliar, exciting, and possibly threatening things to familiar objects embedded in the culture of society and the practices and routines of everyday life. (Oudshoorn et al. 2004: 55)

In order to describe that transformation, Roger Silverstone, Eric Hirsch and David Morley (1992) developed a framework of four stages of the domestication process where:

Appropriation is the first phase of procuring the object, the reasons why people buy a gadget and how they acquire information about the artefact to decide which one to get and where.

Objectification is the second stage which shows how the artefact is displayed in everyday life and what meaning the individual attributes to it.

Incorporation is the stage at which the artefact is made invaluable within an individual's life, including how it is used, becomes part of everyday activities and changes life patterns.

Conversion is the last phase, which describes the relationship of the individual with the outside world, mediated by the technical artefact, and how the artefact is used as an identity marker.

Setting this domestication process in a time frame and looking at it chronologically, the second and third stages occur simultaneously, since by using or not using the gadget I cannot avoid giving it a place and meaning at the same time. So these two stages are not very easily distinguishable in terms of timeframe. As Silverstone et al. remark: 'Quite clearly there is no unambiguous dividing line between incorporation and objectification as we are using the terms, though there is a difference between use and display which we wish to identify and which, of course, has a special relevance for technology' (Silverstone et al. 1992: 29). In applying domestication theory to my research, I shall focus on the first and third stages in this chapter and elaborate on the second and fourth stages in Chapter 6.

Knut Sørensen et al. (2000: 47) argue that the domestication process involves three main features:

- The construction of a set of practices related to an artefact. This could mean routines in using the artefact, but also the establishment and development of institutions to support and regulate this use.
- The construction of meaning of the artefact, including the role the artefact eventually could play in relation to the production of identities of the actors involved.
- Cognitive processes related to learning of practice as well as meaning.

In this chapter I shall address the first and third points made by Sørensen et al., as these connect my research to domestication theory since I studied people's perceptions about learning experiences in each of the stages. Chapter 6 focuses on the meaning that is given to artefacts and the related identities of the users and therefore addresses the second point made by Sørensen et al. Each stage requires various types of knowledge, such as knowing how to use the artefacts, giving them a place and meaning in everyday life, and fitting them into existing relationships with other technology and humans. This process of integrating a new device simultaneously involves the transformation of the old body of knowledge and the abandonment of some of it might while new knowledge is added.

My interviews showed that the four phases identified by Silverstone et al. (1992) were insufficient to fully analyse the acquisition and incorporation process of domestic technologies. For instance, the stage of finding out about a gadget (as opposed to the actual purchasing process) was not covered. I therefore decided to extend domestication theory to include an earlier stage, and shall use this extended domestication process. This is because knowing which devices are available and making the decision about which one to get is the very start of the domestication process. I shall call this phase 'Investigation', as this stage involves investigating the field. A crucial component of making friends with technical gadgets or domesticating them is knowledge. All four phases of the domestication process are related to knowledge. My findings show that acquiring information has to occur even before people purchase an object. Simply considering whether it would be worth obtaining a particular technical device or not requires information to enable the decision-making. Below, I illustrate the kind of technical knowledge each stage of the domestication process requires.

1 Investigation

During the first stage of the domestication process one needs to know which new technologies are available and which technologies would be useful in an individual's life.

2 Appropriation

The second stage of procuring the technical object requires technical knowledge in order to make an informed decision about what to buy, and consumer knowledge to know where to buy from.

3 Incorporation

During the third stage people need knowledge about how to use the new technical device and become familiar with it.

4 Conversion

During the fourth and last stage people use technical knowledge to evaluate themselves as either technically proficient or not. This influences their sense of identity and self-image.

Degele (2000) explains that in order to keep up to date and use knowledge in an effective way one has to go through three steps: Firstly, the process of acquiring new knowledge requires sifting through and choosing information. Secondly, the processing of the acquired information needs competence to abstract and structure the information and the last step in the production of knowledge needs communication and coordinating skills as people talk to others about their gadgets and how they work. How my participants applied these steps to their process of knowledge acquisition shall be explored in the next section, which starts with the first action of adopting a technical device: Investigation.

5.6 The first stage of domestication: Investigation

How is a person's interest in a technical device awakened? An entire field of industry, namely marketing companies, work in this area by trying to create interest in products through advertisements and media coverage. They want to achieve positive curiosity for the novelties on the market. All my interviewees had been influenced by advertisements but the first serious interest in a gadget was mainly aroused when they saw a friend using a new gadget. Many influences came together until finally a decision was made to invest time and search for information about this device.

At the investigation stage my interviewees were confronted with technical information through advertising media such as commercials on TV and in the cinema, the internet, in newspapers and magazines, on buses and in shops. The ubiquity of such advertising presses upon people's consciousness. This was partly the reason for my interviewees' dilemma in not being able to answer the question about where they had obtained information about new technologies. Not least because of the saturation of our culture with advertisements, the uptake of technical information is a mundane activity that people are not normally aware of and cannot trace. Only two Dutch participants and one German participant could distinctly remember when and where they had come across digital cameras for the first time, since it happened in a specific context that they could recall. None of my British participants could point to a specific incident where they were confronted with a new technology or software. Interestingly, all of the Dutch respondents heard about the communication software *Skype* from friends or relatives, downloaded it from the internet and it worked. None had read about it or seen it mentioned in articles.

The most common sources of information about newly-released technology among my interviewees were friends, advertisements and on- or off-line newspapers. The younger participants in particular were introduced to new technologies by friends. The older generation was divided. Some mentioned friends as a source but more important were traditional off-line media such as newspapers and magazines. This was true for all countries. This split along age lines can be explained by the different social contexts in which the generations operate. Peer groups were more important for the younger generation than the older one in terms of seeking to keep up with them socially via technology, through texting or using *Skype*. Younger people were more concerned about fitting in technologically and in terms of knowledgeability. The older generation was not as concerned about their friends' opinions regarding their use of technical gadgets and orientated themselves more towards their own needs.

My participants did not approach the acquisition of technical knowledge about new devices in an obviously strategic manner. They did not display the well-structured learning process described by Knowles (1975; see Chapter 2). Knowles (1975: 18) outlines 'self-directed learning' as a process:

> (…) in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and

> material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes.

The order in which my participants went through their knowledge acquisition process was more casual than the description given by Knowles. All of the stages delineated above occurred, but as the respondents started with their knowledge acquisition at one point, the younger generation mostly asking friends, the older generation tending to read about new technology in newspapers and advertisements, they evaluated their learning outcomes by comparing their knowledge to that of others and decided to stop when they were able to understand what their friends were talking about in the case of the younger generation or had decided whether this object would be useful to have in the case of the older generation. Instead of implementing 'appropriate learning strategies', they only remembered how they gathered their knowledge for the purchase of a particular gadget when I specifically asked for it.

Among my participants, a significant number (about half) had not purchased their mobile phone but had been given one, often by a family member (parents to children, children to parents) but also by employers or friends. For example, Maureen (GB, 23) said:

> I've had a mobile phone for a long time. I think, maybe about 9 or 10 years now. Only, I got one originally because my parents gave it to me so I would have it for emergency calls, you know, personal safety, when I was a bit younger, when I was at school, and they'd say, 'Make sure you always keep it on you and make sure it's turned on in case something happens and you need to ring us.' But only recently, more recently is it a tool for, like, my social life. (Maureen, GB, 23)

It appeared that mobile phones were procured mainly because of social, professional or/and emergency needs. Where participants acquired their own mobile phone, they cited different reasons, divided along age lines. Younger participants tended to focus more on the social dimension of the mobile phone, whereas the older generation bought it for emergencies and professional use, such as Phoebe who found it useful for her job and got it relatively early:

> I used to teach PE and I needed, it was a good idea to have a mobile phone when I was outside and out and about, if I needed assistance, in that sense and I didn't have to be racing around. (Phoebe, GB, 53)

Annette (G, 64) got her first mobile phone as a Christmas present from her son who lived in Poland. He said it was much cheaper to text than to call all the time and she was

very proud when she was able to send him her first text message (which took her ages to do) while her son was on his way back to Poland. Sabine (G, 48) also got her first mobile phone as a gift many years previously, this time from a friend. Her friend wanted her to be more easily reachable, but these hopes were not fulfilled as Sabine did not switch on her phone, and that was still the case when I interviewed her.

The most commonly cited reason for procuring a mobile phone for the younger generation was peer pressure. Kathy described how she felt like an outsider without a mobile phone:

> Most of my friends had mobile phones, and I didn't have one for ages and ages, and I just wanted one, you know, to text my friends and stay in touch, so I said, 'Yeah, I'll get a mobile phone. It'll be useful.' (Kathy, GB, 23)

The responses were similar across countries and genders. This is confirmed by other scholars (Katz and Aakhus 2002, Ling 2004). Leopoldina Fortunati (2002) shows that people need good reasons for having a mobile phone and emergencies were the most commonly expressed reason in all three countries, not only by the older generation. British respondents sometimes gave work reasons whereas German interviewees gave social ones as the second reason for having a mobile phone. Overall, half were given their mobile phone, whereas the other half bought one for themselves, out of necessity for the older generation or peer pressure for the younger one.

5.7 The second stage of domestication: Appropriation

Appropriation of a technical gadget narrows the possible choices down to one particular device. This process can take a long time, during which the user-to-be gauges several possible devices, or it can be a decision made in minutes, sometimes seconds, about what to buy depending on the confidence and the perceived knowledgeability of the user.

All my participants were cost-conscious. Michael expressed how important it was to get a good deal: 'I want to get something for my money. I mean, I don't say: ok, I just buy anything, but I start to probe, I'm infamous for that. I really want to know it. When I am going to spend 200 Euros, then I won't go simply to the next retailer and buy whatever he wants to con me with. I will always go and find out if the gadget really is interesting

or not' (Michael, G, 50). The price was an issue for most of my participants, not only the students. But for them price was more significant, as Kathy emphasized:

> there's a Google product search and they compare the prices of certain items. I do that quite a lot when I'm looking for something in particular online, I'll put it in there and see which one brings up the cheapest prices. (Kathy, GB, 23)

Simone liked to be self-sufficient and said: 'I would look on the internet and then I would go in every mobile phone shop in my town'. I wondered why she would acquire information before she went into a shop and got information from the retailer. She argued: 'I would get knowledge as to what was available, and I would very much know what sort of thing I wanted before I went into the shop. (…). I'm not very open to persuasion. I like to know enough to be able to evaluate what the retailer's telling me' (Simone, GB, 67).

Henry, too, took time to check out objects online and look for all the available features before he went to the garage to look at actual cars, for example:

> Oh, I knew exactly what I was getting. So he didn't have to tell me anything. I told him, in fact. Not because it was a new car, so something he didn't know, but because I'd looked at all the details and studied them, 'cos I get the motoring magazine each week. (Henry, GB, 71)

Bakardjieva (2003) found that 'online product research is rational and consumer-led. It strives at achieving reasonably good understanding of the advantages and disadvantages of the product under consideration and striking a balance between detached analysis and first-hand impression. That is why Internet-based product research is often followed by a personal visit to a local store, especially in the case of products whose feel and appearance matter to consumers' (240). Arjan (NL, 27) confirmed that he wanted to feel the gadget when he purchased an iPod:

> I simply went to the nearest retail store that I knew would have a good selection. I knew that what I wanted would not be particularly unusual and therefore it would be available. Also I wouldn't buy something like this on the internet. I would want to, for a purchase of that magnitude I would want it in my hands.

Many of my participants made quite an effort to gather information before they even got to a shop and encountered a retailer. As it turned out, trust in salespeople was an issue that many of my interviewees raised.

Barton Weitz (1981) and Lisa Scheer and Louis Stern (1992) found that dominating salespeople and high-pressure selling tactics are counter-productive for a good relationship between customer and retailer. Lawrence Crosby et al.'s (1990) study of relationships between customers and salespeople suggests that a high level of expertise on the part of the salesperson correlates with a high level of trust in her/him from the customer. Patricia Doney and Joseph Cannon (1997) state that the most salient factor of a buyer's trust in a shop in general is the salesperson as s/he is the representative of the products, the service quality and the shop's attitude in general. Trust in a salesperson is dependent on the salesperson's expertise, likeability and similarity to the customer. Mary Susan Kennedy et al.'s (2001) study showed that service quality, manufacturer ethical concern and a general tendency to trust others were also qualities that were important factors in a customer-seller relationship. I could not find research on differences of trust in retailers across European countries but it seems that trust in salespeople is lower in Britain than in Germany, where customers' trust in retailers, especially if they are the owners of the shop or working in a family-owned shop, is extremely high. Vincent (GB, 23) was a good example of a buyer who was suspicious of advice from shop assistants; he emphasized that he would not trust a retailer:

> Ah, but I wouldn't trust a retailer (…) the fact is, when someone's wanting to sell you a product, they have a completely different perspective on what it's like, on what the product is like (…) Because they want to make the sale, they get commission, so that's why I'd use the internet, because you can get more of an independent, or what I perceive to be more of an independent viewpoint on it.

Retailers provide expertise and guidance in purchasing processes but also try to influence decisions. Their aim to mediate between producers and consumers is only partially successful. Interestingly the German interviewees had a different approach to retailers. As has been pointed out in Chapter 2 on cultural differences, chain stores are looked down on and Germans prefer to buy in independent shops, particular in shops that have been family-owned for generations. There are not many of these left, they survive mainly in rural towns. Katrin (G, 26) too, preferred to buy from small, family-owned shops rather than buying on the internet. She explained:

> People are important for me. So the newest strategy of mine is just trusting the retailer. I evaluate the shop and when I think 'They know the stuff', then I will go in and get advice. (…) sometimes I do look on the internet and see what is

> available, but I will use the retailer as complexity-reducer, because I don't want to spend three weeks to buy an MP3 player. (Katrin, G, 26)

Katrin analysed her situation in terms of time and effort, and her sense of a retailer's trustworthiness. For her this was partly an attempt to reduce complexity, given the range of choices now available. Some Dutch participants also relied on small retail shops. Corrie (NL, 53) started her search for information with an advertisement leaflet to decide which shop to go to and then went into a mobile phone shop. For washing machines and fridges she chose the brands she was interested in and looked on their websites but preferred to buy in a nearby shop because of guarantee issues that seemed simpler to deal with in her neighbourhood with real people rather than on the internet.

The criteria my interviewees used for the internet were not dissimilar to those they used for shops: trustworthy advice (because independent), reliable information and keen prices were core. They were also aware of bias on the internet. Vincent, for example, said:

> Definitely, they'll [companies] pay to be advertised in the search engines, stuff like this. Yeah. But I try and find what I would perceive to be a more independent viewpoint. And, (…) the internet you can have looked up 50 people's different opinions, even if they are biased, whereas in a shop you can get, like, one. Do you know what I mean? (Vincent, GB, 23)

And Michael (G, 50) looked up rankings from reputable magazines and newspapers to make sure that he got trustworthy information.

> I look at rankings from newspapers and magazines, but only briefly and then I will buy online. I want to get the best for my money. I don't trust retailers and they often can't give me more information than I get on the internet anyway. I always look whether it is cheaper to buy online but if a shop has a really good offer then I will save time and go into the shop, buy what I want and in five minutes it's done. (…) I am quite persistent to get the best value for price ratio if it is expensive.

My respondents were very aware of the time and effort needed for information gathering and comparing, and tried to keep it to a minimum (see also Olshavsky and Granbois 1979, Punj and Staelin 1983, Mowen 1988, Hauser et al. 1993). The NSF survey 2010 for the USA found that using the internet for news and information is more common amongst younger audiences and increases with education and income. Thus the use of television as an information channel increases with age as older people rely

more on off-line media. They also point out that the younger generations are not likely to shift to traditional media when they grow older. In this report it is argued that:

> Using information effectively involves more than finding it. In an information-saturated society, people often need to assess the quality of the information they encounter and determine its credibility.[65]

As people have become more sceptical about the information found on- or off-line, they compare information from different sources. Jan (NL, 62) first searched on the internet web page of the providers to look for specifications of phones or digital cameras. He would also ask colleagues, especially about computers. Jan also read reviews online to see what other people's experiences were. Online reviews were important to many of my interviewees, older and younger, female and male and from all countries. The potential independence of these reviews was what was so attractive about them. But although older and younger people might use the internet differently (Pew Research Centre 2006-2008), the one for information, the other for social purposes,[66] among my interviewees a healthy scepticism towards internet sources was also evident. Therefore they tended to rely on people. As Folkert (G, 26) said:

> In the end I would always consult a good friend of mine who is into technology. He would advise me and even accompanies me when I go into a shop and buy it. The only thing I would do is look what the price range for those devices is to get an idea. (Folkert, G, 26)

Christian (G, 25) also said: 'If I buy something more pricey there is the chance to buy a bad product and then I might lose like 500 €. In such a case I would always ask other people and look on the internet'. Christian was a good example of an uncertain buyer of technology who was not well-informed and found the complexity of the new technology, with all its different products and models, quite confusing. He reminded me of Maureen (GB, 23) and Vincent (GB, 23), who expressed similar feelings and would ask friends for clarification.

[65] http://www.nsf.gov/statistics/seind10/pdf/c07.pdf page 7-11, accessed 09.08.2010.

[66] According to the Pew Research Centre's Internet and American Life Project Survey (2006-2008), older people use the internet differently from the younger generations who engage more in messaging, social networking and blogging on the internet. In general older people use the internet more for information searches on various topics, buying products and online banking. http://www.thematuremarket.com/SeniorStrategic/Older_generations_use_the_internet-10674-5.html, accessed 15.08.2010.

One way to reduce complexity was to focus on particular brands. Craig said: 'I would, if I saw a particular brand that I wanted, or that I liked, I would maybe go on the actual, like, the website for that particular object' (Craig, GB, 29).

Approaching an object through a brand was very common. Companies expend much effort to achieve a reputation either for their company name or for particular company products (Jacoby and Chestnut 1978, Solomon et al. 2009). This is evident, for example, in the branding of *Apple Macintosh*, which has created a significant brand following. If individuals are convinced that a particular brand will satisfy their needs, because it is associated with previous good experiences, they will repeatedly buy this brand.

Research shows that an individual's search activity is greater when the purchase is important and/or the required information can be obtained easily (Punj and Staelin 1983, Hauser et al. 1993). In general younger, better educated women tend to conduct more information searches and may enjoy the fact-finding process (Moore and Lehman 1980, Cobb and Hoyer 1985). But the assumption that people with little knowledge about the desired product will search more than individuals who already have prior knowledge does not hold true. James Bettman and C. Whan Park (1980) showed that neither novices nor experts search much but consumers with moderate knowledge about a product search the longest. The reasons why novices and experts do not do much research are different. Novices might not know where to start whereas the expert engages in a selective search, which means their efforts are more focussed and therefore possibly more effective. Novices are also more likely to rely on the opinions of others, brand names and price, whereas the expert concentrates on the details and functions mentioned in the information (Urbany et al. 1989, Niva et al. 1996).

Four main strategies could be distinguished in acquiring the knowledge needed to make an informed decision about buying a technical gadget. First: looking online and then buying either online or in a shop. This strategy was used by Simone (GB, 67), Henry (GB, 71), Robert (GB, 63), Vincent (GB, 23), Michael (G, 50) and Jan (NL, 62). Many participants, particularly from Britain, fitted into this category. Although Michael (G, 50) also emphasized that he did not trust retailers, this notion was mainly expressed by British participants. This finding contrasts with the second strategy: trusting the retailer of specialised shops and buying from them. Sometimes people who followed this approach looked for a general overview of the devices online beforehand but only to find out what was available and the price range. This strategy was employed by Annette (G, 64), Sabine (G, 48), Katrin (G, 26) and Wolfgang (G, 64). As these are all German

participants, this may indicate something about the quality and attitudes of retailers in Germany compared to Britain or the Netherlands. It was not only the older generation who preferred specialised shops; younger interviewees, too, both female and male, expressed this preference.

The third strategy was relying on friends and relatives. This could involve asking about devices or even borrowing them to try them out. The 'warm expert' comes into play here. Claudia (G, 20) came from East Germany and relied only on her parents. Folkert (G, 26) would always ask a friend first, just like Neeltje (NL, 22), Matthys (NL, 57) and Iris (NL, 58), who only asked her son for advice. The fact that no British participant used the friends-first approach is striking. Several of my British interviewees expressed the wish to be self-sufficient or knowledgeable and made an effort to acquire information before going into a shop and talking to a salesperson. It seemed as though British people did not want to be seen as not knowledgeable, confirming the stereotype explained in Chapter 2, where studies have shown that Britain is a country similar to Japan, where people want to maintain face.

The final strategy was to go to big shops and buy a relatively cheap device, as Maureen (GB, 23) and Maaike (NL, 24) did. As they wanted a cheap product it was not worth spending time on research. The lower the cost, the less research was undertaken. Some people, like Phoebe (GB, 53), Kathy (GB, 23), Craig (GB, 29), Corrie (NL, 53), Arjan (NL, 27), Niklaas (NL, 23) and Christian (G, 25), used a mixed approach involving advertisements, online sources and friends in variable order. This was a case of triangulating information. The Dutch interviewees tended to use friends, relatives and colleagues, a lot of advertisements (only the Dutch mentioned leaflets) and online sources. The reason why Dutch people acquired information from advertisement leaflets might be associated with what Dahl (2000) found in his cross-cultural research about beer ads: Dutch advertisements use more factual information about the product than advertisement in other countries.

The level of technical expertise of my participants seemed to influence the choice of knowledge sources. People like Simone, Phoebe, Kathy, Maureen, Robert, Craig and Michael, as well as Corrie, Maaike, Jan and Arjan might be considered confident users of technical gadgets. This can be deduced from the broad range of different ICT devices they were using at the time of the interview. They were far more confident about relying on non-human sources and even buying online than the other group, who seemed unsure about their technical expertise and found that asking another person for help

was far more reassuring than using non-human resources. One person, Iris, was transiting from the non-knowledgeable group to the first group. Although she used her son as a knowledge source, she was developing more and more initiative in terms of looking for online information herself. She was in the process of becoming knowledgeable. This was also indicated by the wider range of gadgets she used. She was also someone who tried to persuade other people to engage with ICT and the internet.

Although technical information is mostly absorbed incidentally (Solomon et al. 2002), occasionally people make deliberate attempts to find out about a device. In most cases this happens when people have decided to buy a gadget. Four situations triggered such directed learning: when the old gadget broke, became outdated, had to be replaced by a newer model, or when the outside world convinced an individual that acquiring a new type of technical device would be beneficial. Most of my older participants would only buy a new device when the old one broke. Annette and Simone were clear about that and distanced themselves from people who only ever wanted newer gadgets. Simone explained: 'Last year, because I was having a problem with my other camera, so I needed a camera anyway. I buy from need, you see (laughs). I needed a new camera anyway so it seemed silly not to go for digital' (Simone, GB, 67).

5.8 The third stage of domestication: Incorporation

How people incorporated gadgets varied across my respondents, since some used technical gadgets only rarely and others were addicted to them. An artefact occupies a certain segment of daily activities measured in time and importance, and these are perceived differently by each user. Neeltje and Sabine, for example, had very different user patterns for their mobile phones. Neeltje said: 'So a mobile phone I'm always carrying. Well, I almost always carry it with me. So that is very important. That's my way of communicating with people, because I need to plan things, just to see people' (Neeltje, NL, 22). She saw herself as addicted to her mobile phone. In contrast, Sabine kept her mobile phone in her car for emergencies and only switched it on when she travelled. She said: 'I don't really need a mobile phone. And if this one would break I might not buy a new one' (Sabine, G, 48). The value that people attach to a device is clearly dependent on their perception of its usefulness. Sabine's most helpful gadget was her navigation system in her car as she had to visit business partners as part of her job and finding them easily and fast was important for her. For others, different gadgets had diverse levels of importance.

Whilst my interviewees used different strategies to find out how to use a device, the key difference between them was which method they used first. There were basically five methods that my participants employed to get to grips with their new gadgets:

1 reading the manual
2 trial and error
3 buying the same brand as they previously owned
4 transferring previous skills onto using the new device
5 getting other people to explain the device to them.

Only three people I interviewed read the manual from cover to cover before trying out their new device: they all belonged to the older age category. Other participants loathed even touching the manual. Trial and error was the other method mainly used by this age group: Henry (GB, 71), Iris (NL, 58) and Corrie (NL, 53). They strictly preferred a method of experimenting with the new gadget. This approach was applied by Simone (GB, 67), who said she was impatient, by Phoebe (GB, 53), Robert (GB, 63), Sabine (G, 48), Michael (G, 50), Jan (NL, 62), Matthys (NL, 57) and Maaike (NL, 24). This does not mean that the younger generation did not use trial and error. On the contrary, they used it without thinking and this is probably the reason why they did not mention it explicitly. This method of just pressing buttons and seeing what happens means that one uses the technical device as a teacher in the sense that the gadget responds to the performed action by either failing or doing as expected. So, when the pressed button did not lead to the expected outcome, the user would try the next button until they got the result they wanted. The gadget therefore becomes a teacher in itself and encourages the user through yes (I do what you want) and no (I do not do what you want) messages.

Madeleine Akrich (1992: 207-9) uses the concept of 'script' to indicate how designers inscribe specific ways of using gadgets which the potential and successful user has to follow. Appropriating the artefact in that sense means adapting to the norms set by the designers. This can involve even gendered scripts in technical devices, as Ellen van Oost (2003) has shown in relation to Philips electric shavers. She found that the design of shavers for women and men embodied assumptions about the targeted user. The shaver for women was curvy and pastel coloured, had only a few buttons with symbols for armpit and leg and was sold as a cosmetic tool. The version for men was black and silver coloured, with many controls and buttons and no suggestions for how to use them. In addition, the 'male' version was screwed together, so it could be opened, for example to repair it, whereas the female one was put together in a way that made it

impossible to open. These designs implied that women are supposed to shave their armpits and legs, are not interested in technology (they don't want to look inside) and like easy-to-use gadgets with only a few buttons which they will throw away when they do no longer work.

Most of my interviewees were comfortable with experimenting with their gadgets as the artefacts themselves provided tacit knowledge insofar as one could play around with them and in so doing get to know how they worked. Participants who were more experienced were also more comfortable with experimenting. This applied not only to the younger generation but also to some members of the older one. Michael, Simone, Phoebe, Corrie and Jan said about themselves that they were impatient and could not be bothered to read the manual and therefore relied on trial and error. Whilst the younger generation presented themselves more uniformly in terms of technical expertise, the older generation was split between cautious, inexperienced users and experts who shared the technical expertise of the younger generation but often had different reasons for why and how they used particular gadgets. When I asked Simone whether she would get her basic information from a manual she answered:

> Yes. (…) it's like a need-to-know basis. But I'm like, if I find my own way around it, it's more easily committed to my memory, than if I read it and it says, 'Press this, do this.' I then don't remember it easily as if I've found my own way around it. (Simone, GB, 67)

Simone makes an important point here, which is that the ability to recall learnt tasks and the aptitude to remember how to do certain things depends in some respects on whether somebody else has shown it to the participant or whether she has discovered it for herself. There is evidence that people remember better and for longer when they discover how something works for themselves (Von Glasersfeld 1989). This study further emphasises that sustaining motivation to learn and acquire new knowledge is strongly dependent on the learner's confidence in her potential to learn. This confidence is derived from experience in solving problems, which gives the learner a feeling of competence. It is a much more powerful motivation than external acknowledgement (Prawat and Floden 1994). There is a significant literature on learning styles (Dunn and Dunn 1978, Kolb 1984, Sprenger 2003, Pashler et al. 2009). I found the *Index of Learning Styles* particularly suggestive as it expresses learning preferences in four dimensions (active/reflective, sensing/intuitive, visual/verbal and sequential/global). Developed by

Richard M. Felder and Barbara A. Soloman,[67] the four learning styles in short are: Active learners tend to understand and retain knowledge best by doing something active while learning. Reflective learners prefer to think about it first. Sensing learners tend to like learning facts and are good at memorising practices that they can repeat. They want to see a practical reason for learning something, while intuitive learners often prefer discovering possibilities and relationships and want to find new ways of doing things. Visual learners relate to what they see – pictures, diagrams, flow charts, time lines, films and demonstrations, whereas verbal learners need words – written and spoken explanations. Sequential learners tend to gain understanding in linear steps, with each step following logically from the previous one, whereas global learners tend to learn in large jumps, absorbing material almost randomly without seeing connections, and then suddenly getting it since they have to see the big picture before the details.

When applying these learning types to my analysis, I could clearly distinguish the participants who were active learners and preferred the hands-on method of trial and error and the reflective learners, such as Henry and Iris, who liked to read the manual first and understand what would happen if they started to press buttons. It might be possible to understand the respondents who liked to stay with the same brands or even with the same model of device as sensing learners, who prefer repetitions and sameness, whereas Phoebe and Simone tried new gadgets and had fun in trying them out and making them work. Phoebe, like Simone, was a great fan of experimenting with new gadgets. She said about the rest of her family: 'They're not prepared to, kind of, press something and see what happens'. When I asked her if that was what she did, she answered: 'Yes'.

Annette and Christian were clearly verbal learners, who needed another human being to explain the functions of a gadget to them whereas Michael, Sabine and Jan read a lot about new technologies and might be considered visual learners. Folkert explained that he had learnt most of his technical competence from a friend who was into computers and bought his first computer for him. Therefore he was also a verbal learner like Annette and Christian. He transferred knowledge from other gadgets he had used to new ones and explained: 'An MP3 player looks like those memory sticks, I think. And yes, it works exactly the same, you stick it in the computer, use drag and drop and that worked fine' (Folkert, G, 26). He seemed to be at ease with new gadgets as he had successfully tried new functions on devices before and got them to work. Most people

[67] http://www4.ncsu.edu/unity/lockers/users/f/felder/public/ILSdir/styles.htm, accessed 19.08.2010.

do not have only one learning style. Folkert combined verbal learning strategies with intuitive and sensory learning styles.

Some interviewees always stuck to the same brand. This was the main approach of the younger generation across the countries. Kathy (GB, 23), Maureen (GB, 23) and Niklaas (NL, 23) used brand as their first criterion and then started to use their transferable knowledge to try things out. But Phoebe, one of my older participants, also liked sticking to the same brand: 'Nokias do tend to be the same. I have had other ones, but the last one was a Nokia so it's, it's just the same to use it really' (Phoebe, GB, 53). Brands introduce a certain menu structure on their devices that they then transfer to their other models. Therefore, if someone is familiar with the menu structure of a *Nokia* or *Sony Ericsson*, it is easy to use another device from the same brand since the menu structure stays the same.[68]

Vincent (GB, 23), Katrin (G, 26), Claudia (G, 20) and Folkert (G, 26) used the transferable skills method, applying knowledge from another gadget to the new one. As Katrin said:

> Well, with the important functions, you are led through them and the menu structures are similar to each other. I think, if you know the basic functions of a gadget, then you will find your way to the other functions as well. And I will resort to the manual and look at what the gadget can do (…) but I only ask if I get really stuck and can't figure it out by myself. (Katrin, G, 26)

Three interviewees relied primarily on other people to explain devices to them: Annette (G, 64), Wolfgang (G, 64) and Christian (G, 25). They were not confident enough to either read the manual or try things out on their own. Viswanath Venkatesh and Fred Davis (1996) found that perceived ease of use (a variable from TAM (Technology Acceptance Model)) is typically an issue when engaging with new technologies. Magid Igbaria and Amit Chakrabarti (1990) and Nikos Bozionelos (1996) found that women display higher levels of computer anxiety (see also Morrow et al. 1986) compared to men. Roy Bohlin and Nancy Hunt (1995) have shown an inverse relationship between computer anxiety and computer self-efficacy, a known determinant of perceived ease of use. Thus, given the intertwining of anxiety and self-efficacy, higher levels of computer

[68] A good example of how knowledge about how to use a technical device can be transferred across different types of devices is this: The ICT industry has agreed to standardise the display of certain functions, such as the buttons on tape recorders or video recorders. There is a standardised button with a triangular symbol for the function 'play', a rectangular symbol for the function 'stop' and buttons with double triangular symbols for fast forward and backward. These symbols are also found on other devices, such as mobile phones, MP3 players and within computer software.

anxiety among women can be expected to lead to a lowering of self-efficacy, which in turn may lead to a lowering of ease of use perceptions. The expectation here is that women show more resistance to engaging with new technology.

This was not the case in my research. Wolfgang and Henry, older men, were the two participants who did not engage with mobile phones or computers very much. And Christian (G, 25), too, a German student, was not a confident user of new technology. He described his experiences: 'I did not manage to check how it works, I tried, I read the thing, but something is missing, so I don't know how to put music on the phone. (...) I have a pal, who wanted to show me how it works, he thought he could find it out for me, but then we did not find the time.' Later he added:

> That is for example something technical, where I failed, 'cos I don't know what this CD is for and what my computer did wrong so it did not record and I could not find the right section in the manual to tell me how it should be done. I know the function is there and it has Bluetooth and everything, but I don't know how that works. (Christian, G, 25)

In summary, he appeared to be unsure about technology and apologized that he was not more confident. Wolfgang felt it was wasting his time to find out how technology works. He complained:

> I don't want to read the manual or cannot understand the manual. I don't want to sit there alone with the manual and figure it out by myself. No, I want the functions, about five or ten functions, I would like somebody to explain it to me and show me how it works, I don't want to read. And that makes me angry, because I can't use my video recorder to record interesting programmes and just last night there was a talk on and I didn't know how to record it. I would have liked to know how to do it. But I don't want to spend time on it, it takes precious time. All this technology takes my time that I would otherwise spend in the garden, in the house, for fitness and it eats into my time. (Wolfgang, G, 64)

It is interesting to note how he described the dead-end situation of not wanting to spend time to acquire the necessary knowledge to know how to use the video recorder but at the same time missed the gadget's benefits because he would have liked to use the video to record his favourite programme.

Quite a few interviewees, no matter what strategy they used to understand their gadget, explicitly acknowledged that they could not and did not use all the functions. Matthys (NL, 57) admitted that, because he did not read the manual, he missed out on

functionality but had decided he did not need them as basic functions would do for him. Annette, Sabine, Wolfgang, Christian, Iris and Jan mentioned this subject too. It seemed that the older generation were quicker to confess their lack of knowledge and were happy to go without some functions. It was more difficult for the younger generation to deliberately abandon certain functions, since their needs were sometimes predefined by their peers and they had to orientate their use of functions and gadgets towards the conventions of their community.

Dryburgh (2002) found that most people prefer to learn by the trial-and-error method. Using the General Social Survey (GSS) of Canada to examine how men and women aged 15 and over learnt their computer skills and which methods they found most effective and important, she reports that 96% of all users applied the trial-and-error method whereas 78% had received informal help from a friend or family member. Sherry Turkle (1988) and Dryburgh (2000) argue that, in our society, men are generally more likely to use self-learning methods whereas women prefer informal help from a human source. This was contradicted by my results. As pointed out above, participants from both genders, both age groups and all nationalities used the experimental approach. Nelly Oudshoorn et al. (2004) add an important point about the trial-and-error method: 'A learning style of trial and error requires that one has to feel at ease with computers, and self-confident enough to try things' (Oudshoorn et al. 2004: 42). In my research, this was exactly the case. Instead of looking for differences between the generations, the sexes or cultures to find explanations for certain results, I would argue that a better line of distinction is the division between experienced users of technology and inexperienced ones. Dividing my sample along this line explains why the participants who preferred experimenting with devices were comfortable with this approach. They were experienced, whereas those who preferred to read the manual first were the inexperienced respondents.

5.9 Conclusion

In this chapter I have covered issues of knowledge acquisition based on my interviews. I have presented the most frequently used technical knowledge sources. The following knowledge sources were considered helpful by my interviewees: the internet (often the website of brands my interviewees wanted to buy and the ones with reviews), newspapers, magazines, advertisement leaflets (especially in the Netherlands) and TV shows, but most importantly, another human being. I introduced the notion of the

knowledge network that each individual develops, which has to be maintained and kept up to date. The extended domestication theory provided the framework for analysing my interviews in terms of the stages of the domestication process in which a technical gadget shifts from an extrinsic other into a familiar friend, sometimes valued and missed when not available. By investigating the courses of action that my interviewees reported during each stage, I analysed the different strategies they developed. This did not prove successful for the first stage because in the investigation stage there was no prevailing strategy. In other words: in the investigation phase, people would rely more on information they came across accidentally instead of having developed strategies and knowledge networks they could rely on. In the second stage, appropriation, I identified four different strategies that my interviewees applied in order to make an informed purchase. All of them wanted to get value for money. So they all informed themselves before they bought a device, except when it was a cheap appliance such as a toaster. Information was nearly always sought from at least two different sources and then compared for validity. The four strategies were: looking online for information, trusting the retailer in a specialist shop (this mainly applied to the German interviewees), relying on friends and relatives, and just going and buying.

In the third stage, incorporation, participants mainly followed five strategies, within which some were at either end of a scale. Firstly, only three respondents read the manual from cover to cover. Secondly, most participants loathed the manual and applied the trial-and-error method until they found the functions they wanted to use. Some participants simply accepted that they could not use some potentially useful functions since they had never explored them and assumed they would need to read the manual to find out how they worked. As they avoided the manual, they lived without those functions.

Sticking to the same brand of device was another strategy that was applied mostly by the younger participants. The younger generation also successfully applied the strategy of transferring the knowledge they had gathered in relation to one gadget to another. And the last strategy was used by three participants: they needed another human being to explain the functions of a gadget to them. This strategy was used by very inexperienced users who were not confident enough to just go and try things out. My categories proved useful in identifying different traits (such as older men were less savvy than older women). However, in addition, a category that emerged from my data was technical proficiency, which showed how confident people were with trying out new devices. When I distinguished between proficient and experienced technology users and

inexperienced ones, some findings became explainable and predictable. By categorising each of my interviewees on a scale of technical expertise, I could distinguish between groups of very proficient users and very cautious and inexperienced ones. This dividing line did not run along gender, age or national lines, although of the six older men three (Wolfgang, Henry and Matthys) were not interested in modern technical gadgets and two did not use them. Differentiation by proficiency is also used by the European Commission. In their publication 'Report No. 6: Digital Literacy and ICT Skills' from April 2007[69], the European Commission uses this distinction to show that informal assistance was sought mainly by people with a medium level of IT proficiency (22.3%), whereas people with high skills asked less (19.1%). Only 12% of people with a low level of IT skills asked for assistance. The learning-by-doing percentages were similar for medium and high proficiency (23.8% and 23.3%) and low for people with a low level of skills (9.9%). These findings correlate with mine, as more confident users used the trial-and-error method whilst people with little knowledge did not feel comfortable in doing so.

My results from the background questionnaire showed that participation rates on formal training courses, either on one's own initiative or on demand from an employer, were higher for women than for men. The EU Report No. 6 shows that the percentages for self-study with books, CDs or learning by doing were slightly higher for men whereas informal learning and assistance from friends, colleagues and relatives were an equally highly sought means for both men and women. Broken down by countries, Germany reached the highest percentages in informal assistance (84.3) and learning by doing (73.6) and was lowest on self-study with books and CDs (4.7) and formal courses of one's own volition (19.5). The Dutch acquired computer and internet skills mostly through learning by doing (77.8) and informal assistance (66.2) and rates were also lowest for self-study with books and CDs (2.2) and courses done of one's own volition (11.6). British people mostly use other sources than the ones listed above (77.9) and learning by doing (49.3) and assistance from other people (45.3) were much less common than in the other two countries. Study with books and CDs was also unpopular (1.7), as was going to formal courses on one's own initiative (14.8). This correlates with my findings as my British participants were more reluctant than people from the other two countries to ask for help or assistance, especially British men.

Acquiring knowledge in order to be able to make friends with a technical device is the precondition for establishing a relationship with an object, which can develop from a

[69] http://ec.europa.eu/information_society/eeurope/i2010/docs/benchmarking/wp6_digital_literacy_and_ict_skills.pdf, accessed 20.08.2010.

purely functional one to an addiction where people feel incomplete without their technical friend. As themes around these topics emerged in all my interviews, I shall explore them in the next chapter, beginning with the fourth and last part of the domestication process: conversion.

6 Identity and technology

Domesticating a technical device includes getting to know about it, adopting it and learning how to use it. In addition, scholars argue (e.g. Silverstone et al. 1992, Oudshoorn et al. 2004), it is important to look at how the adopted technology is used in everyday life, how people relate to a particular technical device, what meaning is given to it and how it affects people's lives. Issues related to this were raised in all my interviews although I did not ask specifically about them. Clearly they are so closely related to technical artefacts that my respondents could not but mention these subjects. These impacts of everyday technology are addressed in this chapter on identity and technology. I shall first focus on the last stage of the domestication process, 'conversion', which also includes the second stage of Silverstone's domestication theory, 'objectification'. Objectification and conversion touch upon the issue of identity, which I shall then address.

Technical artefacts are not only used for their functional properties but also represent our likes and dislikes, expressed in terms of which gadgets an individual uses, how they are used and which models and designs she prefers. To investigate this, I shall introduce the adopter categories developed by Everett Rogers (2003), followed by a closer look at particular participants who, in their behaviour towards technology, may be regarded as typical examples of these adopter types. My participants' stances towards technology and how they relate to it comes even more clearly into focus when I analyse their self-images in terms of technical expertise. At the end of the chapter I examine my respondents' reported emotional reactions towards technology and the emotional relationships they said they had developed towards particular gadgets that they treated as 'friends'.

6.1 The fourth stage of domestication: Conversion

Silverstone et al. (1992) describe the last stage of domesticating a technical device, conversion, as one that 'defines the relationship between the household and the outside world – the boundary across which artefacts and meanings, texts and technologies, pass as the household defines and claims for itself and its members a status in neighbourhood, work and peer groups in the "wider society"' (25). Showing gadgets to

friends or using a gadget outside the home is considered a feature of this last stage in the domestication of a technical device. This stage also includes stage 2 of the original Domestication Theory by Silverstone et al., 'objectification', which covers the meaning and place given to a technical device and how it is displayed in the home. The latter is no longer as relevant as it was back in 1992, when Silverstone et al. developed domestication theory. In 1992, Silverstone et al. mainly researched computers, which at the time were big and needed much space, so the issue of whether a computer was tucked away in a back room and regarded as a working tool or was proudly displayed in the middle of the living room said something about the meaning it was given by its users. It raised questions of presence and visibility, which in 2011, with the development of significantly smaller sizes for technical devices, is a different matter. Some appliances have moved from a fixed space in the house (like the wired telephone at home) to places on our bodies where they have become part of our everyday lives (e.g. mobile phones), wherever we are in the world. Authors already talk about wearable phones (Reading 2008), clothing contains intelligent fabric and technology becomes more and more an extension of ourselves and hence part of our self-expression. As many technical devices are no longer fixed to the house and move with us, it has become more difficult to draw a boundary between when technology is used and when not. Thus the conversion and objectification stages have no longer any distinct end or border for certain ICT devices as they develop into an integration stage where technology is just another accessory in people's everyday lives. But in contrast to an everyday accessory like a handbag, which is a silent companion, a gadget is interactive and requires attention and engagement.

Bakardjieva (2003) argues that the passionate engagement of people with their ICT devices requires new self-controlling practices 'where individual households coin their own sets of rules and roles around the new medium' (243). Silverstone et al. (1992) called this the 'moral economy of the household' and describe how a new communication device disturbs the established norms of everyday life and how adults need to find guidelines and norms for themselves and for their children for living with new devices and integrating them into their everyday life in their own home. Silverstone et al. point out that:

> This aspect of the expression of the moral economy of the household is particularly significant for teenagers who will use their consumption of recorded music, or their collection of computer games, literally as a ticket into peer-group

> culture (…) The boundary of the moral economy of the household is extended and blended into the public economy through these exchanges. (1992: 26)

Each individual has to find new rules about how to fit new gadgets into their lives. And, as described before, it is not only one gadget such as the computer that has to be integrated into our daily lives, but many small devices, some of them so mundane that we not longer notice them. Mark Weiser (1991) became famous when he coined the term 'ubiquitous computing', pointing to all the unnoticed technology that surrounds us. He argues: 'The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it' (Weiser 1991, n.p.). As everyday life becomes permeated by small technical devices that are integrated into a person's life, these gadgets function as a self-extension to express the owner's identity. Companies therefore produce a wide range of models and designs of the same gadget so that a person can choose which one would fit her identity best and how she wants to be perceived by other people.

6.2 Technology and its impact on identity

For identity as a social phenomenon I shall use the concepts of Erving Goffman (1959), Zygmunt Bauman (2001) and Judith Butler (1990). Goffman's (1959) notion of identity is that it is an individually constructed entity, expressed in and through the interactions of individuals. In early modernity, ready-made identities were the norm and individuals had little choice about who to be. People were born into particular social classes and value systems and the status of individuals was seen as god-given. Identities seemed pre-defined and limited and there was little room to change one's identity into another or to create a new one. These identities did not change much during a lifetime.

In modern times, identities are understood as socially constructed entities that begin to form with socialisation during childhood and are maintained in a lifelong continuing process and project that has to be 'routinely created and sustained, explored and constructed as part of the reflexive process of connecting personal and social change' (Campbell 1993: 43). But to perform an identity is not sufficient because, as Jenkins et al. argue, 'that identity must be validated (or not) by those with whom we have dealings' (1996: 21). However, the identity that we choose to present in a given situation might not be perceived or interpreted by others in the way in which we want them to. Goffman (1959) describes the interaction between how we define ourselves and the

way in which others label us. For this thesis, this is an important point because, for example, a woman's social identity may be performed in a particular situation as a technically proficient individual but might be perceived differently by outsiders. In Chapter 5, one of the findings was that when women and men do the same thing it is perceived differently. When men learn how to use new gadgets they are seen as interested, when women learn how to use devices they are seen as incompetent since they need time to learn. Jo Beall (1997) also focuses her attention on this subject: 'social identity which is often, if not always based on gender, race or some other expression of difference is not only about how individuals or groups identify and present themselves, but also about how others perceive and categorize those individuals or groups' (Beall 1997: 19).

Identity is a fluid expression of ourselves, a social construction performed by each one of us. It relates to a constitutional outside, upon which it is dependent and which at the same time has to be excluded: for example, masculine and feminine; to constitute a feminine identity a demarcation against the masculine is necessary. This process of identity construction is not limited to a certain period or time in life but is an ongoing practice. Bauman (2001) calls this striving for an adequate identity construct: the modern 'identity quest'. In his books, he stresses the issue of 'liquid modernity' and 'liquid love' whereby all achievements of value, friendship and status are frail and have to be constantly re-evaluated to make sure that the desired outcome of a particular status can still be achieved. He argues:

> The quandary tormenting men and women at the turn of the century is not so much how to obtain the identities of their choice and how to have them recognized by people around - but *which* identity to choose and how to keep alert and vigilant so that *another* choice can be made in case the previously chosen identity is withdrawn from the market or stripped of its seductive powers. (Bauman 2001: 147, emphasis in original)

This sounds as though we are free to choose from an unlimited set of identities. But this is not the case. Self-expression is limited to what each individual perceives as being compatible with achieving a desired goal and what is possible within a certain cultural frame. Goffman (1959), in his interactionist approach, even suggests that identities are not singularly built to achieve a place in society but are constructed anew in each single circumstance depending on the situation we are in and who else is part of it, either living entity or technology. 'Role theory says that individual behaviour is shaped by social

expectations, constraints, rewards, and punishment imposed by others. The performing individuals therefore understand and regulate their performance in terms of the others' (Fontana 1980: 64). Self-evaluation is therefore a factor in how people choose to behave, since part of the self 'is the result of the internalisation of the attitudes put forth by the reference groups in which a person takes part' (Van den Berg 2009: 179).[70] Expectations are both intrinsic and extrinsic. What is seen as appropriate behaviour for ourselves is therefore influenced by the worldview of our parents, teachers and peer group and their views about gender stereotypes as well as our own perceptions about which behaviour would be appropriate in a given situation.

6.3 Gender identities and the design of technology

Butler's notion of the construction of gendered identities is based on performative activities. Michelle M. Lazar (2005) points out that Butler also acknowledges 'the coerciveness of "rigid regulatory frames" that police gender performances in a way which makes the accomplishment of identities neither freely chosen nor entirely determined acts' (Lazar 2005: 13).

These restrictions limit the scope of possibilities for both men and women. As we shall see in this chapter, some women had difficulties in finding a balance between being a woman and feminine and at the same time technically proficient. Since being technically proficient is at least to a certain extent a requirement of modern times, integrating technical expertise into the performance of femininity is not easy as we shall see further on in this chapter.

Judith Baxter points out that there is not only one but many gender identities when she argues: 'With the decentring of the notion of essential identities has come the study of the multiplicity of gender identities and the realisation that there are different femininities and masculinities which are often culturally and historically specific' (2003: 182). Which kind of female identity a woman chooses to perform is also dependent on the cultural values of the community in which she lives. Paula Black and Ursula Sharma (2001) argue:

> Women's knowledge of femininity and their own position in it is a collective achievement which is constructed not only through sources such as the media and the advertising industry, but also experienced through the milieu of friends,

[70] See also Paul Gooderham (1987) about reference groups.

> family, employment, partners and so on. Skeggs (1997) argues that women make differing levels of investment in femininity. (n.p.)

As certain kinds of heteronormative femininity are not highly compatible with technical expertise, due to the available gender roles in contemporary western culture, some of my young female respondents, who chose to invest more time and effort in performing femininity, dropped technical proficiency from their performance in order to appear more feminine and to comply with feminine role expectations, as will be exemplified by what my respondents said later in this chapter. Wajcman (2004: 15) declares that computer 'culture is incompatible with femininity. Therefore, to enter this world, to learn its language, women have first to forsake their femininity'. So in order to comply with the stereotypes, a woman has to either appear incompetent with technology or jeopardise her femininity.

Gender is not only assigned to human beings but also to artefacts. Maria Lohan (1997) argues that technical objects are genderised as soon as we start to use them: 'Technologies gain gender identities when they enter into our everyday structural relations and our cultural meaning systems' (n.p.). As mentioned in Chapter 2, Ann Gray (1992) investigated the gendering of domestic and entertainment appliances at home, where gender is assigned through use. When women use an appliance a lot, such as a washing machine, it is classified 'female', when men use it more, such as power drills or entertainment devices, it is classified 'male'.

The user type and self-image that an individual holds of herself determines how she relates to technology and which technical items she uses in order to show who she is. Neeltje (NL, 20) described how this worked in her peer group:

> I think everyone does it to a certain extent - you use products to make up an identity. So the way you clothe yourself, the way you dress, and the way you put on makeup or jewellery and this thing with the products you use. So you use a mobile phone or you don't. Whether you have a laptop or a notebook or whether you just have a computer. I think all those products you use, I think everything makes up for a part of who you are. In this society it's very important what you carry and what you express. So, I think it's a way for people to show, like, 'I really like the newest technology', or you're resenting, you're against it, like 'I don't like new technology', just the simplest mobile phone is all right. (Neeltje, NL, 22)

Neeltje nicely summarises how technology and other consumer goods, clothes and accessories are used as identity markers. Russell Belk (2008) states that these identity markers or marker goods can act as a form of group or peer identity. He points out:

> We may also adopt or create a template of interrelated consumption choices that exemplify a lifestyle. Such product constellations (Solomon and Assael 1987) can also define group identity in a neo-tribal manner (Maffesoli 1996). The role of consumption in contributing to group identity is best seen in 'marker goods' (Douglas and Isherwood 1979) that act as symbolic badges of inclusion and exclusion. In the US, gang members normally signal their affiliation through their clothing, colors, styles, and other fashion choices. (182)

Product designers often assign different colours and designs to women and men. Some of my male students were convinced that design would count for more than functionality with women, whereas they were convinced that they themselves went only for functionality and design was less important. When I asked Craig whether he would ask his female friends for information about technical gadgets and whether he had any such female friends, he answered:

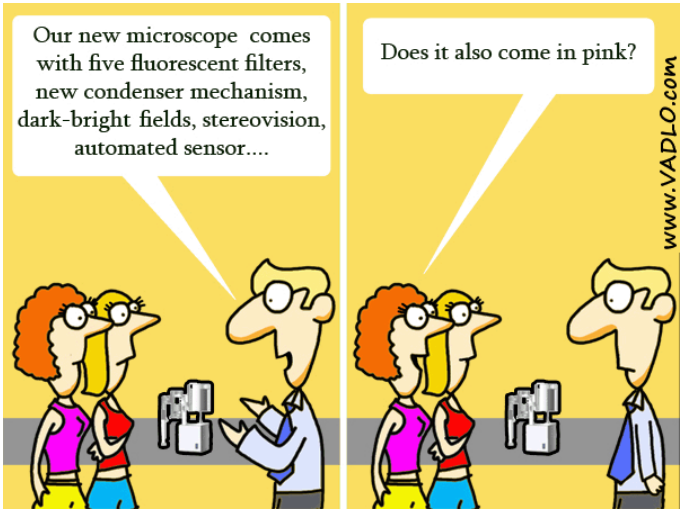
> I think most of, like, the female friends they don't go for them, they do get new cell phones more often than my guy friends, but they don't do it for the technology, they get it for the looks. You know, they go for the phones that are pink or very glittery and they look a lot, they're more appealing to, to what the girls want them to look like, not for what they do. So I think that if you came out with a phone, very basic, just a cell phone and nothing else on it, and it was, like, you know, bright pink, or had sparkles all over, the girls would want, you know, they'd go towards buying that phone than something that can, you know, search the internet or have GPS or those sort of things. (Craig, GB, 29)

Craig was able to make such assertions not only because of his perception of gender roles but also because, in seeking to appeal to women and men differently, technology producers deliberately gender their products in culturally specific ways. This was also articulated in Hughie Mackay and Gareth Gillespie's (1992) discussion of Forty's work which showed that shavers designed for women were pink, round and decorated with a floral motif whereas the shavers for men were black, angular and robust looking.[71]

The cartoon shown in Illustration 6.1 plays with the myth that women prefer technical devices in 'feminine' colours.

[71] See also Ellen van Oost (2003) on designs and functions of shavers for women and men.

Illustration 6.1: Feminising technical objects.



Source: http://vadlo.com/cartoons.php?id=37, accessed 31.07.2011.

However, Simone's emphasis on functionality proved to be in stark contrast to certain male perceptions about the reasons why women choose particular technical gadgets. She said about purchasing a mobile phone:

> It doesn't matter which make. As long as it's basically what I want. I mean, what's important for me is, as well, something that's easy to use? I am interested more in the functions, not the design. (Simone, GB, 67)

Craig's description of his own choice of his mobile phone contrasted in an interesting way with what he maintained about women, men and choice of technology. Earlier in the interview, he had said that he chose his own phone partly for design reasons. 'My friend owns a business and he used it more for, you know, organising his meetings, so I, I saw it and I said I liked the look of the phone' (Craig, GB, 29). Of course the phrase 'liking the look of something' does not necessarily relate to appearance only, but as an expression it points to that dimension of a gadget. In this particular instance, Craig's ways of talking about his own and women's choices of mobile phones suggested that when women and men supposedly do the same thing it is not perceived in the same way.

But women had prejudices about men too: in particular, two older women (Phoebe and Sabine) in my sample had their own opinions about men's behaviour in relation to technical items. Phoebe, as one of the early adopters, had a particular view about an innovator friend of hers, whom she perceived as wanting and purchasing gadgets that he did not really need:

> He's always talking about upgrading and getting the latest thing, and I'm like: 'You don't need it Malcolm. What you're doing here is fine. It does enough of what you want it to do, you know, it's reliable. You don't necessarily want to upgrade to something that's so new it's probably going to be quite buggy. And going to cause problems.' He wants to have the new things. (Phoebe, GB, 53)

When I asked her whether he needed it, she answered:

> Well, usually it's an excuse to needing it (Both laugh). You know what men are like. (Phoebe, GB, 53)

Prejudices were expressed by both sexes about the other. This showed that gender constructs influence the perceived patterns of consumption and their interpretation in ways that reveal deeply ingrained prejudices about gender roles. According to Du Gay et al. (1997: 96), '[individuals' and groups'] consumption of commodities is highly differentiated'. Thus our decisions regarding consumption are influenced by a number of factors, including advertisements and the media. All this plays a part when a person performs her identity by using technical appliances. Bourdieu (1984) describes this phenomenon of the preferences of a person that define her likes and dislikes with the term 'habitus' and relegates them to a matter of supply and demand:

> in the cultural market – and no doubt elsewhere – the matching of supply and demand is neither the simple effect of production imposing itself on consumption nor the effect of a conscious endeavour to serve the consumers' needs, but the result of the objective orchestration of two relatively independent logics, that of the fields of production and that of the field of consumption. (Bourdieu 1984: 230)

To act as extensions of identity, technical devices might be changed in their appearance to comply with individual taste or gender roles. Particular models and designs are chosen because they go well with a person's self-perception. Ilkka Tuomi (2005) argues:

> We do not only speak into a mobile phone to communicate, but we also change its cover and ring tone to communicate at a different level, and to be able to talk about it. Objects become defined as elements in social interaction, which itself is structured by culturally and historically accumulated stock of meaning. (24)

My respondents used their technical devices more or less consciously as identity markers. This was especially obvious in Craig's emphasis on the sleek design of his new mobile phone and how much he liked the colour black. Many of the participants liked

the design of their devices, especially the British ones. The Dutch participants were suspicious when it came to shiny new gadgets. Maaike made it clear how important it was for her to have the 'right' device, in order precisely *not* to be modern and cutting-edge, because in her social environment other values prevailed. When I asked her about whether the design of her mobile phone was important to her, she said:

> No. I am not remotely interested. I would even say, I am conservative. So I do look at design and I want it to look as old fashioned as possible. I think that is because I connect fashionable mobile phones with materialism and capitalism, I don't know. It's one of those things that I also connect with status, social status and I, it's one of the things where I don't want to be a part of. (Maaike, NL, 24)

Although she immediately answered 'no', she contradicted herself to emphasise that she did consider design important. Not in the conventional way, in which design means 'new' and 'shiny', but in that she made sure the design was old and battered. She made it very clear that she did not want to be seen as 'capitalist' and consumption-orientated. She was therefore a good example of using her mobile phone as an identity marker in order to make a statement about her political stance. As she felt forced to use technical gadgets and had no choice, she expressed her views by using old technology with only the basic functions. She made quite an effort not to be seen as an early adopter. She admitted that she was quite attached to her old mobile phone:

> By not buying a new one because it is really old and it fell down a couple of times and it has this tear here. But that's what I like about my phone. I am conservative about my phone. (Maaike, NL, 24)

As Neeltje (NL, 22) said, if people are against technology then the simplest mobile phone with just the basic functions is sufficient for them. Such people use modern technology but distance themselves from it by using old models with only basic functions. I term them 'reluctant users'. This reluctant use of new technology was strong amongst the Dutch interviewees. Most of them had old and basic mobile phones. The Dutch participants seemed to be hesitant about showing off and preferred to use technology in an unostentatious way. The literature confirms this observation by pointing out the Dutch heritage of a Calvinist history with its 'inherent, "low-profile" attitudes' (Vossestein 2008: 49), which forbids showing wealth and enjoying amusements, while emphasising the Calvinist virtues of thrift and sobriety.

6.4 Types of artefact identities

The technological devices that we carry with us, use often and give meaning to become identity markers. I have coined the phrase 'artefact identity' to refer to this aspect of ourselves. This 'artefact identity' includes two aspects: the visible aspect, i.e. the devices I use, their design, age and model, and the invisible one, i.e. my technical proficiency, which decides how confident I feel with technology in general and in terms of the gadgets I use. This artefact identity is different for each individual. As I will now show, people develop different adopter types for every single technical device and this attitude forms a part of their artefact identity. Connected to the adopter type is a certain perceived level of technical expertise which 'feels right' for an individual and is governed by her self-image. It might be that as a woman I feel better if I pretend not to know much about technology. People can feel competent and confident or hesitant and intimidated by technology. They can surround themselves with lots of technical devices or just a few. All these aspects are part of one's artefact identity.

The different qualities of relationships between technology and users express their artefact identity, which influences how and when an individual adopts a particular new technology. As shown in the previous chapter, some of my participants loved to have cutting-edge technology. They were proud of it and did not mind paying more money for it, even knowing that this technology or model would cost less just six months later. Others waited much longer before they bought a new device. Everett Rogers (2003 [1962]) developed an 'individual innovativeness theory' that suggests a classification scheme of five adopter categories characterising the reaction patterns of individuals when confronted with innovations.

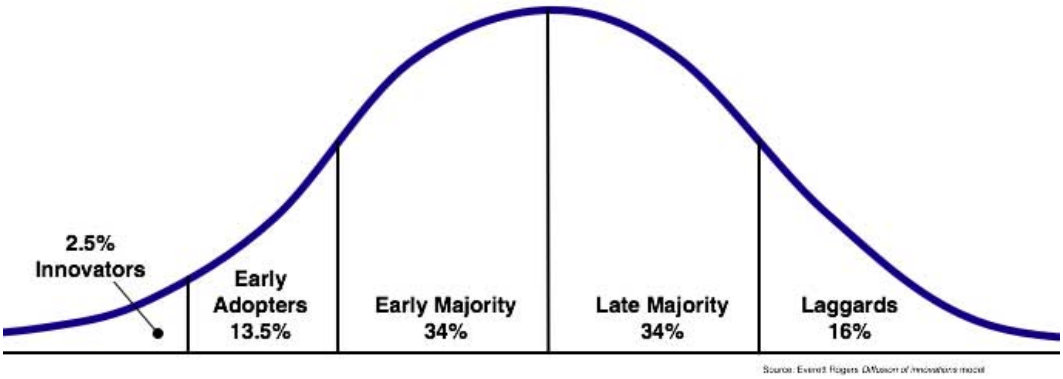
1. **Innovators** - are the first who will adopt an innovation and risk time and money to try out new things. They experience the benefits and possible flaws of the new gadgets and do not get help from other people as they are the first to use them.
2. **Early Adopters** - seek out and adopt new technology before most others but are waiting longer than innovators to reduce the risk of loss of money and time.
3. **Early Majority** – If a technology has proven benefits, individuals in this group are willing to adopt new technology before the majority of the population follows.
4. **Late Majority** – Individuals who are more resistant to change. They will adopt new technology after careful consideration, when they see clearly proven

benefits and have been influenced by other people around them, most of whom have already adopted this technology.

5. **Laggards** – prefer to stick to the technology they are already using as long as possible. They only change to new technology when the old one is no longer available or the new technology has many benefits and pressure is put upon them because most of the population has already adopted it.

The bell curve in Figure 6.1 suggests that the groups of adopter types include certain percentages of the population. Following this model, most people are grouped into the early (34%) or late majority (34%), while there are only a few innovators (2.5%), some early adopters (13.6%) and some laggards (16%).

Figure 6.1: Rogers' (2003) bell curve of product adoption.



Source: Rogers 2003: 281.

Applying this idea to my respondents, I investigated the time when they adopted four key devices: computers, mobile phones, digital cameras and MP3 players. As illustrated in Table 6.1, they were adopted at different times in the course of their lives.

Table 6.1: Year of appropriation of the key devices by British, German and Dutch interviewees.

Britain	Computer	Mobile phone	Digital camera	MP3 player
Simone, 67	2000	1997	2007	2007
Phoebe, 53	1990	1994	2006	2005
Kathy, 23	2005	1999	2005	2005 in phone
Maureen, 23	1997	1997	2006	
Henry, 71		2007		
Robert, 63	1984	2005	2004	2003
Craig, 29	1997	1998	1998	2003
Vincent, 23	1995	2000	2000 in phone	2000 in phone
Average	**1995**	**1999**	**2003**	**2003**
Germany	**Computer**	**Mobile phone**	**Digital camera**	**MP3 player**
Annette, 64	1980	1997	2005	
Sabine, 48	1990	2001	2008	2008
Katrin, 26	1999	2001	2006	2003
Claudia, 20	1997	2002	2004	2003
Wolfgang, 64	2008	2002		
Michael, 50	1988	2005	2005 in phone	
Folkert, 26	1996	1997	2004	2005
Christian, 25	2006	2007	2007 in phone	2007 in phone
Average	**1995**	**2001**	**2005**	**2005**
Netherlands	**Computer**	**Mobile phone**	**Digital camera**	**MP3 player**
Iris, 58	1994	1995	2003	
Corrie, 53	1998	2000	2002	2004
Maaike, 24	1999	2001	2002	2006
Neeltje, 22	1996	2001	2002	1999
Jan, 62	1987	1997	2000	1999
Matthys, 57	1994	1994	2006	2008
Arjan, 27	1999	1998	2006	2003
Niklaas, 23	2003	2001		2005
Average	**1996**	**1998**	**2003**	**2003**

Source: Background questionnaires, 2008-9.

Table 6.1 suggests that the computer was on average adopted at nearly the same time in all three countries and that the German interviewees were later in adopting the three

other devices. In this respect, the Dutch interviewees would count as early adopters and the German respondents as laggards. When I looked at my respondents individually and categorized them into Rogers' five adopter types, the following picture emerged:

The only interviewee I had who described having exhibited the characteristics of an innovator was Michael, who was fond of hi-fi systems when he was young. (At the time of the interview none of my respondents described her-/himself in ways that would have identified them as an innovator.) Rogers characterises innovators as people whose love for particular innovations leads them out of their local circle of peer networks into more cosmopolitan social relationships. 'Communication patterns and friendships among a clique of innovators are common, even though these individuals may be quite geographically distanced' (Rogers 2003: 282). Rogers also describes the way in which substantial financial resources are helpful and complex technical knowledge has to be understood. This is exactly the way in which Michael described his obsession with music systems. He met with other interested hi-fi enthusiasts far away from his home town, was a member of an expert circle and spent enormous amounts of money and time on his hobby. Later in his life, he had to choose between his family and his hobby and chose his family but still longingly remembered his enthusiasm for his former hobby and in the interview stated with regret that he had lost all his knowledge about hi-fis since he was no longer up to date.

The attribution of my respondents into the five adopter categories was not only done by considering the data from Table 6.1. These data are not sufficient to derive a person's attitude towards consumption from them. Some people used a computer earlier than others because their work context forced them to. Some interviewees were not interested in having MP3 players and digital cameras, so I focussed on the computer and the mobile phone as these technical devices were used by all of them. (Henry used his wife's computer.) Furthermore the year of purchase of a technical device is not enough as an indicator to point to an adopter attitude. As I will elaborate later, a person's consumption behaviour might be different for two devices. That makes it difficult to put individuals into categories because an interviewee might cover several adopting categories depending on the artefacts. From my perspective, it was therefore much more important how my respondents expressed their relationship to their devices, whether they appeared eager and enthusiastic or critical and distant, for example, when talking about them. So in considering these categories, I took into account my interviewees' references to technologies, not only to the four key devices, but all their

expressions of the importance of technical artefacts to them. This gave a much better picture of their consumption pattern.

6.4.1 Early Adopters

Craig, Jan, Corrie and Phoebe were the early adopters among my interviewees. They were aware of the design and new functions of a new device. They were all proficient users of technology and enjoyed the new possibilities that the new gadgets provided. Craig defined himself through the technology he used and made sure that all his gadgets were cutting-edge. He explained why this was important to him:

> Like I said, I've had this phone for two years and now I'm, I mean, there's nothing wrong with it, I mean, I dropped it a couple of times and it has had a couple of faults with it, but, you know, new technology, I always think, like, you should replace it maybe every two or three years, otherwise you kinda get stuck behind when, you know, and I just like to have new things anyway. (Craig, GB, 29)

Craig would change to newer models even if they provided the same functions as the one he had, when the newer model was slimmer or nicer looking. Design and a shiny look was important to him. Price was not an issue; on the contrary, he connected a higher price with higher value and was prepared to pay more for well-known brands. It was essential for him to be surrounded by a wide range of new technology. And he was proud of his new gadgets:

> I have two digital cameras. One's like, one I would take out and take, you know, pictures with, I carry it in my pocket. And the other one's like, a professional digital camera? So I also have, like, iPods and a laptop and, I'm very up-to-date with technologies. (Craig, GB, 29)

Craig was also very knowledgeable since he was interested in and used a wide range of different gadgets. He felt comfortable in applying the trial-and-error method when learning how to use a new device and enjoyed playing around with new technology. When Craig remembered his childhood devices he said that he bought the new games consoles as soon as they came out. His choice of words (he used the expression 'had to buy the new one') sounds like obsessive behaviour that he himself was aware of.

He had the money to afford to buy new models or, more precisely, he prioritized having new technology over spending the money on other goods. This distinction is important as there were other affluent participants. But the other solvent participants set other

priorities and, although they could easily have afforded new gadgets periodically, they chose to save the money and waited until they could get this technology at a lower price at a later stage. This behaviour is typical of other adopter types, such as individuals in the late majority, as I will show later in this chapter. In Chapter 5, I introduced the concept of the 'warm expert' developed by Bakardjieva, who is similar to an early adopter as she is keen to get the newest gadgets and is ahead of the majority in terms of knowledge. The classification of the Geek God is also equivalent to the early adopter. Early adopters have identities that are strongly dependent on artefacts. Their artefact identity makes up an important part of their identity in general and, because of this, the artefacts and the accompanying knowledge are kept up to date and in good condition.

6.4.2 Early Majority

Simone and Kathy were typical examples of the early majority with their mobile phones as they adopted this technology in 1997 and 1999 respectively, before the late majority did so in 2000. People in the early majority willingly follow early adopters and are concerned not to be the last ones to adopt a new technology. Early majority adopters wait until new devices have proven benefits but are independent in their choice of gadgets as they do not feel pressure from their peers. Adopters in the early majority category are still in the minority in terms of the diffusion of a device when they choose to purchase a gadget. These adopters also like to be self-sufficient and do not like to ask other people for help. They are in general not as knowledgeable as early adopters but are quite confident with new technology and also prefer the trial-and-error method of learning. They like shiny new gadgets; as Maureen expressed it: '18 months is when I'll change it, and probably because they'll say, "Do you want a brand new shiny mobile phone for free?" And I'll say, "All right then".' But they would not change it if it is still working. Maureen went on: 'As long as it wasn't broken I would definitely carry on using it until it was broken. It seems silly to stop using something when it still functions.' People from the early majority adopter type were more rational in their purchasing attitude than the early adopters, for whom newness and design were the sole reasons for making a purchase.

6.4.3 Late Majority

However, most of my respondents belonged to the next category: the late majority. Arjan, Christian, Niklaas, Iris, Maaike, Folkert, Annette, Michael, Sabine, Robert, Vincent, Claudia and Katrin would all wait for the price of new gadgets to come down and would decide to get a device only when the perceived majority had already adopted and used it. This also generated a certain amount of social pressure on this group to adopt, and many expressed this feeling in the interview. Arjan (NL, 27) described the feeling of being left behind with a digital camera in this way:

> Because we were such late adopters of the technology it seemed as if almost everybody had one but us. (…) All our friends, all our acquaintances, our parents had digital cameras and we didn't. (Arjan, NL, 27)

As he perceived the population to be saturated with digital cameras, he felt left out. This is confirmed by Rogers (2003), who explains that the criterion for adoption depends on the perception of individuals as to how widespread the adoption of a particular technology already is among the population. Rogers points out that increasing peer pressure and economic necessity make the late majority types adopt. Although individuals belonging to the late majority felt pressured to adopt devices, at the same time they found it quite useful to be able to ask so many people for advice about the potential new device, as this technology was already widespread among people they knew. As Arjan points out: 'Pretty much any time we saw somebody using one that we knew well enough, we would say: "Can we borrow your camera and, you know, look at it and play with it for a few minutes?"' As security is important for people in the late majority group, they want to be certain that this technology works and by asking many other adopters they feel secure about making an informed decision. They are afraid of wasting money or time. Rogers (2003) confirms:

> One way to cope with the inherent uncertainty about an innovation's consequences is to try out the new idea on a partial basis. Most individuals do not adopt an innovation without first trying it on a probationary basis to determine its usefulness in their own situation (…) The trial of a new idea by a peer can substitute, at least in part, for the individual's trial of an innovation, at least for some individuals and for some innovations. (Rogers 2003: 177)

Arjan's experience was that most people liked to talk about their new 'toy'. He said:

> Typically people seem to want to explain their relationship to a device and tell you things that they like and things that they don't like. And particularly with phones, it's about the plan and it's about the company from whom you sort of rent the phone. (Arjan, NL, 27)

Much more than the early majority adopters, people in the late majority group went for functionality. Basic design, easy handling, reliability and low cost were the most important features they focussed on. Design was less important and these participants were less knowledgeable, thus more of them resorted to the manual or friends for help, as explained in Chapter 5.

People in this category did not buy a new device as long as the old one worked. Even if some functions no longer worked or the gadget broke, they waited until another good deal came their way and could live without this gadget for a while. In general, these interviewees felt that it was more rational and morally responsible to buy a new device only when the old one was broken. Acquiring a new device while the old one was still working seemed immoral. In my sample, only Craig bought new devices on a regular basis. Other interviewees waited before purchasing a device until the price came down and some of their friends already had it. They felt safer when they knew somebody who already had working technology.

But many did not want to be too late either – that would mean they were laggards. In people's perception, there was an appropriate time for purchasing a new device: not too early and not too late. This time of waiting was therefore not an inactive time but 'an *activity* that consists of both self-reflection and reflection concerning others' decisions' (Lethonen et al. 2003: 366, emphasis in original), judging when the balance between price, desire, self-concept and moral acceptance had been found and the purchase could take place.

But most of my respondents, even when they desired a new gadget, were at the same time wary of it and wanted to wait until the new device had proved its value. A certain amount of critical attitude towards new technology seemed morally acceptable and suited most respondents. Enthusiasm about new technology was thereby countered by being aware of the dangers connected to this technology, such as addiction. When a new technology becomes recognized as a viable option for an individual, this individual is aware of others' attitudes and either follows their example without much evaluation of whether this is the right choice for her or, at the other end of the scale, either

purchases new devices on a whim or does not participate. These decisions are influenced by self-concept and identity.

The students were very much influenced by their peers and had to keep up with them in order to stay in contact and to maintain their position in their community. Kathy (GB, 23), Maaike (NL, 24), Craig (GB, 29), Neeltje (NL, 22), Katrin (G, 26), Claudia (G, 20), Christian (G, 25), Folkert (G, 26), Vincent (GB, 23) and Maureen (GB, 23) all started to look for new information when their friends mentioned new things. Maaike explained:

> If I hear something a lot, that's how I, for instance, got involved with FaceBook or Hyves, which is the Dutch FaceBook. If I hear it a lot, I will google it. And that is how I find out. I would rather google it than ask someone, because then I feel stupid. For instance Skype, I hear it exists and then I will google it and when I find it handy I will become part of it. (Maaike, NL, 24)

The boys in particular were very bound into their peer groups and, as previously mentioned, part of this male culture was to show new technical gadgets to each other and brag about their new functions. But in general people tended to resist change and moved only when an outside event pushed them into moving. Friends acted as the push factor for purchases of new technology for the younger generation, for older people it was malfunction.

6.4.4 Laggards

Christian, Wolfgang and Niklaas were typical examples of laggards as they adopted all four of my key devices much later than the other interviewees. Laggards are characterized by Rogers as looking to the past and having traditional values. They want to be absolutely certain that the new technology will work for them and that they are not making a mistake by participating in it. From the laggard's viewpoint, resistance is a rational choice. But laggards are seen as slow and resistant by their peers, as Rogers points out:

> Late adopters and laggards are often individually blamed for not adopting an innovation and/or for being much later in adopting than the other members of their system. (…) These individuals are considered 'traditionally resistant to change' and/or 'irrational'. A more careful analysis might show that the innovation is not as appropriate for these later adopters, because of their smaller-

> sized operations and more limited resources. In fact, for them, *not* adopting may be extremely rational. (Rogers 2003: 121, emphasis in original)

In my interviews laggards felt a need to defend the reasons for their late adoption and said things like: 'I don't need this gadget' or 'it is too expensive and complicated to use'. They were obviously aware of their late adoption and their non-conformity. How late or early adopters are perceived and judged is dependent on the viewpoint of the observer. Early adopters judged the later ones as being slow, later adopters judged the earlier ones as purchasing devices that they did not really need. Since Craig had only the newest technical gadgets for example, he perceived other people as slow in taking up new technologies.

However, as the quote from Rogers indicates, late adoption can be the best decision for a particular device, depending on life circumstances. And from a laggard's viewpoint, resistance to certain new technology seems reasonable and rational. Laggards feel uncomfortable with new technologies. They perceive them as complicated and therefore they do not use the trial-and-error method to familiarise themselves with the devices. Laggards prefer to be shown how a gadget works by other people because they also feel unable to understand manuals. Technology proficiency is lowest in this adopter category. Also design was least important to these individuals. Annette, Robert, Wolfgang and Matthys were typical members of this group. Laggards are typically people with a limited artefact identity. The later a person adopts a technical device the less important this device is for her and she identifies very little with it. As these people do not identify with their gadgets, the design, model or age of the device is not key to them.

Wolfgang, as a typical member of the laggard division, desperately tried to use the same technical devices as long as possible and to avoid change completely. He had got a mobile phone as a free gift with a newspaper but was not using it. He had just bought himself a notebook at the time of the interview but did not know how to use it. He used his old video recorder and other old technologies that had been around for a long time. Laggards resist coercion from others, such as social or peer pressure, and find many good reasons for not engaging with new technology. Wolfgang was very good at using experts and their knowledge for his needs. He liked to have someone to show him how to use certain devices since he felt unable to read manuals, like other people such as Annette, Robert and Matthys. Interestingly, as a teenager he did possess new technology and was an early adopter of a camera. As each of his seven siblings got a

bicycle as a present for their religious confirmation, there were already so many bikes in the house when it was his turn that he bought himself a camera. This is interesting as it shows that Wolfgang was not generally against technology but could not see the advantages of possessing and using modern technologies at the stage of life he was in when I conducted the interview.

Rogers (2003 [1962]) argues that people with higher education, higher social class and more money are more likely to be early adopters. But though my interviewees had these attributes, not all of them were early adopters. This suggests that factors other than education and wealth influence an individual's decision to adopt a device. Rogers mentions that laggards often have moral reasons for not adopting, such as an 'incompatibility with their values' or they assume a 'relative disadvantage' (Rogers, 2003 [1962]: 295). These reasons were also put forward by those of my respondents who acted as laggards.

An important finding in this context, too, is that individuals are not fixed to one adopter type for their entire life, not even for a particular device. It might be that they were innovators with mobile phones early in their lives and became laggards in relation to mobile phones later on. Somebody might be keen on digital cameras and keep up to date on that but might be a laggard for all other technical appliances. Schiffman (2008) argues that 'innovators in one area may be non-innovators in other areas. There are no generalized consumer innovators' (454). As I asked my interviewees about various technical devices, it became clear that people favoured certain devices because they could see more benefit in them than in others, or their interest might be in those areas, such as hi-fi or cars. These favourite devices were treated differently from other gadgets. This is the reason why individuals might have a posh car but a basic mobile phone, or a fancy hi-fi but no digital camera. Individuals can be innovators and laggards at the same time for different devices. Only some, such as Craig in my sample, are eager to be at the forefront with all their gadgets.

6.4.5 Non-Users

But laggards are not the last category. There are still the non-users. As Rogers (2003) and Oudshoorn and Pinch (2005) emphasise, users of technology have a range of possibilities as to how to react to new technologies, and some uses can be completely different from what the designers intended. A good example is the telephone, which was introduced in North America for use by businessmen and was quickly adopted by

rural women to overcome their isolation (Martin 1991, Fischer 1992). This use was not foreseen by the telephone companies, who advertised them only for business use. Non-use is also an unforeseen and unplanned possibility as most innovations are advertised as bringing improvements to life if adopted. Non-users and their reasons for not adopting a technology have only recently become a new research field. Oudshoorn and Pinch (2005) are among other scholars (e.g. Cowan 1987, Lie and Sørensen 1996, du Gay et al. 1997, Saetnan, Oudshoorn, and Kirejczyk 2000) who have drawn attention to the agency of users by pointing out their crucial role in shaping technologies by being co-designers of technology.

> In using technologies, users do not necessarily have to adopt the scripts constructed by the designers. Users may slightly modify the scripts, they may drastically transform them, or they may even completely reject them and create new meanings and uses of the objects or become nonusers. (Oudshoorn et al. 2004: 36)

Non-users have different reasons for not engaging. Sally Wyatt et al. (2005) found four:

(1) the resisters – those who have never used the internet because they do not want to;
(2) the rejecters – those who have stopped using the internet voluntarily, perhaps because they find it boring or expensive;
(3) the excluded – those who have never had access but would like it; and
(4) the expelled – those who have lost access involuntarily. These are the digitally excluded, but the first two groups may well be exercising agency in choosing not to have access and should not simply be dismissed as ‘laggards’ or ‘luddites’. (Wyatt et al. 2005: 202)

Sally Wyatt (2003) points out that users differ from each other because they have different participation and use patterns for each technology. She argues that use of a technical device such as the internet or mobile phone can range from non-use to permanent use, including all grades of incorporation, and the process of adoption should be conceptualized along a continuum, with degrees and forms of participation that change over time depending on social circumstances, jobs and life trajectories.

> In fact, the adoption process is, according to Fischer (1992), both continuously advancing and retreating as people develop their experience with technology or else they have to decide about the adoption process anew if their circumstances change over their own life course (Haddon 2004). For some, indeed, non-adoption

> and non-use might not be a temporary phenomenon, but rather a deliberate choice. (Mante-Meijer 2008: 220)

As mobile phones, digital cameras, computers and the internet have become commonplace, it seems like an inevitable trajectory that sooner or later a person has to adopt a new device. But the adoption of technical devices and appliances is not a straightforward and predictable process. There is no causal chain between the invention of a new technology and its adoption into households as a consequence. Adoption processes are influenced by many factors. It is not simply a new function that makes a technical device successful. Price and design and the status of the object were and are still important variables that people consider when adopting a new device. And it is not only the new device itself that is put on trial when it is adopted but also established arrangements and practices in life and relationships.

The adoption process of the washing machine during the period from 1940 to 1970 followed an unpredictable pattern. In the end it was not adopted because of the relief from hard work but because cultural values had changed and middle-class women, who had previously left the laundry to others, were persuaded to do it at home when manufacturers released a model that was easy to use and had an appealing design. Catharina van Dorst (2007) explains that electric washers contributed to the re-evaluation of household work. The prestige of the machine helped a higher social class of women to accept the previously low-status labour of washing. These machines disguised the fact that its users still had to put a lot of time and energy into doing the laundry. With the introduction of washing machines, laundry habits changed as well: while in previous times laundry was done once a week or less and clothes were protected with aprons and pinafores against dirt, clothes were washed more often, sometimes every second day, when a washing machine was available. The same applies to the adoption process of refrigerators. Irene Cieraad (2008) highlights the fact that post-war sales of refrigerators in the Netherlands were low since daily deliveries of fresh food were the norm, whereas Finland adopted refrigerators much more quickly as there was no delivery system in place and food had to be kept fresh for longer periods of time. Ruth Oldenziel et al. (2005) confirm that at a certain point women liked to have control over their tools and preferred wringers that they could repair themselves to automatic washing machines, which they also found undesirably wasteful in terms of water usage. ‘Cowan, Parr, and others thus demonstrated the severe limits of focusing on designers, engineers, and producers as well as the shortcomings of explaining a technology’s success or failure based on its “intrinsic” qualities or the “irrational” choices of

consumers' (Oldenziel et al. 2005: 9). The actual user is an important component in the success or failure of a technical invention. The classification into adopter categories gives the impression that the adoption of a new invention is only a matter of time and cannot be avoided. Lehtonen (2003) criticises this viewpoint:

> The classic idea of the 'adoption curve' (Rogers, 1983) implies an extremely passive role as regards the consumer: little by little, in one social stratum after another, users simply adapt to what is offered to them. In contrast with this thinking, consumer research during the past 15 years has traced a completely different picture of lay people; they have been envisioned as very active in the ways they shape the technological environment with their decisions. (366)

While Lehtonen and other authors, as mentioned earlier, emphasise the agency of users and their power to choose one model in preference to another, or use a device differently from its planned use, Lehtonen argues that people also experience a kind of powerlessness because they perceive the progress of technology as inevitable and that they need to adapt to it. The pattern of adoption to saturation that I highlighted earlier seems to suggest a certain inevitability to adoption but that pattern itself may be culturally, economically and technologically specific.

However, it is also the user who has to adapt to the needs of the gadget by at least partly following the script that the device requires in order to function properly. These negotiations between potential users and the device produce different results. Most of my participants incorporated many devices into their lives to a greater or lesser degree, but some did not. Wolfgang and Henry were two examples in my sample who rejected particular technical devices. They were both forced by friends or wives to own a mobile phone but did not use it. They did reluctantly use other technologies, but were suspicious of the results of their engagement with these new technologies in general. They were unconfident users of technology and assumed that it would take too much time and effort to learn how to use new devices.

Similar to the laggards, non-users seemed to be aware of being different from other people and felt a need to explain their choice of non-adoption. As Louis Leung and Ran Wei (1999) confirm, non-users perceive the technology they have rejected as unnecessary or too complex to use and understand or as being intrusive. Wolfgang in particular criticized new technology for wasting time that he would otherwise spend on more rewarding activities, such as gardening or social networking. Wolfgang was not the

only German participant who criticized technology and stopped engaging with it. I shall elaborate on the criticisms of used and not-used technologies later in this chapter.

As Wyatt (2003) and Lehtonen (2003) argue, adoption is not an inevitable and straightforward course of action but rather a complex process of negotiation between moral values, peer pressure and self-image. Therefore the five adopter categories presented by Rogers constitute only one model among several that are available to characterise consumer types. As mentioned in Chapter 2, Horrigan (2009) categorized technology users into ten groups: the enthused digital collaborateur, ambivalent networkers, media movers and roving nodes to mobile newbies, desktop veterans, drifting surfers and eventually the less enthusiastic information encumbered, tech indifferent and off the network people. The important point here is that every consumer type described has a distinct self-perception in relation to technology, which forms part of their artefact identity. Age and life cycle, economic situation, lifestyle, roles and status by occupation influence people's self-perception as well as interactions with family, friends, colleagues and other social groups. Peer groups with shared values, interests and culture shape a person's desires and behaviour. In my sample, the male early adopters Craig and Jan were the ones with the strongest artefact identity and the laggards Wolfgang and Henry had the weakest artefact identity.

6.5 Gender identities and technical expertise

Early adopters and consumer types who are keen on new gadgets in general or on one device in particular, have to stay updated in order to know about the latest developments in the market, and this gives them an advantage in buying new gadgets earlier than other people. Therefore it comes as no surprise that it was important for Craig to keep up to date. He got his information through exchanges with his father, adverts, newspapers and TV.

Craig lived in a social context where owning new technology and knowing about it was appreciated. The technical proficiency of early adopters is the reason why they are sought out by potential later adopters for advice and information. Phoebe was a typical early adopter in this sense. She knew a lot about technologies and had been the expert in her own family and for friends, so she was used to being asked for technical help. After probing, she acknowledged that she was successful in helping other people: 'Usually. Kind of with my neighbours, I help them with their computers and things,

setting them up with digital printers and tune televisions and various things.' When I probed further, asking whether she was really good at it, she played down her technical expertise and experience: 'Well I just press a button, see what happens. Does it work when you press a little button? Eventually it all comes out in the wash. But yes, I mean, I did computing courses, done a lot of computer courses' (Phoebe, GB, 53). Phoebe was well trained but, although she had technical expertise, she diminished her proficiency by saying that she was 'just pressing buttons'. Maybe she did just press buttons, but she obviously knew which buttons to press to get the desired result.

The matter of technical proficiency being played down by women was also apparent with Simone. She admitted to reading technical articles with interest but said that some were a bit too specific for her to understand. 'Yeah, a bit technical really for the layperson. I'm not technical for technical love.' She was interested in technology, even read about technology, and was quite proficient but as she played her knowledge down, she was not likely to be seen as an expert or to be asked for help by other people.

Maureen was also an interesting case in this regard as she emphasized several times during the interview that understanding technology and reading about it was too complex and confusing for her. She thus gave the impression that she was technologically incompetent. But when I asked what technology she used and how, it became clear that she used the same devices and functions as her peers. In the same way, Iris played down her proficiency in technical knowledge, and I observed this behaviour in five out of twelve women in my sample. Three were from Britain and two from the Netherlands.

In the same way as individuals have a self-perception about their own degree of technical expertise, they also judge that of others in their surroundings. When I asked whether men know more than women in technical areas, the answers of my respondents varied. Iris tried to think of the people she knew and came to the conclusion that all the proficient people in her surrounding had a university education, but she knew women, such as her sisters, as well as men who were proficient. Corrie tried to answer the question by comparing children:

> Mmm, doesn't have to be, no. Not as a law that is a statement that men know more. No, I don't think so. Well, I see young children, also girls, in my surrounding, I don't have children myself but nieces or children from friends, girls as well as boys they are common and they grow up with all these technologies, and they use it quite as much, boys and girls. (Corrie, NL, 53)

When I asked her about women, men and new gadgets, she got quite agitated:

> Well, there is a lot of difference. I know a lot of men who are nitwits in computer and I know a lot of women who are nitwits. And I also know women who are quite handy, and also men who are. So I think you can say there are two groups, one is interested going with the new technologies and one is staying a little bit behind. (Corrie, NL, 53)

What is interesting here is that she perceived other people as being members of one of two groups, namely nitwits or knowledgeable. However, as already mentioned, this divide did not run along gender lines, but rather according to people's interest in new technologies.

All the older women and men in my sample perceived women and men as equally proficient. But most British and Dutch students (Craig (GB), Maureen(GB), Vincent (GB), Niklaas (NL), Arjan (NL), Maailke(NL) and Neeltje (NL)) stated that their male peers were more knowledgeable and they would ask boys if necessary.

All the women in my sample saw themselves as interested in technology in general, despite some of the young men's rather dismissive accounts of female technical expertise. When I asked why he would only ask male friends for help, Vincent, a British student (23), admitted:

> I, it's just, I don't believe, it's, you know, I'm ashamed of the fact that that's the way things are, but that it, that is how it is, that's how we are, kind of, moulded through life, and I'm not saying that's right, but men do know, tend to know more as a rule about, about technology, because of, I don't know why. It's just my perception. So I'd ask, I'd be more likely to ask men by a great deal.

He defended his opinion with the argument that his male friends would know more and that one only had to look at the low percentage of women on science courses to know that women could not know much about technology.

> You only have to look at take-up on science and engineering courses as well, computer science courses, there is a high percentage of men. Do you know what I mean? (Vincent, GB, 23)

But the women in my sample were not convinced that men knew more in technical areas. When I asked her whether men or women know more about technology, Phoebe said:

> No, I don't think men do know more, really. Might know a bit more but, the friend who does digital photography, he only knows a very small area of that particular software. But he doesn't know much else and he doesn't, I know he doesn't have a lot of understanding of things like operating systems and how the computer works. (Phoebe, GB, 53)

Maaike too was not convinced that men know more as a general rule. When I asked her whether she thought men know more than women, she stated surprisingly:

> Yes, I do. Of course I don't think that is a natural thing. I think they have grown into it, that society expects them to know more so they have to live up to that expectation and as a result they know more. I don't believe that men are naturally gifted or better at it or understand it better than women. It is just this long process of training by what the society expects that makes it that more men than women are into technology. (Maaike, NL, 24)

Maaike's explanation provides an insight into her perception of societal operations where the male gender role equates with technical competence. Or, as Wyatt argues: 'Masculinity and technical competence are mutually constitutive' (Wyatt et al. 2005: 210).

An individual's perception of her level of technical proficiency seems to develop through experience and self-evaluation as well as feedback from others, and then becomes part of her self-image. However, Maaike had to re-evaluate her technical expertise as part of her artefact identity when she applied for a job. When I asked her whether she was technically proficient, she answered:

> Well, I made a little switch there the last couple of months. I don't think I am, but my job involves updating a website. At first I said no to this job. Precisely because I didn't identify as someone who is into technology. But then they asked me again and I needed a job and I did it anyway. I just figured I will learn it and I did. And I look at myself differently now, because I know that I can do it. (Maaike, NL, 24)

This quote shows how one's level of technical expertise can change one's artefact identity and self-image, and also how an individual, here a woman, limits herself because she has developed a certain self-image that comprises a low technical proficiency and a low interest in technology. In Maaike's case, this collided with her perception of this job opportunity, which in her eyes needed someone who was 'into technology'. So she did not dare to go for the job the first time it was offered.

This might give an indication of a connection between artefact identity and success in the professional world, especially for women, as their confidence in their own technical expertise is mostly low. Even the female early adopters such as Corrie, Phoebe and Simone, who were really proficient with technical devices, all played down their technical expertise. As technology in general and technical expertise in particular are still seen as inherent to the male gender role, Maaike might have perceived it as not appropriate for her to know about things such as web design because she is a woman.

This is exactly what I wanted to explore in this thesis. Do women experience disadvantages because their gender role does not support them in being technically proficient? Looking at Maaike's example, I have to conclude that they do. Because of their lower expectations of their own technical expertise, women are not pushed or equally motivated as men to keep up to date or to be technically proficient in the first place. Although many of the women I interviewed had the same level of technical proficiency as the men, or even more, they gave the impression of not knowing much. Jane Wheelock argues that technical knowledge has a gender bias in the younger generation:

> However, when we look at how computer knowledge is acquired and transmitted via the social economy, a much more contradictory process seems to be at work. Use of networks of friends and relatives shows no gender differentiation in the older generation, yet a very strong bias towards boys in the younger generation. (Wheelock 1992: 111)

Following her argument, technical knowledge is credited more easily to boys, which might make it more difficult for girls to get the same support and acknowledgement in this area. This gap in perceptions within the older and younger generations about the other gender's technical expertise is astonishing as I would have assumed that the younger generation would be more open-minded and emancipated. Gendered prejudices are still active in people's minds and influence their perceptions of the world. These prejudices will also tint our own self-image and our relation to technical expertise. Technical expertise has to be kept up to date, otherwise it quickly becomes obsolete. It was interesting to see who considered it important to stay up to date.

6.6 Keeping up to date

Being technically proficient and up to date was, as mentioned, more important for the early adopters among my respondents. The reason why other respondents did not keep up to date and preferred to ask experts like Craig, Corrie, Jan and Phoebe was explained by Corrie, who believed that it took too much time and effort. 'They say it's too much. Mostly they say, "Oh I don't want to put energy in those silly things"' (Corrie, NL, 53). The four early adopters were perceived as experts in their surroundings and were contacted for information by many different people for various different technical devices. The need to keep up to date in order to be able to provide the right information for the advice seekers was a crucial component in retaining their status as experts and helpers. Although it takes time to keep up to date and to read technical articles properly instead of just flicking over the page, they were prepared to do so in case they needed this information, maybe not for themselves but for their friends. As LeeAnn Kahlor et al. (2006) emphasise, this creates a circular scenario since the more an individual knows, the more she will be asked for help, and the more she is motivated to take in new information.

> [T]he more social pressure one feels to be informed (…), the greater the gap between what one thinks he or she knows and thinks he or she ought to know. The larger the gap between what one thinks he or she knows and thinks he or she ought to know, the more actively he or she will seek related information (…) the larger the gap between what one thinks he or she knows and thinks he or she ought to know, the less likely he or she is to engage in active avoidance of information. (Kahlor et al. 2006: 181)

The later the adopter category, the less prominent was the need or desire to keep up to date. But all the British and Dutch participants agreed with the view that it is important to have a general interest in and knowledge about new technologies. They argued that it is important to know what is available, for example, to know whether there is something available that can improve the use of the technological items one already has, and they suggested that if you don't actively keep up you get left behind. In contrast, only one German woman out of the older range said 'yes, it is important to make informed decisions and to be able to criticise' (Sabine, G, 48). All the German men and three other German women refused to see any importance in keeping up to date. One female German student remarked that 'the standard nowadays is more highly developed than my needs' (Katrin, G, 26). Thus she was not inclined to acquire more than basic

knowledge to meet her needs. A male German student explained his indifference by describing 'the vain endeavour to keep up to date since technology changes so fast' (Christian, G, 25). He described how he was at the cutting edge of knowledge when computer technology was young and the related knowledge limited. He read magazines and everything he could get hold of to stay informed, but when technology moved on and the scope of information expanded he felt lost and thus lost all interest. Exactly the same happened to Niklaas, a male Dutch student. The range of attitudes to keeping up to date was therefore huge – from being well informed to performing the expert role to not engaging at all. As Colin Griffin and Bob Brownhill (2001) argue:

> The standard of competence is not stable (…) It implies something more than reaching a standard and then forgetting about it, for it embraces an idea of professional ideology that includes the idea of lifelong competency to maintain levels of excellence in one's practice. A professional then has a duty to maintain his or her own competence at a high level by careful practice and by keeping up to date with developments in the profession. (Griffin and Brownhill 2001: 65)

These standards are high and, as shown earlier, not everyone feels competent to fulfil those requirements. People with low or no interest in new technologies might well refuse to waste their time in reading or talking about gadgets. Although the 'capable independent person is committed, self-updating and exhibits professional integrity, honesty and an ability to innovate' (Griffin and Brownhill 2001: 66), most people are more or less well-informed and some use technical devices but do not want to acquire technical expertise. In fact, most of my participants were satisfied when they acquired the knowledge they needed to use a few of the functions of their technical gadgets. Simone was typical of this middle position and expressed it like this: 'Well, I don't know, I, I think sometimes you only use things to the extent that you need to use them' (Simone, GB, 67). Folkert, a male German student, stood at the low end of the scale. He expressed his disappointment that he was not able to keep abreast of technical information. He clearly expressed his disinterest in technology and said that he was not knowledgeable about technology. He did not consider technical expertise as important. His reasons were these: 'I don't consider it as important to know much about technology since it is only a fashion for me personally. It will change soon, if you buy this Apple iPhone thing today, you only have to wait half a year or two or three months and there is something new. It's wasted time if you invest time in being interested' (Folkert, G, 26). He even complained that he could not protect himself from knowing about technology since advertisements for technical gadgets were everywhere 'and if it's only the case

that some people buy it and show it around and say how wonderful it is and again you have it in front of your nose and have got to know what you could do with it' (Folkert, G, 26). He sounded frustrated. Matthys brought a new component into play when he compared his technical knowledge with that of younger people:

> I can use the things I need, but when I see also in my company the younger boys and girls who are as old as my son is, they are much faster, they know possibilities and they use more things. (Matthys, NL, 57)

People use different benchmarks to evaluate their level of technical competence. Simone felt that she knew enough when she could use the functions she needed on her gadgets. Others, like Maaike, compare their expertise with their peers and use them as their reference point:

> I think it's sufficient [my technical knowledge]. I think when people talk about technology, I usually understand what they are talking about. (Maaike, NL, 24)

Maaikes' view was interesting since she did not compare herself with the highest standard of technical knowledge available but used the technical knowledge standard of her own peer group as a means of comparison. Arjan, a male Dutch student (27), brought up a different dimension. He associated power with technical knowledge when I asked him whether he felt knowledgeable:

> Partly as a gender studies researcher, I think, that technology is one of the ways that power circulates. In fact, I think, it is the most important way that power circulates. And so, in order to take part in that circulation I have to remain at least somewhat knowledgeable about technology. But I also have to monitor my relation to technology in order to not to be interpolated in ways that I don't want.

He also mentioned that being ignorant about new technology was a luxury that could be problematic.

Despite these warning voices, many of my respondents had a tendency towards choosing ignorance. In particular, the older men (Wolfgang, Henry, Matthys) and the German students showed characteristics of deliberately not involving themselves with technology. This stemmed, as I have shown, from different motivations: some found it too fast-changing and therefore frustrating to try to keep up to date, while others were overwhelmed and did not want to spend the time and energy. This meant that the attitude of the German interviewees to technology was in general critical and distanced except for Sabine and Michael, who loved their favourite gadgets. The data in Table 6.2

provide an overview of my interviewees' attitudes to technology and were derived from the interviews. They are based on the comments made by my interviewees about their thoughts, fears and behaviour towards technology in general. Here national differences were significant.

Table 6.2: Attitudes to technology in Britain, Germany and the Netherlands.

Britain	Simone	Phoebe	Kathy	Maureen	Henry	Robert	Craig	Vincent
Attitude to Technology	Enthusiast	Enthusiast	Critical	Neutral	Critical	Enthusiast	Enthusiast	Critical
Germany	Annette	Sabine	Katrin	Claudia	Wolfgang	Michael	Folkert	Christian
Attitude to Technology	Critical	Enthusiast	Critical	Critical	Critical	Enthusiast	Critical	Critical
Netherlands	Iris	Corrie	Maaike	Neeltje	Jan	Matthys	Arjan	Niklaas
Attitude to Technology	Enthusiast	Enthusiast	Critical	Neutral	Enthusiast	Critical	Critical	Critical

Source: Interviews.

In Britain, half of my participants were enthusiastic about technology, welcomed innovations and felt positive towards new technology, and only two were critical. In Germany, this picture looked completely different. All my respondents were critical of technology, except the two older enthusiasts, Sabine and Michael. The Dutch interviewees were more critical than the British ones, but not as critical as the German participants. Interestingly, the young generation in particular turned out to have a critical stance towards technology. Six German respondents, three young Dutch interviewees and two of the British students took a critical approach to technology. This critical behaviour, shown mostly by the young generation, was an interesting phenomenon, which might be due to the expectations of the younger generation to use much more technology than the older generation, so it might feel to the students that they had no choice about whether or not they want to use particular communications devices. Maaike (NL, 24) expressed it like this:

> I don't feel an alien, I did when I first started at university. I feel that also because I grew up in this small town and my school didn't do a lot with technology. So when I started at university, I was really confused, also because a lot of studies use the internet for their courses. You have to really participate on internet forum and stuff like that. So first I felt a bit, but I learned it along the way. And now, I think, I was in time to catch up.

In the same way as one can almost feel her relief at having been able to catch up with the requirements of using new technology that were imposed on her life, many of the younger generation were also relieved to be able to escape the expectations of their peers to be available via mobile phone all the time. Vincent, a British student, expressed this relief: 'I was quite happy when I was in Nepal for three months and did not have to use my mobile phone.' Neeltje (NL, 22) described it similarly: 'It's sometimes annoying that people expect you to always be reachable. That's why on holidays, for example, sometimes just for a day I turn off my mobile phone and I don't check the web, my emails, because that's another side of technology, the expectations you get with them.' When I asked her why she felt better without it, she elaborated: 'you can put it aside and that can sometimes be really relaxing, that you don't have to worry about all those things.' Katrin behaved in the same way, which allowed her to control the amount of technology she used instead of being controlled by it. She said: 'Sometimes I don't like the mobile phone, so sometimes I deliberately don't take it with me or switch it off. Other people don't understand that or find it silly, but I find, it disturbs the private sphere' (Katrin, G, 26).

As stated earlier in this chapter, technical gadgets are accessories that require attention and a certain amount of engagement. Because these gadgets support us in our everyday lives in fulfilling certain tasks, for example, staying in contact with other people, these devices are seen as useful and people do not want to be without them. In my interviews, the respondents expressed a wide range of emotions related to technical gadgets. Their feelings ranged from enthusiasm about design and/or functions via missing a gadget and frustration at not being able to use it properly to fear of dependency and addiction. The more someone identified with a technical gadget the more she loved or feared its influence on her life. I shall now briefly explore this.

6.7 Emotions and technical devices

> The old one [camera] was broken. I loved it so much, I regretted it so much, but it was broken and the repair would have been more than 100 Marks, so I bought a new one, a digital one. (Annette, G, 64)

I was surprised to hear Annette express an emotional bond with her old camera even though it was broken. When I analysed and coded the interviews, I encountered many more descriptions of emotional attitudes to technical objects. Although this kind of

emotional remark astonished me, Byron Reeves and Clifford Nass (1996) confirm in their study: *The Media Equation: How People Treat Computers, Television and New Media like Real People and Places*, that this attitude is quite common:

> We have found that individuals' interactions with computers, television, and new media are *fundamentally social and natural*, just like interactions in real life. (Reeves and Nass 1996: 5, emphasis in original)

When I gave a paper on this topic,[72] I ended by asking the other postgraduates whether any of them had a relationship to a gadget. This question was completely ignored. Later, when I asked individuals on their own, they admitted that they did not want to talk about it in front of other people and they did not consider themselves as treating technical objects as social subjects despite the fact that some said they had yelled at their computer or pleaded with it to give back a CD. But people felt uncomfortable admitting that. Reeves and Nass (1996) elaborate on this point:

> What seems most obvious is that media are tools, pieces of hardware, not players in social life. Like all other tools, it seems that media simply help people accomplish tasks, learn new information, or entertain themselves. People don't have social relationships with tools. (6)

Bruno Latour (1987) assigned agency and equal rights to technical objects and placed artefacts on the same level as human actors in his Actor-Network-Theory. Thus he extends subjectivity to technical artefacts. This stance is contentious, as many (e.g. Amsterdamska 1990, Ashmore 1993) criticise the idea that there is no essential distinction between the human and the non-human. Although the above-mentioned studies show that everybody sometimes treats a technical object like a sentient being, even if to different degrees, this attitude is still seen as inappropriate since we 'know' that technical objects have no feelings or intentions.

Reeves and Nass (1996) explain these reactions as feeling 'guilty of anthropomorphism' (10). However, their study results are clear:

> People will respond socially and naturally to media even though they believe it is not reasonable to do so, and even though they don't think that these responses characterize themselves. (…) While it might be tempting to assign the confusion between media and real life to problems of age, knowledge, distraction, or convenience, our research shows that social and natural responses are

[72] 'How to make friends with your technical devices', Gender Research Within and Across Disciplines, Conference at University of York, 04.03.2010.

> remarkably common, and true for every group we have tested, including children, college sophomores, people in business, and technology experts. (7)

Many of my participants expressed an emotional relationship with their gadgets in one way or another, even, or especially, when the gadget was old. This observation is confirmed by Nicholas Negroponte (1996), Sherry Turkle (2007) and Bibi van den Berg (2009), who also found that people develop social relationships with technical devices. Van den Berg raises the question of whether the emotions that individuals feel towards their mobile phone, for example, are aimed at the technical object itself or more at its mediating properties, since it is used to maintain intimate relationships and connect people to the world. She presents an answer that recalls Annette's quote from earlier in this chapter:

> (…) this line of reasoning seems to be contradicted by the simple fact that many people are reluctant to part with their specific physical mobile phone and to trade it in for another, for instance when it needs to be repaired. They miss having their 'own phone', even if all the functionalities offered by the replacement phone (including the full potential of staying in touch with important others) remains intact. (Van den Berg 2009: 246)

The strong bond that people feel towards particular technical and non-technical devices is nicely described for different objects ranging from soft toys via cars to laptops in Sherry Turkle's *Evocative Objects* (2007). The different essays in her book give an insight into the intimate relationships that individuals develop with particular objects and how those relationships develop, become more intense over time, change and wane but do not end. It seems to me after reading her accounts of relationships experienced by animate towards inanimate subjects that, whenever individuals experience a technical object as a reliable friend for a long time, it turns into a kind of family member that has gained rights in terms of how it should be treated. Trevor Pinch (2007) describes how technical objects are not only treated and perceived as friends but are also given first names.

The boundaries between the human and the non-human are blurred as people assign feelings and moods to inanimate objects. This is not new. In fairytales and sagas, things come alive, for example when the clock strikes midnight, as in 'The Steadfast Tin Soldier', a fairytale by Hans Christian Andersen, where toys start to come alive. Kathleen Woodward (2009: 157) asked: 'What is the key to believing that a digital life-form possesses subjectivity? To treating a digital life-form as if she or he were a person?' She

suggested: ‘As opposed to other technological artefacts (dishwashers, for example), we are inclined to treat media in accordance with the rules for social interaction in everyday life’ (Woodward 2009: 156). Don Ihde (1990) explains the fascination with artefacts and the urge to turn technical objects into a ‘quasi-other’ (Ihde 1990: 98) as stemming from the fact that they appear to have a life of their own when familiar commands result in unexpected results. But, more importantly – if technical artefacts have been working fine and reliably over a long time – they become valuable friends. As Annette said: ‘the camera served me so well, I hate to see it go, it was a really good friend.’

The propensity to form relationships with both animate and inanimate objects is a core proposition of object-relations theory. Melanie Klein (1952), W. Ronald Fairbairn (1952) and Donald Winnicott (1953) think that humans have an innate drive to form and maintain relationships and that this is a fundamental human need. The objects to which people become attached are incorporated into the self. They argue that in childhood we build relationships with stuffed animals, later in life people might form attachments to habits, alcohol or food. Kleif and Faulkner (2003) point out that studies conducted by Samuel Florman (1976) and Sally Hacker (1990) witnessed the sensual absorption, spiritual connection and emotional comfort, even erotic pleasures, found in intimate relationships with technical artefacts. They observed it mostly in men and raised the question of whether men preferred relationships to objects than relationships to people. In my study, the participants did not form relationships with all their gadgets. Which ones they felt attached to also differed from person to person. But intimate object relationships were expressed by both genders. Michael (G, 50) enthused about his hi-fi, towards which he had devoted much of his time and money in the past and Neeltje (NL, 22) did not want to be without her mobile phone, although it was an old one. When I asked my interviewees what the most helpful gadget was for them, they all came up with a more or less instantaneous answer accompanied by vividly expressed feelings. Simone and Robert, for example, made it clear that they would not like to be without their computers. Simone said about her relationship to her computer:

> I’m pleased to have the mobile phone, but the one I would find so, so difficult to live without would be the computer. Very, very difficult. (...) Because I keep in touch with friends on it. I research things on the internet. (…) And, erm, in weak moments I play Patience on it (both laugh). And I’ve found some really difficult ones. (…) I do use my computer a lot. I would really be lost without it. (…) if my internet goes down I’m bereft (laughs). It’s a bit sad, isn’t it? (Simone, GB, 67)

Robert used similar words:

> I guess I'd have to say the computer, because that's useful in so many different ways. If I had to (…) anything taken away from me, I could lose my camera and my phone, but I would be lost without the computer. (Robert, GB, 63)

Maureen used the word 'attached' when she spoke about her mobile phone, but she was not attached to her computer as she explained that she could find other places to access the internet.

> [the mobile phone is] the only thing I would feel lost without. If it broke or it went wrong or I dropped it down the loo or something, I would feel really quite nervous and anxious without it there. When I leave the house without it I, I come back and I think, 'Oh, whew, I'm back here, I feel like I've lost a limb when I don't have it.' Which is so silly that you get so dependent on it for, because as you mention I use it for, just as a watch, I use it for, you know, reminding me of appointments sometimes, I'll tap them in, and alarm comes up and says, 'Don't forget you've got to go here.' And so without it I think I'd be lost. (…) I have a computer but I'm not very attached to it, really. (Maureen, GB, 23)

Maureen used dramatic comparisons when describing being without her mobile phone. 'Feeling lost' without a certain gadget was mentioned by many of my respondents, but Maureen said: 'lost a limb', which points in the direction of a technical object becoming an extension of one's body. This view is in fact shared by many authors. Sonia Livingstone (1992) states in *Consuming Technologies*:

> In so far as objects function as extensions of the self, invested with personal and family meanings, the language with which people discuss their technologies tells us of their identities, their needs and desires, their ways of interpreting the world and of relating to each other. (Livingstone 1992: 117)

And Margaret Jane Radin also argues that individuals begin to identify with some items of personal property, e.g. wedding rings (Radin 1982: 959), to such an extent that those objects do become personal. The objects in question become almost an extension of the person.

> When an item of property is involved with self-constitution in this way, it is no longer wholly 'outside' the self, in the world separate from the person; but neither is it wholly 'inside' the self, indistinguishable from the attributes of the person. Thus certain categories of property can bridge the gap or blur the

> boundary between the self and the world, between what is inside and what is outside, between what is subject and what is object. (Radin 2001: 57)

The concept of possessions as extensions of the self has been discussed by many authors (e.g. Cooper 1972, 1974, Duncan and Duncan 1976, Belk 1978, Stone 1994). The close relationship between technical artefacts and human beings has many advantages, such as being up to date, proficient in knowledge, confident in handling gadgets, achieving high status and having easy and fast access to information, but it can also have disadvantages. Craig (GB, 29) described how he felt while using the diary on his mobile phone:

> I use it a lot for organising my day. I play a lot of sports back home, so I would use it to, to tell me when my sports games were, and so there weren't conflicting games, or, you know, if I wanted to do something after work I could, say, 'Let me look at my phone and see if I have a game or not.' And then if I didn't have a game I could say to my friends, 'Well we can go out and have a drink.' And if I had a game I'd say no, so, it saved me having to remember everything. I could just travel with my phone and look at it and organise my week or day or my month.

This innocent description of how he made use of his diary makes it sound as if he might be dependent on his phone for planning his life. Without his supporting devices, he might have a problem in keeping up to date with his appointments. This observation was shared by most of my interviewees.

Heavy use of supporting technologies can lead to addiction and dependence. Michael's (G, 50) feelings were dependent on his working internet connection: 'Telephone is meaningless to me compared with the internet and email. Totally meaningless. If the telephone is not working, that leaves me cold. But if the internet connection does not work, that makes me nervous.' Iris admitted that she would be upset if her laptop broke. 'You can go to the internet and look for things you want to know or want to compare or well, I use it daily. I can't, if my laptop would break down I would be really upset' (Iris, NL, 58). And Maaike (NL, 24) said the same: 'My computer. I couldn't do without the internet. I could do without a mobile phone, if it weren't for the numbers, but I could not do without the internet.' And Jan (NL, 62) confirmed in a drastic way the dependency on technology at his workplace:

> yesterday we had a breakdown of the internet and nobody could work anymore here. We didn't have our telephone numbers, we couldn't email, we could go out if we had wanted. [Laughs] And that is scary. It's not only here but the whole

> country (…). And I am sure it will go further and further with technology and as long as it helps us it is very good, but when we are slaves of the technology it is not good. (Jan, NL, 62)

Jan's bleak evaluation of this dependency on technology in general is of course discomforting. Many of my interviewees, especially from the Netherlands and Germany, shared this view and were concerned about where this dependency on technical devices would lead in the future. As Vincent (GB, 23) said:

> I think that's quite alarming, we're just so dependent now for our social relationships that, you shouldn't conduct your life through a phone.

This kind of addiction to technical objects was feared by other participants too. Niklaas argued:

> All the people getting addicted to it. They are always checking their mail. They look on other websites if they are working, at pictures of females and that sort of thing that has nothing to do with their work but they do it lots, they are sending emails to each other that have nothing to do with work. Online casinos, it's an odd thing. People get addicted to it. I heard students, they are gambling on the internet now. Of course, you have now mobile phones with internet. I don't use that, because I think you will get addicted to it. (Niklaas, NL, 23)

Addiction to the internet and emails, online games and gambling is a problem for many people nowadays.[73] To find a balance between such overuse of technology and not using it at all seems to be a challenging undertaking for every individual.

Another point that worried my interviewees was whether individuals still had power over technology or whether they were already at the mercy of technology and exploited as data sources, for which their privacy was invaded. Folkert (G, 26) feared the transparent society and that information about his habits might be retrieved from his computer and debit card and transferred to companies who would use it for all kinds of commercial purposes. This double-faced nature of technology meant that it could be used for good or ill. Katrin therefore limited her involvement with technology:

> I am not open to everything that is available, some things are highly questionable, since social contact happens less and less, also because of the mobile phones

[73] See also: http://www.netaddiction.com/, and Young, Kimberly S. (1998) *Caught in the Net: How to Recognize the Signs of Internet Addiction--and a Winning Strategy for Recovery*. New York: Wiley and Sons.

> since a text is impersonal, even when it is practical and, like electronic pets, I disapprove of that. (Katrin, G, 26)

Some interviewees were concerned, not about themselves, but about others, whom they saw as in danger. Christian (G, 25) worried about older people who are coerced into using more and more technical objects, for example when they want to get money from the bank or buy train tickets from machines. He wondered whether these people would understand how to deal with technology and the increasing level of impersonalization in society. Simone was shocked about the silliness of young people confiding private data on FaceBook:

> I think there's a lot of problems with young people with FaceBook. They put their names on FaceBook. They actually put the date of birth, and they might say, I'm studying at X University or Y, and they're so easily identifiable. And that frightens me really. And it's a bit like the genie out of the bottle and you can't put it back and I do think it's an incredibly valuable tool, and I'm not being a Luddite about it at all. I'm in fear for how it's being used at the moment. (Simone, GB, 67)

By expressing concerns about dependency, addictions, the network society, love and fear, my participants confirmed the two sides of every technology – the advantages and disadvantages inherent in each technical device. Positive feelings towards technical objects were expressed more by the British interviewees and fear more by the German participants. Surprisingly they were expressed as much by younger participants as by older ones. In the Netherlands and Germany, the younger participants were self-aware about their own behaviour and evaluated themselves rather critically. This was not the case in Britain. Older British participants expressed concerns about some technical developments but, apart from Vincent, none of the students critically reflected on their own behaviour. The three early adopters, Craig, Jan and Phoebe, and the people who loved technology, such as Michael and Sabine, were less critical than the others. Interestingly, although addiction to email, computer games and chat rooms is an issue in Britain too, these subjects were not mentioned in the interviews.

6.8 The end of the domestication cycle: Parting from a technical gadget

Looking back at the beginning of this section to the quote from Annette, she seemed to have difficulty in parting with her old camera, although it was broken. Apparently she

perceived this gadget as valuable and useful and was quite attached to it. Although people are quite accustomed to the low longevity of technical gadgets, they try to use them as long as possible. Simone emphasized that she would only buy a new camera if her old one broke but that she would not replace it for a better one. She said: 'the latest technology's not really of importance to me. So as long as this works I probably won't change it. And the same with my digital camera' (Simone, GB, 67). The attachment to technical gadgets, as discussed before, can be very strong.

In a documentary on BBC Four (October 2009),[74] the life story of a mobile phone was told from the perspective of the phone itself. It was assigned agency, feelings and a voice (male) and expressed feelings of regret (to have lost the intimate relationship with its owner, a woman), indignation (about being dumped and left on a grubby floor in Antwerp to be melted down) and sentimental, maudlin feelings (by calling out to her with its last bit of battery life, flashing the display light desperately to make itself be seen and rescued). This documentary anthropomorphized the technical artefact, assigned feelings and sensations to it, giving it the status of a friend and playing with our feelings of guilt, since we would never do such a thing to a friend.

At the end of the adoption cycle, when the use of a device declines and it no longer fits into current life circumstances, when it is partly or completely broken, my respondents found it hard to discard their devices. Lehtonen points out that: 'people have a hard time abandoning their unused devices once and for all, even when they acquire up to date things to replace them' (Lehtonen 2003: 379). But the adoption cycle of production – consumption – disposal is, following Kevin Hetherington (2004), not necessarily a linear sequence. People pass their used devices on to friends and family members, whereby they obtain new sentimental value. He also emphasises the two-stage process of disposal: before being buried for good, the devices are stored away in attics, garages, wardrobes and cupboards, from where they can be retrieved if necessary.

Every technical item will lose or gain importance during its lifetime and is eventually replaced by a newer model or discarded. However, many of my participants looked back with nostalgia when talking about technical devices they had had in the past or even as children. Their eyes became dreamy when they remembered past times with particular

[74] *The Life and Death of a Mobile Phone*. BBC Four. Broadcast: Sun, 11 Oct 2009, 03:40. http://www.bbc.co.uk/programmes/b00n58ml, accessed 21.05.2010.

technical appliances that they loved. Michael (G, 50) was still attached to the hi-fi that he had had when he was young.[75]

6.9 Conclusion

This chapter has explored the relationship between identity and technology. As I have explained, people use technical devices as extensions of the self and as identity markers to show how they want to be perceived. Identity as a concept is seen as socially constructed, a performance that is re-enacted anew in each situation, whereby the way in which it is performed is influenced by what is perceived as appropriate by the individual and in her social context. In that sense, woman has to be performed distinctly differently from man but within the gender she has a range of possibilities. Industry offers a wide range of designs and models of all manner of items that are also genderised in design for women and men. The question is which came first: did women want pink gadgets or flowery motifs and the industry fulfilled their wish? Or did male designers decide that women want those designs and then women went for them? This conundrum cannot be answered here. But my male British students were convinced that women would want pink devices with only basic functions. Women had prejudices too. Some of the older British and Dutch women perceived men as being keen on new gadgets whether they needed them or not. And although the young men claimed that function would be more important to them than design, some, like Craig, enthused about the sleek designs of their gadgets. In general, my observation is that both women and men were susceptible to design and it was more dependent on their artefact

[75] On the internet site of the German Newspaper *Die Süddeutsche Zeitung* are pictures of extinct appliances that people might well remember. Illustration 6.2 shows my first computer, a Sinclair ZX 81, which brings back memories of nights spent together with friends, full of excitement to find out what this little machine could do.

Illustration 6.2: Gravestone for an extinct gadget.

Source: http://www.sueddeutsche.de/computer/954/319825/bilder/, accessed 24.05.2010.
Translation of the text in picture: 'rest in peace'.

identity than their gender whether, for example, a basic mobile phone or the newest model was appropriate for them.

These distinctions between my respondents were investigated in terms of adopter types. The result was as predicted by Rogers, with a few innovators and early adopters and a few laggards while the largest proportion of my respondents was either early, but mostly late majority adopters. What is interesting to note here is the high number of women who were early adopters and that all the laggards were men. It is not possible to generalise from my sample but this may warrant further research. Early adopters have more knowledge and confidence in dealing with technology in general. They also identify more with their devices, whereas laggards keep their distance from their gadgets, have little knowledge and perceive technology as difficult to deal with and learning how to use devices as long and effortful. Two of my respondents (Wolfgang and Henry) can be characterized as non-users, as they rejected most gadgets.

I also found that some of my female respondents played down their technical expertise. As explained earlier in the chapter, this behaviour might be connected with the desire to appear more feminine. As technical proficiency is connected to the male gender role, it is difficult for women to integrate both technical expertise and femininity in the performance of their identity. Another surprising result appeared when I asked my interviewees whether they thought that men knew more than women. All the older participants denied this and found examples of both knowledgeable women and men, but within the younger generation, in particular my British and Dutch respondents, both female and male students agreed that men knew more than women. Some pointed to reasons for this, such as the fact that there are fewer women in technical studies or the gendered socialisation of girls and boys.

In general it was more important for the early adopters in my sample to stay up to date with their technical knowledge than for the later adopters. As the early adopters are seen as ‘warm experts’, who are asked for help, they have significant motivation to keep their knowledge up to date, which in turn gave these individuals more knowledge and confidence with technology. Maaike served as a good example of how self-perception in relation to technology can limit job opportunities in real life. As she saw herself as not being a person ‘who is into technology’ she rejected a job that had to do with technology. Only when she was asked a second time did she consider changing her own self-image in relation to technology and adapted her identity to integrate a higher level of technical proficiency.

The German respondents were highly critical of technology, especially the younger generation. They seemed frustrated at not being able to keep up to date with new technology as it developed too fast. Many distanced themselves from technology, talked a lot about its dangers and feared developing a dependency on technical gadgets, but nevertheless used the same gadgets as the students from the other two countries.

Many respondents talked in emotional terms. Women and men alike mentioned feelings in relation to technical devices. This is a common behaviour, as Reeves and Nass (1996), but also Turkle (2007), confirm. Individuals maintain relationships with technical devices that they use often and start to treat them as social beings. Most of my participants found particular gadgets helpful in their everyday lives and said that they would miss them if they broke down or could not be used. This was sometimes experienced as dependency. The attachment to technical objects was most clearly observed when gadgets had served the owner for quite a long time but no longer did so for a variety of reasons. They might be broken, obsolete and exchanged for a newer model or no longer needed, but when it came to parting from old, even useless, technology some of my respondents became sentimental. The older German generation, such as Michael, Annette and Sabine, were particularly affected by such feelings.

All the topics discussed in this chapter touch upon the identity of the individual. How she perceives herself in terms of technical expertise and how she is attached to her gadgets, how she presents herself to the outside world by using technical artefacts and how artefacts influence her self-image all reference what I have termed one's artefact identity. This is a very complex topic that deserves to be explored further than I can do here.

7 Conclusion

This study set out to investigate the acquisition of technical knowledge about everyday ICT devices. In particular, I wanted to find out whether the acquisition of the knowledge necessary in order to use everyday technical devices would be different for women and men.

Considering the stereotyped gender roles that assign to men implicit technical knowledge and to women a lack of interest in technology, I wondered how women manage the challenge of using widespread ICT devices such as mobile phones, computers, the internet, digital cameras and MP3 players, which in 2012 are part of everyday life. Although it may seem like a personal decision to choose how much technical knowledge and proficiency an individual wants to achieve, this is not quite the case. Media literacy is one of the major goals of the European government. Citizens are encouraged to attain media literacy in order to act responsibly and critically with media content and to become ideal citizens who are technically knowledgeable, responsible and informed consumers. This neoliberal approach focuses on the individual as the source of achievements. Structural dimensions of income, access and cognitive abilities are neglected. How the individual is supposed to acquire these qualities is seldom inquired into. On the contrary – individuals are left to find their own methods and strategies to acquire the necessary information that enables them to be technically proficient. The individual's own endeavours are key. Since many people use everyday gadgets, it seems that one 'just knows'.

In my study I investigated the narratives of female and male, older and younger individuals from three north-west European countries about their perceptions of technology, their personal technical gadgets and their practices regarding technology. None of them was an expert in all technical gadgets, each experienced her technical gadgets differently, some were attached to some but not to others, some had difficulties with technology in general, others with particular concepts and few felt comfortable with all kinds of technology. By entering into this field, I entered into 24 individual stories where each narrator was the centre of the perspective and opened up a window into their complex world of networks between human and non-human actors from their own point of view. Through semi-structured interviews, I generated qualitative data that allowed me to understand their views, hopes and fears. Many of the findings of this

study are a snapshot in time as my interviewees' attitudes and interests towards particular devices might change over time.

I wondered whether different cultures would influence people's attitudes towards technology. As a German living in Great Britain, I had encountered more cultural differences than I had expected and began to wonder whether people in Great Britain would react differently to new technical devices than people in Germany. Therefore I decided to do interviews in different European countries and chose Great Britain, Germany and the Netherlands for my research. At first glance, these three countries seem to be quite similar. However, I discussed certain cultural differences that emerged initially in the literature I reviewed in Chapter 2. By using concepts developed for marketing purposes I was able to evaluate cultural differences between the countries. Hofstede (1991) argues that there are cultural differences between these three countries, for example, in terms of the display of emotions, in that Britain is amongst the less expressive countries whilst the Netherlands and Germany are counted as 'affective countries'. Further, British people have, following Hofstede, a lower 'uncertainty avoidance' level, which implies that new technology might be adopted earlier than in the Netherlands and especially in Germany, where individuals tend to stick to their old gadgets much longer because the 'uncertainty avoidance' level in Germany is high.

In my sample, the Dutch respondents appeared to be the most technologically advanced, and my British participants seemed to embrace changes more quickly than the others. German respondents in my sample showed a conservative attitude to new technology and valued established patterns more highly. These cultural differences reflected Hofstede's above mentioned cultural differences. Technical enthusiasts were more commonly found within my British sample, whereas the Dutch interviewees seemed to be more neutral and the German ones were mostly critical of new technology.

I discussed the methods I used to investigate how women and men acquired their media literacy in Chapter 3. I explained that semi-structured interviews seemed the best way of finding out about individual perceptions of knowledge acquisition because this approach provides the freedom to follow up on a subject or to inquire further into a topic a respondent has mentioned by guiding the flow of conversation. My sample of 24 participants from two generations (20 to 30 years of age and 50 to 70 years of age), half of them women and half men, from the three countries, proved to be a valuable and rich resource for my work. As I did all the interviewing, transcription and analysis, it

made me live through the narrative of each respondent many times until I knew them by heart, and this helped me to decide how to make sense of the different themes that emerged in their comments.

When I started my analysis, I realized that it would be best to consider my participants' childhood experiences with technology first, as it was possible that childhood experiences might influence later interest in technology. For this reason I asked my respondents about the technology they used in their childhoods and discussed their responses in Chapter 4. The findings were understandably very different for the older and younger generations. Between the childhood years of my older respondents, during the 1950s and 1960s, and the years when my younger interviewees were children during the 1980s and 1990s, the technological development of ICTs grew exponentially. Whereas the older participants were excited about getting a fixed telephone line and a refrigerator, the younger ones took these appliances for granted and were used to having little personal gadgets carried on their bodies.

I found that most participants used all four of my key gadgets; only three older interviewees did not use them all. Further, technical development in all three countries was similar in speed and in terms of which kind of appliances were available. The Netherlands was probably the most advanced country in terms of the spread of domestic appliances. The older respondents could clearly remember the domestic technology they had had in their family. Many, across all three countries, had one special device that they were one of the few people to own and which back then was novel and made them stand out. They all used the same word to describe their feelings about this fact: 'proud'. This was definitely a good experience with technology as they were given a higher status through the possession of a particular technical device. This feeling is more difficult to achieve in modern times as there are so many technical devices around that the majority of people use. But this positive experience with technology in youth was no predictor of interest in technology later in life. Wolfgang, an older German participant, despite having had this positive experience in his childhood, rejected technology at the time of our interview when he was about 60 years old because it was all too much for him, the changes were going too fast and he felt that he could no longer catch the moving train.

However, there seemed to be a correlation between the interest in technology shown by my respondents' parents in their natal family and the degree to which their own interest in technology developed later in life. Girls and boys in all three countries who

had parents with an interest in technical innovations were more interested in technology later in their own lives and used more devices.

The attitude in terms of how technology was perceived was fairly similar across the older generation and across countries. Technology was seen as useful and was appropriated for specific, often pragmatic reasons. The older generation made no distinction between the genders and emphasized that they all knew women who were interested and competent with technology as well as men. The younger generation, however, showed significant differences across the countries in their attitude to technology. First, none of them mentioned domestic appliances as these were not even perceived as technology. Only communication and entertainment technology was seen as 'real' technology and worth talking about. But, apart from that similarity, the differences were considerable: British students showed a lot of enthusiasm for shiny new gadgets, whereas the Dutch students were using mostly old models, in this way using their mobile phone as a way of expressing their political standpoints. German students took a critical stance towards technical gadgets, although they used the same devices as the British and Dutch students. These differences have not been previously been discussed in any related literature and thus constitute part of the original contribution to knowledge made by my study.

There were also significant differences in attitude between female and male students. Whereas there was no difference between German students, the British and Dutch had quite a lot of prejudices about the other gender. The boys thought that girls would only be interested in design and not in functions and they were more inclined to ask a boy for information on technical gadgets. Girls played into this role and described themselves as confused about technology and confirmed that they would rather ask boys than girls for help with technology. These attitudes amazed me as I thought that especially the younger generation would show more gender equality. One male Dutch student, Niklaas, was apologetic about his opinion, which he perceived as chauvinist, and used the low number of women in engineering studies as an explanation. Kleif and Faulkner (2003) emphasise that the reason why more men choose to become engineers has nothing to do with 'natural talent' but is grounded in childhood experiences with technology.

> Boys' and men's pleasures in technology demonstrably contribute to the continued male dominance of engineering occupations in at least two ways. First, boys are more likely than girls to be socialized into hands-on tinkering with

> mechanical devices. This is evident in the toys boys are encouraged to play with at home; in the tendency for boys to gravitate to and dominate the use of all kinds of equipment at school (Murphy 1991); and in the classic projects, such as taking cars apart, in which technology provides a rare focus for fathers to bond with their adolescent sons. For many male engineers, a childhood spent tinkering with technology is what makes engineering a 'self-evident' career choice (Mellström 1995, chap. 7). Second, it is commonly assumed that being technology focused is mutually exclusive with being people focused. The fact that this dualism maps readily onto presumptions of masculine instrumentalism and feminine expressiveness makes engineering a symbolically 'gender-inauthentic' career choice for women. (Kleif and Faulkner 2003: 297)

The reasons why so few women choose engineering as their profession are manifold. The two mentioned here by Kleif and Faulkner might be important ones and explain why men are thought to be more 'into' technology than women, but the issue of why women and men are assigned such different attitudes to technology within their gender roles is a complex one and is outside the scope of this thesis. My aim here was to find out whether or not women reported disadvantages because of these different assignments.

Looking at the two generations, it was noticeable that most of the younger participants in all three countries were dismissive of their parents' abilities with new technologies. Although several confirmed that their parents could text and were using the same gadgets as they did, parents or the older generation were seen as not competent in using modern technologies. Younger participants seemed to think that they were more knowledgeable and used more functions than the older generation in general. Participants from the older generation confirmed this prejudice by remarking on their children's ability to use every gadget without seeming to have to learn how to do it. Michael, a male German participant from the older generation, admitted that he would ask his daughter for advice about his mobile phone as she seemed to 'just know' how these things work. However, those older individuals in my sample who did engage with modern technology, which was all of them apart from three older men (one from each country), seemed to use the same technical devices and the same functions as the younger generation and felt comfortable with their gadgets.

The younger generation saw themselves as more dependent on technology as they felt that they no longer had the choice of not adopting new technologies. Universities, for example, use various media channels, such as email, videos and message boards, and

students need to use these in order to participate in their courses. Additionally, peer groups set standards in terms of which devices and which communication channels have to be used. Those who did not adapt to these particular technologies were perceived as not 'available'. Vincent (GB, 23) put it like this:

> Living in England you just, you just have to, it feels like you have to have one to be able to keep contact and keep in line with your friends. I only have one friend who doesn't have a mobile phone and, yeah, he's just so off, off the radar, we joke 'cos it's really hard to get in contact with him, and it's just, I don't know. It's one of those taken-for-granted things, do you know what I mean? (Vincent, GB, 23)

The younger generation not only felt forced to use various technical gadgets, they were also expected to 'just know' how they worked, as Michael explained. Parents turned to their children for help with technical devices and therefore exercised pressure on them to be knowledgeable. This pressure was probably higher for boys than for girls, in line with male gender role expectations regarding technological know-how.

One of the biggest challenges in acquiring a technical device and adopting it into everyday life is the accompanying necessity to gather information about which model to purchase and then learning how to use it. This was the focus of my primary research question, which initially propelled me into this research. By investigating the strategies women and men develop to manage this challenge, my aim was to find out whether they operate differently in this process. In Chapter 5, I utilized Silverstone et al's (1992) domestication theory to analyse the process of adopting a technical appliance. Domestication theory begins the adoption process with the Appropriation Phase, where the device is purchased. My research showed that the process of acquiring information actually started earlier than that as my participants talked about finding the right information about new technology in general prior to the point of purchase. To be able to assign the interviewees' responses to the corresponding stages of adoption, I defined an additional phase preceding 'Appropriation', which I named 'Investigation', thus extending this theoretical framework. Another phase, which Silverstone et al. called 'Objectification', was not applicable to my research. In 1992, Silverstone et al. chiefly examined computers at home, which were rather large back then, and explored how they were displayed in the house and therefore how much importance they were given. As the key devices I examined were small and used everywhere, this stage had limited meaning. The process of adoption thus divided into four stages in my research: 'Investigation': research about which technology is available, 'Appropriation': the

purchase of the device, 'Incorporation': when the appliance is assigned a place in a person's everyday routine and finally 'Conversion': when the device is used as an extension of the self and an identity marker to express the identity of the owner.

In each phase, different knowledge has to be acquired in order to be able to go on to the next stage. As MacKenzie and Wajcman argue, technology is always connected to knowledge and without know-how technology cannot be used at all.

> Technology, (…), can be seen as including not just things themselves but the physical and mental know-how to make use of those things. Know-how is a resource that gives those who possess it a degree of actual or potential power. (MacKenzie and Wajcman 1985: 22)

The authors point out that this power is often held by men and contributes to the differentiation of the genders. There is a further aspect to this. Kleif and Faulkner argue that women are not supposed to have fun with technology and, since in general they have less leisure time than men (Waring 1989), there might be a need for a legitimation for women that does not exist for men:

> It appears to be more legitimate for adult men to have fun with technology than for adult women to do so. Legitimacy here has two aspects: that women perceive fun with technology as a gender-inauthentic pursuit and that they need to legitimize or justify their leisure activities more than men do. (Kleif and Faulkner 2003: 310)

With this in mind, I analysed the narratives of my respondents and found that each of them had a strategy that enabled them to achieve a certain level of media literacy in line with their perceived needs. In the first phase the most striking difference was how women and men found out about innovations. Although all my interviewees had been influenced by advertisements, the first serious interest in a technical device was often aroused when they saw a friend using a new gadget. In particular, the male participants of all ages and all countries, even the refusers in my research, mentioned the showing around of new devices among their friends and how they learned on these occasions that new technologies were available. Female participants did not engage in this behaviour. There was only one female Dutch student who mentioned that a female friend had told her how excited she was about her first mobile phone and that Neeltje should buy one too. This finding suggests that women have fewer opportunities to be confronted with and learn about new technical gadgets. Members of the younger generation are part of many social communities and friendship networks, so the chance

of encountering new technical gadgets is higher than for older people, who often do not engage in the same kind of object display and also operate differently in their social circles. This circumstance might be disadvantageous for older women.

I found that in general my respondents tried to avoid the act of learning whenever possible. This was true for both women and men. When they did engage in learning, they tried to keep it to a minimum. The hurdle of investing time and effort in acquiring new knowledge was mostly overcome when individuals were interested in purchasing a device. Then they needed information about which model to buy, when and where. Once the device was purchased, they had to embark on more learning as they now had to acquire knowledge about how to use the appliance's functions. This was also mostly done with a minimum of effort, with the result that most of my respondents deliberately only used a few of the functions the appliance provided.

It is a struggle to maintain a balance between the sheer amount of information and pressure coming from the outside and the individual's desire to perform a particular identity by transforming this pressure and information into a manageable amount of knowledge to survive. If the burden of these two is perceived as no longer manageable, people become stressed and might decide to become non-users for a while or forever. Therefore all the strategies developed by my participants included ways to keep the amount of information intake as limited as possible in order for it to remain manageable and assessable. If participants felt overwhelmed, which happened especially to both the younger and older generations of my German sample, they withdrew from technology and some refused to get involved again. There was a continual process of negotiation in progress to evaluate at regular intervals whether the information that had been gathered was just enough to make an informed decision or not, in which case the information hunt was resumed.

Technical knowledge can be found in more and more contexts, from newspapers and magazines to theatre productions and movies, which all address new technology issues and present the various challenges of dealing with modern technology. I distinguished between the five non-human knowledge sources mainly used by my participants: the internet, magazines, newspapers, TV and manuals. The internet was the most important information source for everybody in my sample. My findings show that the older generation in my sample mostly used the websites of their preferred brands, online newspapers and sites with customer reviews while the younger ones used a wider variety of sites including forums, *YouTube* and blogs. Offline media such as magazines,

newspapers and manuals were used mainly by the older generation and interactive media appealed more to the younger participants. Gadget magazines were targeted at a male audience, especially in Britain, where they were generally advertised with half-naked women on the cover. In Germany, the covers were more neutral but showed mainly men and gadgets. Only the gadget magazines in the Netherlands had competent and fully-clothed women on the cover and indeed published one gadget magazine specifically for a female audience: *savvy*.

The approach to manuals was interesting. As a legal requirement, a manual, either in written or digital form, has to accompany each appliance in all three countries I researched, but only three of my interviewees would ever read a manual from cover to cover, all of them from the older age group. The majority of my participants loathed manuals and claimed that they could not make sense of the descriptions and that they would be of no help anyway. This perception was shared by all ages, sexes and countries.

The most important knowledge source for nearly all of my respondents, apart from the internet, was other people: friends, relatives, colleagues and so-called 'warm experts', a term coined by Bakardjieva (2003). A 'warm expert' is a technically proficient human being who is in the circle of either friends or acquaintances and is consulted whenever a technical question arises. Such warm experts, or Geek Gods, as Rentel and Zellnik (2007) call them, are early adopters, use a lot of different technical devices and are happy to share their knowledge and give advice to technically non-proficient individuals. A human helper can usually identify the level of information needed, even if the wrong level is requested. This saves time, effort and frustration. When my interviewees found a person more proficient than they were, they could discuss their personal needs and would trust this person to recommend the best product for their situation. Each of my interviewees maintained a personal knowledge network containing individuals with a higher proficiency than their own in different areas of knowledge.

The kind of knowledge that has to be acquired at different stages of the domestication process is diverse. Lehtonen (2003) argues that technical knowledge subsumes multiple skills and is:

> intimately linked with commercial knowledge (for instance, the capability to sort out information concerning brands, prices and shops), with social knowledge (who of my acquaintances is more familiar with these devices than I am? How can I mobilize this person to join me?) and with questions concerning personal and

> collective taste (how can I fit this object into the already existing technoscape and family practices? Which brand is cool or suitable and why?). (Lehtonen 2003: 382)

How did my respondents react to this challenge individually? I discovered that they applied four main strategies of knowledge acquisition during the phase of appropriating a new device. Most British participants would first look online and then either buy online or in a shop, whereas most German respondents (young and old, female and male) would trust retailers, preferably from family-owned shops, to advise them on what they needed and would buy there. This had the advantage of cutting down the time and effort required to search for the right information, and by explaining to the retailer the circumstances in which this device would be used they trusted her or him to recommend the device that would best fit their particular needs and used this person as a 'warm expert'. The third strategy was reported by most Dutch and German interviewees but by hardly any of the British: asking friends and relatives for information and advice on new gadgets. This approach included borrowing devices from friends or relatives and trying them out.

The fact that none of my male British participants used human knowledge sources was striking. This might have to do with the fact that men are 'supposed to know' and by asking friends they would be admitting that they lacked knowledge. Additionally, cultural values might impinge here, as explained in Chapter 2, as Hofstede (1991) found that in British culture might be a sense of losing face and therefore people might not be likely to admit that they do not know something. By pressing this issue in my interviews, two British men admitted that, if at all, they would ask only very close friends but not relatives.

As women find themselves confronted with the fact that they have to use particular technical devices, they do so and seem to have no more difficulties in acquiring the necessary technical knowledge than men. They seem rather to be in an advantaged position compared with men: because they use closer social connections, it is easier for women just to ask friends and relatives for information when they need it. They do not seem to have a fear of losing face, since they are not expected to know in the first place.

The last strategy was used mostly by students; in order to reduce the complexity of the information gathering process and the risk of losing money, they went into a big discount store and chose a cheap device so that it would not matter if it broke soon and it was thus not worth putting in time for thorough research.

Once my respondents had purchased a new technical appliance, they were confronted with the challenge of learning how to use it. This endeavour was solved in different ways. Most used the trial-and-error method, especially the younger participants. Some reported resorting to the manual if the trial-and-error method failed, but many perceived this as a personal defeat. Others just lived with the fact that they did not know how to use certain functions if they failed with the trial-and-error method because they loathed manuals and did not want to resort to them.

To make sure that access to a new gadget would be easy, many of my participants stuck to the same brand. In this way, they could transfer their existing knowledge about menus and functions to the new gadget. A small group had difficulties with all non-human knowledge sources; they felt dependent on other people who would explain the device to them. The majority of my respondents resorted to their human knowledge network at a certain point during the process of adopting a new device. Only the older British respondents were reluctant to ask another person for help. They tried to be self-sufficient by using online helpdesks and manuals or just the trial-and-error method. Most people had one particular person in their knowledge network whom they would contact first before moving on to their second choice and so on.

When comparing the strategies of the women and men, older and younger and from the three countries during the phases of both purchasing and learning how to use their devices, I found that there was no evidence of significant differences. All age groups, both genders and people from all three countries used a mixture of the trial-and-error method and resorting to their knowledge networks and other sources. But one particular new finding emerged: the reported strategies were similar within the group of people with higher technology proficiency and different strategies were used within the group with a lower level of technical knowledge. The respondents with higher technical proficiency were more confident users, and used the trial-and-error-method as their main instrument of learning by making the gadget the teacher, which responds with the desired result or not. These respondents used a wider variety of devices. In contrast, participants with a low sense of proficiency felt dependent on other people to explain the functions to them and were unsure about gadgets in general.

In Chapter 6, I discovered that the relationships my participants developed with a technical object ranged from purely functional ones to affective relationships where the device was described as a helpful friend and was treated like a social being. All of my respondents, male and female, young and old, and in all three countries, had their

favourite gadget, which was dear to them. The favoured gadget could change over time and was different for each interviewee. Most found their mobile phone very helpful in case of emergencies but it was not a close 'friend'. Most interviewees said they would find it difficult to imagine living without a computer and the internet, especially the Dutch participants. The British respondents were divided: the older ones were attached to their computers and the internet, the younger ones thought their mobile phone was indispensable. And the German respondents had many different devices, like a sat-nav that Sabine valued, a CD player that a young German liked very much and a digital camera which was dear to an older German woman. Some expressed their dependency on the mobile phone, like one female British student who described it as feeling as though she was missing a limb when she went out without it.

This kind of attachment to technical devices is supported by the industry, which provides many different models and designs so that each individual can choose a design and colour that she identifies with and likes. This turns technical gadgets into identity markers that are used to express ideological stances, economic and social status and proficiency, as well as likes and dislikes. One female Dutch student, Maaike, deliberately used an old mobile phone with only basic functions to demonstrate that she was not a capitalist. As Van Dorst argues: 'By choosing a technology and using it, she also produces a part of her identity, of who she is' (Van Dorst 2007: 191). Product designers have used this tendency to create a 'feminized' version of many appliances that are associated with men. Technical tools such as screwdrivers and even hammers are now available with flowery motifs, as though design were the only reason why women would not use them as often as men did. Pink mobile phones and laptops with glittery finishes are aimed at a female target audience. This is supported by some interesting perceptions, especially from the male British students, who were convinced that women would love that kind of thing and would rather go for design than function. My findings contradict this perception, as all the women were knowledgeable and valued function more than design. It was the men who talked about the shiny sleek black design of their new mobile phones. More research might usefully be undertaken to investigate this phenomenon further.

It was noticeable that the Dutch interviewees were not keen on shiny new gadgets (apart from Jan). This could have to do with the Calvinist influence in their culture, where showing off wealth is considered inappropriate. In contrast, the British valued shiny new technical gadgets. They enjoyed a new phone with the latest new functions. The German respondents' critical attitude towards technology seemed to have the

effect that they were using all the modern devices but did not care about the latest model. Some, like the German students, perceived more technology as a burden that they had to carry. It meant more new things to learn, more to engage with as well as more hassle of having to keep up. My interviewees were on the one hand drawn towards the technological sphere, which seemed to have an autonomy of its own, and on the other hand they tried to maintain a distance from it in order to retain a degree of control.

I used the adopter categories identified by Rogers (2003 [1962]) to typecast my respondents into typical technology users. According to Rogers' five categories, none of my respondents was an innovator, at least not at the time of the interview[76]. Three – two British (one older female, one younger male), one Dutch older male – were early adopters and were looking forward to and really enjoyed new technology. They had new technical gadgets earlier than others, were very proficient with all kinds of technical devices and acted as 'warm experts'. Few belonged to the early majority; most of my participants were part of the late majority category. These people tend to wait before they adopt a new device to reduce the risk of losing money and increase the chances of acquiring a well-engineered appliance. They are the ones who consult an early adopter for advice and keep their own technical proficiency at a lower level. Three men were the laggards in my sample. They would use technical devices only when they could no longer withstand the social pressure. They were apologetic about their behaviour, so they knew they were acting against the expectations of society. But then there were also the non-users as the last category.

The entire process of adopting a technical device is a series of negotiations between several forces, such as user and technical gadget but also social groups, self-image and identity issues. When the technical gadget has been given a place in an individual's life and the user has acquired enough knowledge to use it comfortably, a stable working phase has been reached. However, this is only temporary. As soon as the gadget becomes old and needs to be replaced or breaks or the patterns of use change, the negotiation starts anew, including more learning and adapting. It is a continuous learning process.

Adopter types are also not static. Many of my participants corresponded to several types at the same time. They were, for example, early adopters of a particular device such as a mobile phone but laggards with digital cameras, just because they valued and

[76] Innovator Michael (G, 50) changed during his life.

used mobile phones more than digital cameras, which were not as important to them. The appreciation of a technical device can also change over time. During the course of a lifetime, a person can be an early adopter of a mobile phone, for example, and later might no longer care so much whether the phone is old or new and become a laggard with mobile phones. The adoption and domestication process requires a very active user-to-be in the early stages, who has to invest time, effort and money. Later, when the device is integrated into everyday life and has its place and meaning, it is consumed more passively and not much noticed except for when it does not function. The more proficient users are, the more engaged they are with technology.

The level of technical proficiency was highest for early adopters and lowest for laggards. And in my sample I could not find a difference that would suggest that women or men knew more about technical devices. The level of knowledge had more to do with the category of adoption for the particular device, despite the fact that many participants held opinions about the other gender in terms of how knowledgeable they perceived it to be. The older generation was convinced that there were both women and men who were knowledgeable and they also knew both women and men who were nitwits in terms of technology. But many of the younger generation, both girls and boys, especially in Britain and the Netherlands, expressed the opinion that boys in general would know more about gadgets and their functions than girls. This perception influences the technical confidence of an individual. In my sample Maaike, a female Dutch student, made an interesting contribution on this subject. She expressed her surprise about herself when she finally accepted a job that she urgently needed which involved maintaining a website. She did not identify as somebody 'who is into technology', which she emphasized, and now she had to change her self-image and her identity in order to take on a job that required more technical competence than she perceived herself to have. But she confirmed that after a while she quite liked her new self-image of being technically proficient. Her old self-image did not entail a high level of technical expertise, so it might not have felt appropriate for her to gain a higher level of technical knowledge and to be able to think of herself as right for that job. If this is a typical female attitude, it adds to the playing down of competence that many of my female participants, old and young, displayed. This leads to behaviour that might be perceived as incompetence from the outside. Men, in contrast, do not appear to face this obstacle in the process of acquiring technical expertise.

Although I began this research only wanting to know about my participants' technical knowledge acquisition, during the interviews they introduced many other topics related

to technical devices. For example, everyday gadgets generated emotions such as suspicion, fear, enthusiasm, attachment and affection in all of my participants. The interviews were interwoven with greater or lesser levels of expression of emotion towards technology in general and technical devices in particular. This was apparently an important issue for my respondents. Thus I decided to analyse this subject in Chapter 6.

Both women and men, and older and younger participants from all three countries expressed affection towards their favourite gadgets. They valued the added dimension that was brought to their lives through using the functions of the gadget and sometimes felt as though they could no longer live without this added benefit. The Dutch and German students in particular were afraid of becoming addicted to their mobile phones and the internet. The British students expressed more positive feelings towards their gadgets and emphasized the convenience provided by the technology.

The attachment to a gadget can develop into a deep relationship. Several of my older participants remembered gadgets they had used in the past and became dreamy-eyed. They enthused about these gadgets as if they had been old friends. So it comes as no surprise to discover that parting from a gadget when its life span is over is hard for some. Old gadgets that are no longer used, even broken ones, are stored in cupboards, attics or drawers but not thrown out.

The identification with particular gadgets can be so thorough that they are seen as an extension of the self. This might be a reason why it is so difficult to part with them. They have been part of life for a certain time, mobile phones have transmitted many private feelings, digital cameras have captured precious moments. Such moments are normally only shared with close friends. Participants carefully chose which gadgets fitted their perceived identity and also the level of technical expertise was carefully chosen to fit into their self-image as someone not so much interested in technology or as an expert. As I explained, even the female early adopters in my sample who were very proficient played down their expertise, which might have to do with women playing down expertise in general or because this was technical expertise that they were not supposed to have.

I introduced the term ‘artefact identity’ to address the part of our identity that covers identification with technical artefacts, but also the amount of technical expertise that is felt to be suitable for an individual. The process of identity formation is a negotiation

between self-images and outside judgements, the normative power of which influences the identities of both women and men. Erel argues:

> An important moment in the formation of identification is the recognition of identity through authoritative instances on different levels such as family, school, media, etc. (…) By identification it *[sic]* is meant processes in which subjects form their identities, both personal and in relation to collectivities. This is never simply a 'free choice' but always takes place under conditions in which one is ascribed identities and social positions. (…) In this sense, identification is always a process in which resistances and contradictions are negotiated and struggled over. Conceptualising identities as multiple acknowledges that people identify in various, sometimes contradictory, ways which may be weighted differently depending on the situation. (Erel 2009: 36)

Identities are the scripts that individuals write for themselves and by which they live. If something happens that requires an adjustment to an identity, this is not easily made, as in the example of Maaike where it took a few months for her to change her identity enough to be able to take on the job that required more technical expertise than she herself seemed able to fit into her carefully constructed identity. Her sentence: 'I did not think of myself as being into technology' reveals a limiting perception of how much technology and technical expertise fitted in with her perceived female identity.

7.1 Coming full circle

Returning to the starting point of my thesis, I shall now return to my three research questions to provide some comment as to what my research revealed in relation to these. My first question was, 'In what ways might the acquisition of technical knowledge be more difficult for women than for men?' Looking at Maaike's example, I have to conclude that women may not encounter more difficulties than men in acquiring technical proficiency but rather in expressing and living it. Because society has lower expectations of women in the area of technical expertise, women are not as encouraged and might not be as motivated as men to keep up to date or to be technically proficient in the first place. If a woman restricts herself in the amount of technical expertise she thinks it is appropriate for her to have and limits herself in how much she allows herself to enjoy and play with technology, this has an influence on her relations and involvement with technology. In the workplace, as Maaike demonstrated, women might

not apply for a job that involves technical knowledge or working with technology in general. Also women might not consider the possibility of studying a technical subject if it does not fit their perception of themselves in terms of 'being into technology' and their femininity. As technology in general, and technical expertise in particular, is still seen as inherent only in the male gender role, Maaike might have perceived it as not appropriate for her to know about such things as web design because she is a woman.

Although many of the women I interviewed had the same level of technical proficiency as the men, or even higher, they gave the impression of not knowing much. This might then be an indication of a connection between artefact identity and success in the professional world, especially for women, as their confidence in their own technical expertise was mostly expressed as low. Even the female early adopters amongst my interviewees, such as Corrie, Phoebe and Simone, who were really proficient with technical devices, played down their technical expertise.

My second research question addressed the age factor: Did the 'digital natives', the younger generation I interviewed, develop different strategies from the 'digital immigrants', as older people are often called? Is the perception true that the older generation is engaged in a desperate struggle to catch up with the younger one? This question was explored in Chapter 4. Although these questions suggest that younger people know how to use technology without having to learn about its functions, this was not true for my respondents. Several students struggled with their devices and did not know how to use certain functions. In particular, one of the male students from Germany, Christian, and one from the Netherlands, Niklaas, expressed their frustration at not knowing how some of the functions on their gadgets worked. The German student apologized in a gender-referencing manner for not knowing 'as a man', which confirms the social pressure on men to know how technology works. However, the younger generation was perceived by all participants, old and young, as being more proficient with new technology, although the older generation was in general as well informed and proficient as the young one. Except for the three refusers, all used similar technical devices and enjoyed their functions. This finding is especially interesting for the older women in my sample as it contradicts the stereotype of older women as first, not being interested in technology (because of being women), and second, as not being capable of using it (because of being old). My results show that all the older women interviewed used many different technical devices and felt comfortable with them. They were more open to new technical developments than the older men, of whom three were refusers of technology. The older women in my sample were thus similar to the

younger women, for whom the use of technological devices was so much part of their everyday existence that they were no longer aware of the extent to which technology had become incorporated into their lives. This became apparent when I asked which functions they used on their mobile phones and the answer was: texting and phoning. But when I asked about the integrated clock, the calculator, the address book function and other possibilities of how to use a mobile phone, they all indicated that they used these and were astonished about how many functions they actually did use.

However, the reasons for using some technical devices were different across the generations. The mobile phone, for example, was reported to be mostly used for emergencies by the older interviewees whereas the young generation coordinated their social life with the help of mobile phones. I discovered that women in the older generation were more proficient than men and that the proficiency within the younger generation was similar between the sexes. But because all my respondents perceived the younger generation as more up to date with new technology, all respondents would resort to a young individual for technical help. Participants mentioned their daughter and sons as useful informants for technical help and the younger ones proudly admitted that they were being asked by parents and grandparents for help in technical matters. In answer to my second research question, I therefore cannot confirm a struggle by the older participants to keep up compared to the younger ones. In fact, the older ones often seemed more relaxed about their technical devices because they did not have the pressure from their peers to have the latest gadget or to use the most recent new function.

The third set of research questions centred on knowledge acquisition strategies and asked: Which kinds of strategies do individuals develop for acquiring technical knowledge? Are these strategies the same for everyone or do they differ in the case of users from different generations, cultural and gender contexts?

In response, in Chapter 5, I distinguished several different methods of knowledge acquisition among my respondents. These were used by both women and men, and by younger and older participants from all three countries. More proficient users employed similar techniques, as did individuals with lower knowledge levels. Younger people used more and a wider range of online media and interactive websites such as *YouTube* and blogs whereas the older ones (especially the men) resorted more to newspapers and magazines for information but, again, the applied strategies were similar. All my respondents used other people like friends and family as knowledge sources except for

most of my British respondents, who preferred to be self-sufficient. All had developed knowledge networks that contained both non-human and human knowledge sources. In contrast to conventional gender expectations, young male students, especially from Germany, had difficulties with technology and kept their involvement low. I found no evidence that women had more difficulties in acquiring the necessary knowledge to operate the same gadgets than men.

Given these findings, my thesis makes five main contributions to the field of gender and the appropriation and use of ICTs. It shows that:

1. Assumptions about gender and technology are more differentiated than is generally assumed. In particular, stereotypes of older people and women as less technologically competent than men or younger people are called into question. My findings then contradict gender and age stereotypes and thus open a new perspective on women and technology but also on older people and technology.
2. This thesis takes a mundane topic for its research area. Shedding light on mundane activities is an effort not often made. How people learn informally is an overlooked matter in everyday life and occurs seemingly unnoticed. However, the everyday is crucial since it involves everybody because we all use technological devices in our everyday lives.
3. The finding that German students were more critical of technology than British or Dutch students has not previously been reported in any of the literature. Young people are assumed to be enthusiastic about new technology. However, my findings did not uniformly support this, and there is clearly room for further research in this area.
4. In Chapter 5 I introduced Silverstone and Hirsch's (1991) domestication theory. In applying it to the chronological order of events that occur during the domestication process of technical devices in people's lives, it became evident that the stages outlined by Silverstone and Hirsch did not fully capture the process. I therefore extended this theory by a further stage which I termed 'Investigation' as the first phase of coming into contact with a new appliance.
5. I introduced a new concept, the notion of the 'artefact identity', in Chapter 6 to express how individuals use technical items as identity markers and choose a level of technical proficiency which they perceive to fit their self-image. This new phrase defines that aspect of one's identity through which individuals express their relation to technology. Artefact identity then supports individuals' self-image as expressed through choosing and using particular technical items and a certain level of technical

knowledge. (As an aside, this concept might be useable across a range of other contexts in/through which individuals express their relation to the material world.)

This research would benefit from longitudinal data collection by interviewing participants at intervals over a period of time, which would show how conceptions and perceptions as well as practices change over time. Such an approach might reveal whether laggards are still laggards five years later or whether early adopters have turned into laggards. Additionally, it would be interesting to focus on artefact identity and self-image. The close relationship between a woman's self-image and the amount of technology and technical expertise that she herself judges to be right for her, which I subsume under the concept of artefact identity, is an important and original thread to follow up.

While I was doing my research I came across an interesting story from a toy company, which asked visitors to their website for their opinion about the Career Barbie, which is newly designed every year. In recent years, visitors had voted for the professions of vet, photo model and ballerina, but in 2010 people could choose between architect, newsreader and system administrator and to the surprise of most and against gender roles, most people voted for the tech-savvy Barbie. She is clothed in a T-Shirt with the binary code (0 and 1), has a smart phone, a bluetooth headset and a laptop, even though this is – sadly – still pink.[77]

Illustration 7.1: IT-Barbie.

Source: March edition of the women's technical magazine *savvy* http://www.savvymag.nl/nieuws/435-barbie-als-it-girl-letterlijk, accessed 23.03.2010.

Despite the traditional gender stereotypes, in my study women have proved to be as competent and interested in technology as men. They are also as knowledgeable as men

[77] http://www.savvymag.nl/nieuws/435-barbie-als-it-girl-letterlijk, accessed 23.03.2010.

and do enjoy technology. Although the perception of women, especially women who are performing femininity, has not changed much in the younger generation, particularly in Great Britain, there are signs that the strict gender roles are softening. When Barbie, as the embodiment of femininity, begins incorporating IT, as shown above, gender roles with regard to technology are definitely opening up.

8 Appendices

Appendix I: Interview Schedule

INTERVIEW SCHEDULE **No.** | | | | |

Interview No. _____ **Country:** _____

Code-Name
Sex
Age
Town
Location of Interview
Date
Start, End and Duration
Interviewer

Particularities of this interview/Fieldnotes

_____
_____
_____
_____
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_____
_____
_____

1. Technology in general **[_ _ Minutes]**

In my research I deal with technology in everyday life. How do you get to know about newly available technology? How do you acquire your knowledge to use it and how do you use it in your life? I want to start with your mobile phone.

1.1 Own Reference

Which mobile phone do you have?	- Is the make mentioned? - Ask to see the phone. Is it in a protective cover? - Age of mobile?
How did you get it?	- Bought it themselves or received as a gift or inherited?
What functions are you using on your mobile?	- Used only for receiving calls? - Alarm clock? - Where do you find the £-sign? Let the people show how they get it.
You want to text a friend that something was cheap and cost only £50. Where do you get the £-symbol?	
Imagine this mobile is broken. What would you do?	- What are their first steps and their strategies and experiences?

1.2 Reception of new knowledge

How do you get your knowledge about new technologies?	- Which experiences did they have with getting new knowledge? - Where do they go to gather their knowledge?
Do you use different sources of information for different products? Washing machine, toaster, mobile phone, car?	- Internet, Retailer, Other person/friend, Fairs, Books, Journals? - Do you use manuals?
Where and how did you get the information you needed about this mobile phone or gadget?	
When do you decide you want to have a new mobile phone or other technical product?	- What wishes go with that? - Read an advertisement about new products? - What gave the impetus to gather more knowledge about a new

		product?
1.3	***People as sources of information***	
	If you are seeking information from another person, who is it?	- Age? - How long have you known this person? - Location of the person asked? - Female or male?
	What is your relationship to this person?	- Relative? Old friend? Only spoken to if there is a technical problem?
	What makes this person an information source?	- Profession? Hobby? Recommended by others?
	Does this person consider the best options for you?	- Fascinated with technology and not considering your wishes?
	Who in your family was interested in technology?	
1.4	***Quality and availability of information***	
	Which experiences did you have while gathering information?	
	Can you remember certain experiences?	
	Do you feel well informed about new technologies like MP3players and mobile phones? Have you heard about making telephone calls on the Internet?	
	Do you feel you should have a certain amount of knowledge about new technology in everyday life?	- As woman or man? - About new gadgets that are coming up soon?
1.5	***Personal interest in technology***	
	When you were a kid or teenager, which technical gadgets did your family have and use?	- Household and entertainment - Washing machine, Television, Tumble dryer, Toaster, Video recorder

What was the first gadget you owned yourself**?**

Which gadget do you find particularly helpful and sensible?

Are you interested in technology in general?

Do you think women or men know more about technology? - Why?

Inserted 23.01.2007

How well do you feel you cope in general with new technology in everyday life, such as MP3 players or mobile phones?

How do you think our life will look in the future concerning new technology?

Which technology are you looking forward to in our future?

Appendix II: Background Questionnaire

Background Questionnaire

No. ☐☐ ☐☐

Year of birth: _____ Country of birth: _____

Marital status: ☐ Married ☐ living with a partner (unmarried) ☐ Single / living alone ☐ Single / living in a shared flat

Do you have children? ☐ No ☐ Yes How many? _____

Are you in employment? ☐ No ☐ Yes ☐ Part time ☐ Full time Profession: _____

Is your partner in employment? ☐ No ☐ Yes ☐ Part time ☐ Full time Profession: _____

My ethnic background is: _____

The ethnic background of my partner is: _____

Profession of your mother _____ Profession of your father _____

Were both parents mainly in jobs? ☐ Yes ☐ No

Who was the breadwinner in the family? ☐ Mother ☐ Father ☐ Other (e.g. children, employers, relatives): Who? _____

Who did predominantly most of the childcare in your family? ☐ Mother ☐ Father ☐ Both parents ☐ Other (e.g. nanny, relatives):

Was your mother interested in technical things? ☐ Yes ☐ No ☐ Sometimes In which? _____

Was your father interested in technical things? ☐ Yes ☐ No ☐ Sometimes In which? _____

Who has shown most interest in technical gadgets in your family? E.g. Aunt, Brother_____

Which products did they deal with? _____

Which kind of school did you mainly attend?	☐ Girls-only ☐ Boys-only ☐ Mixed school
What is your highest level of education?	☐ GCSE ☐ A-level ☐ Bachelor's degree ☐ Postgraduate degree ☐ Professional qualification ☐ Trade qualification
Have you studied at university?	☐ No ☐ Yes: Which subject?_____ Type of degree: _____
Are you trained in a vocational field?	☐ No ☐ Yes: In which profession?
Which technical products do you use in everyday life?	☐ Mobile phone ☐ Car ☐ LCD-Television ☐ Computer ☐ MP3-Player ☐ Digital Camera ☐ Other: _____
When did you first get these technical products? (State year of acquisition)	Mobile phone _____Car _____LCD-Television _____ Computer _____ MP3-Player _____ Digital Camera _____ Other: _____
Do you watch consumer programmes on the TV?	☐ No ☐ Yes: which? _____
Do you read consumer magazines?	☐ Computer magazines ☐ Car magazines ☐ *Which*? ☐ AA/RAC ☐ Others? Which: _____
Do you regularly use the internet?	☐ No ☐ Yes How often? ☐ daily ☐ weekly ☐ less often
Do you read a newspaper online?	☐ No ☐ Yes How often? ☐ daily ☐ weekly ☐ less often
Have you ever attended a computer course?	☐ No ☐ Yes How often? _____ Which subjects? _____
Where do you mainly buy your technological products?	☐ High street e.g. Dixon's, Curry's ☐ Internet ☐ Supermarket ☐ Specialist shop ☐ Friends ☐ Other: Where? _____
Do you always read the manual of a gadget?	☐ No ☐ Yes ☐ Sometimes Why? _____ ☐ Do you read it cover to cover? ☐ Or in sections as necessary?
Do you think it is important to keep up to date with new, upcoming and already implemented technology?	☐ No ☐ Yes Why? _____ _____

Thank you very much for your support.

Appendix III: Consent form

Confidentiality assurance and copyright agreement

Gitta Victoria Brüschke

Centre for Women's Studies

University of York

Email: gvb500@york.ac.uk

Dissertation title:

Gender Dimensions in the Appropriation and Use of ICT-Technology:

A Qualitative Study in Great Britain, Germany and The Netherlands

This is to certify that I _____ agree to the anonymized transcript of my interview being quoted and published in excerpts (or in full) in the MA and PhD dissertation of Gitta Victoria Brüschke, and in associated publications. Further to this, I recognise that this dissertation may be accessed by future students from the Centre of Women's Studies dissertation archive.

I do/ do not wish (delete as appropriate) my name to be used in any publication arising from the research.

Print Name
Date
Signed

Appendix IV: Mini-biographies of my interviewees

British interviewees

Simone: White female, middle class, 67 years old, married, two children. Mother: Dressmaker, did most of the childcare, mainly in jobs, was not interested in technical gadgets. Father: Blacksmith, mainly in jobs. Father was breadwinner and also not interested in technical gadgets. No-one in her family was interested in technical gadgets.

She attended a mixed school, had a BA in Women's Studies and was currently studying for her MA in Women's Studies. Always used her own shorthand terms, like B4 for before, that's why she knew about the pound sign. She was very well acquainted with technology, tried new technologies and even things a bit out of the ordinary, like a Mac computer. She was confident in the use of technologies and knew whom to ask for help. Interest in technology was high, she was interested even if she didn't want this technology. Bought herself the things she needed and then adapted to them and used them regularly.

Phoebe: White female, middle class, 53 years old, single, no children. Mother: Teacher, did most of the childcare. Breadwinner and was not interested in technical things. Father: Lawyer who was sometimes interested in technical things. She was the one in her family who was interested in technical gadgets like TV, washing machine, radio and radiogram.

She attended a girls-only school, held a professional qualification in teaching and was trained in the vocational field of physical education. She was very much interested in technical gadgets. As it was she who dealt with technology in her original family, she was still doing that. She made her parents buy mobile phones and knew a lot about mobile phones, MP3 players and cameras because she used them a lot for rambling and to listen to sporting events. Helped other people a lot and seemed to be one of the networking points that others use to help them with their technical gadgets. She was confident with technology of all kinds and found her way through it. Played with gadgets to find out more, but would use the manual for further reference and to find out about functions.

Kathy: White female, middle class, 23 years old, single, no children. Mother: Parent support worker and sometimes interested in technical gadgets. Stepmother did most of the childcare. Father: Auditor, was breadwinner and also sometimes interested in technical gadgets. Her sisters and uncle were interested in technical gadgets and dealt with mobile phones, computers, MP3 players, cameras.

Attended girls-only school, had a BA in English literature and was currently doing the MA in Women's Studies. Was interested in technology insofar as it had advantages for her own life. She got to know about new gadgets mostly from other people, strangers, or

friends by accident. Found her way through manuals and other information if she wanted to know more about her gadgets.

Maureen: White female, middle class, 23 years old, single, no children. Mother: Librarian, did most of the childcare and was not interested in technical things. Father: Company director and breadwinner who was interested in technical things, such as TV, audio, mobile phone. Her brother was interested in every technology like laptops, mobile phones, TVs, car modifications.

She attended a mixed school, held a BA in politics and was doing her MA in Women's Studies at the time of the interviews. She was not interested in technical gadgets. Seemed to have to keep up with her mates and was forced into buying new gadgets. She gave the appearance of not knowing much about technical gadgets and said several times that technical things confused her. But when she described what she did with the gadgets she had, she used them as competently as the other students. She gave the impression of being dependent on other people's knowledge for her dealings with her own gadgets.

Henry: White male, middle class, 71 years old, married, four children. Grandmother was housewife, did most of the childcare and was not interested in technical gadgets. Father: Labourer with several children, breadwinner and was not interested in technical things. No one in his original family was interested in technical gadgets.

He attended a boys-only school, had a GCSE-level education and worked for an oil company. He was the husband of one of my female interviewees and not at all interested in technology. He had a mobile phone, but was not sure whether he was able to use it. He was forced to have it by his wife. Some numbers were saved in it, so he thought he could manage to ring them. The only things he was interested in were his newly bought hi-fi system from Bang&Olufsen and cars. Even though I was lost at the beginning, when my normal approach with the mobile phone was not working, I found a way to share his enthusiasm about cars. He was interested in changing cars regularly and getting to know how all the functions worked. Was dismissive about new gadgets and admitted that some are useful, but not for him.

Robert: White male, middle class, 63 years old, married, two children, born in South Africa. Mother had no profession, did most of the childcare and was not interested in technical gadgets. Father: Teacher and breadwinner and was sometimes interested in technical things. His brother was interested in technical gadgets in the family and dealt with radios and motor engines.

He attended a boys-only school, had a PhD in English and worked as a university teacher. Very much interested in technical gadgets, he had most of them himself, was well informed and only asked very good friends and colleagues for advice. He knew what was new on the market and what will come in future. Did not know every function of his gadgets, but could use them for his purposes. Got to know things from others, like Skype and how to use the MP3 player for audio books (colleague at a conference told him).

Craig: White male, middle class, 29 years old, not married but living with a partner, no children, born on the Bermudas. Mother: Travel advisor, did most of the childcare, breadwinner and was not interested in technical gadgets. Father: Retail manager and was interested in technical things. One of his uncles was a mechanic and was the one who was most interested in technical gadgets in the family. The uncle dealt with TVs and cameras.

He attended a mixed school, had a BA in Sports, Medicine and Sociology and worked as a government statistician. Was very self-confident and had many new expensive gadgets. He was the only one who couldn't find the pound sign. For him it was a status symbol to have the latest technology. He was convinced it has to be expensive; otherwise it will not be good.

Vincent: White male, middle class, 23 years old, single, no children. Mother: Secretary, did most of the childcare and was not interested in technical things. Father: Electrical engineer and breadwinner who was interested in technical things. He and his father were interested in TVs etc. and hardware sorts of stuff.

He attended a mixed school, held a BA in Sociology and was doing his MA in Sociology at the time of the interview. He was not interested in technical gadgets. Seemed to have to keep up with his mates and was forced into buying new gadgets. He was open, but dismissive about all the new technologies and it seemed that he would rather live without them, but that was seen, unfortunately for him, to be no longer possible.

German interviewees

Annette: White female, middle class, 64 years old, married, one child. Mother: Housewife, did most of the childcare, was interested in technical gadgets. Father: Process engraver, mainly in jobs. Father was breadwinner and not interested in technical gadgets. No-one in her family was interested in technical gadgets.

She attended a mixed school and was working part-time as a secretary. She was interested in technology, tried new technologies like her camera and the mobile phone and enjoyed using them. She learnt texting from her son, who lived in Poland, because texting is cheaper than calling. She was confident in the use of technologies and knew whom to ask for help.

Sabine: White female, middle class, 48 years old, single, no children. Mother: Housewife, did most of the childcare and was not interested in technical things. Father: teacher and breadwinner who was not interested in technical things. Her older brother was interested in Hi-fi.

She attended a girls-only school, held a professional qualification in teaching and studied mathematics and biology to become a teacher herself. She was interested in technical gadgets but also reluctant. She only had a mobile phone because a friend gave her one as a present which she hardly used. She was fascinated with hi-fi and cars but needed professional help in choosing, installing and support when there were problems. Never

read a manual, even when something went wrong. She would rather not use functions she knew were available if she would have to read about how they work.

Katrin: White female, middle class, 26 years old, single, no children. Mother: Church musician and sometimes interested in technical gadgets, did most of the childcare. Father: Church musician and teacher and not interested in technical gadgets. Both were breadwinners. Her brother and herself were interested in technical gadgets and dealt with mobile phones, computers, video recorders.

Attended a mixed school, had a BA in sociology, and was currently doing the MA in Sociology. Was interested in technology insofar as it had advantages for her own life. She read manuals carefully but thought it was not important to know about technology. She liked to buy in specialist shops and trusted the retailers there. She was confident with the technical gadgets she owned and used.

Claudia: White female, middle class, 20 years old, single, no children. Mother: Occupational therapist who did most of the childcare and was sometimes interested in technical things. Father: Engineer who was interested in technical things, such as computers, digital cameras, mobile phones. Both were breadwinners and both took care of the children.

She attended a mixed school, held a BA in Social science and was currently doing her MA in social science. She was not interested in technical gadgets. Seemed to have to keep up with her mates and was forced into buying new gadgets. She claimed that everything about technology is self-explanatory and no problem at all to use. She had never bought a technical thing for and by herself but waited until her parents gave it to her. Her father could solve every problem with technical things.

Wolfgang: White male, middle class, 64 years old, married, three children. Mother was housewife, did most of the childcare and was sometimes interested in technical gadgets. Father: Vicar, breadwinner and was also sometimes interested in technical things. Everybody in his original family was a bit interested in technical gadgets.

He attended a mixed school, held a PhD and worked as a teacher. He was the husband of a professor and not at all interested in technology. He had a mobile phone, but was not sure whether he was able to use it. He was forced to have it by his wife. Some numbers were saved in it, so he thought he could manage to ring them. He was fascinated by the things new technology was able to do and had bought a computer and had attended a computer class just before the interview but said he had already forgotten everything again. Was dismissive about new gadgets and admitted that some might be useful, but not for him.

Michael: White male, middle class, 50 years old, married, three children. Mother: Housewife who did most of the childcare and was not interested in technical gadgets. Father: Judge and breadwinner and was also not interested in technical things. Nobody in his family was interested in technical gadgets.

He attended a boys-only school, had a PhD in Sociology and worked as a university teacher. Very much interested in technical gadgets, was very much into hi-fi when he

was young and still enthused about Mac computers and cameras. He was interested in new gadgets, read about them and when the prices went down he would buy them. He said that his daughter knows a lot about mobile phones and if he had a question he would ask her.

Folkert: White male, middle class, 26 years old, single. Mother: Housewife who did most of the childcare and was sometimes interested in technical gadgets. Father: Carpenter and boat-builder who was interested in technical things. His father, stepfather and grandfather were all interested in technical gadgets and dealt with mobile phones, cameras and MP3 players.

He attended a mixed school, had a BA in Sociology and was doing his MA in sociology at the time of the interview. Was very critical towards technical gadgets but used them nevertheless. He pointed out many negative things connected with technology such as surveillance problems and data theft.

Christian: White male, middle class, 25 years old, single, no children. Mother: Dyslexia therapist, did most of the childcare and was interested in technical things. Father: Pastoral minister who was sometimes interested in technical things. His brother was interested in telephones and computers.

He attended a mixed school, had a BA in Musicology and was doing his MA in Musicology at the time of the interview. He was not interested in technical gadgets and was very unsure about how to use them. Seemed to have to keep up with his mates and was forced into buying new gadgets. He admired other people who were confident users of mobile phones and MP3 players as his own did not seem to work properly and he did not know what he did wrong. He was not able to understand a manual.

Dutch interviewees

Iris: White female, middle class, 58 years old, married, one child. Mother: Housewife, did most of the childcare together with a nanny, was sometimes interested in technical gadgets. Father: Entrepreneur and breadwinner and very much interested in technical gadgets. He visited many technical fairs within Europe to find out about the newest technology such as satellite dishes and telephones via satellite.

She attended a mixed school and worked as a teacher and ran a bed and breakfast hotel. She was interested in technology, tried new technologies like her computer and the mobile phone and enjoyed using them. She had a son who was studying technology and who had introduced her to many new technologies.

Corrie: White female, middle class, 53 years old, single, no children. Mother: Housewife, did most of the childcare and was not interested in technical things. Father: Safety officer and breadwinner who was interested in technical things, mainly computers. She and her brother were interested in musical products and toys.

She attended a girls-only school and held a professional qualification in pedagogy. She was very much interested in technical gadgets and acted as a warm expert for friends who used her as an adviser for technical support. She used many technical objects and was confident in using them. She preferred the trial-and-error method to learn how to use new gadgets.

Maaike: White female, middle class, 24 years old, single, no children. Mother: Care taker who was not interested in technical gadgets, did most of the childcare. Father: Manager and breadwinner and sometimes interested in technical gadgets. Her younger brother was interested in technical gadgets and dealt with computers and iPods.

Attended a mixed school, and was currently doing her MA in Women's Studies. She was interested in technology insofar as it had advantages for her own life. She deliberately used old gadgets and used only a few functions. It was important for her to not look like a capitalist. She also did not see herself as into technology although this self-image changed when she got a job which included creating websites.

Neeltje: White female, middle class, 22 years old, single, no children. Mother: University teacher who did most of the childcare, breadwinner together with father and was interested in technical things such as computers, mobile phones and cameras. Father: Teacher in secondary school and he was sometimes interested in technical things, such as computers and hi-fi. Both were breadwinners and mother was most interested in technology in the family.

She attended a mixed school, held a BA in Psychology and was doing her MA in Women's Studies. She was very much interested in technical gadgets and described herself as addicted to them. She was well connected within her peer group and they exchanged news about new gadgets and talked about them a lot. She admired her mother for being so tech-savvy and the grandmother of her friend who had bought a computer and was using Skype at the age of 86 while her own remaining grandmother did not want to hear about these things. Neeltje explained that this probably had some connection to the fact that it was her father's mother and her father was not much interested either.

Jan: White male, middle class, 62 years old, married, one child. Mother: Housewife who did most of the childcare and was not interested in technical gadgets. Father: Bank manager, breadwinner and was interested in technical things such as photography and cars, radios, TVs and telephones.

He attended a boys-only school, had a postgraduate degree and worked as an administrative employee at the university. He was very interested in technology and used many different kinds at work. He had a mobile phone, LCD-television, computer, digital camera and MP3 player. He was fascinated by new technology and tried to stay up to date by reading magazines and picking up information from the internet.

Matthys: White male, middle class, 57 years old, married, one child. Mother: Housewife, did most of the childcare and was sometimes interested in technical gadgets such as TVs and telephones. Father: Market gardener and breadwinner and not interested in

technical things. His older brother was interested in technical gadgets such as TVs, telephones and cars.

He attended a mixed school, had a postgraduate degree in Marketing and Organisation and worked as a university employee. Not much interested in technical gadgets, used modern mobile phones because his employer gave him the newest ones. He was interested in new gadgets, but only when he needed them for work purposes. He relied on his son for all technical information and help.

Arjan: White male, middle class, 27 years old, single. Mother: Researcher at university who was breadwinner and was interested in technical gadgets, mostly medical technologies as she was also trained as a nurse. Father: English professor who did most of the childcare and was also interested in technical things such as computers and PDAs. Arjan and his sister were interested in technical gadgets and dealt with computers and stereos.

He attended a mixed school, had a BA in English and was doing his MA in Gender Studies and Communication at the time of the interview. He was very interested in technical gadgets, especially Apple systems and all music gadgets. He kept up to date about his favourite gadgets and loved to play with them. He came over from the US and brought all his music on a small USB stick instead of records or DVDs and was proud of this fact.

Niklaas: White male, middle class, 23 years old, single, no children. Mother: Speech therapist, did most of the childcare and was not interested in technical things. Father: Engineer, expert on ships and motor damage, breadwinner, was interested in technical things such as computers and mobile phones. His oldest brother and his father were mostly interested in gadgets such as the internet on mobile phones and MP3 movies on computers.

He attended a mixed school, was doing a BA in Economics with Law minor at the time of the interview. He was not very interested in technical gadgets and was critical about how his friends used them. He complained about all the texting going on during lectures and that males would show porno movies on their gadgets. He criticized the possibility of being under surveillance by technology and kept his own use to a minimum.

Appendix V: Tabularized summary of my interviewees' key characteristics

British interviewees

Interviewees	Simone	Phoebe	Kathy	Maureen	Henry	Robert	Craig	Vincent
Gender	Female	Female	Female	Female	Male	Male	Male	Male
Year of Birth	1941	1955	1985	1985	1937	1945	1979	1985
Country of Birth	Great Britain	Great Britain	Great Britain	Great Britain	Great Britain	South Africa	Bermudas	Great Britain
Marital status	Married	Single	Living with partner	Single	Married	Married	Living with partner	Single
Children	2	0	0	0	4	2	0	0
Employment	Retired	Full	Full/Part	Full	Retired	Full	Full	Full
Profession	Account consultant	Admini-strator	Student /Office work	Student	Worked for an oil company	University teacher	Govern-ment Statistician	Student
Partner in Employment	Retired	-	Full	-	Retired	Yes	Full	-
Partner's Profession	Worked for an oil company	-	Analytical chemist	-	Account consultant	School-teacher	Bank Teller	-
Ethnic background	White	White	White	White	White	White	White	White
Ethnic background Partner	White	-	White	-	White	White	Mixed black/ white	-
Profession of Mother	Dress-maker	Teacher	Parent support worker	Librarian	Grand-mother: Housewife	None	Travel advisor	Secretary
Profession of Father	Blacksmith	Lawyer	Auditor	Company director	Grand-father: Labourer	Teacher	Retail manager	Electrical engineer
Both parents mainly in jobs?	Yes	No	No	Yes	Yes	No	Yes	Yes
Breadwinner of Family	Father	Mother	Father	Father	Father plus several children	Father	Mother	Father
Responsible for Childcare	Mother	Mother	Step-mother	Mother	Grand-mother	Mother	Mother	Mother
Mother interested in technical gadgets	No	No	Sometimes	No	No	No	No	No
Father interested in technical gadgets	No	Sometimes	Sometimes	Yes. TV, Audio, Mobile Phone	No	Sometimes	Yes	Yes
Most interested in technical gadgets of family	No-one in particular	Me	Sisters, uncle	Brother	-	Brother	Uncle-he is a mechanic	Myself, my father
Products with which they dealt	-	TV, Washing Machine, Radio, Radiogram.	Mobile phone, computer, MP3 player, camera.	Everything Laptop, mobile phone, TV, car modi-fication.	-	Radio, motor engines.	TV and camera.	TV Hardware sort of stuff.

Kind of school	Mixed	Girls-only	Girls-only	Mixed	Boys-only	Boys-only	Mixed	Mixed
Highest education level	BA	Profess-ional quali-fication	BA	Post-graduate degree, BA, MA	GCSE	Post-graduate degree, PhD	BA	BA
Studied at university	Women's Studies, MA	Teaching	English literature	Politics, Women's Studies	No	English	Sports, Medicine Sociology	Sociology Education Studies
Trained in a vocational field	No	Physical education	Bar service	No	No	No	No	No
Which technical gadgets they use	Mobile phone, car, computer MP3 player	Mobile phone, car, LCD-television computer MP3 player	Mobile phone, computer, digital camera	Mobile phone, car, LCD-television computer	Car	Mobile phone, car, computer, MP3 player	Mobile phone, car, LCD-television, computer MP3 player	Mobile phone, computer
When they got those gadgets	Mobile 1997, Car 1962, Computer 2000, MP3 2007	Mobile 1994, Car 1977, LCD-TV 2007, Computer 1990, MP3 2005	Mobile 1999, Computer 2005, Digital camera 2005	Mobile 1997, Car 2005, LCD-TV 2005, Computer 1997	Car 1958	Mobile 2005, Car 1971, Computer 1984, MP3 2006	Mobile 1998, Car 2001, LCD-TV 2003, Computer 1997, MP3 2003	Mobile 2000, Computer 1995
Watch consumer programmes on TV	No	No	Gadget show.	No	No	No	No	No
Read consumer magazines	No answer	No Answer	No answer	No answer	Car magazine	Computer Magazine, Which	No Answer	Computer Magazine
Regular use of the internet	Daily	Daily	Daily	Daily	No	Daily	Daily	Daily
Read newspaper online	Not in question-naire	Not in question-naire	Weekly	Daily	Not in question-naire	Not in question-naire	Not in question-naire	Not in question-naire
Attended a computer course	Yes. 2003, Word, Excel	Yes. 1998, Word, Excel, PPT, Access	No	No	No	No	Yes. 5 days SPSS	No
Where they buy their technical products	Specialist shop	High street, Internet, Super-market	Internet	High Street, Internet	Super-market	Internet	High street	Internet
Read the manual	Some-times. Read on 'need to know' basis.	Yes. Quicker to find new functions.	Yes. To make sure I am using it right and that I know everything it can do.	No. Too much info! Confusing.	Yes	Yes. To avoid doing anything that might damage the machine.	No. Like to play with it to get to know it.	Some-times. For the complex tasks it's normally needed.
Cover to cover or in sections?	Sections	Sections	Cover to cover.	-	Cover to cover.	-	-	Sections
Important to keep up to date	Yes. Important to know what's available.	Yes. To have access to infor-mation and use it fully.	Yes. To see if there is something which can improve your use of technology	Yes. Stops you getting left behind, important to be culturally aware.	Yes. To know what is available.	Yes. Because it is part of the world we live in.	Yes. So you don't get left behind the times.	Yes. It can make your life easier.

German interviewees

Interviewees	Annette	Sabine	Katrin	Claudia	Wolfgang	Michael	Folkert	Christian
Gender	Female	Female	Female	Female	Male	Male	Male	Male
Year of Birth	1944	1960	1982	1988	1944	1958	1982	1983
Country of Birth	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany
Marital status	Married	Single	Living with partner	Single	Married	Married	Single	Single
Children	1	0	0	0	3	3	0	0
Employment Part-time/Full-time	Part-time	Full	Full	Full	Retired	Full	Full	Full
Profession	Secretary	Education consultant	Student	Student	Teacher	University teacher	Student	Student
Partner in Employment	Retired	-	Full	-	Full	Full		-
Partner's Profession	No answer	-	-	-	Professor	No answer		-
Ethnic background	White	White	White/Japanese	White	White	White	White	White
Ethnic background Partner	White	-	-	-	White	White	-	-
Profession of Mother	Housewife	Housewife	Church musician	Occupational therapist	Housewife	Housewife	Housewife	Dyslexia therapist
Profession of Father	Process engraver	Teacher	Church musician/ Teacher	Engineer	Vicar	Judge	Carpenter, Builder of boats	Pastoral minister
Both parents mainly in jobs?	No	No	No	Yes	Yes	No	No	Yes
Breadwinner of Family	Father	Father	Father	No answer	Father	Father	Father	Father
Responsible for Childcare	Mother	Mother	Mother	Mother and father	Mother	Mother	Mother	Mother
Mother interested in technical gadgets	Yes	No	Sometimes	Sometimes	Sometimes	No	Sometimes	Yes
Father interested in technical gadgets	No	No	Sometimes	Yes	Sometimes	No	Yes	Sometimes
Most interested in technical gadgets of family	No answer	Older brother	Older brother and me	Father	Everybody a bit	None	Father, Stepfather, Grand father	Brother
Products with which they dealt	-	Hi-fi	Mobile phone, play station (brother) video recorder (me)	Mobile phone, computer, digital camera.	Camera, motor bike, car	-	Computer, mobile phone, MP3	Computer, telephone.
Kind of school attended	Mixed	Girls-only	Mixed	Mixed	Mixed	Boys-only	Mixed	Mixed
Highest education level	O-levels	BA	MA	BA	MA	PhD	BA	BA
Studied at university	No	Mathe-matics/ Biology	Sociology	History/ Social science	Theology, Politics, Pedagogy	Sociology	Sociology	Musicology
Trained in a vocational field	Manage-ment assistant	No answer	No	No	No	No	No	No
Which technical gadgets they use	Mobile phone, car, computer	Mobile phone, car, computer	Mobile phone, car, Computer, MP3	Mobile phone, computer, MP3	Mobile phone, car, computer	Mobile phone, car, computer	Mobile phone, car, computer	Mobile phone, computer, MP3
When they got those gadgets	Mobile phone 1997, Car	Mobile phone 2001, Car	Mobile phone 2001, Car	Mobile phone 2002,	Mobile phone 2002, Car	Mobile phone 2005, Car	Mobile phone 1998, Car	Mobile phone 2007,

Interviewees	Annette	Sabine	Katrin	Claudia	Wolfgang	Michael	Folkert	Christian
	1966, Computer 1980	1978, Computer 1990	2000, Computer 1999, MP3 2004	Computer 2007, MP3 2003	1975, Computer 2008	1977, Computer 1988	2000, Computer 1997	Computer 2006, MP3 2007
Watch consumer programmes on TV	No	Yes. Cars, Travel and Food	No	Yes	No	No	No	No
Read consumer magazines	No answer	Stiftung Warentest, Ökotest	Stiftung Warentest	No answer	Stiftung Warentest	No	No	Music Magazine
Regular use of the internet	Daily	Daily	Daily	Daily	No	Daily	Daily	Several times a week
Read newspaper online	Not in question-naire	Not in question-naire	Not in question-naire	Not in question-naire	Not in question-naire	Not in question-naire	Not in question-naire	Not in question-naire
Attended a computer course	Not in question-naire	15 different ones Office, OP-systems	Not in question-naire	Yes	Yes, introduct-ion.	No	No	Not in question-naire
Where they buy their technical products	Specialist shop	Specialist shop	Specialist shop	Given as a present	Specialist shop	Internet	Super-market, Specialist shop, friends.	Super-market, Internet
Read the manual	No	No. Boring. If, then on a need to know basis.	Yes. To make sure I know everything it can do.	No. No interest.	No	No	No	No. Too stressful.
Cover to cover or in sections?	Sections	Sections	Cover to cover.	-	-	-	-	-
Important to keep up to date	No	Yes. To be able to make informed decisions and to be able to criticise.	No. Because the standard of knowledge is higher than my personal needs.	No. No interest.	No	No	No	No

Dutch interviewees

Interviewees	Iris	Corrie	Maaike	Neeltje	Jan	Matthys	Arjan	Niklaas
Gender	Female	Female	Female	Female	Male	Male	Male	Male
Year of Birth	1950	1955	1984	1986	1946	1951	1981	1985
Country of Birth	Nether-lands	Nether-lands	Nether-lands	Nether-lands	Nether-lands	Nether-lands	Nether-lands	Nether-lands
Marital status	Married	Living with partner	Living with partner	Single	Married	Married	Living with a partner	Single
Children	1	0	0	0	1	1	0	0
Employment Part-time/Full-time	Full	Full	Full	Full	Full	Full	Full	Full
Profession	Teacher	Secretary	Student /Office work	Student	University teacher	Consultant	Student	Student
Partner in Employment	Full	Full	Full	-	Full	Yes	Full	-
Partner's Profession	Consultant	Manager	PhD student	-	No answer	Runs a B&B	Student	-
Ethnic background	White	White	White	White	White	White	White	White
Ethnic background Partner	White	White	White	-	White	White	White	-
Profession of Mother	Housewife	Housewife	Care taker	University teacher	Housewife	Housewife	Researcher and nurse	Speech therapist
Profession of Father	Entre-preneur	Safety officer	Manager	Teacher at secondary school	Bank manager	Market gardener	Professor of English	Engineer for ships and motor damage
Both parents mainly in jobs?	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Breadwinner of Family	Father	Father	Father	Mother and Father	Father	Father	Mother and father	Father
Responsible for Childcare	Mother and nanny	Mother	Mother	Mother	Mother	Mother	Father	Mother
Mother interested in technical gadgets	Sometimes	No	Sometimes	Yes. Computer, mobile, camera.	No	Sometimes such as TV and telephone.	Yes, such as medical technolo-gies mostly	No
Father interested in technical gadgets	Yes	Yes	Sometimes	Sometimes Computer, Hi-fi.	Yes. Photogra-phy, cars	No	Yes such as PDAs and computers.	Yes. Computer, mobile phone.
Most interested in technical gadgets of family	Father	My brother and I	Sisters, uncle	Mother	Father	Older Brother	Me and my sister	Oldest brother and my father
Products with which they dealt	All things technical	Computer, musical products and toys	Mobile phone, computer MP3 player, camera.	See above.	Radio, television, cars, Telephone.	TV, telephone, cars.	Computer and hi-fi.	Internet on mobile phone, MP3 movies on computer.
Kind of school attended	Mixed	Girls-only	Girls-only	Mixed	Boys-only	Mixed	Mixed	Mixed
Highest education level	BA	Postgradua te degree	BA	BA	Postgradua te degree	Postgradua te degree	BA	BA
Studied at university	No	Pedagogy	MA Women's studies	Psychology Women's Studies	No	Manage-ment and organis-ation	English, Gender Studies, Communi-cation.	Economics with Law minor.

Trained in a vocational field	No	Ortho-Pedagogic	No	No	No	No	Yes. Child-care and nursing.	No
Which technical gadgets they use	Mobile, car, LCD-television computer MP3 player, digital camera	Mobile, car, computer MP3 player, digital camera	Mobile, car, computer, LCD-television, MP3 player, digital camera	Mobile, computer, MP3 player, digital camera	Mobile, car, computer MP3 player, digital camera	Mobile, car, LCD-television, computer	Mobile, car, computer MP3 player, digital camera	Mobile, car, computer
When they got those gadgets	Mobile phone 1995, Car 1972, LCD-TV 2008, Computer 1994, Digital camera 2003	Mobile phone 2000, Car 1993, Computer 1998, MP3 2004, Digital camera 2002	Mobile phone 1996, Car 2007, Computer 1999, Digital camera 2008, MP3 2006	Mobile phone 2001, MP3 1999, Digital camera 2002, Computer 1993	Mobile phone 1997, Car 1965, Computer 1987, Digital camera 2000, MP3 1999	Mobile phone 1994, Car 1975, Computer 1994, LCD-TV 2005	Mobile phone 1998, Car 1998, Computer 1999, MP3 2003, Digital camera 2006	Mobile phone 2001, Computer 2003, MP3 2005
Watch consumer programmes on TV	No	Sometimes Radar	No	No	No	No	No	Yes. Kassa and Radar.
Read consumer magazines	Only on the internet	No answer	No answer	No	Multimedia Video, Audio magazine	No	No answer	Car Magazine
Regular use of the internet	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily
Read newspaper online	Yes	Yes	No	No	Daily	No	No	Yes
Attended a computer course	No	Yes. 12 times, Office, Photoshop, Dream Weaver.	No	No	Yes. Twice. Outlook, Power Point.	No	No	Yes. Twice. MS Office.
Where they buy their technical products	High street, specialist shops.	High street, Internet	High street	High street, Internet	High street	High street	Specialist shops	Internet and specialist shops
Read the manual	Yes	Sometimes I would rather experiment and learn.	No. Like to figure it out by myself.	Sometimes For special functions.	Sometimes impatient.	Sometimes	Sometimes Only for problem solving.	Some-times. To look up some functions.
Cover to cover or in sections?	Cover to cover.	Sections	-	Sections	Sections	-	Sections	Sections
Important to keep up to date	Yes. To know what is on the market.	Yes. I want to participate in society and to keep up with it.	Yes. Technology equals power and control, it is crucial for agency.	Yes. When it is used a lot in your context because others use it. No when it doesn't apply to you or your context.	Yes. To keep myself up to date with a lot of things for my job.	Yes. Otherwise you lose contact with the ongoing world around you.	Yes. Power circulates principally through technology – to contest its uses or benefits, you must keep up to date.	Yes. You have to use it every day, like internet.

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