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**Studies and a Model of Appropriation of
Information and Communication
Technologies in University Students'
Everyday Life**

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A thesis submitted for the degree of Doctor of Philosophy

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Abstract

This thesis investigated the appropriation of information and communication technologies in everyday life among university students and mature people. To that end, pertinent literature was reviewed resulting in the identification of three issues in need of a more careful appraisal by the HCI field. These issues were used as the research questions propelling this work; they include the identification of elements favouring the process of appropriation; the effect of a changing context on this process; and the co-existence of seemingly overlapping ICTs in people's lives.

A qualitative methodology was utilised in the studies reported in this thesis. Ethnographic work was conducted over a period of three months with fifteen masters students at the University of Glasgow in the UK. Further ethnographic work over a shorter time frame was conducted abroad among university students at Hokkaido University in Japan, Ajou University in South Korea and Nankai University in China. Additional ethnographic work was conducted among mature people in a religious community in Mexico. Qualitative data gathered was analysed using Grounded Theory and Structuration Theory.

Two are the main contributions of this work. First, a number of insights providing some answers to the research questions posited in this thesis. These answers were advanced as a complement and expansion to issues previously identified in the literature as relevant in the process of appropriation. Because of the ecological perspective underlying this thesis, these answers were presented as technology-neutral and yet useful to understand how the appropriation of technology is induced and sustained, what the impact of a changing environment in the process of appropriation is, and how similar technologies with overlapping features can thrive in the same environment.

The second contribution of this work was a three-layered model of appropriation of ICTs built from the identification of common patterns across the studies conducted. This model sought to detail the role of several intersecting large-scale social processes or structures (i.e., governments, various-sized private and state-owned organisations, the media, families and peers, as well as marketing practices, technical infrastructures and architectural spaces) that provide the resources and restrictions upon which the process of appropriation of digital technology rests. This framework was advanced as a simple tool to aid HCI researchers in the collection, analysis and reporting of qualitative data around the process of appropriation as shaped by the pervasive social structures of contemporary society.

The limitations of the ethnographic work here reported, as well as those of the ensuing conclusions, are identified and used to suggest some avenues of future exploration around the appropriation of ICTs in daily life.

Keywords: appropriation, ethnography, qualitative research, social structures, ICTs, Japan, South Korea, China, Mexico

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Declaration of Originality

I certify that I am responsible for the work submitted in this thesis, that the original work is my own except as specified in acknowledgements or in footnotes, and that neither the thesis nor the original work contained therein has been submitted to this or any other institution for a higher degree.

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You have been forgetting me for one year...

I have been remembering you for one year...

Jose

19 October 2009

30 September 2010

Associated Publications

“The Appropriation of Information and Communication Technologies: A Cross-Cultural Perspective”,
HCI International 2009

“A Model to Explore the Appropriation of Technologies across Countries” Presented in the workshop on
Culture and Technologies for Social Interaction at INTERACT 2009

“A Model of Appropriation of Information and Communication Technologies in Everyday Life”
(Artefact) Presented at the Ethnographic Praxis in Industry Conference (EPIC) 2009

“The Cultural Construction of Ubicomp” presented in the workshop on Culture and Collaborative
Technologies at CHI 2007

Introduction

The central concern of Human-Computer Interaction is to understand and design “different relationships between people and computers” (Harper *et al.* 2008, p. 84). Traditionally, this commitment has been interpreted as the development of usable technology or technology that is easy to learn and use. In time, however, as a consequence of the penetration of digital technology into all areas of life, the focus of HCI on usable technology has been expanded to accommodate an ever expanding number of concerns such as the creation of useful technology or the types of social relations established between people because of computer technology (Harper *et al.* 2008, pp. 84-86). Across this evolution of HCI an important focus of attention remains on the fact that some digital technologies are embraced regardless of their usability (see section 4.1.2.3 *Indirect Influence* on page 107 in this work), their not meeting the expectations originally created around them (Sellen and Harper 2002), or the unexpected complications they create in daily life (Dholakia and Zwick 2004). This interesting and somewhat contradictory phenomenon, perhaps at the root of HCI, is known as the appropriation of technology.

In this thesis we will explore how the appropriation of digital technology has been possible. We will focus, however, only on a few of those information and communication technologies (ICTs) that appear to have reached a special place in contemporary life. We will endeavour to answer this question by positing the phenomenon of appropriation as a convergence of many influences acting in one direction, that of turning a digital technology into an important element of our cultural landscape.

In our view, an enhanced understanding of the manner in which this transformation takes place may help technology designers reframe their role in the production of technology. This, we think, can be achieved by illustrating the forces that influence this transformation. With this increased understanding, technology designers may be in a better position to engage more productively with those other areas outside theirs that seem to have a preponderant role in the production of the appropriation of ICTs in everyday life.

Research Approach

Research reported in this work rests on the assumption that, as indicated earlier, certain digital technologies have been made part and parcel of everyday life and, as such, they should be studied through methods suited to capture the *situatedness* of daily life (Suchman 1987), while accounting for those elements that seem to be behind or induce this so-called transformation of technology.

We will report on the findings of three qualitative studies we conducted exploring the use of common ICTs, including computers, the Internet, email, online social networks, Internet messaging, and mobile phones in everyday life. We conducted our first study with a group of international students from China, Greece and India enrolled in masters programs at the University of Glasgow. We conducted our second study among university students but this time in Japan at Hokkaido University, South Korea at Ajou University, and China at Nankai University. Unlike the previous two, we conducted our last study among mature people in a religious community in Mexico. Throughout each study we attempted to provide a deeper understanding of those elements that appear to induce and sustain the appropriation of ICTs in daily life.

Research Outcome

We used a survey of the appropriation literature in HCI as the launchpad for our inquiries into the process of appropriation. This activity helped us identify three main issues in need of a more careful appraisal regarding the appropriation of digital technologies in everyday life.

The first research question we explore in this work seeks to elaborate on the social structures that produce and appear to sustain the appropriation of technology over the long term, their individual roles and their relations with each other. Our interest in this issue is derived, on the one hand, from our appraisal of some views in HCI that appear to position the process of appropriation as one that can be achieved solely through the right combination of the right features (see for instance (Papantoniou *et al.* 2003; Carroll 2004; Höök 2006)). In our opinion, this view seems to ignore the fact that many technologies are rejected despite the provision of a rich set of features, while others are embraced among users who are not the target audience of a technology and among users whose primitive computer skills prevent them from using a larger set of features. On the other hand, our interest also stems from an interest to provide an extended account of large-scale social processes influencing the appropriation of ICTs in everyday life (complementary work on this matter can be found in (Rodden and Benford 2003; Kohiyama 2005; Wei and Kolko 2005)).

Our second research question explores the impact of changing contexts on the appropriation of digital technology. Our interest in this issue is derived from what we see as a scarcity of accounts exploring the transformation of practices with ICTs through time across different locales of interaction and across the natural stages of human life (Petersen *et al.* 2002). Furthermore, we are also interested in assessing whether a rationale for people's manipulation of technology under changing conditions can be identified, and if so, what it is like (Crabtree *et al.* 2009).

The co-existence of digital technologies with similar features in people's lives is our last research question. Our interest in this matter is derived from the observation that, for all the multiple features of ICTs, people still rely on a multitude of devices and systems to pursue rather similar activities. The first contribution of this thesis is, consequently, the answers we provide to the research questions indicated in the context of our investigations.

The second contribution of our work is a model of appropriation built from the identification of common patterns across our studies. We advance this framework as a simple tool to aid researchers in the collection, analysis and reporting of qualitative work. With it we do not aim at prescribing a strict way to look at settings of interaction; we aim instead at providing guidance and suggestions that proved useful for us regarding important elements or social structures to consider when exploring the use of digital technology in everyday life. As will be illustrated in this work, any computer-mediated social interaction takes place within the possibilities and constraints provided by various social structures. In our view, no HCI account should bypass their role in shaping the practice studied.

Clearly, each one of the structures we have identified as inducing and sustaining the process of appropriation deserves to be the topic of an entire thesis. Nevertheless, we have strived to provide, with a certain degree of detail, examples of the manner in which each one of these forces shapes encounters between digital technology and people. In our view, these structures create the conditions whereby ICTs

are used to satisfy the very needs and activities they engender. In pursuing those activities and satisfying those needs, people continually exercise their agency and reflexivity within a changing environment to acquire, accommodate and appropriate digital technology.

Thesis Structure

This work is presented in four parts. The first part comprises Chapters 1 and 2. In Chapter 1 we review relevant literature in HCI to elaborate on the field's current understanding of the phenomenon of appropriation in order to identify some areas where further understanding is required. In Chapter 2 we describe the more practical aspects of this work including the author's personal experience leading to his choice of topic; the methods used to breach and explore the phenomenon of appropriation in everyday life; and the methodologies that guided and informed the analysis of the qualitative research here presented including Grounded Theory (Strauss and Corbin 1998) and Structuration Theory (Giddens 1984).

The second part of this work from Chapters 3 to 7 follows the path of other works in Grounded Theory (see for instance (Strauss and Corbin 1997)). Thus, instead of arranging the presentation of our findings following the order in which we conducted our studies, we do it following the framework provided by the model of appropriation we built from the analysis of data collected.

Thus, in Chapter 3 we discuss **Activity**, the first element of the most external layer or *social layer* of our model. We emphasise the influence utilitarian uses of ICTs to address common daily practices (e.g., entertainment, leisure, work, study, etc.) have on their own appropriation. Chapter 4 describes the influence of the second element of the social layer, **Socialisation**. Here we explore the influence of different social groups (family, peers, organisations and governments, and the media) in determining which ICTs are to be used, for instance, to mediate social relationships with members of those groups. Chapter 5 describes the enabling and restricting influence of the last element of the social layer, **Place**. We explore the influence of the infrastructure, the architectural layout and marketing practices in determining what ICTs are available and/or affordable and where and how these can and should be used.

The middle layer or *individual layer* of our model is presented in Chapter 6. This layer illustrates people's agency in the face of a changing environment as they pursue their everyday activities. In our view, the elements of this layer are purposefully manipulated by people in order to accommodate ICTs in their regular activities. These elements include: 1) the type of **message** that can be transmitted through ICTs; 2) the **audience** and level of involvement with it; 3) the **location** where ICTs can be used; 4) the **time** of the day and the season of the year when these technologies can be used; and 5) the **costs** associated with using them. The satisfaction of this basic considerations secures access to a technology and lays the groundwork upon which the appropriation of technology can occur. This layer also represents a sort of filter between social influences described in the external layer and the subjective attributes technologies may acquire (and lose) as described in the next layer.

The last layer of our model, the *digital-object layer* or innermost layer is discussed in Chapter 7. In this chapter we describe ICTs according to subjective attributes bestowed on them as they are appropriated. A **relevant** ICT is that which, in its users' view, satisfies in a practical or perceived manner the task for which it is put to use (e.g., communication, entertainment, work). A **trivial** technology is that which,

from a certain perspective, satisfies the following criteria: it has been commoditised by reason of being available and affordable, it has reached a certain maturity in its usability, and it has been made pervasive in society's landscape. Finally, the **meaningfulness** of a technology comes from being endowed by its users with intangible properties like belonging, increased educational opportunities, protection, and even personal and kin salvation.

Our model of appropriation of information and communication technologies seeks to convey one major finding per level. First, there are a number of social forces or structures that shape the use of ICTs in everyday life including economics, marketing, architecture, mass media, and governmental and institutional regulations (social layer). Second, each individual acts as his or her own filter to external influences deciding which ICTs to appropriate by effectively obscuring many of the possibilities and capacities of these technologies. This process is, nevertheless, necessary as it allows people to take practical control of their digital devices and integrate them into their everyday activities (individual layer). Finally, ICTs considered 'common' are those that underwent a process that not only rendered them 'fit for consumption', but also prone to the endowment of subjective qualities (digital-tool layer).

The third part of this work only comprises Chapter 8. This chapter illustrates the utility of our model in the collection and analysis of qualitative data. It does so through an exploration of the appropriation of *FamilySearch*, an online genealogy system, among a religious community with very low computer expertise in Mexico. Even though the setting of this study appears in stark contrast to the other studies reported in this work, we will illustrate the manner in which our model can be used to succinctly structure an account of the development of a techno-spiritual practice covering the social structures that sustain it, the adjustments people make to embrace an otherwise *extraneous* technology, and the subjective character the technology acquires in this process.

The last part of this thesis consists of Chapters 9 and 10. Chapter 9 discusses the two major contributions of this work which, as indicated, include a model of appropriation, as well as the answers to the research questions identified from the perspective of our studies. Chapter 10 concludes our work re-evaluating our methodological choices, reflecting on its contribution, and identifying future avenues of research derived from the limitations of our work.

Conclusions

While the work here presented on the appropriation of digital technology in everyday life is placed within the domain of the HCI field, we expect its findings may contribute towards an enhanced view of the forces that influence this phenomenon; forces traditionally outside of the concern of our field. In doing so we strive for a closer integration of our field with other disciplines more typically associated with the study of large-scale social processes like economics, architecture, politics and marketing, to name a few. We believe that such an event is necessary given the fact that all human interaction mediated by digital technology in *real life* effectively takes place within a social context that provides the resources and constraints that make the process of appropriation possible. In our view, no study in HCI should ignore the larger social context where a socio-technical practice is performed (Sellen *et al.* 2009).

Chapter 1 – Literature Review

A long standing concern of the HCI field is how to facilitate the introduction and use of new technologies. Interest in this issue seems to arise from a preoccupation with the fast-paced change of technological development and with society's seemingly limited ability to deal with such a changing technological landscape. The study of this phenomenon broadly falls within what has been termed the appropriation of technology. In this chapter we review the concept of appropriation of technology and how this would appear to be a continuation of the appropriation of non-digital objects and spaces. We review two important and somewhat complementary perspectives behind the development of technology whose explicit aim is facilitating the appropriation of technology. From this review we identify some areas in need of further exploration and how addressing these issues may lead to an enhanced understanding of the process whereby digital technology becomes part of everyday life.

1.1 What is Appropriation?

Generally speaking, people tend to decorate and adorn everyday, mundane objects and spaces to mark them as their own, as their property, imbuing them with a sense of intimacy even when these objects and spaces may be public. People may intentionally mark objects and spaces through the addition of various symbols or items that make them unique or personalised. The personalisation or singularisation of products may begin when products are first acquired and continue all through their lives and beyond through memories and stories. The personalisation of objects and spaces makes them more familiar and pleasurable. Objects and spaces may also be personalised to convey social relationships, relationships with the objects and spaces themselves, as well as personal traits. For Ahde, the personalisation of objects and spaces is synonymous with the appropriation process that represents “the biography of products from the moment of purchase” (Ahde 2007). This process, however, makes products lose their exchange value (or market value) to a symbolic one elevating it beyond considerations of, for instance, the material used to produce the good. Items so personalised or appropriated embody unique meanings and significances that can be interpreted by those who can read these assemblages (Howes 1996).

The appropriation of objects and spaces has its counterpart in the digital realm. For Dourish, appropriation is “the process by which people *adopt* and *adapt* technologies, fitting them into their working practices” (emphasis added) (Dourish 2003). This statement highlights two sides of this process: (1) the social element whereby people modify their activities to integrate a technology into their practices and, thereby, create new practices, and (2) the technical features embedded in a technology that can be modified according to a (not necessarily) predefined set of options in different use situations (cf. (Hall *et al.* 2009)).

The modification of features according to a predefined set of options is, for Balka and Wagner (2006) related to two other popular concepts in computing science known as *customizability* and *tailorability*. According to Balka and Wagner, both phenomena received particular attention in the 1990s when researchers explored users' practices as designers adapting systems to their very particular needs. Tailoring in the workplace—also identified by others as tinkering, translating and gardening—can be seen as “construction work” aimed at adapting ‘off-the shelf’ software to specific uses and needs. Customisation, on the other hand, could be seen as the type of activities necessary to make a system work in the first place in a particular environment (Balka and Wagner 2006).

The phenomenon of appropriation can be portrayed as an ongoing process of adaptation or tailoring of technology to suit specific needs. This would appear to be possible because as one gains experience with an artefact it presents new “resources for action” (Salovaara 2007). These resources, unlike those that are said to be independent of personal interpretation, are intimate and personal resulting from direct or indirect interaction with a technology. The emergence of resources for action or of the ‘new’ possibilities of an existing technology may come as a consequence of gradual changes in practice around it, imitation, conscious exploration or sheer serendipity. Moreover, when a user learns a new function in some situation, the same can be later retrieved under similar circumstances; a process known as “utilization schemes” for (Papantoniou *et al.* 2003). In this manner a technology is continually being appropriated and re-appropriated as one continues discovering its (hidden) resources (Salovaara 2007).

In the process of appropriation of, for instance, mobile telephony, Bar *et al.* (2007) see a “cultural echo” resembling the process whereby Latin American countries embraced the cultural change brought by the Spanish conquest. In their analysis, Bar *et al.* distinguish three forms in which this cultural change was embraced, contended, and resisted including baroque layering, creolization, and cannibalism. In their view, the same processes can be seen in the appropriation of technology, particularly mobile telephony. In this manner, baroque layering refers to those practices aimed at personalising a device thanks to those “blank spaces” deliberately left behind by technology designers; creolization or bricolage is the purposeful recombination of the components of a technology to produce something new; and cannibalism is “creative destruction” or the act of disassembling a technology to reassemble it into something different (Bar *et al.* 2007). Bar *et al.* argue each mode of appropriation is an expression of creativity in itself whose main distinction is the level of user involvement and the technical knowledge and skills required by each mode to repurpose digital technology.

Furthermore, for Bar *et al.*, these modes of appropriation represent “increasingly confrontational stances” users take against what the technology stands for (e.g., plans, corporations, infrastructures, etc.). In this manner, baroque appropriation is simply the type of appropriation that follows the plan laid out by the technology provider; creolization is appropriation where users seek to lay out their own paths in the use of technology which might or might not be counter to technology providers’ interest; and cannibalism is a direct confrontation with providers’ interests in the provision of a technology (Bar *et al.* 2007).

As seen in this section, the appropriation of technology is understood in the HCI literature through a number of related concepts. In general, they all would convey the idea of a process whereby technology is embraced in the satisfaction of particular needs. There is a variety of ways in which technology is so embraced (or used in the satisfaction of needs) and these would appear to depend on people’s ability to master the features of a technology. The process of appropriation is also portrayed as ongoing because needs may change and people would extend their knowledge of technology when faced with new circumstances. In a more general sense, the appropriation of technology is, as it were, the digital counterpart of the personalisation or singularization of objects whereby these are marked as private and personal. Under this view, the appropriation of technology is not necessarily utilitarian, but may be symbolic in that it is made part of the landscape of everyday life.

There appear to be two complementary perspectives from which the appropriation of information and communication technologies is analysed in HCI. As indicated earlier, Dourish (2003) portrays them as a technical ('adaptation of technology') and a social perspective ('adoption of technology'). Both perspectives, however, would appear to have the same aim: facilitating the introduction and use of novel technology in society. In the following sections we will elaborate further on both perspectives.

1.2 Appropriation as a Design Endeavour

The problem of designing for appropriation is, for Dourish (2003), a technical issue arising from "the fundamental structure of the technologies from which software systems are constructed". In other words, the process of appropriation of novel technologies is hindered because these continue relying in models that are limited in their capacities to reconfigure to varying conditions of use.

Salovaara (2007) appears to reach the same conclusion in his investigation of communication practices with a group of high-school teens. For Salovaara, participants in his study are able to appropriate Comeks, a novel multimedia messaging system, because it provides the features ("resources for action") that facilitate this process. This is manifested in the fact that participants followed three distinct, non-hierarchical, non-overlapping paths to appropriation including increased mastery of the features of Comeks, use of the application to mediate existing communication practices, and use of the application to invent new communication practices.

Under this view, one of the reasons why technologies are not appropriated is because they lack the features that facilitate this process. A great deal of research in HCI is thus devoted to finding 'the right combination of features' that would facilitate the appropriation of technology. For instance, inspired by Brand's 'shearing layers' (Brand 1994), Papantoniou *et al.* (2003) suggest appropriation can be favoured when technologies are designed with an eye towards change over time. This, they argue, can be achieved by 'underbuilding' applications on top of "concrete infrastructure" in order to "leave room for [user] adaptation". (See a similar idea in (Höök 2006).)

For Carroll (2002; 2004) the "cycle of appropriation" is completed only when, in the design process, a new set of requirements is gathered from the different ways in which a technology is appropriated ("design from appropriation"). These new requirements and new uses are then incorporated into the design process for future iterations of a technology ("design for appropriation") in order to add those features which the designers did not foresee in the early iterations of a technology.

The output of this approach to find the right combination of features that would facilitate the appropriation of technology is generally found in what is known as the 'implications for design' section in research papers. For instance, regarding the implications for design of mobile phones, these appear to be lacking some features that would foster their appropriation by reason of better supporting the practices in which they are involved. Thus, among Tokyo youth, Schiano and Loudon (2006) suggest the inclusion of features of "hyperconnectivity" to achieve an enhanced "sense of continual real-time connection"; for Berg *et al.* (2003) young English users require enhanced content visualisation to support groups of 2-4 people, support for messages with multiple media (photos, sounds, type and drawing), dedicated memory sticks to save content, and enhanced mechanisms to convey identity, feelings, mood, playfulness and value of private objects; and finally, for Taylor and Harper (2002), English youth also require tangible,

exchangeable items to support embodiment of meanings, access privileges to sustain alliances and rivalries between social groups, and proximity access restrictions to link messages to specific people and places.

The previous implications for design, however, are completely upended if the target users were to be, for instance, Thai retirees. For Williams *et al.* (2008), new mobile phone features should instead take into account that not all users of mobile telephony are also PC users; that these should be developed to run even in the most basic of handsets; that not all mobile phones are, in fact, private devices (cf. (Jones *et al.* 2008); and that current voice communication practices are in themselves information gathering practices.

1.2.1 Ambiguity as a Resource in the Design of Technology

As indicated earlier, sometimes technology is appropriated in ways different from those intended by its designers (Bar *et al.* 2007). In HCI, this notion is usually referred to as unanticipated or unforeseen uses of technology (Dourish 2003; Balka and Wagner 2006; Dix 2007). Drawing from the domain of linguistics and rhetoric, Papantoniou *et al.* (2003) label this phenomenon ‘catachresis’ (literally “the use of a word in a way different from the normal meaning”) to describe uses of technology beyond those realised by the designers of a technological artefact. This, Papantoniou *et al.* argue, is a reaction to the traditional design process in HCI that presupposes designers as being able to arrive to an ideal and fixed design solution (i.e., a technological artefact) that prescribes a rather strict set of uses for a technology. People would circumvent the limitations of technology (and their own with respect to it) through the development of ‘utilization schemes’ that transpose their experience with other artefacts (even when non-digital) to the one at hand even if this results in suboptimal use of a digital device (Papantoniou *et al.* 2003).

The idea of previous experience bearing on current use of technology is further expanded by Chalmers (2004). Chalmers argues that unseen use of technology is possible because people, influenced by their past experience with a “heterogeneous rich mix of media, tools and artifacts”, adapt it to meet the demands of changing contextual conditions. For Chalmers, unexpected uses of technology could be favoured if technologies were to support more explicit reflections about a device’s past use—what Heidegger calls “present-at-hand”—through, for instance, recommender systems, demos of people’s past use under similar circumstances, and system adaptation through software components, in order to support the eventually less reflective, but more common, “ready-to-hand” use of technology.

For Gaver *et al.* (2003), people’s ability to use technology in unexpected ways is, in fact, a resource for the design of technology. Gaver *et al.*’s “ambiguity in design” suggests this type of appropriation can be favoured when technologies are designed as ambiguous or prone to being interpreted by users in various ways including those that can be suggested by designers. In their view, ambiguity can be designed into *information* to encourage people to question “the truth of a situation”; in the *context* to motivate expansion, bridging, or rejection of “technological genres” (e.g., by embedding a screen on a bench, the *sloganbench* transcends genres because if seen exclusively as a piece of public furniture or as a public display its other function is obscured); and in *relations* to invite people to consider “new beliefs and values, and ultimately their own attitudes.” For Gaver *et al.* ambiguity leads to appropriation via user

engagement since the latter is necessary to decipher on a personal basis the role or function a technology may fulfil. It is in this manner that technologies are “open to interpretation” (Gaver *et al.* 2003).

There is a growing body of research in HCI using ambiguity as a ‘resource for design’. In general, it is argued that design that is open to interpretation—for reason of not being deterministic (i.e., restricted to what a designer saw fit to provide in a technology), but ambiguous—leads to appropriation. This aim is nicely put by Höök who asks whether it is possible to design for appropriation by opening the surfaces of systems allowing users to inscribe their own meanings in the technology actively contributing to its development over time (Höök 2006).

In this manner, ambiguity is said to be the core idea behind, for instance, personal communication systems that reduce the fidelity that is common in communication technologies to support the creation of “personal space” or boundaries across people and places (see (Aoki and Woodruff 2005) and further refinements of this concept in (Boehner and Hancock 2006)); the interweaving of the realms of game and everyday life to blur otherwise strict roles between gamers and bystanders and encourage participation of the latter (Benford *et al.* 2006); a TV remote control to encourage socialisation among seniors without explicitly revealing someone’s need for company (Sokoler and Svensson 2007); and finally, affective and social computing in which systems and artifacts have “open surfaces” that users can fill with their own meanings, values and interpretations by reason of resembling a real world practice (Höök 2006).

Gaver *et al.* (2009), however, caution on trying to link the “open-endedness” of this approach to a sure measure of success. In other words, a system built with ambiguous features does not necessarily imply that any use that can be made out of them is synonymous with appropriation. Gaver *et al.* suggest appropriation has taken place when four conditions are observed: engagement (enthusiasm in the use of a technology over time); reference (relating a technology to others a user may have experience with), accommodation (developing of patterns of use integrated to other activities of everyday life); and surprise and insight (continuous reflections motivated by a technology over the long term). In suggesting these conditions as a more adequate measure of success or appropriation, Gaver *et al.* stress the fact that so-called systems open to interpretation are also prone to failure and, therefore, they should only be considered as another approach in the design of technology (Gaver *et al.* 2009).

1.2.2 Culture and the Design of Technology

Another way in which technology may be crafted—and one relevant to this work as will be more evident in the next chapter—is with an eye to its cultural context. Under this view it is expected that a ‘culturally-sensitive’ technology would facilitate its introduction. Even though the study of culture would appear to be only a marginal area of research in HCI (Kamppuri *et al.* 2006), there is a growing body of literature on this issue, e.g., (Bourges-Waldegg and Scrivener 1998; Bourges-Waldegg and Scrivener 2000; Marcus and Gould 2000; Abdelnour Nocera 2002; Abdelnour Nocera 2004; Choi *et al.* 2005; Kayan *et al.* 2006). Interestingly, according to Kamppuri *et al.* (2006), among the research published, a full 40% of papers do not provide a working definition of culture to frame the research being presented. When a definition of culture is in fact presented, the HCI community seems to be resorting to the same sources of cultural theory including cross-cultural psychology, marketing and management practices, and the cultural dimensions of Geert Hofstede (2001) and Edward Hall (1959).

Of particular interest to this work are Hofstede's cultural dimensions. For Hofstede, culture is "the collective programming of the mind which distinguishes the members of one group of people from another". In Hofstede's view, the values and norms of cultures (i.e., the subjective dimension) are rather static issues somehow preserved over hundreds of years despite changes in the institutions and artefacts (i.e., the objective dimension) of cultures. The slow pace of change in the values and norms of cultures give rise to specific traits, or cultural dimensions, that distinguish one group of people from another. For Hofstede there are five such cultural dimensions including *power distance*, or the expectation and acceptance that power should be distributed unequally; *individualism*, or the degree of integration of individuals into groups; *masculinity* related to the distribution of 'traditional' gender roles; *uncertainty avoidance* that describes tolerance for ambiguity; and finally, *long-term orientation* or the general attitude of a group towards the future. In Hofstede's view, each culture and, therefore, the individuals in that culture, can be analysed on the basis of these dimensions. Thus, it is possible to say that one culture is more or less collectivistic than another or that one culture is more or less individualist than another (Hofstede 2001).

At least three reasons may account for the popularity of the concept of cultural dimensions in the study of culture in HCI and, arguably, in the creation of so-called culturally-sensitive technology. First, it provides a reductionist and ready-made model of culture; second, being, a model, it is based in so-called 'quantifiable' traits of culture (power distance, collectivism vs. individualism, uncertainty avoidance, masculinity vs. femininity, and long term orientation); and finally, this model was cited in one of the earliest books dealing with culture and HCI: *International User Interfaces* edited by del Galdo and Nielsen (1996).

Nevertheless, the cultural dimensions approach has received a considerable deal of criticism because of its reductionist nature. For instance, it claims cultural homogeneity among the members of a culture; disregards behaviour and values that are not necessarily determined by a particular cultural setting; does not account for variations in the expression of cultural traits because of changing situations; and finally, ignores differences in the importance assigned by different cultures to a particular cultural trait (Kamppuri and Tukiainen 2004).

Furthermore, limitations with the rather static and monolithic view of culture advocated by the cultural dimensions approach are evident when it fails to provide an intelligible account of, for instance, the fast-changing pace of computer-mediated communication. Such a circumstance can be observed in a study analysing McDonald's websites around the world (Würtz 2004) in 2003 with their counterparts years later. Clear-cut issues of low- vs. high-contextuality (Hall 1959) and individualism vs. collectivism, like those said to be documented in Würtz's study, are difficult to distinguish in the current design of those websites.

1.3 Appropriation as a Social Process

In their discussion of configuration work, Balka and Wagner (2006) argue this involves more than the technical features of technology that may be adapted to varying conditions of use. For Balka and Wagner, complex systems in office settings have more possibilities of succeeding if, during the design process, attention is given to the organisational and spatial relationships already in place where a new technology

is to operate. This complex mesh of technical elements, organisational relations, space-technology relations, and people's relationships to other people, places and materials, are dimensions that should be understood and supported before the introduction of a technology in an office setting because it is only through users' purposeful modifications and adjustments that technologies are, in fact, appropriated. Furthermore, the shaping of a technology and the context where it operates is, for Balka and Wagner, an activity largely performed by users themselves without direct intervention from the designers of a technology.

Balka and Wagner's work is reminiscent of earlier work in office settings documenting the incorporation of technology into daily activities. For instance, DeSanctis and Poole (1994) adapted some concepts from Anthony Giddens' Structuration Theory (see section 2.3.1 Structuration Theory on page 61 for a more detailed exploration of this theory) to develop their Adaptive Structuration Theory (AST) as a tool to explore the appropriation of technology in office settings. In AST, the introduction of a technology in any setting may trigger the "structurational process" that necessarily modifies the technology itself along with existing structures including the task the new technology is called to fulfil, the environment where the action takes place and group dynamics. For DeSanctis and Poole, the appropriation of technology in organisations is evident when technology becomes integrated in the discourse of a setting through spoken sentences, speech acts, turns of speech, and other forms of written and spoken interaction.

For DeSanctis and Poole, however, the appropriation of technology is never a straight path leading always to the same outcome given the variety of structures (i.e., technology, task, environment and group dynamics) intervening in this process. The path different groups and organisation may follow in the appropriation or rejection of technology, DeSanctis and Poole argue, can be analysed through four aspects of this process delineated by AST: 1) appropriation moves (i.e., whether a technology or structure is used as provided or interpreted in relation to other technologies that may constrain and enable use of the new technology); 2) faithfulness of appropriation (whether the 'spirit' of a feature is preserved in use); 3) instrumental uses (actual reasons or purposes behind the adoption of a technology); and finally, 4) attitudes towards appropriation (comfort, respect or challenge) (DeSanctis and Poole 1994).

The appropriation of technology has also been explored beyond office settings in everyday life. For instance, Ito suggests the success of *keitai* in Japan—as mobile phones are known in that country—is due to a self-feeding loop carved in the particularities of Japanese popular culture (e.g., animation, video games, comics, food and other cultural elements of this nation) (Ito 2005). Okada (2005), on the other hand, attributes the success of personal technology like the mobile phone to incremental upgrades (e.g., the addition of a simple LCD screen on pagers) that made possible the popularisation of this technology and its transition from a business tool to a personal one. Nevertheless, even these technological achievements would appear to have had little impact among Japanese society if the corporations behind these technologies in that nation had not battled each other to penetrate the market through constant reductions of the costs associated with, for instance, leasing a mobile phone (Kohiyama 2005; Okada 2005). These price reduction schemes in particular and marketing practices in general brought along a number of changes (e.g., in the user base and the modes of consumption of this technology) that can also be attributed with the success of mobile telephony in Japan. For instance, before 1993 mobile phone

usage's peak hours were at 10 am and between 2 pm to 3 pm. By 1993, when 70% of new subscribers were private individuals in their teens and twenties, peak hour was at 10 pm (Okada 2005).

That larger social processes—beyond the technology itself—are important influences in the adoption, use and appropriation of ICTs in everyday life is a point also made by Wei and Kolko (2005). In their exploration of the budding mobile telephony industry in Tashkent, Uzbekistan, Wei and Kolko describe how three elements, culture, politics and economics, shape the use of mobile phones in that nation. In this manner, Wei and Kolko argue, minimal use of mobile phones in public spaces is a reflection of a political environment in which one does not want to attract unwanted attention. Similarly, the investment made in the acquisition and operation of a mobile phone appears to be the reason why these devices are treated with a deference not observed in other nations where mobile telephony has reached a certain level of commoditisation (Wei and Kolko 2005).

The appropriation of technologies in everyday life, then, would appear to be linked to a larger number of considerations than those previously identified as relevant in office settings. In fact, in their discussion of Brand's work (Brand 1994) as a framework to orient the development of ubiquitous computing for domestic spaces, Rodden and Benford (2003) call not only for a recognition of the new professions (i.e., the plumbers, joiners, decorators, etc. of a future digital age) that may smooth this process, but also for a recognition that Ubicomp-enhanced homes can not exist in isolation from external forces, but are a point of convergence of larger social processes pushing towards that digital vision.

An emphasis in the temporal dimension of the appropriation of technology is, according to Huysman *et al.* (2003), a particular concern of social constructivism. For social constructivists, meanings associated with communication technology are not given in isolation but along a number of contextual influences that may be in constant fluctuation on time. The purpose of research from this perspective, Huysman *et al.* argue, is identifying what these influences are and how they affect the process of appropriation. For instance, in their exploration of the appropriation of communication technology among virtual teams, Huysman *et al.* introduce the concept of 'media stickiness' to convey the idea that a) distinctive patterns of use among virtual teams are developed early on in the process of collaboration, and b) that these patterns persist in a rather inflexible manner restricting future use that deviates from the conventions initially established within a team (Huysman *et al.* 2003).

Perhaps a more formal approach in HCI to the study of the appropriation of technology in light of contextual and temporal forces affecting this process is that given by Activity Theory (AT). According to Bedny and Harrys (2008), AT is a "psychological framework" originating in the former Soviet Union in the first decades of the 20th century whose addition to the arsenal of theories in HCI in the mid-1980s was part of a rising concern in the field with theories that could portray "users as autonomous, motivated agents acting, learning and developing within specific cultural and sociotechnical work arrangements".

Among its proponents (see for instance, (Bødker 1989) and (Nardi 1996)), the main appeal of AT in HCI would appear to be the theoretical framework it provides to analyse the use of technology (or appropriation) "within a historical and cultural context" (Rogers 2004). This orientation can be seen, for instance, in Petersen *et al.*'s (2002) exploration of TV use. In their view, the AT's perspective allows them to suggest design recommendations for "development in use"—as opposed to "snapshot use". For

Petersen *et al.*, snapshot use refers to a form of design that does not account for evolving use of a technology over time. In the evolving use of technology over time “learning artifacts” (i.e., those through which people learn to use a technology even before actually using it including shop demonstrations, sales brochures and manuals) have an important role in the appropriation of a technology.

Nevertheless, despite its dense theoretical structure, AT and its many variants have been of limited utility in HCI to guide the design of technology because, like many other overarching theories, understanding its tenets and learning how to apply them requires “considerable time, effort and skill”. Thus, AT has been turned into an analytic framework in which its main concepts (tool, subject and object) are mostly used simply to analyse ethnographic data (Rogers 2004).

1.4 The Technology Acceptance Model

Even though it is hardly used in the HCI field, we consider important to provide an overview of the Technology Acceptance Model (TAM) in this work as it is the leading model in the Information Science (IS) field to explain information system use and/or user acceptance (Lee *et al.* 2003), or, in the language of this piece, appropriation of technology.

First introduced in Fred Davis’s 1985 doctoral dissertation at the MIT Sloan School of Management (Chuttur 2009), its original publication in paper format (Davis 1993) has received over 700 citations (Bagozzi 2007). For Lee *et al.* (2003), TAM’s popularity in the IS community is due to two factors. First, its parsimonious (simplistic) nature (see also (Bagozzi 2007)) when compared to similar models (e.g., TRA below) and its theoretical basis (more of this below). Second, its assumed robustness as it has been used to explain use of a large variety of information systems (email, word processors, hospital information systems, etc.) under different situations and control factors, and with different subjects. In tracing the historical roots of TAM, Chuttur (2009) suggests its inception is a response to the growing concern in the 1970’s with the adoption of computer systems in organisations. Therefore, in proposing TAM, Davis was seeking to produce a reliable measure to explain system acceptance or rejection in organisations (see also (Lee *et al.* 2003)).

The TAM is a conceptual refinement of Fishben and Ajzen’s (Fishbein and Ajzen 1975) Theory of Reasoned Action (TRA). Briefly put, the TRA maintains that a person’s behaviour can be determined through a person’s prior intention towards a given behaviour as well as the beliefs this person had about the behaviour in question. To operationalise this hypothesis, Fishbein and Ajzen proposed several constructs (behavioural intention, attitude toward behaviour, and subjective norm) to measure the likeness of a behaviour being displayed as a consequence of the proper stimuli (Fishbein and Ajzen 1975).

Similarly, in its original form (Figure 1 from (Chuttur 2009)), Davis’ TAM advanced the idea that actual system use—or appropriation—or rejection is a consequence of user motivation. In TAM, user motivation is conceived as a relationship between two constructs known as perceived usefulness (PU) and perceived ease of use (PEU) and a third one known as user’s attitude towards using a system. It was hypothesised that PEU had a direct influence on PU. It was also thought that both beliefs were shaped by the features of a system (represented by X1, X1 and X3 in the figure). To put it more succinctly, in its original form TAM conceived system usage as the direct consequence of an attitude that is shaped by the beliefs engendered by the attributes (features) of the system itself.

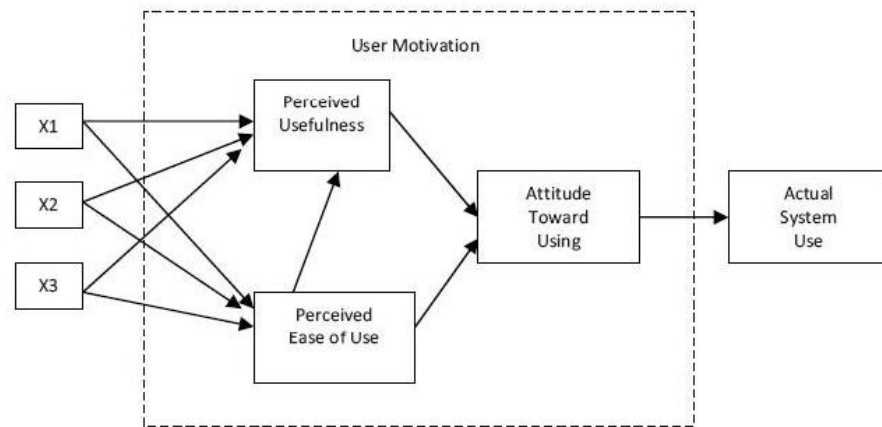


Figure 1 Original TAM

In proposing TAM, however, Davis did not embrace wholesale the theoretical assumptions of the TRA. Instead, Davis chose to eliminate the concept of subjective norm for reason of not even being properly understood by Fishbein and Ajzen themselves. In doing this Davis deprived its own model of the ability to take into account the influences of other people in the use of a piece of technology (Chuttur 2009). Davis reduced to only two the number of beliefs considered important in shaping behaviour. PU, one of the two beliefs influencing the use of a technology, was thus defined as “the degree to which an individual believes that using a particular system would enhance his or her job performance”. PEU, the second belief influencing use of a technology, was defined as “the degree to which an individual believes that using a particular system would be free of physical and mental effort” (Chuttur 2009). Through the use of psychometric scales Davis eventually refined two six items scales to measure perceived usefulness and perceived ease of use (Davis 1993).

According to Lee *et al.* (2003) the evolution of TAM can be divided into four periods including model introduction, validation, extension and elaboration. An example of research conducted in the introductory period of TAM is, of course, Davis (1989) and Davis *et al.* (1989). Research conducted during TAM’s validation period can be seen in Davis (1993). In this latter piece, Davis documents a direct influence of PU on actual system use. Davis also observed the influence system characteristics had on actual system use thus bypassing the need to first form a belief that may later lead to use.

Later adjustments to TAM included the addition once more of behavioural intention as an element influenced by perceived usefulness (Davis *et al.* 1989). Studies conducted on this assumption obviated the need for the attitude construct, as it was determined that both PU and PEU had instead a direct impact on behavioural intention and, therefore, on actual system use. Through this refinement Davis *et al.* could both explain the direct influence of PU on behavioural intention, as well as eliminate unclear direct relationships observed between system characteristics and the attitude construct. The resulting TAM model reflected this streamlined relation.

Posterior modifications to TAM saw the addition of external variables (e.g., system characteristics, user training, user participation in design, and the nature of the implementation process (Venkatesh and Davis 1996)) to explain influences on a person’s beliefs towards a system. Such modifications were produced to

explain why a person would perceive a system as useful or not. In what came to be known as TAM 2, Venkatesh and Davis (2000) extended the original TAM suggesting the following variables influence PU: voluntariness, experience, subjective norm, image, job relevance, output quality and result demonstrability; experience and voluntariness form the moderators in this elaboration of TAM. Later, Venkatesh (Venkatesh 2000) proposed anchors (general beliefs about computers and computer usage) and adjustments (beliefs shaped by direct experience with a system) as antecedents to PEU. Anchors include computer self-efficacy, perceptions of external control, computer anxiety, and computer playfulness. Perceived enjoyment and objective usability form the adjustments. This work is an example of research conducted during TAM's extension period.

TAM is currently in its third version. TAM3 (Venkatesh and Bala 2008) is a combination of TAM2 (Venkatesh and Davis 2000) and the determinants of PEU identified by Venkatesh (Venkatesh 2000) just mentioned. As Venkatesh puts it, "TAM3 presents a complete nomological network of the determinants of individual's IT adoption and use". More simply put, TAM3 attempts to depict all relations found relevant in the acceptance and use of information systems. TAM3 also introduces the effect of experience in three relationships between: 1) PEU and PU, 2) computer anxiety and PEU, and 3) PEU and behavioural intention (Venkatesh and Bala 2008) (Figure 2).

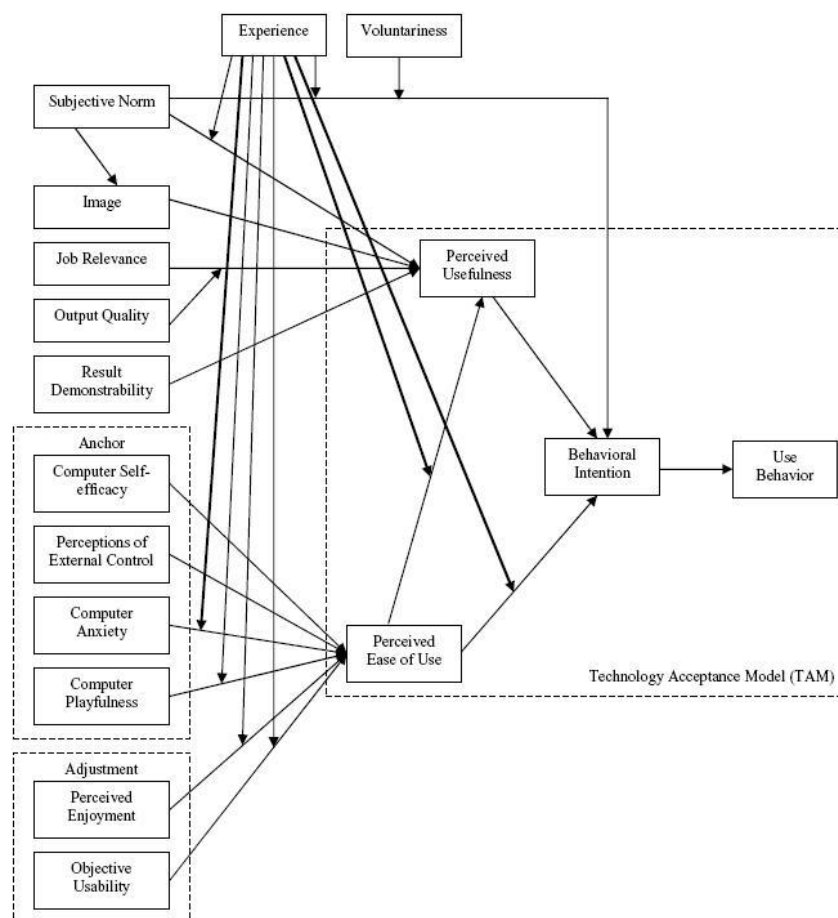


Figure 2 TAM3

Up to this point we have presented the evolution of TAM at the hands of those most closely involved in its authorship, that is, Davis and Venkatesh. However, as Yousafzai *et al.* (Yousafzai *et al.* 2007) highlight, many other researchers have proposed additional modifications to TAM. In their review of 145 studies using TAM Yousafzai *et al.*, divide into four groups (i.e., organisational, system, users' personal characteristics, and others) 70 external variables identified by other researchers as bearing on both PU and PEU (see Table on page 269 in their paper). According to Yousafzai *et al.*, in the many studies adding external variables to TAM it is possible to distinguish a preoccupation with a better understanding of the antecedents of PU and PEU than that provided by the 'official' version; i.e., that of Davis and Venkatesh. As with the initial conception of TAM, the main purpose of these extensions is that researchers may "know which levers to pull in order to affect these beliefs [PU and PEU] and, through them, the use of technology" (Yousafzai *et al.* 2007 p. 268).

1.4.1 TAM Criticism

Despite its popularity in the IS community, the TAM has received a good share of criticism. Criticism of TAM has been directed, for instance, to the conflicting and confusing findings of the effect size of TAM variables. For Yousafzai *et al.* (2007) conflicting findings of the effect size of TAM variables are most likely the product of the particular methodological characteristics of each study. In their meta-analysis of TAM studies, Yousafzai *et al.* group these problems in four areas (similar points of criticism can also be found in (Lee *et al.* 2003)). *Subject type* is the first area identified as problematic. Criticism here revolves around the generalisability of the findings of TAM studies to the entire user population since, first, most research conducted in this area has been based on student populations; and second, most studies have been conducted on the use of technology on a voluntary basis which differs from the more stringent constraints observed in organisational settings.

The *type of method used*, whether a field study or an experiment, is the second area of criticism of this model and one that also accounts for variance observed in the magnitude of the effect size in TAM variables. The use of different methods in TAM studies does affect the type of results obtained; while experiments can control for those factors that may confound findings, they do so at the expense of the insights gained from naturalistic settings where technology is actually used.

Communication systems, general purpose systems, office systems, and specialised systems constitute the four types of technologies commonly evaluated through TAM studies. Because users have different frames of reference for each type of technology (i.e., each user has a different conception of what is useful or easy to use), the meaning and significance of TAM constructs (PEU and PU) can not be preserved across studies. Thus, *variations in the value of TAM constructs* across different technologies constitute the third area of criticism of this model.

The last area of criticism deals with the manner in which most TAM studies approach *usage measures*. Most TAM studies rely on self-reported usage; as a consequence, most studies exhibit the problems objective measures would avoid like selective recall, inaccurate estimation, common-method bias, hypothesis guessing, and indistinguishable causation (Yousafzai *et al.* 2007).

While the above criticism of TAM is directed to its conflicting outcomes, Bagozzi's criticism (2007) is directed to its actual structure or what he considers "fundamental problems with TAM". We consider

Bagozzi's criticism particularly insightful as he was involved directly with TAM during its introduction period being one co-author of one (Davis *et al.* 1989) of the two (the other being (Davis 1989)) earliest and most cited TAM papers (Venkatesh and Bala 2008).

Earlier in this section we mentioned the success of TAM among the IS community may be due to its simplicity in explaining technology acceptance. Bagozzi argues the simplicity of TAM has "seduced researchers into overlooking the fallacy of simplicity" [p. 244]. In others words, in relying in as simple a model as the TAM to explain such a complex phenomenon as technology acceptance regardless of the particular technology, situation, and users under consideration, researchers have ignored "essential determinants of decisions and action, and turned a blind eye to the inherent limitations in TAM" [p. 244]. It is, therefore, worth reviewing some of TAM's limitations relevant in the context of this thesis.

The first problematic area in TAM deals with the cause and effect relationships set forth by this model. The first such relationship is that indicated by the construct *intention to use a technology leading to actual use of a technology*. For Bagozzi the problem with this relationship is that it assumes behaviour (use of a technology) to be the terminal goal of an intention when use may well be instrumental to a higher end. For Bagozzi this relationship, which he calls 'goal striving', is a more complex one constituted by several sub-processes including intention formation, planning (when, where, and how to act instrumentally), overcoming obstacles, resisting temptations, monitoring progress to goal achievement, readjusting actions, maintaining effort and willpower, and reassessing and changing goals and means. By failing to account for these sub-processes, the intention-to-use-a-technology—actual-use-of-a-technology relationship is unable to properly explain what is necessary for the adoption and use of a technology over the long term.

The second problematic cause and effect relationship in TAM is found further up in the model in the constructs linking *individual reactions to using technology and intentions*. For Bagozzi, there are many more reasons beyond simply PU and PEU that people take into account in forming an intention to act. However, even people's acknowledgement of the PU and/or PEU of a technology does not constitute reason enough to use a technology as people may still have no desire to act or choose not to act despite those two 'reasons'. Moreover, TAM fails to account for the manner in which multiple reasons to act are reconciled by people resulting in a decision or intention to act.

The deterministic foundation on which TAM rests, as expressed through the cause and effect relationships mentioned, is for Bagozzi one more of its flaws. In considering an effect (i.e., use of a technology) as the undisturbed consequence of a cause (i.e., PU or PEU), TAM ignores people's agency. In doing this TAM portrays decision making more akin to a physical process taking place in the brain than as a self-regulating process whereby people reason on how best to act.

The last problematic aspect of TAM relevant for this work is the manner in which this model is used to account for individual behaviour as if this were devoid of any social influence. As Bagozzi puts it, "decisions with regard to technology acceptance and actual usage are often done collaboratively and with an aim to how they fit in with, or affect, other people or group requisites" [p. 247]. When social influence is acknowledged in TAM, Bagozzi continues, this is usually depicted as a constraint acting in a unidirectional sense, that is, on the individual deciding to use a technology. For Bagozzi there are several

mechanisms through which the group, cultural and social aspects of decision making are expressed and which TAM fails to account for. First, there is social normative influence, or a type of *compliance* based on an individual's "need for approval, acceptance, or fear of reprisal" [p. 247]. This influence is manifested in interpersonal relationships with peers and within families and groups one belongs to. At the same time, however, through the education, training, and indoctrination received across different institutions and organisations, individuals are socialised and psychologically influenced to act by themselves in harmony with the values and goals of those diverse social settings. This type of social influence 'wilfully' expressed by individuals is known as *internalisation*. A second type of social influence unaccounted for in TAM is known as *identification* or *social identity*. This represents a "self-defining relationship a person has with another person or group" and consists of self-awareness of group membership (cognitive component), feelings of attachment or belongingness (affective component), and positive or negative value connotations associated with group membership (evaluative component). Another type of social influence missing from TAM is what Bagozzi terms *collective intentions*. Bagozzi recognises TAM only accounts for personal intentions to perform an action or achieve a goal. In doing so, TAM neglects the type of individual decisions people make in harmony with a group or as individual contributions to collective activities. A related form of collective intention refers to those whereby individuals express their identity as members of a group or social category (e.g., gender, ethnicity, or religious affiliation). In acting under collective intentions people perceive themselves as agents of a group or as a group acting as a unit.

1.4.2 HCI and TAM

We will now move to consider the TAM in the context of the HCI field. As indicated above, in the HCI field the TAM has not received the same degree of attention as in the IS field. This much can be gathered from the 26 results produced by a query performed in the classification keyword field for the terms '*technology acceptance model*' or '*tam*' among the most influential journals and conferences in the HCI field¹ (Appendix 1).

It is difficult to assess what makes a paper exclusively HCI material, as opposed to IS material, since both types of papers follow a similar structure. This may be a consequence of the fact that in sharing literatures between both fields, as some have advocated (Zhang and Dillon 2003), other components of the research arsenal of one (i.e., theories, models, methodologies, etc.) necessarily transfer to the other.

The typical TAM paper found in the HCI literature has a standard layout we will attempt to illustrate with a few pertinent examples. The first element of a TAM paper in HCI is an introduction. Usually, the introduction is used to make a case for the need to further understand user acceptance of a particular technology from the perspective of TAM. In this manner, Shin (2009), for instance, advocates the need to study user acceptance of virtual worlds like Second Life (SL) from a TAM perspective because this technology has been understudied from this stance [p. 531]; Tan and Chou (2008) propose the exploration of a construct known as Perceived Playfulness, an element of intrinsic motivation (i.e., the undertaking of an activity for no apparent reason other than the activity itself) in TAM, in the context of Mobile Information and Entertainment Services (MIES) as this construct has already been proven important in

¹ The accuracy of this figure depends on two factors. First, it assumes all authors of TAM research in HCI were careful enough to classify their work under any of the two terms indicated. Second, that the databases powering the online versions of these journals retrieved all relevant matches.

user acceptance of other mobile and stationary Internet technologies [p. 650]; while Serenko (2008) proposes the use of TAM to study interface agents for email because one of the major advantages of this model is that it can “be applied to virtually any computer technologies, including interface agents” [p. 462].

The second element of a TAM paper in HCI consists of the proposition of additional constructs, adapted from the literature and/or borrowed from other models and/or theories, to compensate for TAM’s perceived deficiencies. Thus, in his study of SL, Shin (2009) borrows Synchronicity, Empathy, and Self-efficacy (Table 1) from elaborations on social presence [pp. 537-538], behavioural studies [p. 537], and self-efficacy theory [p. 539], respectively.

<i>Synchronicity</i>	The extent to which users recognize the same activity at the same time
<i>Empathy</i>	The ability to feel with or for another person and to display that by responding to a perceived emotional state in a congruent way
<i>Self-efficacy</i>	An individual’s assessment of his or her ability to perform behaviors in specific situations

Table 1 Constructs introduced by Shin (2009) in a study of Second Life

Similarly, Tan and Chou (2008) review the IS and marketing literature on mobile commerce and on extrinsic and intrinsic motivators to propose the concept of Mobile Service Quality—a multidimensional construct integrated by “extrinsic and intrinsic service attributes [i.e., Perceived Usefulness, Perceived Ease of Use, Content, Variety, Feedback, Experimentation, and Personalization] deemed important in stimulating users to experience Playfulness and which likely led to the adoption of [e-services]” [p. 652].

Finally, Serenko (2008) introduces the constructs Perceived Enjoyment, Computer Playfulness and Personal Innovativeness from an “extensive review” of the HCI, IS, interface agents [p. 462] and play literature [p. 463] (Table 2).

<i>Perceived Enjoyment</i>	The extent to which the activity of using the computer is perceived to be enjoyable in it’s own right, apart from any performance consequences that may be anticipated
<i>Computer Playfulness</i>	An intrinsically rewarding activity accompanied by pleasure
<i>Personal Innovativeness in Information Technology</i>	The willingness of a person to try out a new information technology

Table 2 Constructs introduced by Serenko (2008) in a study of interface agents for email

The proposition of an improved or amended TAM model incorporating those constructs advanced by the author(s) typically constitutes the third element of TAM studies in HCI. Accordingly, Shin (2009) proposes the amended TAM model depicted in Figure 3 incorporating the constructs Synchronicity, Empathy, and Self-efficacy in his study of SL:

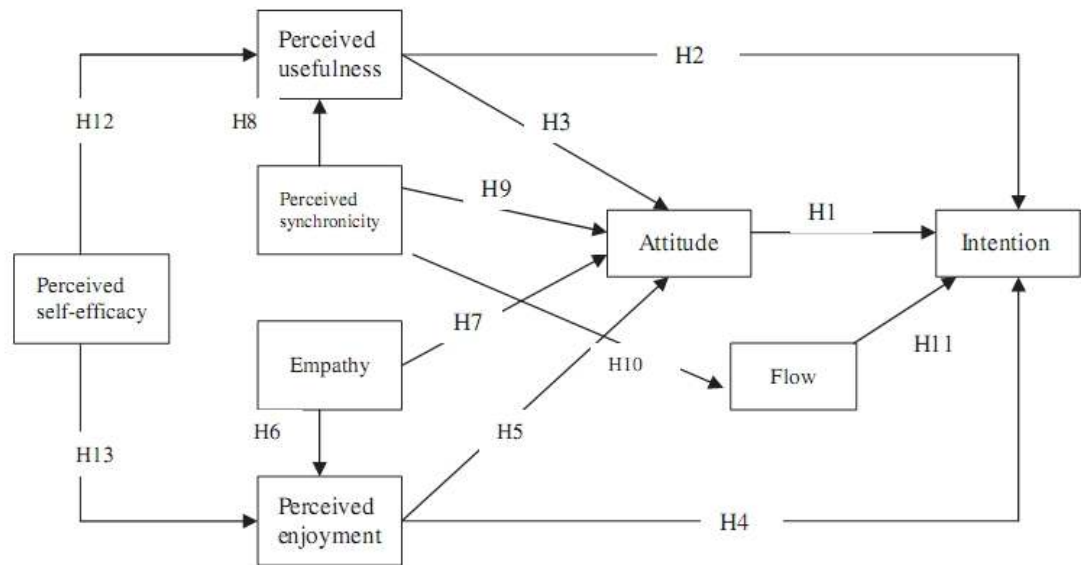


Figure 3 Shin's (2009) amended TAM model in a study of Second Life

Every study amending TAM is necessarily accompanied by a number of hypotheses describing the cause-effect relationships linking existing and new constructs. In the figure above, for instance, thirteen hypotheses (H1 to H13) accompany Shin's exploration of Synchronicity, Empathy, and Self-efficacy. The following three hypotheses are representative of this step; they are a subset of the hypotheses presented in this study and pertain to the Synchronicity construct [p. 538]:

H8: There is a positive relationship between perceived synchronicity and perceived usefulness.

H9: There is a positive relationship between perceived synchronicity and attitude toward SL.

H10: There is a positive relationship between perceived synchronicity and flow.

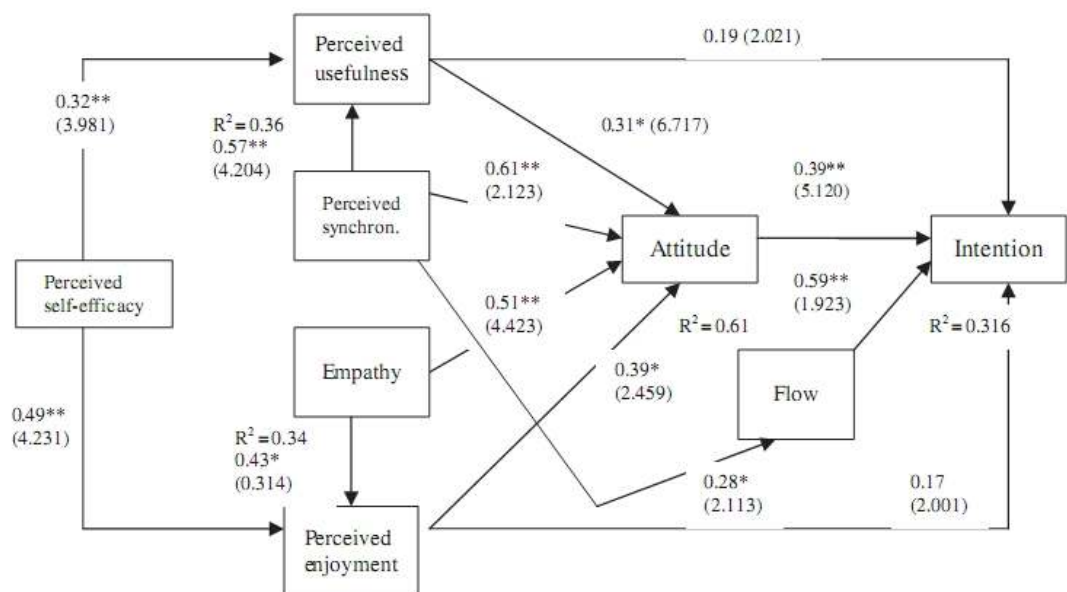
In the sample of TAM studies in HCI gathered, the number of hypotheses tested varies; it ranges from three in Tan and Chou's study of Mobile Information and Entertainment Systems (2008) to ten in a study of social presence (i.e., the feeling or sense of warmth and sociability within a website) in e-Commerce (Cyr *et al.* 2007) to twenty in a study of continuance intention (i.e., intent to continue displaying a certain behaviour) in an e-learning service (Roca *et al.* 2006).

The fourth element of a TAM paper involves the description of the measuring apparatus. Most often than not, the measuring apparatus is a Likert-type survey borrowed and/or adapted from a previous study. For instance, in a study of user acceptance of Digital Multimedia Broadcasting (DMB) in South Korea, Shin resorts to Davis, 1989; Kurnia, Smith and Lee, 2005; Nysveen *et al.*, 2005; Gokhale and Lu, 2006; and Cheong and Park, 2005 (all authors cited in (Shin 2009, p. 184)) to assemble his own survey exploring behavioural intention and perceived usefulness; perceived cost level; elements of enjoyment; perceived availability; and perceived quality, respectively.

Surveys may be applied online (Serenko 2008; Shin 2009), offline (Tan and Chou 2008) or by phone (Shin 2007; Shin 2009). In a few cases, however, a purportedly built technology or service is used to test

the hypotheses formulated under experimental conditions (Cyr *et al.* 2007; Hassanein and Head 2007). Surveys may be applied among actual users of the system under study (Konradt *et al.* 2006; Roca *et al.* 2006; Serenko 2008; Shin 2009), users and non-users of the system explored (Shin 2007; Shin 2008; Tan and Chou 2008) or those considered representative (e.g., university students) of the intended audience of a system (Cyr *et al.* 2007; Hassanein and Head 2007).

Statistical analysis of data collected along with the validation, or not, of the relationships depicted by the amended TAM introduced form the next stage of this research in HCI. Figure 4 illustrates the resulting values of the relationships explored by Shin (2009) (see also Figure 3 above). As can be seen, eleven out of thirteen hypotheses are supported. Of these, those pertaining to Synchronicity (see **H8-H10** above), for instance, confirm this construct as having “significant direct effects on both perceived usefulness and attitude” [p. 543] and less so on Flow which, according to Shin, implies Flow acts as a moderator and in synergy with Synchronicity to affect Behavioural Intention [p. 544].



* $p < .10$. ** $p < .05$.

Figure 4 Shin's amended TAM depicting the statistical significance of the relations explored

The last element of a TAM study in the HCI literature consists of a discussion of both the theoretical and practical implications of the relationships proved statistically significant in the amended TAM model proposed. The theoretical implications often amount to a call to include new constructs (i.e., those proved statistically significant), into the standard body of TAM for a particular type of technology. Shin, for example, positions Synchronicity, Empathy, and Self-efficacy as antecedents to TAM in the context of virtual worlds like SL. This argument is made not only on the grounds of the statistically significant results obtained, but also on the fact that one of the acknowledged weaknesses of TAM is its inability to elaborate on what makes a technology be perceived as useful or joyful (i.e. easy to use) (Shin 2009, p. 544-545). Tan and Chou make a similar argument for their multidimensional construct Mobile Service Quality which, by integrating intrinsic and extrinsic motivators, also explains what makes MIES useful and a joy to use (Tan and Chou 2008, p. 663-664). Lastly, Serenko's addition to TAM include the

identification of the preponderance of enjoyment features over those of usefulness, as well as the role of individual characteristics like personal innovativeness and computer playfulness on the TAM constructs perceived ease of use and perceived enjoyment, respectively. (Serenko 2008, p. 468-469).

The practical implications of TAM studies in HCI are varied. Shin (2009), for instance, argues users can “accept virtual reality as a new way to interact, collaborate, and enjoy” [p. 548] as long as the user acceptance and usability aspects of these technologies are addressed. Consequently, he advises developers to provide architectures of participation in which users can create individual content and retain ownership over it on a stable and constant environment. Furthermore, service providers should “raise user’s perceived synchronicity of enjoying various services as well as the actual synchronous function” [p. 546] of their systems.

Tan and Chou (2008) suggest MIES providers should: a) emphasise the usefulness of their products by improving the quality, productivity, performance and speed associated with the tasks users can perform with them; b) increase ease of use through the development of clear and understandable interfaces so that users can become skilful with them; c) include personalised services that provide information relevant to users needs and context; and d) augment the Perceived Technology Compatibility of MIES by creating a seamless experience through a better integration of mobile phone functionalities like strong roaming capabilities, interoperability, screen design, imputer features and terminology [p. 663].

Lastly, after identifying a strong positive relationship between computer playfulness and perceived enjoyment with agents, Serenko (2008) recommends developers of email agents to develop agents that cater to a variety of more and less playful users—perhaps by incorporating modes such as help, learn, work and play—since perceived enjoyment is the key influencer of behavioural usage intention [p. 469].

Authors of TAM research in HCI have recognised the limitations of their studies apart from those reviewed earlier (see section 1.4.1 *TAM Criticism* on page 32). As indicated above, one of this is TAM’s inability to provide a more elaborate account of what makes a technology (be perceived as) useful or easy to use (Shin 2009, p. 544-545) or, in the language of TAM, what are the antecedents of the PEU and PU constructs. As Wu *et al.* (2008) explain it, this limitation is due to the fact that the “TAM model is based on the epistemological assumption that technology acceptance can be explained by potential adopters’ cognitive perception of the technology itself and [that] such perceptions are individualistic and context-free” [p. 101]. Thus, even when Davis and other TAM researchers have recognised the influence of the environment in the use of technology, this influence has only been attributed to peer pressure or subjective norm (a person’s perception of what other people think he/she should display as a behaviour) exerted on the individual by relatives, friends, co-workers and supervisors (Wu *et al.* 2008, p. 101).

For Wu *et al.* (2008) TAM fails to properly recognise the manner in which contextual factors influence the adoption of technology, as well as the perception of what makes something easy to use or useful, by ignoring the fact that technologies are embedded in complex socio-technical networks that sustain their use [p. 101]. Thus, the acceptance of even simply technology (e.g., an Emergency Alert System deployed on a university campus described in their work) running on well-established, popular platforms like mobile phones is never a simple matter of embracing it due to their ease of use and/or potential usefulness [p. 104].

To better grasp the complexity of the context in which technologies exist, Sun and Zhang (2006) argue it is necessary a methodological shift from TAM's positivistic stance to a more interpretive one. This, Sun and Zhang argue, could be achieved through qualitative approaches like Grounded Theory that focus on contextual processes and the reactions of users to contextual changes. Such approaches are not only rare in research on user acceptance of technology, but have the potential to inductively identify factors affecting this process in particular contexts [p. 73].

A methodological shift in studies of technology acceptance may not only be able to identify previously unknown factors affecting this process—along with the relationships behind them—in specific contexts, it can also give room for the periodical reassessment of these factors since the emergence of new technologies most probably will entail the consideration of new elements not previously identified as relevant in the acceptance of technology (Sun and Zhang 2006, p. 73).

1.5 Discussion

The phenomenon of appropriation is not exclusive to digital technology; in fact, it would appear to be a natural extension of the same process whereby people mark or distinguish items and spaces as individual or as personal property even when these might be shared. The appropriation or personalisation of things can be said to fulfil social, aesthetic and practical purposes. The appropriation of things is said to change their value endowing them with a symbolic dimension hard to gauge but present, nonetheless. To different degrees, everybody appears to appropriate objects and spaces.

Just as with objects and spaces, digital technology can be appropriated. In the appropriation of technology users may simply follow the 'use path' presented by a technology or, to different degrees, contravene it in one way or another. In any case, the appropriation of technology would appear to involve more than simply using a technology, but making it part and parcel of the routines of daily life according to specific use situations (UNESCO 1997).

The appropriation of digital objects, whether in the form of digital devices or in the form of the applications running in them, is a matter of particular interest in HCI. This appears to be one of the consequences of the ongoing push to take digital technologies to all areas of human endeavour; a move usually predicated around the potential benefits for the users of these technologies (Weiser 1991). One of the interests of HCI in this matter is, understandably, facilitating the appropriation of technology so that its users can more readily benefit from it.

We have reviewed what we consider to be two prominent positions in HCI behind the development of technology in general and the appropriation of technology in particular. Even though both positions do not necessarily oppose each other and are, in fact, commonly used in a complementary fashion, they would appear to come from different ideological positions.

When seen purely as a design endeavour, the process of appropriation is conceived as one that can be induced and directed by those behind the production of a technology in order to arrive to a destination: appropriation, as expressed in the successful integration of the technology in some practice. One of the

main arguments of this stance is, or so we understand it, that it is possible to produce a technology (i.e., a device or system) that is self-evident (Suchman 1987) or, as Heidegger would put it, *ready-to-hand* simply by reason of being available. Such a technology, it is argued, would be naturally appropriable.

This perspective appears to focus the success of a technology entirely on its features or in embodying the right balance of “resources for action” (Salovaara 2007). In our opinion, this perspective is readily evident in, for instance, Carroll’s argument that in order to “design for appropriation” it is first necessary to “design from appropriation” or in Höök’s (2006) and Papantoniou *et al.*’s (2003) observations that technologies should be under-constrained to provide surfaces where personal meanings can be inscribed.

As seen above, a growing body of literature on this perspective appears to consider the production of such a ‘natural’ or self-evident digital technology feasible as long as this is designed in accordance with the social practices of a group of people (see section 2.2 Qualitative Research as a Scientific on page 51 for an extended discussion of this approach); their natural characteristics (i.e., culture); or as a somewhat ‘open surface’ prone to the endowment of individual meanings as is the view behind ambiguity in design or openness to interpretation.

Nevertheless, these various approaches to create successful digital technology fail to account for the fact that technologies created in specific socio-cultural milieux can and are being appropriated elsewhere (e.g., (Barrionuevo 2008)); how those open surfaces that are said to be required to foster appropriation can accommodate the scores of IT-illiterate people who have embraced rather fixed technologies such as mobile telephony (Wei and Kolko 2005); or how even feature-rich technology fails to become part of daily routines (Schiano *et al.* 2006).

Furthermore, in our opinion, the view of design for appropriation would appear to reduce the complexity of this phenomenon not only because it portrays it in isolation from any other influence and, therefore, as depending on one single factor (i.e., technology and its features), but most importantly, because it tends to minimise—or some may say, facilitate—the role of computing scientists reducing it to one of mere tinkering with technology in search of the next self-evident or naturally-appropriable technology.

The second perspective we reviewed positions the appropriation of technology as a social process. This, however, is not a new perspective in HCI. It could be argued that, at least since Suchman’s *Plans and Situated Actions* (1987), use of digital technology has been understood as always taking place within the restrictions and possibilities of a setting and, therefore, as a product of the synergies of at least three elements: the technology, the user and the setting.

As illustrated above, many elements beyond a technology’s features are said to be relevant in its appropriation. Balka and Wagner (2006) argue users are, through purposeful adjustments made in their practices and environments to accommodate a new technology, ultimately responsible for the appropriation of technology. Thus, if designers were to account beforehand for the complex mesh of relationships in which technologies are to operate, these would have increased chances of succeeding. Success of a technology, or its appropriation in office settings is, for DeSanctis and Poole (1994), an issue that can be evaluated through their AST. Through AST, DeSanctis and Poole attempt to map both a

technology's integration within an office setting's discourse and the changes produced to the technology itself and the existing structures (tasks, environment and dynamics).

The work just cited is important in highlighting two things. First, how, even within the confines of office settings, the introduction of technology is a process affected by and affecting other elements already in place. Within this more encompassing view, the appropriation of technology can be seen as a coordination of seemingly disparate elements towards one end. Second, just as with the multiplicity of manners in which objects and spaces can be appropriated, DeSanctis and Poole emphasise there are many paths leading to many forms of technology appropriation as this is, in the end, a reflection of the variety of existing structures (in office spaces).

Beyond office settings, however, the process of appropriation becomes even more complex given the variety of technologies that are used in the performance of social practices or in the satisfaction of needs. However, as reviewed above, research has recognised the influence of at least the following elements in the appropriation of technology in everyday life: popular culture, technological improvements, business competition, politics and economics. Interestingly, perhaps because of the descriptive nature emphasised by current approaches like ethnography in the study of technology use in everyday life (see an extended discussion of this in section 2.2 *Qualitative Research as a Scientific* on page 51), few are the studies devoted to providing an extended elaboration of the manner in which these environmental forces would appear to promote or facilitate and sustain the appropriation of technology.

Current explorations of technology use in everyday life, however, have not only been able to emphasise a large number of elements influencing this process, but also a variety of practices developed around the same technology as a consequence of the various ends they satisfy across different settings. For instance, the concept of media stickiness mentioned earlier stresses the difficulty of changing practices or customs around communication technology once these have been established (Huysman *et al.* 2003), or regardless of an increased number of features (Chipchase *et al.* 2005; Schiano *et al.* 2006). Mobile telephony use among teenagers, according to Taylor and Harper (2002) resembles "age-old practices" of friendship and rivalry as those existing before the advent of digital communication; but also a prop towards independence (Ling 2001). For adults, however, mobile telephony is a "cognitive artefact" that supports engagement in multiple activities concurrently (Palen and Hughes 2007); and also a device to preserve a sense of identity among transnational groups (Williams *et al.* 2008).

Even though certain perspectives familiar to HCI such as social constructivism and activity theory emphasise the role of time in the development of practices around technology, the effect of this element would appear to be largely absent from studies of everyday practice in HCI. As Petersen *et al.* puts it (2002), many studies would appear to be documenting "snapshots of use" disregarding how everyday practices around digital technology may change because of changing contexts and needs. Furthermore, according to Crabtree *et al.* (2009) some approaches to the study of everyday practice also fail to provide coherent accounts of the way people order their activities according to their current circumstances.

As prominent as it is in the IS field, we think it is important to highlight TAM also fails to provide a coherent account of the manner whereby people exert their agency over time to integrate a technology in their ongoing activities within the restrictions posed by a given environment. Beyond its failure to

account for individual agency (Bagozzi 2007) or the environmental elements that render a technology useful or easy to use (Sun and Zhang 2006; Wu *et al.* 2008), TAM can at most be seen as a tool to try to predict or anticipate behaviour (i.e., acceptance of technology), but not as one to document the rich set of practices arising from the introduction of a new device or the activities in which it is incorporated. In other words, TAM's main concern ends with assessing whether a technology is used or not. As a consequence, and given its roots in a positivist tradition, TAM research appears only interested in measuring the anticipated degree of influence of each of the over 70 constructs advanced so far as precursors (antecedents) to PU and PEU, than in attempting to understand the consequences of the introduction of a new technology. As seen, the unwieldy task of trying to measure the individual influence of each one of those elements has resulted in TAM3, an 'official' attempt to reduce once more the complexity of the many elements impacting the appropriation of technology. It could be argued then, that TAM's aims are apart from those of the other perspectives reviewed in this chapter. While TAM attempts to *predict* behaviour (i.e., use vs. not use) towards technology purely as a consequence of a number of identified stimuli, the others attempt to *describe* actual behaviour as a consequence of technology.

In light of the above, and given the ongoing interest of HCI in the expansion of digital technology away from the desktop, we believe there are at least three issues identified above which are worth exploring around the process of appropriation of technology in everyday life. First, there is a need for a more detailed elaboration of the forces that produce and appear to sustain the appropriation of technology over the long term, their individual roles and their relations with each other. Second, what is the impact a changing context may have on the appropriation of a given technology, or more generally, what is the impact of time in practices around a given technology. Finally, given the proliferation of information and communication technologies whose functions, in a sense, overlap each other, there is a need for a more detailed description of the process whereby people organise all their digital technologies integrating them into their routines. It is our aim to explore these issues pertaining to the appropriation of technology in this thesis and contribute to an enhanced understanding of this important phenomenon in HCI.

1.6 Conclusions

In this chapter we reviewed the concept of appropriation and its use within HCI. We explored two perspectives behind it. One would appear to focus in the creation of the perfect technology that can be understood by users on first sight. The second perspective presents appropriation as a social process. This view has a long tradition in HCI and recognises that even though the introduction of a technology, and the new possibilities it brings along, induces wider changes, this is not by itself the only reason why technologies are appropriated. Outside office settings several elements of everyday life have been identified as having an influence in the appropriation of technology. We have identified a few areas where more research is required to foster our understanding of the process of appropriation specifically in relation to a more detailed elaboration of the impact of multiple influences in this process, how it may be affected in time by changing environments and how people can integrate seemingly overlapping technologies in the prosecution of their daily activities.

In the next chapter we will explore with more detail how these topics are addressed in this thesis. We will describe the studies that form the bulk of this work and the main findings that we believe contribute to an

enhanced understanding of the process of appropriation. We will also review some theoretical and methodological issues that influenced this research.

Chapter 2 – Methodology

This chapter is organised around three standards introduced by Malterud (2001) to ensure the objectivity of qualitative research, my chosen approach in the development of the research reported in this piece. These standards include (1) *reflexivity*, that is, a disclosure of the background and position of the researcher as this determines what is to be studied and how, as well as the conclusions derived from such an endeavour; (2) *transferability*, an acknowledgement of the limits of a study recognising the contexts in which a piece of research can be applied (also known as external validity); and (3) *relevance*, or the identification of the systematic procedure followed to analyse and interpret data collected.

In an attempt to follow these standards, each one of them is given individual attention in each one of the first three major sections in this chapter. In this manner, section 2.1 *Early Insights on the Appropriation of Technology in Everyday Life* accounts for the manner in which my own life experience as a postgraduate international student in the University of Glasgow first brought me to explore the topic of the appropriation of digital technology (reflexivity). Section 2.2 *Qualitative Research as a Scientific Perspective* explains in greater detail my research orientation and how it influenced the selection of participants for the various studies reported in this work, as well as the limitations in the knowledge gained from this experience (transferability). Lastly, section 2.3 *Interpretation and Analysis* describes both the theories and methodology I used to analyse data collected and the manner in which the insights I gained from this experience were integrated in a model of appropriation (relevance).

I will now proceed to describe my own experience in the development of the research project presented in this work. This is the only chapter I write in the first person. I do so to better communicate, or so I believe, the development of my own perspective on the appropriation of information and communication technologies in everyday life. As indicated, the importance of conveying my own experience in conceiving and conducting this research satisfies Malterud's standard of reflexivity; its relevance in qualitative research will become more evident later in section 2.2 *Qualitative Research as a Scientific Perspective* when introducing the basic tenets of qualitative research. The influence of my personal perspective on my own research is, however, not limited to this section alone; it percolates throughout the various stages of the research project recounted across this chapter.

2.1 Early Insights on the Appropriation of Technology in Everyday Life

My interest on the topics explored in this thesis, specifically, the appropriation of information and communication technologies in everyday life, first arose through my involvement beginning in October 2005 with the former Equator group (now Social, Ubiquitous and Mobile group) in the Department of Computing Science at the University of Glasgow.

One staple of this research group are weekly meetings. During our meetings we discussed the progress made in our different research topics. At the time, different systems were being developed to implement and test some ideas originating from the collective consensus of those present. Recognising that one of the drives of science is sheer curiosity, I was surprised, nonetheless, by the ingenuity shown in the conception of ideas and features for new technologies and for the manner in which it was presumed these would be eventually understood and used by potential users.

This issue led me to ponder on the meaning of various issues discussed during those meetings apart from, but related to the crafting of technologies. Why do people adopt certain digital technologies and not others? Why do some technologies suddenly appear to become wildly popular and how is that social consensus achieved? How are novel technologies crafted and why do they appear to be so useful for those designing them, but not for everyone else? Why do novel technologies appear to pose ‘fantastic use scenarios’ and why do we understand them as such, while those posed by everyday technologies appear more realistic, but ultimately, why do we consider them more realistic?

This questioning made me focus on what could otherwise be considered a trivial matter. I refer to the process whereby otherwise complex digital technologies such as information and communication technologies have become common and mundane objects in the landscape of everyday life (away from work settings) and the way society, in turn, appears to be ordered around them. It appeared to me that a better understanding of the issues that turn novel technologies into common objects would be highly relevant for the HCI field. More importantly though, it seemed to me that if we were to have a clearer understanding of this process we could be in a better position to craft the conditions, or perhaps even expedite the process, whereby the novel digital technologies produced today may become tomorrow’s common objects.

In my mind, and given my previous job experience before enrolling in a PhD degree, there were a number of fundamental differences between the use of ICTs in everyday environments and office settings. For instance, in an office environment users may be provided with specific tools to perform a task in the form of hardware and vertical applications specifically designed to some end. In some cases users are fully precluded from installing any additional application or from using an application that has not been previously approved. In office settings, users usually have no concerns regarding the costs of operating a technology (e.g. licenses or electricity) and sometimes their equipment is upgraded on a regular basis. Also, whenever a new application is introduced in an office setting, a more or less concerted effort is undertaken to promote it. This may include training in the new application, manuals, application champions, help desks and other resources to smooth the adoption of the new application by a certain deadline. In general, the use of ICTs in an office setting would appear to be isolated from external forces; it is, as it were, a “micro-cosmos” within which certain ICTs exist.

Similarly, in my view, there are a number of issues prototype technologies lack that are essential and intrinsic in the common technologies we see all around us. For instance, a prototype technology presupposes a sort of ‘ideal’ use by a number of users to fulfil a number of tasks that have been selected over a specific time-frame (usually that of the trial). In my view, a prototype technology appears to users as a blank slate de-contextualised of the history all other common objects possess. In other words, before actually using a prototype technology, a user does not know what the device does, how does it do it, or what its value may be within a larger context (e.g., peers, society, organisations, etc.). Users may indeed have a preconceived image of the technology they are about to use based, perhaps, on instructions issued by researchers in charge of a trial or the wording of an advertisement. Nevertheless, this preconception is only that; it can not match the image of a technology a user may form after interacting with it even when briefly. Because of these issues, I assumed exploring a prototype technology could never provide the type of insight I hoped to gain from the study of already available, popular and common ICTs.

The above two issues pertaining to the exploration of prototype technologies and the use of ICTs in office settings represented matters from which I wanted to stay well away. I wanted to focus instead on achieving a deeper understanding of the process whereby the ICTs we see around us today are, as it were, ‘brought to the table’ allowing people to make them part of their activities unbounded by the restrictions of office settings. On a more practical note, exploring the use of a prototype technology until it achieves the status common ICTs have achieved would require an investment of time and resources well outside the scope of a PhD degree.

To address this issue I began by analysing my own activities with certain technologies in my daily life. For instance, I reflected on the circumstances that finally lead me to acquire a cheap, second-hand mobile phone in August 2006 and what changes this technology brought to my life. I was intrigued by the ability to contact anybody no matter where I might be, by my new ability to organise impromptu meetings, and even by the new possibility of being rejected by SMS and the feelings it engendered. More importantly though, I was puzzled by the feelings of inclusion this technology generated on me as in the new social setting surrounding me I was no longer the only person without a mobile phone. I also reflected on my use of the Internet access I had within the computer science building—where I was able to access websites at a considerable high speed, as well as downloading files using BitTorrent, a P2P protocol—and compared it with my Internet use in student housing where I only had access to a restricted service. I was also surprised with some of the services available in the UK, for instance, at the time I used to rent films by post through LOVEFiLM.com and constantly wondered how this service could exist when it was so easy to lose DVDs in transit.

I understood that my use of these technologies and services was dependent on my current environment and my new social habits as a student in the University of Glasgow. This was particularly evident when compared with my previous habits back in Mexico, my home country. For instance, before I came to Glasgow to enrol in a PhD degree I never had a mobile phone since I never felt the need for it and was not interested in adding yet another economic burden to my already tight budget. As a matter of fact, I considered all those carrying mobile phones as ‘posers’ pretending to have ‘important’ businesses requiring their immediate attention.

Before proceeding with an account of the manner in which these reflections led me to conduct a pilot study exploring how others integrate ICTs in their daily activities, I must take a slight detour to discuss another issue that picked my curiosity around the same time, culture.

2.1.1 Cultural Dimensions

At the time of these reflections and weekly meetings, one more issue captured my attention. I refer to the influence of the environment in shaping our outlook on, for instance, the role of computing technologies in everyday life. As indicated, during those meetings many ideas on the development of different digital technologies to address some perceived need were voiced. This led me to wonder on the extent in which our cultural environment determines what we make of ICT. To put it succinctly, was it true that ‘for a man with a hammer everything looks like a nail’?

It has been argued that computing technologies have a Western bias, as most of the ideas and technological breakthroughs that have made ICTs possible originated in this milieu (Bolter 1984; Tedre *et*

al. 2006). The same circumstance seems to continue in the development of the next computer paradigm: ubiquitous computing. Could this mean that computer technologies developed in other cultural milieux would, then, respond to a different type of needs and that these different aims would be reflected not only in the tool itself, but in the manner in which they are used by other cultural groups?

Intrigued by this question, I was drawn into a popular view of culture in the HCI field. I refer to Geert Hofstede's 'cultural dimensions.' Hofstede claims that it is possible to analyse culture along five dimensions found in every nation including power distance, individualism, masculinity, uncertainty avoidance and long-term orientation (Hofstede 2001).

The popularity of cultural dimensions in HCI may be due to several reasons. First, it provides a simple (to the extent of being reductionist) and ready-made model of culture; second, being a model, it is based in so-called "quantifiable" traits of culture (power distance, collectivism vs. individualism, uncertainty avoidance, masculinity vs. femininity, and long term orientation); and finally, this model was cited in one of the earliest books dealing with culture and HCI, "International User Interfaces" edited by del Galdo and Nielsen (1996).

In HCI some researchers have used cultural dimensions to interpret use of ICT according to the cultural background of users. In this manner, it has been claimed that, say, South East Asian people use ICTs in a manner different than Western Europeans and that these differences are evident not only in the type of visual clues favoured by a culture, but also through the navigational features implemented in an application; see for instance (Yeo 1996; Sacher and Loudon 2002; Choi *et al.* 2005; Kayan *et al.* 2006).

Hofstede's cultural dimensions are also invoked in HCI to justify the development of, arguably, 'culturally-sensitive' technologies that can be 'naturally' appropriated (Marcus and Gould 2000; Jordan 2001). This view of appropriation as a single trait—culture in this case—that can be captured and endowed upon novel ICTs ignores research suggesting that a number of elements, and not just a technology by itself, are behind the process of appropriation (see the discussion on appropriation in Chapter 1).

However, not only is the concept of cultural dimensions limited in its contribution to explaining the process of appropriation, it also appears to be flawed in its conception. The main criticism of cultural dimensions is its reductionist nature. For instance, it claims cultural homogeneity among the members of a culture; disregards behaviour and values that are not necessarily determined by a particular cultural setting; ignores variations in the expression of cultural traits because of changing situations; and does not account for differences in the importance assigned by different cultures to specific cultural traits (McSweeney 2002; Ratner and Hui 2003; Kamppuri and Tukiainen 2004).

Furthermore, giving its positivistic roots the concept of cultural dimensions portrays culture as a monolithic and fixed entity. The idea of culture as a monolithic entity is nowhere clearer than in Hofstede's definition of culture as "the collective programming of the mind which distinguishes the members of one group of people from another" (Hofstede 2001). Interestingly, but perhaps quite frequently ignored, even Hofstede denied the homogenising implications of his definition by conceding that cultures cannot be attached to a particular geographical setting since cultures can be found both as

integrated social systems (e.g., within a given geographic area) and as smaller parts of those integrated social systems (e.g., gender, generational, organisation, etc. cultures) (Hofstede 2001).

Under Hofstede’s model, culture is also characterised as fixed. Thus, even when the symbols (i.e., institutions and artefacts) of a culture may change (the objective dimension), its values and norms are said to remain static (the subjective dimension). For Hofstede, the slow pace of change in values accounts for the emergence, over hundreds of years, of what he termed cultural dimensions (Hofstede 2001).

The monolithic and fixed view of culture advocated by cultural dimensions prevents this model from providing an intelligible account of, for instance, the rapid embrace of computer-mediated communication. Such a circumstance can be illustrated through a study analysing McDonalds websites around the world in 2003 (Würtz 2004) with their counterparts at the time of writing in July 2009. Clear-cut issues of low- vs. high-contextuality (Hall 1959) and individualism vs. collectivism, like those found in Würtz study, are difficult to distinguish in later designs of those websites.

Consequently, as will be more evident later in this chapter, the studies contained in this work do not deal with cultural specificity, despite the fact that they were conducted across different geographies. As seen, the view of culture advocated by cultural dimensions, despite its popularity in HCI, appears to be at best dubious. Thus, I stay well away from any reference to ‘culture’ as a sort of ‘looming force’ with a major influence on, or as a predictor of, the process of appropriation. Instead, I have chosen to focus on social practices, which I found to be common across all settings of my research, and how these forces affect the appropriation of digital technology. The fact that ICTs may indeed have interstices prone to the development of rich practices in specific geographies (see section 2.4.3 *Mastering Information and Communication Technologies* on page 73 below)—what some would see as an expression of culture—is of my concern insofar as it exemplifies the expression of local social practices inducing and sustaining the use of ICTs. (Examples of the impact of localised social practices will be eventually presented in section 4.1.3 *Institutional Regulation* on page 111.)

2.1.2 Pilot Study

2.1.2.1 Motivation

To begin exploring the manner in which ICTs become part of everyday activities and whether, in fact, there are cultural differences in the way these technologies are used, I conducted a pilot study in February 2007. My definition of ‘common’ ICTs was quite simple: I would explore technologies constantly being featured on the media and those I saw constantly being used and discussed around me including mobile phones, personal computers, mp3 players, digital cameras, the Internet and a few specific software applications such as email, Internet messaging, online social networks and blogs. I focused in these devices and applications because in my view they have certain qualities, such as their popularity and availability, that set them apart from, for instance, prototype technologies or from those only confined to office settings (cf. page 46 above).

I was also interested in exploring whether those cultural differences discussed earlier were in fact present in the use of ICTs and if these issues could be investigated without the need to be right next to each participant as they used these technologies. Given my intention to explore use of several common ICTs in

everyday life, shadowing participants documenting their use of technology would require a considerable time investment. I thought the logistics of this would have been impractical for a pilot study with fifteen people.

2.1.2.2 Methodology

Striving to compare and contrast my own experience as an international student in the University of Glasgow regarding the use of various digital technologies with that of others coming from different environments, I recruited five international students each from China (4 female, 1 male), Greece (3 f, 2 m) and India (2 f, 3 m), who were enrolled in masters degrees other than computing science at the University of Glasgow. I selected these nationalities for two reasons. First, they have the largest representation in this university. Second, according to the concept of cultural dimensions they are supposed to be quite different from each other. Participants were recruited from among friends and friends of friends.

I conducted one semi-structured interview with each participant that lasted between 40 to 60 minutes. Four participants from China decided to have their interviews as couples (two females in one occasion and a female and a male in another). Questions during this pilot study mainly dealt with the conditions surrounding their acquisition of computers, the Internet, and mobile phones, and the uses generally given to these technologies.

2.1.2.3 Findings

Through this exercise I was indeed able to gather some insights into the reasons that had drawn these participants to acquire various ICTs. I was surprised to find that, regardless of their country of origin, they all had very similar experiences regarding the reasons and circumstances why they came to own ICTs and the uses given to these technologies. As a matter of fact, it would appear to me that I was actually interviewing people from the very same country. This pilot study, however, was limited in producing detailed accounts of the uses of ICTs while in the UK.

These findings were encouraging as they showed several things. First, it would appear to be that the adoption of ICTs was possible as long as these were available for consumption. Second, regardless of their nationality, everybody would appear to be performing the same type of activities with these technologies. Third, it would appear to be that everybody was coping just fine with their current conditions of, for instance, Internet connectivity in university housing and use of mobile phones in their daily routines. These generalisations of behaviour regardless of participants' 'cultural background' were interesting in the sense that they appeared to highlight the fact that current environmental and contextual conditions were more relevant in the use of ICTs in everyday life than conditions previously experienced. These findings, however, were also contradictory to what in my view was being said in the HCI literature about the influence of culture on the use of ICTs.

As I reflected on these issues, read on these topics and discussed them with my supervisor, I came across two papers that encouraged me to be less concerned with cultural differences and more open to the idea that culture is neither static nor monolithic as the cultural dimensions concept advocates (see (McSweeney 2002; Ratner and Hui 2003)). As discussed earlier, both papers specifically address the weaknesses of Hofstede's cultural dimensions both in the methodology followed and the conclusions

drawn for those results. In summary, these papers argue cultures do change (and so do the people who belong to a culture), and that establishing the geographic boundaries of so-called national cultures is not reasonable as these are in constant fluctuation because of the individuals living within them.

Ultimately, the uses given to Hofstede's model would appear to reflect more of a concern with finding a suitable marketing model that can be attached to a geographical area (de Mooij 1998), than a real attempt to understand people in their regular settings. Because of all this evidence, I abandoned any further attempt to try to understand everyday activities through the lens of 'culture' as the sole determinant of action. I chose instead to focus more fully on understanding the influence a changing context has on people (see also section *1.2.2 Culture and the Design of Technology* on page 25).

The reader should keep in mind that even though I continued exploring diverse cultural groups and settings in subsequent studies, this was only done to increase the diversity of data gathered, as well as the relevance and transferability of any finding that may ensue, but never to justify any finding in terms of a looming, inescapable and inexorable influence as culture is usually portrayed. Nevertheless, I remained (and still am) puzzled by the use of cultural dimensions in HCI to justify the design of so-called culturally-sensitive technologies.

2.2 Qualitative Research as a Scientific Perspective

In this section I address more particularly the standard of transferability set by Malterud (Malterud 2001) in qualitative research. I will introduce the postulates upon which this research tradition operates and the manner in which they influenced my selection of participants and data collection. Naturally, the implications of these issues on the transferability of my research extend beyond this section alone.

There are at least two approaches or scientific methods to understand the nature of reality. These two approaches are based "on two different and competing ways of understanding the world" (Maykut and Morehouse 1994, p. 16). These approaches are commonly known as the positivist or quantitative perspective, primarily concerned with explanation, prediction, and proof of observable phenomena, and the phenomenological or qualitative approach, foremost concerned with understanding people's perspectives and the formation of meanings about different events (Maykut and Morehouse 1994, p. 3; Travers 2001, pp. 7-8).

Like the quantitative perspective, the qualitative position is built upon a number of postulates that determine what problems are investigated, how, and what methods are used to collect and analyse data (Maykut and Morehouse 1994, p. 11). Table 3 adapted from (Maykut and Morehouse 1994, p. 12) lists the postulates of the qualitative perspective as a series of questions and answers to these important issues. As will be seen, these postulates are interconnected affecting each other in multiple directions. More importantly, though, these postulates drive the development of a research project under this 'alternative' research tradition.

Question	Postulates of the Qualitative Approach
I. How does the world work?	There are multiple realities. These realities are socio-psychological constructions forming an interconnected whole. These realities can only be understood as such.
II. What is the relationship between the knower and the known?	The knower and the known are interdependent.
III. What role do values play in understanding the world?	Values mediate and shape what is understood.
IV. Are causal linkages possible?	Events shape each other. Multidirectional relationships can be discovered.
V. What is the possibility of generalisation?	Only tentative explanations for one time and place are possible
VI. What does research contribute to knowledge?	Generally, the qualitative researcher seeks to discover or uncover propositions

Table 3 Postulates of Qualitative Research

Postulate I - The manner in which researchers understand the nature of reality, that is, how the world works, is reflected in their choice of method (quantitative vs qualitative) to conduct research.

Postulate II - In the qualitative perspective knowledge is seen as constructed and, therefore, the researcher can not be separated from that which is being researched as both affect each other. Thus, the planning, collection, and interpretation of findings in qualitative research is tightly linked to the relation established between the researcher and the group under study since his or her own very attributes (sex, age, socio-economic status, experience, theoretical orientation, etc.) bear on the outcome of a research project (Kirk and Miller 1986, pp. 46, 50). The quantitative position, however, conceives the researcher as being able to stand apart from his or her object of interest; an object that can also be separated into its constitutive parts to be analysed individually (Maykut and Morehouse 1994, p. 11).

Postulate III - Because the qualitative position sees knowledge as constructed, it accepts the fact that researchers' values impinge on the manner in which a research project is conducted. Consequently, the outcome of a research project necessarily reflects the tacit or explicit position of the researcher on the matter under study. In qualitative research, the researcher is understood as a partial observer also affected by the phenomena under study. In acknowledging its 'perspectival' stance, however, qualitative research fulfils the standard of objectivity in science through the sound accumulation, and even refutation, of knowledge from different perspectives (Kirk and Miller 1986, p. 11, 13, 17, 46, 50; Emerson *et al.* 1995, pp. 42-43). The quantitative position, unlike the qualitative, conceives the researcher as being able to stand apart untouched by his or her object of study (Maykut and Morehouse 1994, p.13, 15, 20).

Postulate IV - According to the qualitative perspective, events do not have a single sequential relationship. Instead, events have multidirectional relationships and, therefore, are constructed. This view shapes the manner in which data is analysed as it forces the researcher to seek for emerging patterns. The explanation of findings in qualitative research must, therefore, convey this complexity; failure to account for one of its parts would result in a distortion of the phenomena under study. Put differently, circumstance A causes B, and vice versa and, in fact, the cause is inseparable and indistinguishable from the effect. The quantitative position, on the other hand, would seek to establish unidirectional relations

through hypotheses that test data in linearly causal form, as in the proposition element A causes B (Maykut and Morehouse 1994, pp. 11, 13, 15).

Postulate V - Because in the qualitative perspective knowledge is seen as constructed, it follows that its findings, the knowledge gained of a given phenomena, are only relevant within particular settings. Under this perspective change is seen as organic, one element being affected and affecting others. Only contextual findings, and not sweeping generalisations, are the ultimate goal of this approach. The quantitative position, in contrast, strives to eliminate the unique features of an environment to increase in this manner the generalisability of its conclusions (Maykut and Morehouse 1994, p. 13, 15).

Postulate VI - Perhaps the foremost characteristic of the qualitative perspective is the discovery or identification and documentation of “salient propositions” or patterns from data. The aim to identify new phenomena (even in common settings of interaction) requires the researcher to step outside his or her own frame of reference to identify the manner in which what he or she takes for granted may not correspond with the experience of others (Kirk and Miller 1986, p. 18). Through the identification of patterns of meanings arising from the analysis of people’s actions, speech and documents, qualitative research obtains its subjective character—an ideal that should not be taken to mean this perspective lacks objectivity. Patterns identified in qualitative research must be reported in the participants’ own voice as they better convey their own way of seeing the world. It follows, therefore, that there must be harmony in the manner in which a researcher connects with participants, how they experience themselves in a situation, and how the findings are conveyed. Moreover, since there are no automatic instruments or technologies to confirm the truthfulness and completeness of the reality conveyed by participants in a study, this necessarily rests in the fieldwork researcher who, through the development of close relationships and a sound theoretical orientation, must strive to achieve a clear understanding of the idiosyncrasies of those explored (Kirk and Miller 1986, p. 32). Through these actions the qualitative researcher is constantly embarked in something akin to hypothesis testing. This occurs because in the collection of data, analysis and presentation of findings, the qualitative researcher is permanently drawing tentative conclusions whose ability to explain the phenomena under study have to be constantly confirmed (Kirk and Miller 1986, p. 25). On the contrary, the quantitative position “is oriented toward verifying what has been already discovered by other methods” (Maykut and Morehouse 1994, p. 13) to “establish complete intellectual control over experience in terms of precise rules” (Polanyi 1958 cited in (Maykut and Morehouse 1994, p. 15, 17-20).

Three methods are commonly used in qualitative research to gain insight into the lived experience of others including observation, interviewing and ethnographic fieldwork. Even though the term ethnography is generally used as an umbrella term to encompass the previous two it is, nonetheless, a method by itself characterised by researcher’s immersion into the activities of the group under study over a considerable period of time to document the experience of its members (Travers 2001, p. 4).

The postulates of qualitative research and the methods of ethnographic fieldwork are no strangers to HCI. For instance, Sharp *et al.* (2007, p. 330) recognise ethnography as an increasingly popular approach in interaction design to explore and document diverse locales of interaction. In HCI, however, the time that

can be invested conducting ethnographic fieldwork is generally shorter than that usually devoted by the social disciplines. This appears to be a necessary condition of ethnographic studies in HCI since these are usually part of a larger research enterprise that still needs to account for, at least, development and testing stages (Sharp *et al.* 2007, p. 333).

Even though ethnographic studies of work settings can be found in the literature—a prominent contribution being that of Suchman’s *Plans and Situated Actions* (Suchman 1987), which established the contingent nature of the organisation of action and interaction—Sellen *et al.* (2009) suggest this research orientation has been more prominent since the early 1990s when HCI’s focus of exploration moved from issues of efficiency to “issues that are much more complex and subtle” as those found in everyday life, and when the discipline began to embrace the perspectives brought to the field by researchers from the social sciences. To this I would add the early 1990s also coincide with the public introduction of the idea of ubiquitous computing (Weiser 1991; Weiser 1993) and its far-reaching vision of enhancing all areas of human endeavour through some form of computation.

In HCI ethnographic research exploring the use of digital technology beyond work settings can indeed be found across a wide variety of topics. I will limit the following review to ethnographic explorations on the use of mobile telephony and online social networks to illustrate the type of insights gained from these explorations and to highlight some issues I believe ethnographic studies in HCI have left unaddressed.

2.2.1 Ethnography in the Study of Mobile Telephony

Mobile phone use among young people is an area that has received considerable attention from the ethnographic perspective. In HCI the ethnographic perspective may be invoked to document the character these technologies have acquired as they are embraced by society and to derive design guidelines (implications for design) based on a better understanding of this process. Arguably, design guidelines thus generated would produce devices with a more explicit support for those social practices analysed. Technologies thus created, it is believed, would further ease their adoption, use and appropriation.

Taylor and Harper (2002), for instance, conducted ethnographic research among British teenagers and identified how their use of mobile telephony resembles, in general, practices of the non-digital realm. For Taylor and Harper, gift-giving through mobile phones is one such practice. Gift-giving takes the character of a ritual when enacted in the giving, accepting and reciprocating of digital items and forms (e.g., through text messaging or calls) that demonstrate friendship or rivalry towards the other party involved in the exchange. When seen from this perspective, they argue (see also (Berg *et al.* 2003)), upgrades to mobile telephony would go beyond the path of more-is-better (e.g., a larger memory card to avoid deleting meaningful items such as text messages) and more towards supporting longer and richer associations between the sender and the receiver (e.g., through memory cards that may contain digital gifts from a particular meaningful other or digital items that can only be accessed in certain places).

In a different study Schiano *et al.* (2006) explore the role of mobile phones in leisure practices among Japanese youth and find them as having a role to “kill time” especially in long commutes where the preferred content accessed includes games, music and video. Communication itself, the main feature of mobile telephony, is also given this entertaining character usually among young women who prefer sending longer and more emotive messages. Men, on the other hand, would resort to mobile phones not

only as a communication device, but also as gaming machines. Interestingly, despite the multitude of features available in mobile phones, even more so when mobile Internet access is a rather common feature in that country, young women report using them for little more than texting and voice communication; when thus used, this is mostly to communicate with close friends and family. However, use of such a reduced number of features is not an obstacle in giving mobile phones the status of real necessities in modern society (cf. with Chipchase *et al.*'s (2005) idea of 'mobile essentials' comprised of mobile phones, cash and keys). For Schiano *et al.* the personal, portable and pedestrian nature of mobile telephony, to borrow a phrase from Ito (2005), suggests a trend to achieve 'hyperconnectivity' or "a sense of continual real-time connection". Even though such a 'feature' would bring along an unseen number of negative consequences and tensions (e.g., 'shallow' friendship, new forms of 'rudeness', and new conventions to avoid rudeness, to name a few) that users would ultimately have to cope with, Schiano *et al.* conclude their investigation implying these issues are worth the trouble in order to realise the 'benefits' of hyperconnectivity through mobile telephony.

Through ethnography mobile phones have also been placed as a medium to express youth's coming of age as they assert their own identity and make inroads into social and economic independence (Ling 2001). Furthermore, at least during the popularisation of mobile phones in Norway, mobile telephony has also been portrayed as a reflection of gendered approaches to technology. In this manner ownership of a mobile phone by male youth would represent several things including a "visual sign of independence and economic wherewithal", a replacement for loss of contact as independence is gained, a way of imposing order on a chaotic world, or simply a sign of modernity. Ultimately, though, males would come to master mobile phones simply because that is the role they are supposed to play in our society as designers, constructors and marketers of technology. On the contrary, women would only come to embrace mobile technology after it has been demystified and feminised (Ling 2001).

Young people are, of course, not the only ones using mobile phones. Palen and Hughes (2007) explore the use of mobile phones by parents identifying these not only as the vehicle of what they call "concurrent active engagement" (i.e., the ability to attend home matters at work and vice-versa) but, more importantly, as a "cognitive artefact" whereby the "scope, reach, and obligation" of parental duties can be extended beyond the physical confines of the family home.

Home use of mobile telephony is also the focus of attention of Williams *et al.* (2008) who describe the role of this technology in keeping a sense of identity among transnational Thai families. In this process, however, mobile telephony is not adopted 'wholesale' but selectively after careful consideration of features within the larger context of the situation of family and friends both co-located and distant.

2.2.2 Ethnography in the Study of Online Social Networks

Ethnographic research around online social networks appears to attend to the same type of concerns indicated earlier regarding mobile telephony, that is, understanding practices around this technology and later using that understanding to improve future iterations of these applications.

In one of the earliest ethnographic explorations of an online social network known as Friendster, Boyd (2004) describes what appears to be an unintended consequence of the process of exploring a practice to 'fix' it. In her account Boyd describes the pervasive presence of 'Fakesters' (fake personas) within the

ecology of Friendster basically since the inception of this system. Despite the creativity displayed behind Fakesters and the uses given to these profiles by the community, Friendster administrators never approved their presence as it diminished what they saw as the main value of the system, namely, trusted links represented by real people. Friendster administrators procured deleting these fake accounts through what was known as the ‘Fakester Genocide’ that apparently ended up removing all such profiles. Removal of these profiles not only caused outrage on the users behind these accounts—who sought to win this battle creating even more Fakesters—but also among some members of the larger community who saw this as an unjustified restriction on the creative canvas afforded by Friendster. Boyd’s study is important for two things. First, it highlights the peculiar interaction paradigm embodied in social networks ever since: creation and maintenance of an extended, private social network by publicly exploiting existing, private social connections. Second, it documents users’ agency in appropriating a technology to whatever ends they see fit. An attempt to reign over practices thus developed, even to preserve system functionality, negatively affects use (Boyd 2004).

Lampe *et al.* (2008) seem to support Boyd’s observations regarding the latter point. In their study Lampe *et al.* explore changes in Facebook use over time among college students through data gathered from 2006 to 2008. In their view, there are indeed changes on the patterns of use, perception and attitude towards Facebook, even when these are not drastic. This, they speculate, may come as a consequence of natural changes in users’ lives (e.g., leaving college) or because of the addition of novel features that disturb practices already established with a system.

As mentioned, Boyd’s work with Friendster also highlighted the peculiar case of these systems in trying to create extended and private social networks through a somewhat public disclosure of these relationships (Boyd 2004). Privacy issues in online social networks have also received attention from the ethnographic perspective. In a study conducted by Strater and Lipford (2008) on the use of Facebook’s privacy settings by college students they observe that even when its users are more or less aware of the potentially public nature of their information, they soon forget the implications of this in their daily use of the system. This would appear to be a consequence of first, the low usability of privacy features in the system that make difficult to understand what the effects of each adjustment are; and second, the fact that users of the system simply lose track of the scope of their network believing this is comprised only by close friends.

Social practices in online social networks are also established among those who do not share offline friendship (Ploderer *et al.* 2008). Online ties in the absence of offline friendship appear to be possible as long as there is a coalescing activity or shared interest upon which these relationships can be built. Ploderer *et al.* maintain online relationships are possible because social networks, at least within the bodybuilding community explored, take simultaneously three different roles. First, social networks are tools that can be used to gain knowledge of a field, monitor personal progress and compare it with others. Second, social networks can also be perceived as a ‘theatre’ as they encourage promotion of personal accomplishments, appraisal of other’s achievements, and a venue to express other aspects of life beyond what the system specifically addresses. Finally, social networks are sites of real communities between like-minded people whose online friendship provides the support needed by those engaged in particular activities like bodybuilding, apparently a lonely activity.

As seen, the scope of insights produced by ethnographic explorations on the use of common ICTs in everyday life is wide and varied. Nevertheless, the use of ethnography in HCI has also received some criticism. For instance, Crabtree *et al.* (2009) criticise contemporary uses of ethnography beyond work settings on the grounds that these approaches appear to come from the assumption that ethnomethodology—the study of “how people understand and interpret the world around them, and the practical content of their day-to-day activities” (Travers 2001, p. 62)—is, somehow, inherently concerned with issues of productivity and efficiency. Thus, Crabtree *et al.* argue, the outputs of ethnographic approaches to studies of everyday settings appear to produce ‘cultural commentaries’ instead of “empirical studies of what people do and how what they do is accountably organised by them *in situ*.” This type of ethnographic studies fail to provide insights into the, borrowing from Suchman, “situatedness of action” or the individual agency displayed to accomplish activities. Contemporary ethnographic studies in HCI would appear to separate themselves from the idea that ‘work’ is also required to accomplish tasks beyond office settings and instead loose themselves in “broad generalizations of setting, action and the cultural character of artifacts.” In general, for Crabtree *et al.* contemporary ethnographic studies in HCI fail to provide empirical accounts of the underlying methodologies people use to achieve social order in everyday life beyond office settings.

It also appeared to me that ethnographic studies as those reviewed tend to overly focus on the particular technology under scrutiny, whether this is a social network or a mobile phone or Internet Messaging, etc. (interesting exceptions, however, are (Williams *et al.* 2008) and (Kolko *et al.* 2007) who cover several technologies in their studies), ignoring the fact that each technology is but one of the many tools used to mediate everyday life.

Similarly, the studies reviewed above tend to produce, in my view, de-contextualised accounts that, while explaining existing practices around a technology, fail to explain several issues including how a practice arises in the first place and under what conditions it is manifested; how the practice changes over time and under different conditions; and the place a practice occupies along other online and offline activities. As Petersen *et al.* (2002) put it, the typical ethnographic study in HCI would resemble a ‘snapshot’ of people’s lives with respect to technology—exceptions are, again, (Williams *et al.* 2008) who describe communication practices across transnational people in two settings, (Kolko *et al.* 2007) given their multi-site exploration, (Ling 2001) who documents use of mobiles at a critical stage of development towards independence among young Norwegians, and Lampe *et al.* (2008) who document a longitudinal study of Facebook over, apparently two years.

2.2.3 Exploring the Appropriation of ICTs among International Students at the University of Glasgow

Encouraged by the findings of my pilot study (see section 2.1.2.3 *Findings* on page 50 above) and taking into account the gaps in knowledge identified in contemporary ethnographic research in HCI on the adoption, use, and appropriation of popular technologies (see the closing paragraphs in the previous section), I began devising a full ethnographic exploration to shed more light on this important issue.

In harmony with Postulate VI in qualitative research, that is, with the identification and description of phenomena (Kirk and Miller 1986, p. 9; Strauss and Corbin 1998, p. 41), and considering the need to have a diverse sample of participants to increase the transferability and relevance of any findings

(Malterud 2001), I encapsulated the objectives of my planned study in the research question: *What is the process whereby international students in the University of Glasgow incorporate various information and communication technologies in the prosecution of their daily activities?*

The more particular objectives of my research were thus rendered as follows:

- *How, and under what conditions, are information and communication technologies first integrated in the prosecution of daily activities among international students at the University of Glasgow?*
- *How does the appropriation of a particular information and communication technology change over time and under different contextual conditions?*
- *How does an activity pursued with or through a particular information and communication technology relate to other online and offline daily activities?*

The reader should keep in mind that in tackling this research question, as will be more evident later in this chapter, I was not concerned with a narrow and decontextualised view of the use of ICTs. In other words, I was not interested with a detailed description of, for instance, whether person A uses more or less features in technology Z than person B, or whether person A is faster or more efficient at using the same technology than B. I was foremost concerned with a more ordered and detailed understanding than that achieved so far (see Chapter 1 and sections 2.2.1 *Ethnography in the Study of Mobile Telephony* and 2.2.2 *Ethnography in the Study of Online Social Networks* above) of the various elements or forces that have been somewhat identified in the literature as at least partially responsible for ‘bringing to the table’ certain ICTs rendering them effectively available and, usually, affordable. My interest also lied in achieving a better understanding of the relationships between these elements, as well as the impact these large-scale social processes have on users of those technologies (the process of structuration for Giddens, see section 2.3.1 *Structuration Theory* later in this chapter).

I understood, however, that any answers to these research questions would be partial and, therefore, applicable only within specific settings (see Postulate V; (Malterud 2001, p. 486)) since they would be bounded by my projected field of research (i.e., the University of Glasgow), my projected sample (i.e., international students), and my theoretical and methodological orientation (see sections 2.3.1 *Structuration Theory* and 2.3.2 *Grounded Theory* below). Nonetheless, I considered that any insights gained from this research project would contribute to what Malterud calls the “systematic and reflective process for development of knowledge” (2001, p. 483) in which qualitative research is founded.

2.2.3.1 Sampling

As indicated, I was interested in extending the findings of my pilot study among international students at the University of Glasgow, and yet I was aware of the similarities observed in their experiences as international students (see section 2.1.2.3 *Findings* on page 50). In my view, these observed similarities were perhaps a consequence of the timing and timeframe of that study. My pilot study was conducted at least five months after participants arrived in the UK and its findings were derived from only one meeting with each participant. Consequently, I deemed reasonable to begin exploring the appropriation of

technology among international students when these similarities are arguably not yet present, and to follow their activities over a longer timeframe to document their development, if at all.

Given my own experience as an international student, it appeared to me that those apparent similarities among students would be less likely to be present upon arrival to the UK. Moreover, one appears to be more sensitive to a new environment and its influence upon one's activities just after relocation. Accordingly, I aimed at beginning my full study as a new batch of international students enrolled in the University of Glasgow for the school year 2007-2008.

To capture the development of those similarities observed in the pilot study, I planned meeting prospective participants on a weekly basis over a three-month period. This timeframe would also help me document what technologies were being incorporated in their daily activities and how.

To strive for variety, while documenting the influence of the context in shaping individual experiences, I again planned recruiting five participants from China, India and Greece each. I advertised my study through Facebook and my own website (see Appendix 2). I also distributed flyers prepared to this end during some of the social activities organised by the International Society (a student group that caters to the social needs of international students at the University of Glasgow where I was a volunteer) at the beginning of the 2007-2008 school year.

To take part in this study it was necessary to fulfil some requisites including 1) being a masters student, 2) not being enrolled in a computing science related degree (to avoid having representation from those who, like myself, would appear to have an endless stamina to deal with computers and their quirks), and 3) living in university accommodation (to 'normalise' previously dissimilar environments and compare coping strategies under the same restrictions). Ownership of specific ICTs was not a prerequisite for participation in my study. To ensure commitment to the study over a three-month period, I offered £15 payment every fourth interview. Table 4, a subset of Appendix 6, lists participants in this study.

No.	Name	Sex	Age	Hometown	Occupation
1	Wen	F	23	Meizhou, Guangdong, China	MSc Management Business
2	Zhi	F	23	Nantong, Jiangsu, China	MSc Management Marketing
3	Ping	F	22	Guangzhou, Guangdong, China	MSc Management HR
4	Ming	F	24	Tianjin, China	MRes Bioinformatics
5	Hui	F	22	Hefei, China	MSc Banking, Finance and Economics
6	Adara	F	23	Athens, Greece	MSc in Adult Education
7	Aeneas	M	23	Athens, Greece	MSc in Information Technologies and Cartography
8	Christos	M	23	Athens, Greece	MSc Banking, Finance and Economics
9	Danae	F	24	Athens, Greece	MSc Human Nutrition
10	Eurydice	F	23	Drama, Greece	MRes Biomedical Science
11	Nilaya	F	21	Bangalore, India	MSc Space Mission Analysis and Design
12	Nalin	M	20	Porbandar, India	MSc Medical Genetics
13	Padma	F	21	Bangalore, India	MSc Medical Genetics
14	Osman	M	23	Mysore, India	MLitt War Studies
15	Panna	F	21	Mumbai, India	MLitt in Film & TV Studies

Table 4 Participants in the study conducted at the University of Glasgow. All names have been changed to preserve anonymity

2.2.3.2 Data Collection

As my main method to collect data I chose again deep, semi-structured interviewing assuming it would be useful in meeting the goals of this study. Furthermore, this method would be helpful in having participants synthesise long time-spans of personal history while keeping only those events more significant in their lives and in their day-to-day activities. I also employed this approach as I was more interested in the overall experience of integrating ICTs in one's everyday life and how this comes to pass (Atkinson 1998, pp. 13-14). Finally, I decided on this method of data gathering as it is recommended in the search for “novel understandings” even on areas about “which much is known” already (Strauss and Corbin 1998, p. 11).

On a more practical note, I expected obtaining ethics approval to follow participants wherever they may be and whatever they may do, would be harder to obtain. Also, the logistics of arranging to follow fifteen participants in their activities documenting what they did with ICTs over a three-month period, but only in convenient locations—i.e., places and activities where participants might feel comfortable with someone peering over their shoulders—would add a dimension of complexity hard to overcome by a single researcher. Furthermore, I assumed that by shadowing participants I would ultimately modify their real behaviour with or towards ICTs. Thus, although such an intervention could produce rich details, it would be, I assumed, a distorted view of participants' reality. This research project received ethics approval from the Faculty of Information and Mathematical Science under Project Reference Number: FIMS00389.

In harmony with Postulates III and VI in qualitative research (see a longer discussion of both issues on pages 52 and 53, respectively. See also the standard of reflexivity in (Malterud 2001)), I considered my own experience as an international student at the University of Glasgow as a good resource to complete some of the expected gaps in participants' accounts when reporting on their activities each week (Emerson *et al.* 1995, pp. 42-43).

I conducted my first interview on 3 October 2007 and the last one on 25 January 2008. It would appear the actual length of my study goes over the initially planned three months; however, it should be taken into account the December holiday period during the development of my study. This break ultimately was beneficial for my study as it gave me insights into seasonal variations on the use of ICTs.

In the end, I conducted 175 unstructured interviews. Each interview lasted only around 30 minutes both to avoid running out of things to talk about during each interview and to offer as fair a payment as I could in exchange for the two hours per month each participant invested in my study. Most of the interviews were conducted in an empty lab in the Computing Science building; some also took place in the common room or in the lobby of the Sir Alwyn Williams building. Towards the end of the study, most of the interviews were conducted in the restaurant at No.1 The Square in the main building of the University of Glasgow. I recorded audio from each interview using an mp3 recorder. I gathered around 90 hrs of audio which rendered around 234,000 words. Appendix 6 contains a list of the URLs of all transcriptions reported in this work.

2.3 Interpretation and Analysis

In this section I address Malterud's last standard (Malterud 2001), relevance, to ensure the objectivity of qualitative research through a recount of the systematic procedure followed to analyse and interpret data. Before proceeding with this task, however, I take another detour to acknowledge (a) the theoretical influences pervading the analysis of data, and (b) the methodology used to this end.

2.3.1 Structuration Theory

Analysis of data collected was influenced by Anthony Giddens' Structuration Theory as presented in *The Constitution of Society* since several issues I identified early in my research resonated with several of his ideas.

I will present a concise summary of some ideas behind Structuration Theory percolating through my data analysis especially in my attempt to produce a broader view on the use of ICTs than that produced by the type of ethnographic studies reviewed earlier in section 2.2 *Qualitative Research as a Scientific* on page 51.

According to Giddens, the theory of structuration is concerned with the study of "social practices established across space and time" and departs from more traditional views in social science concerned exclusively with individual actors and their free-agency in the present (as is the case with so called microsociology through, e.g., symbolic interactionism and ethnomethodology) or with structures that limit free activity by imposing an over-arching order (as is the perspective of macrosociology) (Giddens 1984, pp. 2, 139).

Structuration Theory can be conceived as an attempt to bridge micro and macro approaches in the study of society combining otherwise opposing concepts and theoretical stances such as agency vs. structure and subjectivity vs. objectivity. Structuration Theory thus advocates the study of the particular recognising this as always taking place within larger structures. Such a double perspective, Giddens argues, results in a theory with a stronger empirical basis as it accounts for the particular (Giddens 1984, p. 140) as well as one that recognises that no "strip of interaction" (i.e., individual occurrence) can be understood on its own but instead has to be seen as part of a routinised practice (Giddens 1984, p. 142).

To better appreciate the perspective of Grounded Theory in social science, I will review three of its basic concepts : structure, duality of structure and system.

Structures are rules and resources constraining and enabling the organisation of social practices recursively, thanks to people's ability to enact them contextually (i.e., in a situated manner). People can enact those structures because of their 'memory traces' or individual representations of those structures (Giddens 1984, p. 25). Structures can also be seen as properties of social systems that make similar social practices possible across different spans of time and space (Giddens 1984, pp. 17, 170).

Duality of structure refers to the structural properties (rules and resources) of social systems that 1) act as the medium in which a practice or social action is possible, and 2) are reinforced by the performance of a practice or social action (Giddens 1984, pp. 19, 25). Simply put, the duality of structure refers to structures' ability to sustain action while being reinforced by those very actions.

From the perspective of people (i.e., social actors) the duality of structure refers to the pool of knowledge from which an individual draws to perform activities which, in turn, reproduce the “structural features of wider social systems” within which he or she exists (Giddens 1984, p. 24).

System is understood as social practices reproduced between actors across time and space following distinctive patterns or features. A social system is, therefore, integrated by social practices. The degree of integration (‘systemness’) of social systems is widely variable and, therefore, can not be compared to the unity or integration displayed by biological and physical systems (Giddens 1984, pp. 25, 377).

In Structuration Theory people (social actors) are always conceived as *knowledgeable* or purposive agents, who, if or when asked, are able to elaborate on the pool of knowledge from which they draw to produce and reproduce actions, even if that leads to lying or to explanations that are not based in evident facts (Giddens 1984, pp. 3, 281, 375).

Because of their *agency*, people may choose a course of action in the performance of an activity. Because of their agency, people can perform the same activity differently or stop at any stage its completion (Giddens 1984, p. 9).

As people exert their agency, they also display *reflexivity* or an ability to keep track or awareness of their own actions in the “ongoing flow of social life” (Giddens 1984, p. 3). People not only monitor their own actions, but also physical and social aspects of their environment (Giddens 1984, p. 5). People expect others to display a similar awareness or reflexivity of their own actions and environments (Giddens 1984, p. 3).

Day-to-day actions, and social activities in general, are routinised to reduce sources of anxiety in daily life. *Routines* are the basic expression of the duality of structure (Giddens 1984, p. 282), that is, of the enactment and re-enactment of the structures that make actions possible and that, in turn, would appear to provide social systems with a certain level of stability.

Even though structures would appear to convey a sense of immutability, social systems do change. Change depends on “conjunctions of circumstances and events”, that is, on a rich mix of possibilities available in a given context that are purposefully manipulated by those inhabiting them. (Giddens 1984, p. 245). These conjunctions of circumstances and events occur in episodes (i.e., sequences of change with an identifiable opening, sequence of events and outcomes) bounded to a particular time and place. Nevertheless, even when the outcome of an episode may be similar to that taking place elsewhere, the coming together of the circumstances that produce it are always different (Giddens 1984, p. 251). Because of the multiplicity of elements intervening in the process of change, plus the reflexivity agents display in such a circumstance, Structuration Theory holds that it is impossible to establish a “single and sovereign mechanism” to explain this process and reduce the “mysteries of human social development... to a unitary formula” ((Giddens 1984, p. 243) See also Postulates IV and V on page 52 above).

As will be seen later in this chapter, some of the concepts of Structuration Theory here explored are used as a sort of theoretical basis to sustain some of my findings. For instance, in my view, elements described by the external layer of a model of appropriation I will describe later act as the *structures* that provide the

rules and resources ICTs are subject to. Chapters 3-5 are thus devoted to an exploration of the influence of these structures in the adoption, use and appropriation of technology. The *agency*, *knowledgeability* and *reflexivity* of people are represented by the second layer of this model. Thus, in Chapter 6 I attempt to describe a simple method that reflects the manner in which people develop *routines* that help them retain control over, and make sense of, their technologies within the contexts through which they move. Finally, the innermost layer of this model of appropriation (see Chapter 7) represents the images or characteristics I identified as being attached to ICTs once they are made part of the performance of daily routines. In my opinion, this subjective view of technology stand as a proxy for social practices that, regardless of space and time, are found once and again across those groups, large and small, that have appropriated ICTs.

2.3.2 Grounded Theory

Grounded Theory is a methodology aimed at formalising the analysis of data gathered through qualitative research with the express purpose of generating theory rooted in concepts arising from the data themselves (Strauss and Corbin 1998, p. 12).

Three staples of Grounded Theory represented a good match with the aims of my research. First, the phenomena under research should be approached without any preconceived idea or theory in order to allow theory to emerge directly from data gathered (Strauss and Corbin 1998, pp. 12, 34); second, throughout the research project a close link should be kept between data gathering and analysis allowing the latter to guide the former (see *theoretical sampling* below) (Strauss and Corbin 1998, p. 12); and finally, the generation of theories that explain phenomena should come as a result of the identification of relationships between different properly established and developed concepts or categories (Strauss and Corbin 1998, pp. 22, 114).

For Strauss and Corbin, there is an essential difference between Grounded Theory and some ethnographic accounts that is represented by the end product of both approaches. While ethnography is concerned with producing descriptions of events and objects (Strauss and Corbin 1998, p. 25), Grounded Theory attempts to explain or interpret why certain events occur through the generation of theories that explain phenomena (Strauss and Corbin 1998, pp. 20-21).

The process of organising data into categories representing events and objects and their properties, but without relating them under an overarching explanatory scheme is called *conceptual ordering*. For Strauss and Corbin conceptual ordering is the precursor of theorizing and sometimes is the desired end point of a research project (Strauss and Corbin 1998, pp. 19, 25).

A few procedures are basic in the development of Grounded Theory but not exclusive to it. Strauss and Corbin recognise open coding, microanalysis and theoretical sampling are also useful when the desired outcome of a research project is only description, conceptual ordering, or the identification of categories or concepts (Strauss and Corbin 1998, p. 288).

Open coding is the process of breaking down data, analysing it line by line (Strauss and Corbin 1998, p. 119) to identify events, objects, actions and interactions that are significant, and grouping them under abstract classifications known as concepts or categories (Strauss and Corbin 1998, pp. 101-103). Categories or concepts thus identified represent phenomena (Strauss and Corbin 1998, pp. 102, 114).

Categories may become the properties of other categories or, when they accumulate, can be organised as subcategories of more abstract categories (Strauss and Corbin 1998, p. 114). Subcategories describe when, where, why, and how a phenomenon occurs (Strauss and Corbin 1998, p. 119). Categories and subcategories both have properties (i.e., general or specific characteristics (Strauss and Corbin 1998, p. 117)) and dimensions (i.e., the position of a property within a range of values (Strauss and Corbin 1998, p. 117)).

The purpose of microanalysis is not only the generation of categories or concepts (along with their properties and dimensions) like open coding, but more importantly, the identification of relationships between categories and subcategories coding around a point of interest (axial coding) (Strauss and Corbin 1998, pp. 57, 66, 70, 123).

Theoretical sampling is the purposeful guiding of the research (e.g., through observations and interviews) along the dimensions of the properties of a category exploring what happens when conditions vary and enriching the explanatory power of those categories identified as relevant in the phenomena under study (Strauss and Corbin 1998, pp. 67, 120).

Even though Grounded Theory aims at formalising the analysis of qualitative data, the identification of categories, subcategories, their properties and dimensions and the guiding of research through theoretical sampling are procedures subject, ultimately, to a researcher's subjective interpretation of the phenomena under study. A great deal of imagination and ingenuity is thus required of the researcher not only in identifying 'important' issues, but also in organising and relating them to each other and, if necessary, in abandoning them when leading through sterile paths.

My adoption of Grounded Theory as the specific methodology to collect and analyse data not only followed the fact of this being a proven methodology to sift systematically through data, while digging at the roots of appropriation, it also came as a result of the explicit encouragement to be flexible when and where needed during the course of my research; a circumstance I anticipated as necessary when exploring multiple technologies across the vicissitudes of daily life.

Furthermore, while analysis under a pure ethnographic perspective would have allowed me to describe practices around ICTs, it would have left me, or so I presumed, with the same type of questions similar approaches have left unanswered (see section 2.2 *Qualitative Research as a Scientific* on page 51 above) including: a) how a practice arises in the first place and under what conditions it is manifested; b) how the practice changes over time and under different conditions; and c) the place a practice occupies along other online and offline activities.

At the time I was drawn into Grounded Theory, it appeared to me this approach would be able to provide some answers for those questions a pure ethnographic approach had left unanswered so far; issues I thought relevant in an exploration of the appropriation of ICTs in everyday life.

2.3.3 Analysis

I will now proceed with a more detailed account of the analysis conducted on data gathered in the study conducted at the University of Glasgow. The reader should keep in mind that both of these activities, data

gathering and analysis, are intrinsically linked feeding back into each other (see the previous section on Grounded Theory).

During the first and second interviews with each participant I explored in as much detail as possible the circumstances surrounding their adoption of what I considered popular ICTs (i.e., computers, Internet, email, mobile phones, Internet Messaging, Online Social Networks and blogs) both in each participant's lives before coming to the UK and also in the context of their experience at the University of Glasgow. Appendix 3 lists the questions used in this first stage of semi-structured interviewing. As mentioned, to take part in the study ownership or use of these technologies was not a prerequisite. As a matter of fact, two Indian participants were particular in this regard. Osman had decided to stop using a mobile phone as soon as he arrived in the UK in order to abandon what he called his 'addiction' to this technology. Nilaya did not own a laptop and only acquired one by the end of the study.

Later interviews followed a more unstructured approach. Although the general theme underlying each subsequent interview was still the incorporation of ICTs in common activities while in the UK, they did not follow a pre-established set of questions. To try to avoid an obvious focus on the role of ICTs in their lives and, thus, to try to avoid overly focused accounts of the role of ICTs in their lives, I used to begin my interviews by asking participants about their daily activities with questions such as 'What did you do before coming to this interview?' and 'What will you do after this interview?' or 'How do you study?' and 'What do you like doing to relax?'. Through these types of questions, and since I was free to explore with different degrees of detail issues I considered worth exploring (see theoretical sampling in previous section. See also (Strauss and Corbin 1998, pp. 67, 119-20)). I was able to achieve two things. First, I documented how ICTs had been absorbed into various activities in participants' lives rendering them virtually unremarkable. Second, I was able to gather more insights into the role other issues (beyond the technology itself) have in this 'invisibility' of technology (cf. (Tolmie *et al.* 2002)).

In some occasions, however, participants and I would embark on brief discussions centred on a particular technology such as computers or Internet access. This usually happened when these technologies were not working as expected. In some of these discussions participants expressed their frustration with ICTs and the annoyance of having to cope with them as if in 'darkness' as a consequence of their ignorance of some of the more intrinsic aspects of digital technology. In these occasions I would offer some advice to deal with the problem.

Interviews did, in fact, bridge wide time-frames in a few minutes. Sometimes answers would produce such broad strokes about participants' lives that it was necessary to go over an experience again, breaking it into smaller pieces to gather more details about it. Also, perhaps because of the retrospective character of my questions, participants would appear to display their knowledgeability (see use of this term in section 2.3.1 *Structuration Theory* above) when venturing explanations for their behaviour with or towards ICTs even before any was requested. Explanations represented a rationale for participants' own actions, although this rationale was not always evident to me.

It was soon obvious that for participants adapting to a new environment as international students at the University of Glasgow was a rather trivial matter. All of them soon settled in daily routines revolving around a central theme, studying, that appeared to force them to spend long hours indoors with, arguably,

little time to do anything else. It was not that participants had suddenly become hermits, but for some of them studying was their biggest source of concern and anxiety and thus, all other activities were subordinated.

2.3.3.1 What are you doing?

The adoption of routines was more evident when, realising all data I was acquiring was pretty homogeneous, I devised a second intervention inspired by experience sampling (Christensen *et al.* 2003) and prompted by the idea that certain measures can become excessively reliable without advancing a research project (Kirk and Miller 1986, p. 26). Thus, the aim of this intervention was clarifying whether, in fact, participants were all involved in very similar activities. This intervention consisted of an SMS message sent at some point in time between interviews. The message sent only contained the phrase '*What are you doing?*' Upon reception of this message participants were instructed to, if possible, take photographs of their immediate environment and/or a screen printout if working with a computer. Participants were instructed to send me those photographs in advance so I could print them. Photographs were used in subsequent interviews as props to elaborate in more detail on their daily activities. In total, I sent four of these messages during four consecutive weeks between 26 October to 21 November 2007. To increase the possibilities of gathering more varied data across a wider set of activities I sent these messages at different times of the day and in different days of the week. This intervention was not fully successful in that some participants never took any photographs of their environment or sent them ahead of our next interview. However, participation in this intervention reached about 70% (Appendix 4 contains some examples of the type of photographs taken by participants in their intervention). Through this intervention I confirmed the routine character of their activities and how their use of ICTs was indeed quite homogeneous after a few days in the UK.

2.3.3.2 Thumbstrips

With less success I tried a third intervention aimed at documenting with more detail participants' use of the Internet. This was done to further explore this homogenisation of activities that was becoming more apparent as our interviewing continued. At the time, I stumbled upon a Firefox plugin called Thumbstrips (<http://intuitlabs.com/thumbstrips/>) that essentially saves to a file thumbnail images of websites visited over a period of time. I requested participants to install this plugin and use it to record their online activity when prompted to do so via SMS. As before, this file was supposed to be brought along to our next interview to discuss the websites they usually visited (Appendix 5 contains some examples of the type of screenshots taken by participants in this intervention). Few of them actually managed to do as requested for any of the following reasons: they just could not be bothered, they did not understand the instructions I gave them, or they were not able to make the plugin work.

My interviewing had generated several insights into the role of ICTs in the life of my interviewees, but given the way I conducted those interviews, I gathered what appeared to be 'narrative puzzles' from which it was difficult to distinguish a linking thread. The following extract from an interview with Wen, a 23-year old female Chinese participant, discussing her experience with Internet Messaging during her teens illustrates this circumstance:

When I was in High School the Internet became very popular in China. Everyone would have a computer at home and in their offices. Everyone would be talking about chatting and QQ. I started using QQ in High School. It was very popular in my environment among my friends to communicate with each other, so I applied, downloaded and installed the software. However, I would seldom use QQ. At that time our work schedule was very tight. My best friend, my classmates, all were very keen on their studies, so we seldom used it. It was common to have a computer, but students would seldom use it. I think now it's more popular and younger students use it more frequently than us. After we had finished our university entrance exam we had more time to use the Internet.

There are so many elements at work in this single fragment that at first I could neither identify them all, nor be sure if it was relevant to identify any at all. However, using my understanding of Grounded Theory and Structuration Theory as described earlier, I began organising information with an eye to the role of context in shaping use of technology.

The reader should in keep in mind that while the following sections detailing my analysis of data are presented in a sequential manner, the actual process from which my model eventually arose was not as straightforward. As indicated earlier, the application of Grounded Theory requires a great deal of imagination and ingenuity to sift through the material collected identifying issues worth exploring, along with their relations and characteristics. I believe to have succeeded in integrating those issues worth further exploration in a coherent (visual) argument, i.e., the model itself.

2.3.3.3 Social Structures in the Appropriation of Information and Communication Technologies

I began the open coding process by identifying what I considered to be important events, objects, actions, etc. present in data gathered to select candidates for potential categories or concepts. In this manner, when exploring the forces—or structures for Giddens, see section 2.3.1 *Structuration Theory* above—facilitating the adoption of ICTs in the lives of participants, I identified five recurring themes in their accounts including parents, friends, institutions, governments and the media.

Microanalysis of these themes led me to identify some of their particularities. For instance, regarding parents' influence on the provision of ICTs, I noticed there were certain differences in the various motivations behind the provision of computers and the Internet as opposed to the provision of mobile telephony. The influence of the immediate family hub in facilitating and sustaining the appropriation of these two technologies among participants, along with various properties of both circumstances (e.g., why computers and the Internet are provided, why mobile phones are provided, when each technology is provided, the modes of communication developed through each one of these technologies, and contradictory and negative cases of some of these events) were thus encapsulated in a category I called *Domestication* (see page 99).

Microanalysis of the other themes identified through open coding (i.e., friends, institutions, governments and the media) led me to delve deeper into the manner in which these other influences impact the appropriation of digital technology. These four remaining themes are substantiated in this work under the

labels I assigned them: *Peer Support* (beginning on page 105), *Institutional Regulation* (page 111), *Government Regulation* (page 121), and *The Media* (page 124).

Sometimes, however, it was difficult to ascertain the properties of the categories identified. For instance, as is properly acknowledged, I was unable to establish why an institution like the University of Glasgow would provide such a meagre Internet service in its student housing (see section 4.1.3.1 *Masterpoint and the University of Glasgow Student Accommodation* on page 112). These limitations in my data were to be expected since I was exploring but one side of the process of appropriation, i.e., only the perspective of the end user of a technology.

Because of strong relationships identified across these five categories blurring in practice the boundaries of each one, I grouped them under the more abstract concept of **Socialisation**. As can be gathered, these five categories represent all social influences I could identify throughout my data as bearing on the process of appropriation by inducing and sustaining it.

Following the rationale described, I continued exploring through microanalysis the properties of additional themes identified. As before, I grouped the resulting categories under two more top-level categories I named **Activity** and **Place**. In this way, the top level category **Activity** is integrated by those main activities (subcategories) in which ICTs play a prominent role including *Communication* (beginning on page 86), *Study* (page 89), *Leisure and Entertainment* (page 93), and *Online Commerce* (page 96).

Finally, the top-level category **Place** is further integrated by those subcategories that make ICTs available in certain environments including *Infrastructure* (beginning on page 129), *Marketing* (page 133) and *Architectural Layout* (page 139). In my view, these three top-level categories, Activity, Socialisation and Place, represent all the social influences that both enable and constrain the appropriation of digital technology in daily life. In my view, they represent the structures described in Structuration Theory. These categories, social influences or structures integrate what I call the **Social Layer** of a model I built to represent the process of appropriation of ICTs in the lives of international students. This layer and the categories and subcategories integrating it are discussed in more detail in Chapters 3 to 5. This layer is represented in Figure 5. (Please refer to this chapter's last section 2.7 *Additional Considerations* on page 82 for details on the use of interview extracts in support of each one of the categories above described.)

2.3.3.4 Individual Perspectives on the Appropriation of Information and Communication Technologies

In my ongoing exploration of the use of ICTs among participants to address their daily activities I noticed they would appear to assign intangible properties to these technologies. For instance, after I requested participants to use Thumbstrips (see section 2.3.3.2 *Thumbstrips* on page 66) to produce a record of their online activity, I also introduced them to EndNote, a reference manager, hoping to document the manner in which this piece of software was adopted, used, and perhaps appropriated. Also, I assumed that if participants were to have this software, the task of working with references in, say, assignments and dissertations, would be facilitated. However, illustrating the use of EndNote through a quick tutorial during one of our interviews and sharing online video tutorials with them did not seem to have any impact on their use of this application.

In my mind, this was a bizarre circumstance. How could it be possible that an ICT was not used when its benefits were so evident? This reasoning was, of course, influenced by my own way of approaching digital technology. I came across *EndNote* a few years earlier when in need of an application with certain imagined features to handle references for my assignments during my own masters degree. Despite its many quirks, I have been using *EndNote* up to this day despite briefly experimenting with a few alternatives. My experience with *EndNote* was to be replicated later with *Express Scribe* when I was in need of an application whose functionality I first conceived in my mind to help me with the task of transcribing the 175 interviews of my study in Glasgow. In a sense, embracing these and other applications originated with my ability, unlike that of my participants in the study, to put my needs in terms of the possibilities of ICTs and, if necessary, re-adjust my conceptions or images of them, that is, of their features.

Through this failed experience with *EndNote* among participants I was able to visualise, by contrasting it with my own experience, the subjective dimension of participants' experience with technology that should be a staple of qualitative research (Postulate III; (Kirk and Miller 1986, pp. 9, 12; Travers 2001, pp. 7-8)). Under this view it was only to be expected that what someone considers as a relevant application to address an activity might not be so for another, or what someone considers usable might not be so for another. I also noticed that while some of these subjective properties can be bestowed on first impression, others take time to develop, although this does not necessarily imply they will stay forever the same.

These intangible, subjective properties of ICTs were once again substantiated and organised in categories I called **Relevance** (beginning on page 160), **Triviality** (page 162) and **Meaning** (page 165). These categories comprise the *Digital-Tool Layer* of the model through which I represented my knowledge of the process of appropriation. This layer is described in more detail in Chapter 7. My model at this stage can be seen in Figure 5.



Figure 5 First Version of a Model of Appropriation of ICTs in Everyday Life. The outer ring represents the Social Layer. The inner ring represents the Digital-Tool Layer

Another interesting issue observed in this study was that participants appeared to treat ICTs in practice as if these technologies had less features (and, therefore, possibilities) than those they actually have. Any

further adjustment or alteration in or to a piece of technology, unless its benefits are clearly obvious—and sometimes not even in these cases—would appear to be undesirable and, therefore, resisted and/or ignored. This evidenced an important difference between their abilities to deal with digital technology and my own (see my experience with EndNote above), or that of my colleagues (see section 2.1 Early Insights on the Appropriation of Technology in Everyday Life on page 45 above).

In my view, this was as if the multi-functionality of digital technology was being ‘reduced’ to that of non-digital, static objects whose functions and features were, somehow, only those most ‘apparent.’ This was evident, for instance, in participants’ difficulty to begin using the Firefox Web browser (a pre-requisite to use Thumbstrips and in my view at the time of the study a superior browser to MS Internet Explorer) and continue using it afterwards, or, as illustrated, in their reluctance to adopt EndNote. For participants, however, it appeared to be that ICTs were being used as they were *supposed* to be used within the context of their *perceived reality* or needs. In other words, despite their limitations in using the various available features in popular ICTs or in adopting ‘better’ applications, they were integrating what they had into their daily routines (i.e., appropriating them). That I may have thought they were using suboptimal tools in suboptimal ways was, of course, irrelevant for them.

At this point in my research the type of insights gained from my study seemed reasonable, as they emphasised the influence of local practices in shaping individual use of ICTs. Furthermore, as conveyed through the graphic representation of my model (see Figure 5), these local practices appeared to bound and limit, but also induce and sustain, individual perspectives on the use of ICTs. In my view, this stance was more representative of people’s ability to adapt to a changing environment. Also, the layout of the model allowed me to convey the idea that the appropriation of ICTs is an individual process depending on a delicate balance of issues I tried illustrating through the model itself.

2.4 Exploring the Appropriation of ICTs Abroad

I grew aware and concerned with two limitations of my study. First, my sample of university students provided information that, while diverse, was restricted to a particular segment of the population from each country surveyed living within very particular conditions in the United Kingdom. Second, my limited exposure to the countries and cultures explored in my study could imply that I was losing valuable information from the lack of a common cultural background from which I could interpret past experience with ICTs, as well as its impact on present use. These reflections prompted me to look for ways in which I could overcome the limitations of my study and improve the relevance and transferability of my findings in a sensible manner. In the following I will describe how I strived to achieve this.

2.4.1 Motivation

To address some of the limitations of my study in Glasgow, I procured varying somewhat the characteristics of my sample and the phenomenon under study. To this end I planned to conduct fieldwork abroad. This, I assumed, would help me confirm whether the elements I had identified so far were still relevant under different conditions or if I was in need of accounting for as yet unknown ones. I was also interested in observing common places of interaction in other places to continue exploring the influence of local social practices on the appropriation of ICTs. In my view, exploring these issues under different conditions would both increase the transferability of my findings and remain in harmony with

the theoretical sampling advocated by Grounded Theory (Strauss and Corbin 1998, pp. 67, 120) to explore the impact of varying conditions on the elements of my model of appropriation identified thus far.

With this in mind, I arranged to conduct fieldwork in Japan, South Korea, and China. I was interested in visiting these countries because, in terms of cultural dimensions, they are always portrayed as almost fantastically different from the Western world. These countries are always depicted as having high indices of power distance, uncertainty avoidance, collectivism, masculinity and long-term orientation. Although I had not been able to see any of these traits among my sample of Chinese participants and their use of ICTs, I presumed this could be due to the fact that they were not surrounded by the same social structures existing in China, and thus, their behaviour in Glasgow might not be the same observed at home. Also, perhaps absence of the behaviour predicted by cultural dimensions was due to the fact that those who can afford postgraduate education in the UK are not typical of mainstream Chinese society.

2.4.2 Sampling and Methodology

I visited Japan, South Korea and China, in that order, spending six weeks in each country between July and November 2008. As before I was interested in interviewing university students in each country visited to contrast their ‘native’ experience with that of participants in the study in Glasgow. As in my previous study, I was also interested in exploring the use of popular ICTs like computers, Internet and mobile phones. However, unlike my previous study, this time I also had to familiarise myself with each environment visited, documenting with photographs and annotations what I thought to be signs of the integration of ICTs into the fabric of everyday life among these other societies.

From 7 July to 7 August 2008 I visited Sapporo, Japan. There I interviewed six Japanese people including two university students at Hokkaido University plus two Brazilian PhD students and two Indian PhD students in the same institution. My sample of Japanese people included four non-students for the first time. It was my initial intention to interview foreign students while conducting research abroad just as I did in Glasgow, because I presumed they would also provide me with interesting insights into, for instance, the Japanese culture and the adjustments they underwent to cope with a new setting. However, as I interviewed foreign students in Japan, I noticed their experiences were too similar to those of my sample in the UK; if possible, foreign students in Japan were even more withdrawn from Japanese culture than my sample of foreign students in the UK. I attributed this fact to the language barrier. In the UK participants communicate with foreign friends in English, but more importantly, this is also the language of instruction in university and the native language of the country. In Japan, on the other hand, foreign students appeared to be living in a sort of ‘cultural limbo’ because while they would socialise and receive instruction in English, the rest of the country operates in Japanese language. Deliberate isolation from complex matters, in this case dealing with the Japanese language, by participants was in itself an interesting case of what I eventually called *accommodation* (see section 6.3 *Simplification* on page 154), but away from digital technologies. Because in this occasion I was more interested in understanding the native experience, I did not continue interviewing international students in Japan and elsewhere. This, again, was motivated by my understanding of theoretical sampling and thus, I avoided going through the same type of issues already identified with the sample in Glasgow. Regrettably, I took this decision too late during my study in Japan and thus I was not able to recruit more than six Japanese participants. Table 3 list these participants.

To participate in my study in Japan (and those conducted later in South Korea and China), the only requisite was having the ability to sustain a simple conversation in English with me. As before, I offered payment for participation in my study. Although payment was supposed to be equivalent to that offered in the UK, it never taxed me in the same manner. Two participants in Japan were recruited through word of mouth from amongst friends of my host there, Dr. Lunzer. The rest knew about my study through friends of friends or were personal contacts I made. I would be hard-pressed to say this small sample is representative of the Japanese population. Nevertheless, this sample allowed me to dab into some issues I later explored further in Korea and China. For instance, I met for the first time people with actual experience with old personal communication technologies like pagers, as well as people who, having lived abroad for some period of time, could reflect on their use of technology in different environments.

Each participant in the studies in Japan, South Korea and China was interviewed only once. These interviews followed the same question guide used in the first stage of the study in Glasgow (see Appendix 3). Participants were also queried about their current use of technology. Because I was interviewing participants only once I made heavy use of theoretical sampling (see section 2.3.2 Grounded Theory on page 63) to explore in more detail various issues particular to each setting, for instance, the use of pagers and mobile phones in Japan (see page 114), military service in Korea (see page 117), and the BBS system in Nankai University in China (see page 118).

In South Korea and China, the mechanics of my study were the same as those in Japan. Participants were recruited from posts made to the BBS systems of Ajou University in South Korea and Nankai University in China thanks to some early contacts I made in those universities. All participants in these two countries were either graduate or undergraduate students from a range of disciplines but computer science and related fields. A relation of all participants in these studies can be found in Table 5, a subset of Appendix 6. Transcripts of all interviews conducted in Japan, South Korea and China are available online. Appendix 6 also contains a list of their URLs.

In general, these three groups of students in Japan, South Korea and China were quite homogeneous except for two things. First, as indicated, some participants in Japan, as well as several participants in South Korea, had experience living abroad. These participants were questioned about, and elaborated on, their use of various ICTs in different contexts. In contrast, only one of the participants in China had any experience living abroad. Second, China was the first setting where I came across participants who would recognise themselves as coming from economically poor backgrounds.

Despite the apparent similarities between participants in my first and second studies, I believe the data generated by my second study was useful in providing more evidence and variety to sustain the relevance of the categories identified earlier. The role of organisations in shaping the use of ICTs is further explored, for instance, through the case of the subway system in Japan and South Korea (see section 4.1.3.2 *Subways in Japan* on page 114), and through the case of the BBS system in Nankai University in China (see section 4.1.3.4 *The BBS at Nankai University* on page 118).

Furthermore, the case of those with experience abroad in Japan and South Korea, as well as those restricted by economic considerations in China, together with my observations on the manner in which

participants in Glasgow appeared to reduce the multi-functionality of digital technology, provided material to propose a third and final layer in my model of appropriation, as will be seen next.

No.	Name	Sex	Age	Hometown	Occupation
1	Akane	F	36	Sapporo, Japan	Graduate Student
2	Chihiro	F	27	Engaru, Japan	Office Worker
3	Miho	F	52	Sapporo, Japan	Artist
4	Daichi	M	23	Yokohama, Japan	Masters student
5	Riko	F	22	Sapporo, Japan	Office Worker
6	Shiori	F	33	Sapporo, Japan	Office Worker

1	Chin	M	25	Pusan, Korea	University student
2	Cho	F	22	Seoul, Korea	University student
3	Chul	M	25	Haenam-Gun, Korea	University student
4	Hei	F	22	Seoul, Korea	University student
5	Hyun-Ki	M	22	Pohang City, Korea	University student
6	Hyun-Shik	M	25	Yang-pyeong, Kyeonggi-Do, Korea	University student
7	Sook	F	21	Song Tan, Korea	University student
8	Soo	M	23	Seoul, Korea	University student
9	Sun	M	24	Pusan, Korea	University student
10	Yon	F	21	An-yang, Kyung-gi, Korea	University student

1	Bo	F	20	Qiqihar, Heilongjiang, China	University student
2	Chen	M	24	Changsha, Hunan, China	Graduate Student
3	Hua	F	21	Tianjin, China	University student
4	Jun	F	22	Renqiu City, Hebei Province, China	Graduate Student
5	Fai	M	24	Shandong, China	Graduate Student
6	Nuwa	M	21	Ankang, Shaanxi, China	Graduate Student
7	Mei	F	22	YunCheng, Shanxi, China	Graduate Student Microbiology
8	Yen	F	21	Tianjin, China	University student
9	Yin	F	20	ZhengJiang, China	University student
10	Yong	M	21	Guizhou, China	University student

Table 5 Participants in the studies conducted in Japan, South Korea and China. All names have been changed to preserve anonymity

2.4.3 Mastering Information and Communication Technologies

As indicated earlier, during my fieldwork abroad I was interested in documenting local social practices around ICTs across all countries visited. To document this, besides interviews, I took a large number of photographs portraying what I interpreted as local uses of technology in common places like streets, restaurants, supermarkets, subways, shops and other public and semi-public places of interaction I visited.

To my surprise I soon realised that local social practices around ICTs were very similar to those already identified and explored in Glasgow. I came to the realisation of these similarities not only through my interviewing and observations, but also as I found my way around the countries visited. For instance, even though I could not read signs and other instructions written in a foreign language, the behaviour all around me was always legible. A case in point is *7-Eleven*, a chain of convenience stores very popular in

Japan, but by no means the only such chain. A staple of these stores is the magazines section. Patrons would visit these stores and stand besides the magazines reading at will any item available. Only magazines of an adult nature were sealed (Figure 6). These arrangements and customs reminded me of my own experience in, say, *Borders* in the UK or in a similar section of another shop chain known as *Sanborns* in my home country, Mexico.



Figure 6 Magazine stand at a 7-Eleven convenience store in Sapporo, Japan

I experienced similar feelings of familiarity in South Korea and China where food street stands are quite common just as they are in Mexico (Figures 7-9). The feeling eventually became pervasive and wherever I went I would be able to relate features of a particular environment to previous experiences elsewhere.



Figure 7 Chinese street food stand. Photograph taken in Tianjin, China on 1 October 2008



Figure 8 Korean street food stand. Photograph taken in Suwon, South Korea on 19 August 2008



Figure 9 One of the Japanese street food stands I came across. Photograph taken in Tokyo, Japan on 17 August 2008

I believe to have reached the highest point of this familiarity with the environment through which I was moving (i.e., the structures and their social practices) when I came across a *Carrefour* supermarket in a shopping mall in Tianjin, China. This was, literally, as if I was entering any other such shopping mall in Mexico or any of the countries visited earlier. The same type of fashion stores, restaurants and other amusements, and the supermarket itself were distributed across the shopping mall just as I had seen them elsewhere during my trip and before (Figures 10-13).



Figure 10 A Carrefour supermarket in a shopping mall in Tianjin, China. Photograph taken on 1 October 2008



Figure 11 A McDonald's fast food restaurant in a shopping mall in Tianjin, China. Photograph taken on 1 October 2008



Figure 12 Cosmetic aisles in a shopping mall in Tianjin, China. Photograph taken on 1 October 2008



Figure 13 Starbucks restaurant in a shopping mall in Tianjin, China. Photograph taken on 1 October 2008

Even when supermarkets in the three countries visited would carry different brands and food styles, these were always distributed in shelves and aisles. There was always a frozen food section, a dairy section (though small when compared with their Western counterparts), a meat section and a vegetable and fruits section. There were always people re-stocking shelves, dispatching goods, cleaning and at the counters (Figures 14-16). Also, there were always actresses and actors advertising all manner of products (Figures 17-19).



Figure 14 Dairy products section in a supermarket in Sapporo, Japan. Photograph taken on 7 July 2008



Figure 15 Dairy section in a supermarket in Suwon, South Korea. Photograph taken on 25 August 2008



Figure 16 Bread aisle in a supermarket in Tianjin, China. Photograph taken on 1 October 2008



Figure 17 Japanese Pepsi advert using local celebrities. Photograph taken in Sapporo, Japan on 7 July 2008



Figure 18 Korean beer advert using local celebrities. Photograph taken in Suwon, Korea on 20 August 2008



Figure 19 Chinese Pepsi advert using local celebrities. Photograph taken in Tianjin, China on 1 October 2008

There were also differences, although these did not affect my general understanding of the activity I was developing or how to perform it (e.g., grocery shopping or eating at a fast food restaurant), nor my understanding of the activity others were performing. For instance, in the supermarket I visited frequently in Japan, personnel at the counter would loudly greet people as they approach it and mention one by one each of the products carried in the shopping basket as they removed, scanned and placed them in a second basket. Cash or credit and debit cards were not supposed to be handled directly to the cashier person, but be placed in special trays by the checkout machine. Afterwards, each patron would have to take their own basket containing all the items purchased to a nearby table where wet towels and rolls of plastic bags were available to pack the goods and carry them out of the supermarket (Figures 20-23).



Figure 20 Counter at a Japanese supermarket. Personnel at the counter always wear an apron. Photograph taken in Sapporo, Japan on 7 July 2008



Figure 21 Each scanned item is placed in a second basket. Photograph taken in Sapporo, Japan on 7 July 2008



Figure 22 Baskets are then taken by patrons to a nearby table where they can be bagged. Photograph taken in Sapporo, Japan on 7 July 2008



Figure 23 Bags and wet towels to bag purchased groceries. Photograph taken in Sapporo, Japan on 7 July 2008

A larger number of differences would appear to come from the more subtle aspects of the ‘familiar’ practices I observed. Some of these differences did not appear to be a direct consequence of what a given space allowed, although that was important in the practice observed, but a consequence of an alternative local interpretation of it (cf. section 1.1 *What is Appropriation?* on page 1) For instance, in Nankai University in Tianjin, China there were at least four student restaurants serving each one over 50 dishes at very accessible prices (Figure 24). Some students, however, would visit a KFC restaurant just across the road from this university to have a more expensive Western-style breakfast and do some studying in the process. Studying was not forbidden on campus restaurants, but the noise produced by a large amount of students having their meals was such that the practice was effectively precluded. The KFC restaurant was, in contrast and unlike others I have seen elsewhere, a sea of calm offering a relaxed, clean and well-lit environment to study (Figure 25).



Figure 24 One of the student restaurants in Nankai University in Tianjin, China. Photograph taken on 10 October 2008



Figure 25 A KFC restaurant just across Nankai University. Photograph taken in Tiajin, China on 12 October 2008

As I reflected on these similarities and differences encountered in such a common place as a supermarket or a restaurant, it occurred to me that these facilities did, in fact, structure the experience of people within those premises orienting them on what to do in the prosecution of their routine. People's routines, in turn, would appear to further entrench the structures or practices that both made possible and constrained their actions (cf. Giddens's duality of structure in section 2.3.1 *Structuration Theory* on page 61).

Structures like supermarkets, restaurants, public transportation, etc. would appear to leave some interstices 'open' to the expression of some form of idiosyncratic practice. This is more evident, I think, in those issues that have become staples of some regions. For instance, mobile telephony in Japan has long been considered a special case of the intersection of popular culture and technology (Ito 2005). This can be seen in the huge market of mobile phone accessories found all across that nation (Figures 26-29).



Figure 26 Screen filters for mobile phones. Photograph taken in Sapporo, Japan on 22 July 2008



Figure 27 Fastening straps for mobile phones. Photograph taken in Sapporo, Japan on 22 July 2008



Figure 28 Hanging adornments for mobile phones.
Photograph taken in Sapporo, Japan on 22 July 2008



Figure 29 Jackets and pouches for mobile phones.
Photograph taken in Sapporo, Japan on 22 July 2008

In my view, ICTs resemble physical structures since they also seem to structure social practices around their possibilities and constraints. Nevertheless, the interstices left open, if any, by ICTs are of such a different nature that people have a harder time figuring them out. In this manner, the diversity of uses that can be given to an ICT are indeed reduced by the way in which those possibilities are closed, not evident, or obscured in practice by people's ignorance of the more subtle aspects of ICTs. Such an event would appear in marked contrast with people's more 'natural' ability to 'grasp' or command the possibilities of, say, a street corner to set up a food street stand or a makeshift bed in an underpass.

As a consequence, and as suggested by the above discussion, it seems to me people treat ICTs as if they have less features than they actually have. I believe people reduce the functionality of digital technologies failing to perceive and use their multiple possibilities out of necessity. In my view, and as I try to argue in this thesis, this is a necessary step in the appropriation of digital technologies; I call this the *simplification* of ICTs. This notion attempts to convey the idea that in order to integrate digital technologies into their lives people need to effectively close their multiple possibilities (features, capacities, applications, etc.) to give them a more specific use within the routines of daily life. The simplification of technology is further explored in section 6.3 *Simplification* on page 154.

These insights led me to look back again into the many accounts I had collected to confirm whether I could gather more details to substantiate this closing or simplification in practice of ICTs, and how this event was related to the integration of digital technology in everyday practices. My observations on this issue were organised in a third layer that I added in between the previous two. This layer I called the **Individual Layer** and is integrated by five categories around which, I argue, participants accommodate their use of ICTs in everyday life including *Message* (beginning on page 148), *Audience* (page 148), *Location* (page 149), *Time* (page 149), and *Costs* (page 150).

The aim of this layer is, therefore, to illustrate people's knowledgeability, reflexivity and agency to mediate a changing environment through at least the five categories mentioned (see section 2.3.1 *Structuration Theory* on page 61). Its position in between the previous two layers attempts to convey the idea that individual agency or ability is, nonetheless, shaped and/or bounded by the possibilities and

restrictions of a given setting (i.e., the *Social Layer*). The *Individual Layer* also tries to convey the view that each person necessarily acts as their own filter to all the social influences affecting them, which results in the formation of private and subjective views (i.e., the *Digital-Tool Layer*) about each piece of information and communication technology they have access to. This layer is discussed in more detail in Chapter 6. The resulting and final version of the model of appropriation of ICTs in everyday life is depicted in Figure 30.



Figure 30 A Model of Appropriation of Information and Communication Technologies in Everyday Life, Final Version

2.5 The Appropriation of ICTs as a Techno-Spiritual Practice

At the conclusion of my fieldwork in China I travelled back to my hometown in Mexico to visit my parents after an absence of over three years. As devout members of The Church of Jesus-Christ of Latter-day Saints—the faith in which I was raised, but one from which I had been well away for about the same length of time—my parents were, as usual, actively involved in various church activities in the local congregation. Even though my parents, and particularly my mother, have always been involved in genealogical work in the church, I was surprised to find out she had been recently appointed as the leader of an initiative recently launched by the church in this area to have its members conduct genealogical work online using a purportedly built application known as *FamilySearch*.

Intrigued by this circumstance, in particular by the many difficulties I foresaw in having local members do genealogical work—an important church duty, but in my opinion one always neglected by the congregation—through a computer application, I decided to take a closer look at the unfolding of this process. I was particularly attracted to this situation by the prospects of using this setting as a sounding board for my findings on the appropriation of ICTs. As I saw it, this setting and activity (i.e., genealogy) could give me an excellent opportunity to increase once more the transferability of my findings since potential participants differed in many ways from the previous ones. Important differences included age (and activities associated with it), educational and socio-economic background, as well as proclivities to information and communication technologies.

Since I had easy access to the setting of interaction where this process was to be unfolded (because my own mother was responsible for this activity), I decided to approach it through participant observation to add a level of detail in the actual use of technology I had not achieved in my previous studies. In this manner I conducted four participant observation sessions during four consecutive weeks in the Family History Centre of the local meetinghouse of the church in my own hometown. Participants in this study

were recruited from those more actively involved in genealogy including my own parents, another couple, and two more adult women. I interviewed each participant once to explore their previous experience doing genealogy before and after the introduction of *FamilySearch*. I was also interested in understanding their main motivation in coping with the challenge of learning to operate a computer and *FamilySearch* to perform work considered sacred within the theology of this church. This study is presented in Chapter 8.

Through this last and rather unexpected study I was able to confirm, at least in my view, the presence of the same important elements (categories) identified earlier as being of paramount importance in the appropriation of information and communication technologies. More important, though, is the fact that these elements were at play in a very different environment than those of my previous studies. While this overall finding satisfied me, it has also led me to ponder on whether the ‘lens’ of my own research and observations may now be so firmly placed in my eyes as to preclude me from perceiving other important issues on the appropriation of ICTs. As Haraway puts it, a researcher’s perspective always limits what can be seen (Haraway cited in (Malterud 2001, p. 484)). Nevertheless, as with my previous studies reported in this work, I report the findings of this last study in the spirit of postulates V and VI, that is, as a contribution to the body of knowledge on the appropriation of ICTs.

2.6 A Model of Appropriation of ICTs in Everyday Life and Related Concepts

The model of appropriation of ICTs reported in this work aims at describing the manner in which a number of elements and their relationships affect the appropriation of technology in daily life. From the perspective of Grounded Theory, I have only been able to go as far as conceptual ordering (Strauss and Corbin 1998, pp. 19, 25) in the identification of issues related to this phenomenon. As acknowledged, the findings and ideas that comprise this work were mostly derived from studies conducted among university students; a young, somewhat-literate, somewhat-affluent cohort further distinguished by its tendency to be always-connected to address their communication, information, and entertainment needs through a screen.

With an understanding that the findings of my work can not be applied to the “population at large” (see Postulates V and VI and (Malterud 2001, p. 486)), my model, however, strives to contribute to the body of knowledge on the appropriation of technology by achieving several things. First, it attempts to follow the standard of previous ethnographic work in office settings and unthread the mechanism whereby people achieve orderliness in everyday life and the role, if any, of ICTs in this process (Crabtree *et al.* 2009). Second, my model aims at illustrating how the ‘situated-ness of action’ (Suchman 1987) in everyday life is achieved within a very complex mesh of elements always structuring action by constraining and enabling localised customs according to particular infrastructural conditions and organisational policies on the use of ICTs (see Chapters 3 to 5). Third, through my model I also seek to convey the idea that in the face of all these influences people, nevertheless, retain their individual agency and reflexivity. This allows them to cope with the challenges of everyday life through the (imperfect) knowledge they may have of ICTs and within the context of the structures regulating that use (see Chapter 6) And finally, my model also tries to represent how in the process of appropriation, technologies are assigned subjective characteristics as they are successfully incorporated in social practices according to changing environments (see Chapter 7).

Essentially, I see the *appropriation* of ICTs as an individual display of human ingenuity whereby these technologies become embedded in the landscape of everyday life according to local needs and customs or social practices (UNESCO 1997). Furthermore, in my view, the appropriation of ICTs is not a fixed point in time in the history of artefacts (cf. (Ahde 2007)) since people and their environments are in constant flux. It is under this view that I use the term ‘appropriation’ throughout this work.

In my view, *adoption* of ICTs simply represents that point in time in which a digital technology is acquired. In this sense, the adoption of technologies occurs several times throughout the life of a person. Adoption, however, does not go beyond the mere purchase of digital goods or any other means whereby people come to own digital technologies. For me the adoption of ICTs is an event that may lead to the appropriation of a technology but not necessarily so. Conversely, one does not need to own an ICT to appropriate it (a circumstance that may occur with the use of certain technologies like public displays in public and semi-public spaces). It is in the manner that I use the term adoption in this work.

Similarly, whenever I refer to *use* of ICTs I do it simply to allude to the fact that a person employs a digital technology to pursue an activity. In these cases I am not necessarily concerned with appropriation *per se* or with whether a technology has been incorporated in the landscape of everyday life according to local practices or not. (A glossary at the end of this work provides a definition of terms used throughout this work.)

Above all, and following Structuration Theory, my model strives to integrate micro- and macro-perspectives on the phenomenon of appropriation suggesting it can only take place when at least all elements illustrated in the model are present. The model, however, does not attempt to indicate to what degree these elements are relevant in the appropriation of ICTs and it is therefore limited in this (Postulate IV). My model is, therefore, positioned as an instrument or lens to look at settings of interaction to sensitise the observer to those elements, large and small, that may have a role in the appropriation or failure of a given technology under particular circumstances. In this manner, this model could serve as a guide, an ordered approach, to move beyond isolationist views in the study of ICTs (cf. some of the limitations identified in ethnographic studies in sections 2.2.1 *Ethnography in the Study of Mobile Telephony* and 2.2.2 *Ethnography in the Study of Online Social Networks* on pages 54 and 55, respectively) that bypass the real and effective influence of larger social forces in shaping the adoption, use and appropriation of a technology in a particular setting. This, however, should not be taken to imply that all ethnographic studies are necessarily flawed and, therefore, of little utility to HCI. As indicated, even though my model attempts to direct attention to elements I identified as substantial in the appropriation of ICTs, it does not attempt to dictate how those elements should be explored individually. Ethnography and other qualitative approaches will surely continue providing the type of specificity necessary to understand the minutiae of situated practices (Postulates V and VI).

2.7 Additional Considerations

On a more practical note, the reader should bear in mind a few particularities of this work. First, as illustrated in section 2.3 *Interpretation and Analysis*, many generalisations and abstractions were necessarily made in this work across all settings explored. This is done in accordance with the spirit of aims of qualitative research (Postulate IV) and Grounded Theory that seek to establish relationships

between the elements (categories or concepts) identified in the phenomenon under study (Strauss and Corbin 1998, p. 22). I have endeavoured to highlight when these generalisations are not warranted across the settings explored. Also, following, again, the recommendations of Grounded Theory, I have sought to provide a ‘negative case’ of the issues explored (Travers 2001, p. 43). This is done to emphasise the presence of individual agency and reflexivity regardless of the presence of general patterns (Postulate VI) of a particular behaviour in the face of constraining contextual forces (Strauss and Corbin 1998, p. 118).

Second, some examples in this work are mentioned several times across its different sections. This occurs to stress the idea that the same elements interacting in a particular occurrence can be analysed from different stances, like those suggested by the layers and elements of my model of appropriation (Postulate IV).

Finally, in support of essentially each one of my observations, I provide 161 interview extracts distributed throughout Chapters 3 to 7. Almost every participant who took part in the studies presented in this work is represented in an at least one extract. Verbatim or paraphrased extracts are denoted by the abbreviation **Ext** followed by consecutive numbers (e.g., **Ext 1**, **Ext 2**, **Ext 3**, ...). In some cases additional material supporting an observation is included in footnotes.

Appendix 6 presents a relation of all extracts used per participant. For instance, Adara, a 23-year-old female Greek participant is featured in extracts: 1, 9fn, 40fn, 58fn, 103, 140, 144, and 160. Extracts followed by ‘fn’, for example, 9fn, indicate that an additional reference to Adara is not made in the body of the text (i.e., in the extract itself), but instead as an accompanying footnote to provide additional material in support of an observation. Thus, 9fn, indicates a reference to Adara is made in the footnote accompanying Ext 9.

Participant validation has been conducted with Hua and Yin from the study conducted in China; Hui and Ming from China from the study conducted in Glasgow; Adara and Danae from Greece; Osman and Padma from India; Chihiro from Japan; and Hyun-Shik and Yon from Korea. At the time of writing only Hua, Yin, Ming, Adara, Danae, and Padma have replied confirming my description of those events was appropriate and accurate and, therefore, no change was needed.

Appendix 6 also provides a list of all participants in the study in Glasgow and those in Japan, South Korea and China including a very basic background for each one of them. All participants’ names have been changed to preserve anonymity. The entire transcript of the interview(s) with each participant can be accessed in the URLs also listed in Appendix 6. Adara’s transcript, for example, can be found at <http://tinyurl.com/2b6cfsw>.

Appendix 7 contains all interview extracts used in this work. Appendix 7 is provided to give the reader a better insight of the material on which every observation is based, since in most cases participants’ experiences are not quoted verbatim but abridged (this is done to incorporate extracts more fluidly into the prose of this work). Appendix 7 also indicates which extracts have been used in footnotes (fn), as well as the particular lines extracted from a full transcript (full transcripts are available online as indicated in the previous paragraph, see Appendix 6). Appendix 7 also indicates when a particular extract is used in more than one place, that is, as a source material for another observation (see column ‘Cross-reference’).

In the next chapter I will begin analysing the most exterior layer of the model of appropriation proposed in this work and how the structures it depicts constrain and enable the use of ICTs.

Chapter 3 – The Social Layer – Activity

In this chapter we will begin describing the outer layer of our model of appropriation, what we call the social layer. This layer illustrates the influence of context in structuring the adoption, use and appropriation of ICT. It is integrated by three interrelated elements: activity, socialisation and place. Our main objective in this chapter is illustrating the influence of the first of these elements on the appropriation of ICTs. The reader will notice that many issues described in this chapter are linked to those in the subsequent chapters. This occurs because it is impossible to completely isolate the influence of each element in its own terms on the appropriation of ICTs. This will also help us illustrate how the appropriation of ICTs indeed involves many elements and forces.

3.1 Activity

This chapter, activity, will seek to emphasise a very utilitarian view of ICTs. In other words, ICTs are adopted, used and appropriated because participants can easily identify the purpose an ICT serves which, in turn, facilitates its accommodation within the horizon of things they own and manipulate in the performance of their activities.

One of the crucial aspects of the appropriation of ICTs is the way in which otherwise complex technologies have been made *mundane*, that is, they have been integrated by our participants in the prosecution of a number of activities notably play, communication and study, according to the trends of our time. The perceived or real ability of ICTs to assist in the satisfaction of diverse needs seems to be essential in their appropriation (cf. section 7.1 *Relevance* on page 160).

As the name implies, information and communication technologies are supposed to address at least these two types of activities. Nowadays, however, novel ICTs make more difficult to distinguish where an information activity ends and a communication activity begins. For instance, all information found in online sources can be said to be an act of communication from the point of view of those providing that information. Conversely, it could be said that all acts of communication transmit information to those listening and that as long as there is a record of that communication, this can be used as a piece of information.

To help us analyse different activities performed by our sample, we will distinguish communication activities as those representing a volitional act undertaken by an individual in order to transmit data, whatever its nature, to one or more probable listeners synchronously or asynchronously. A straightforward example of a communication activity is the use of a mobile phone to call someone. In this scenario there is a clear synchronous channel of communication between two parties. A less clear example of communication can be observed in so-called Web 2.0 applications. For instance, popular services like Facebook and Twitter allow their users to update their status at will; those within a user's network will, eventually, be notified of such a change. Even though such updates do not appear to be directed to anyone in particular, users take advantage of this feature to communicate information to those who care to notice. Unlike the previous type of communication, this type of communication seems to rely on background knowledge on the part of the reader to make sense on the meaning of a status update. This new mode of communication made possible by novel ICT would be a case of asynchronous, one-to-many communication.

3.1.1 Communication Activities

Participants in the sample grew to rely on ICTs to support traditional and novel forms of communication. Nevertheless, the appropriation of communication technologies is ancillary to the need to communicate. People communicate to meet their safety, love, belonging, esteem and self-actualization needs. The satisfaction of these needs through communication technologies appears to be a very important reason behind their adoption, use and appropriation. Even though participants always had these needs, their intensity seems to vary over time. These variations over time appeared to be one explanation behind shifting use of various communication technologies. Various participants across the settings surveyed reported on their increased use of communication technologies such as mobile phones, Internet Messaging and online social networks when moving to a new setting. The case of Adara, a 23-year-old female Greek masters student, illustrated this situation. When questioned about the frequency of communication with her parents a few weeks after her arrival to Glasgow she replied,

[Ext 1; 1033-1041] [I talk to my parents] everyday, perhaps three times per day via Skype. Yesterday I called them five times. The first call was at 10 am; the second at 12 pm; the third at 4 pm; then at 6 pm; and finally at 10 pm. Most of the time I use Skype, but sometimes I call them over the phone. Yesterday I called them three times using Skype and the other two using my phone. Each one lasted around 15 min. Sometimes they might take longer, sometimes one hour. Usually longer calls are in the evening or late at night.

Other participants described experiences similar to that of Adara². The challenges posed by a new environment warranted an increased volume of communication between participants in our study and their families. Participants sought reassurance with their families about their abilities to meet common challenges faced during the first days and weeks of their relocation. In time, however, the need to communicate to compensate for an extraneous environment appeared to diminish and participants again changed their communication habits. Some went as far as contacting their family once per month, while others would remain in closer contact.

Adaptation to the changes in communication prompted by novel communication technologies seems to be, for the most part, an effortless event experienced by participants several times in their lives. To various degrees, participants went through all the changes in modes of communication brought about by communication technologies. In recounting his experience with various ICTs, Osman [Ext 2; 3-176], a 23-year-old male Indian masters student in Glasgow, recalled that around the time he was 6 or 7 years old he played Prince of Persia in the computer his mother used to type students' homework. Later, during his undergrad degree he was required to use a computer for his assignments. In 1998, around the time he was 14, he got his first email account with Hotmail, which he later changed to Yahoo!, although he has been using a GMail account for the past two years. At 18 he became familiar with MSN chatrooms where he chatted with "random people". Later, he acquired a Yahoo! Messenger account that he used to keep in touch with his relatives abroad. At 17 his father gave him a mobile phone despite the fact that they were costly. He was the first in his family with a mobile phone. Finally, two years ago, he started using Orkut,

² Wen's communication with her parents increased after her brother-in-law in China added credit to her Skype account around one month after she arrived to Glasgow [535-544]. Padma received a 15-20 min call from her parents in India every day before they went to bed. A few weeks after her arrival, however, she began feeling irritated with the monotony of this call and the manner in which it interrupted her busy schedule in Glasgow [206-211, 1123-1159].

a very popular social network in India, and even though he eventually cancelled his account, he later signed for yet another Orkut account in which he has not befriended anyone. In between this, about a year ago he acquired an account with Facebook because it was more interesting and gave him more things to do. In the beginning, however, he didn't know how to use it and a friend had to show him how to operate Facebook.

Like Osman, most other participants had experience with all sorts of communication technologies ranging from the (nearly) synchronous as in the case of chatrooms, Internet Messaging and Voice over Internet Protocol (VoIP), to those asynchronous such as online social networks, blogs and BBSs. The ability of participants to adapt to continuous changes in the modes of communication imposed by ICTs at different times (cf. sections 4.1.2 Peer Support and 4.1.3 Institutional Regulation on pages 105 and 111, respectively) is an instance of what we call *accommodation* (More on our usage of this term in next section 3.1.1.1 *Accommodation and Communication Activities* on page 88)

The availability of communication technologies, however, does not automatically transform people's existing communication practices. Despite all the possibilities offered by new communication technologies these are still assessed by their probable users against the activities in which they are supposed to fit. The evaluation of the possibilities of communication technology and the tradeoffs necessary to use them are reflected in the way these technologies are appropriated. While some users will completely replace offline forms of communication for digital ones, others will make compromises with regard to what can be ported to the digital realm and what is more convenient to keep offline. This sort of compromise was illustrated by Yon [Ext 3; 159-177, 263-268], a 21-year-old female Korean student at Ajou University. Yon kept a paper journal for several years; eventually she began writing an online diary in Cyworld, the most popular online social network in Korea. However, she preferred keeping her thoughts, worries and other emotional aspects of her life offline; when she wanted to get people's attention and announce something so that people knew what she was doing, then she resorted to her online diary.

Even though it may appear that there is a 'natural' progression towards more sophisticated ICT in order to communicate, this is not always the case. Participants were able to adapt to more technologically sophisticated or more pedestrian conditions as needed in order to fulfil their communication needs. Ultimately, the tool used to this end is of secondary importance to the communication act. This situation was pervasive across our sample, especially among those with experience abroad; a circumstance that necessarily brings along a considerable number of changes. For instance, Riko [Ext 4; 111-116], a 22-year-old female Japanese ANA airlines employee, had access to a personal mobile phone from her early teens. However, she had to substitute her mobile phone with phone cards and public phones to call home once a week when visiting Canada as an exchange student. She also relied on a weekly email to keep in touch with her family.

Clearly, communication technologies offer all the advantages of digital technologies such as speed, efficiency in the transmission of information, and an enhanced reach to communicate with a wider audience. However, this is not the sole criterion on which to base the decision to appropriate communication technologies.

3.1.1.1 Accommodation and Communication Activities

Participants mixed and matched a number of communication technologies, *accommodating* their particular features and fitting them to specific circumstances. The accommodation of technologies is depicted by the middle layer of our model of appropriation, what we call the *individual layer*. As such, the accommodation of ICTs is part of the appropriation of ICTs but not the same. The individual layer will be described in more detail in Chapter 4. For now it suffices to say that in our view, accommodation is a reflexive process participants undertake to fit existing and novel communication technologies into their everyday landscape of objects and activities. We were able to identify at least five elements according to which participants accommodated their use of ICTs: 1) the *location*³ of the user where she intends to use an ICT, e.g., bedroom vs. lecture hall vs. library vs. pub; 2) the *message* a user attempts to transmit through the technology, e.g., chit-chat vs. more substantial issues; 3) the *audience* with whom a user attempts to establish communication and the level of involvement with them, e.g., local friends vs. family abroad vs. lecturer vs. boyfriend/girlfriend; 4) the *time* of the day and the *season* of the year when that communication is attempted, e.g., day vs. night, holidays vs. term time, exam season vs. rest of the term, and 5) the *costs* incurred when using a communication technology.

Participants accommodated their various communication technologies according to different scenarios of daily life characterised by the multiple combinations of the above-mentioned issues. As we will try to show throughout this thesis, participants exercised their *agency* (purposeful action) and *reflexivity* (examining, questioning and monitoring of their own and others behaviour) within the structures they inhabit accommodating novel and existing communication technologies into everyday activities.

As will be seen in section 3.1.2 *Information Activities* on page 89 below, participants accommodated their information technologies according to location, time and costs. This is true even if we acknowledge, as will be suggested later, that information activities only involve the consumption of information without generating any in return (cf. with section 8.3 *Personal Adjustments in the Appropriation of FamilySearch* on page 179).

In the performance of communication activities, participants expected others will use similar criteria to their own according to ongoing, mutual, explicit or tacit social agreements. These agreements may have originated with the advent of digital technology or may have their roots at a time before the popularisation of contemporary communication technologies. However, some participants found difficult to decide up front what sort of relationship might be established with a peer. This difficulty seems to be expressed in hesitation over sharing a personal detail such as a mobile phone number. Yong [Ext 5; 186-195], a 21-year-old male student at Nankai University, is representative of the circumstance mentioned. Yong hesitated in sharing his mobile number with other students met on campus as he did not want to continue being bombarded with questions from them. Interestingly, this hesitation is rarely manifested when sharing a mobile phone number with a commercial establishment. Such was the experience of Yen [Ext 6; 155-161], a 21-year-old female student at Nankai University, whose work in a lab required sharing her mobile number with lab providers to be notified of the availability of special equipment.

³ We use the term *location* as an element of the *individual layer* to represent a user's particular, private and incomplete understanding of a given setting. As will be seen later in this chapter, the term *place* is used in the *social layer* to represent a more complete or encompassing view of environmental elements we observed affecting settings of interaction between people and computers.

This seemingly contradictory behaviour perhaps can be explained understanding first the type of relationship the participant establishes with each party. Usually, a person would establish a strict business-to-customer relationship with a commercial establishment. This would imply sporadic communication at specific points in time, for instance, to notify dispatch or availability of a product. Departure from the expected communication behaviour by the other party may be met with annoyance not only because there is a breach of the tacit rules of communication through digital technologies, but also because some communication technologies always impose an economic burden whenever they are used. (This issue will be explored further in section 5.1.2 *Marketing* on page 133). Some users of mobile telephony in the USA expressed annoyance when receiving unrequested advertisement from their service providers on their mobile phones (Richtel 2009).

3.1.2 Information Activities

Unlike communication activities, information activities imply a more passive consumption of data. This should not be taken to imply that all people mindlessly consume information from any source. A person might be actively evaluating online information when, for instance, reading a news article or when planning to acquire an item online; another might be doing the same when looking at a billboard ad.

We simply want to highlight that information activities include those in which users ‘simply’ appear to be accessing information, but not explicitly—at least to their knowledge—issuing a response. This situation occurs either because the system does not support a different type of interaction or simply because the user is not interested in explicitly recording her actions or thoughts through the system regarding a piece of information. This does not imply, however, that such a behaviour will remain unchanged regardless of the system used, at a different point in time, or in a different situation.

From this perspective, it could be argued that, as seen in the previous section, a person is either engaged in the act of communicating something or in the act of consuming information to different ends. We make this distinction to elaborate on three types of information activities performed by our sample through ICTs across the settings explored; in each of these three activities participants appeared to be simply consuming information.

3.1.2.1 Studying

Given the image under which ICTs have been widely promoted (i.e., as information tools) and since our exploration was conducted for the most part among university students, it is no surprise that the use of ICTs as an aid to education was a central theme in the lives of our sample. ICTs were used to address a variety of activities linked to education including access to online resources, reading of online material, report writing and information exchange with peers, teachers and the university to stay abreast of the ins and outs of university life. This use of ICTs was made evident when questioning participants on the manner in which they tackled their assignments. Danae, a 24-year-old female Greek masters student, described her use of ICTs to write an essay in the following manner:

[Ext 7; 209-227] I had to produce an essay and I had one month to submit it, so I studied a little every day. I started last Monday. I wrote it for two nights. It was a 3,000-word essay and I wrote 3,400 words. I had downloaded a lot of information but I had it on the computer but didn’t read it. The topic was ‘iron during pregnancy.’ I found the information through the library using my Athens account

and also some other journals I had registered. I selected some of them and download some PDF.

I made different folders one for ‘iron and nutrition’ another for ‘iron and metabolism’ and separate them. I had 4-5 folders but when I started writing the essay I produced 5-6 Word documents. Usually I print those documents but here I haven’t purchased a printer so I read them on the screen. I prefer having them on paper so I can highlight something but now instead of highlighting something I just copy that part and put it in another document, that’s why I had a lot of documents. I don’t like working under pressure but I haven’t got used to working in advance. I had to submit by Friday.

Danae’s experience illustrates the manner in which information technologies, like communications technologies, are adopted, used and appropriated because of their apparent fit and integration with educational activities⁴. Such a character of information technologies was manifested early in the lives of participants. In general, participants reported having access to a computer and the Internet at home from their teens under the argument, whether expressed by them or by their parents, that these technologies would ‘enhance’ their educational possibilities. Panna, a 21-year-old female Indian masters student in Glasgow, put it succinctly this way:

[Ext 8; 16-29] My dad thought [the computer] could help me and as soon as we got the computer, within the month, we got Internet also. My dad was thinking of the educative aspects because in India the 10th grade is a state [entrance examination to Junior College], so he thought it would help me accessing the Net and using referential material.⁵

More on this issue will be explored in section 3.1.2.2 *Leisure and Entertainment* on page 93 and on section 4.1.1 *Domestication* on page 99.

Interestingly, it was usually until the time participants enrolled in university education that they did, in fact, begin using information technologies to address school-related activities. Before that, use of information technologies by educational institutions was still quite rare. Some participants attended primary or secondary schools where formal computer training, usually based on the Microsoft Office suite, was provided. Nevertheless, the use of these applications to tackle school assignments was still optional. Danae [Ext 9; 4-24, 44-51] recalled taking a 45-minute weekly Word and Excel class in Middle School. At the time, however, perhaps due to the fact that not all pupils had a computer at home, assignments were still submitted using a typewriter. A few years later, when she moved to Thessaloniki, Greece to attend university, the use of computers in education appeared to have taken a more prominent role. As a consequence, she had to bring her desktop computer from Athens. Interestingly, even though her university provided a gateway to the Internet, not all her classmates took advantage of this service. The experience of other participants with computers in education resembled that of Danae, that is,

⁴ In working on an essay, Hui used Baidu, the most popular search engine in China, to gather information on deflation conditions in China, as well as its monetary policy. She also consulted a Chinese to English translation website. She liked using Firefox and Maxthon, a popular Web browser in China, at the same time to open multiple websites [683-692].

⁵ Heeding the advice of a friend, Padma got a brand new laptop before coming to Glasgow so she could be prepared to do the volume of research she anticipated in her masters course [126-132].

emphasis on the use of technology increased as participants continued through higher education⁶. More on this issue in section 5.1.1.1 *Organisations and Infrastructures* on page 130.

Interestingly, the use of information technology as an aid in education is not as straightforward a matter as could be expected. For instance, some participants across the settings surveyed emphasised that to be able to study effectively they had to be as far away from computers as possible. In Glasgow, Zhi [Ext 10; 432-438], a 23-year-old female Chinese masters student, insisted in studying in the main library, but away from the computers available there, to avoid being distracted by email and her friends. In Nankai University in China many students did something similar and spent long hours studying in empty classrooms on campus (Figures 31-32). Hua [Ext 11; 209-216], a 21-year old female undergraduate student in this school, said few people would bring their laptops to these classrooms. If one needed to access the Internet or watch movies the standard practice was to simply go back to the dormitories to do so.

Others, however, would avoid the environment of a library precisely because they found it suffocating. Aeneas, a 23-year-old male Greek masters student, described in the following manner his reasons for studying elsewhere and not in the University of Glasgow's library:

[Ext 12; 307-316] I hate being in the library. I went there to find a book, but I can't be there after 10 minutes. Everybody goes there to read but I can't concentrate there. I went inside found a terminal to search for a book, went to find the book and check it, but I couldn't stay there. My friend from Pakistan goes everyday there, but I can't. I haven't learned to study in the library. When I study I want to do stuff like turn on the TV, walk or something, but I can't be three hours like that 'studying,' I can't study like that, I have a schedule, I study two hours but I also do other stuff. Everybody is in the library so I think is easier to get interrupted there than in your house. Maybe if there was a room with your own desk I could study 10 minutes, but I can't.



Figure 31 A view of a classroom transformed into a study room at Nankai University in China where many students would spend long hours studying away from computers. Photograph taken on 14 October 2008



Figure 32 Another view of the same classroom. Photograph taken on 14 October 2008

We did not pursue further the type of studying for which information technologies represented a distraction rather than an aid. Presumably, it had to do with subjects that did not require further

⁶ Adara also recalled school assignments were handwritten even though they were also receiving formal training on the use of computers in her school [7-16].

investigation—assuming that enough knowledge of a given topic can be found within a single book—or that only demanded rote learning. This was in fact the case among several participants, particularly in China. Some of them would devote a considerable amount of time and effort preparing exams such as the GRE, TOEFL and IELTS as prerequisites to pursue further education abroad.

This observation challenges the accepted view of ICT as supportive of educational activities. As illustrated by the experiences of Zhi (Ext 10 above) and Hua (Ext 11 above), it would appear to be that, at least for some people and within certain educational activities, the identity of ICTs as supportive of education is problematised by the other identities of ICTs as channels of entertainment, leisure, communication, etc. Of course, other participants like Aeneas (Ext 12 above) saw in this one of the greatest asset of ICTs.

The type of self-disciplinary action needed to avoid distraction from information technologies while engaged in periods of studying is, of course, not limited to computers and the Internet, but also extends to other technologies like mobile phones. Sook [Ext 13; 58-68], a 21-year-old female Korean student, described how her younger sister, then a 19-year-old high school student, had stopped using her mobile phone altogether as she prepared for the university entrance examination. In her particular circumstance, all other activities were of secondary importance.

In China, Japan and South Korea participants and their families tend to see entrance to university and, in fact, all education-related activities, as life-defining events that are the source of every major achievement that may come afterwards. Zhi, for instance, described in this manner the outlook of Chinese parents regarding the educational opportunities of their children abroad:

[Ext 14; 580-596] Some... would come [to the UK] because they failed the entrance examination and cannot be enrolled in China and their parents would send them here. ... Nowadays, most parents in China, if they have the money, they want to send their children abroad. They think they will have better possibilities afterwards in China. I think it counts. Many people come to the UK or America; it's easier to come here. For example, some of my friends in China didn't do well in their studies and if they stay in China they can't go to university, but they can go to Glasgow and... Glasgow university ranks very high in China, even higher than the best universities in China.

Perhaps the lengths some people are willing to go to avoid putting in jeopardy their life-long opportunities because of information technologies might be unique to these societies (Robertson 2006).

Behavioural modifications to the role of information and communication technologies in education are not only self-imposed. Organisations and institutions also strive to enforce the proper attitude towards these technologies. Riko [Ext 15; 17-23] recalled the use of mobile phones during her high school years was forbidden, whether it was during classes or in between them. For this reason, while in school, she had to hide in the toilet to use her mobile phone⁷. More on the role of organisations and institutions on the use, adoption and appropriation of ICT in section 4.1.3 *Institutional Regulation* on page 111.

⁷ Nilaya reported a similar situation in which mobile phones were confiscated if brought into her religious-oriented school in India [82-88]. Soo and Sun, a 24-year-old male student, in Korea also recalled confiscated mobile phones during their high school days [159-166].

3.1.2.1.1 Finding a Job

As the conclusion of university studies draws near, a new activity that is an extension to this takes precedence in participants' lives: finding a job to achieve economic independence. Accordingly, participants rearranged their activities to accommodate this new challenge. The primacy of this new activity among university students, and the modification of behaviour towards information and communication technologies to address this challenge, was a common circumstance we encountered across all countries surveyed, but more evident in China. Nuwa, a 21-year-old male postgraduate student at Nankai University, was representative of this 'transformation'. While describing the reasons behind his diminished use of his personal blog, Nuwa [Ext 16; 68-73] empathically declared, "... now I'm busy because I have to find a job because I will graduate next year and now I'm a job hunter."⁸ Other participants also claimed to have radically modified their use of various information technologies reducing to a minimum, for instance, their use of online social networks and their access to other websites for entertainment. Others insisted on hardly watching movies and TV series during the period when they were applying for jobs.

The commitment shown by participants to finding a job is reminiscent of their commitment to education. In this particular case, however, practically all activities directed at finding a job take place online. For instance, even when many companies visited Nankai University on a regular basis to conduct recruitment fairs, students were usually required to submit résumés and other information online (cf. section 4.1.3 *Institutional Regulation* on page 111). Chen [Ext 17; 140-149, 192-200], a 24-year-old male postgraduate student at Nankai University, reported spending several hours online scouting for jobs and internships and completing job applications, as well as collecting information on companies and polishing his CV. Several participants in China indicated that, having completed all the credits required for graduation during the previous years, they would devote the entire last year in university to find a job.

As expected, the possibilities of being called for an interview are slim among such a vast population of graduating students (Wong 2009). In such an event, communication with prospective candidates would take place through mobile phones and/or email.

3.1.2.2 Leisure and Entertainment

Among our sample, uses of ICTs to address leisure and entertainment activities were second only to the uses of ICTs to address study and job related activities.

Most of the participants in the sample who had access to a computer and the Internet before enrolling in university recalled using these technologies to chat and make friends locally and abroad, play video-games, and explore other hobbies and interests. Panna described her early experience online in India in the following manner:

[Ext 18; 31-39] Most of my time on the Internet around [my teenage years] was divided between searching for schoolwork and using MSN. One of my friends, her sister left to study in America and she told her how to use it and she was the one who came home one day and she told me and how to add her and then we could talk, like live talk, and I got really excited. It used to be really funny because I

⁸ Jun said completing a single job application took her 3-4 hrs. Furthermore, even though she used to download many movies in the past, she stopped doing this from the previous month as she was then devoting all her time to finding a job [135-146].

would always forget to sign out and then whenever my dad used to go online he used to find all my windows open. I was pretty new to this stuff and didn't know my way around. I did add more friends. If there was someone who didn't have MSN you could email them and tell them to install it, I guess that's how it happened initially.

Even though some participants received some formal instruction on the use of computers during middle or high school, most of them suggested that, as in the case of Panna, whatever knowledge of computers they had acquired came from less formal settings and, in many cases, from simply engaging in different leisure and entertainment activities through ICTs.

Regarding their competency to use computers and the Internet, with few exceptions, participants saw themselves as, at best, unskilled users of computers, only able to perform 'basic' procedures with these technologies. This personal perception was common even among those participants who had access to computers and the Internet since their teens. Consider, for instance, the experience of Christos, a 23-year-old male Greek masters student, who in describing his experience with computers appeared very familiar with several procedures and features. Pay special attention to the manner in which Christos variously attributed the slowness of computers to the presence of a virus, the number of programs installed, and other items stored in the hard disk:

[Ext 19; 50-60] One time my computer broke and I had to format it. During the process I needed the help of a friend who was an expert and helped me a little. My computer was working with the virus and I made a backup of songs, photos, and all of this; later I formatted and put back the programs because I had the CDs. My computer broke because of a virus, I was using an antivirus but the antivirus was old and I hadn't updated it; I didn't have a firewall, only an antivirus. I had an antivirus that you would pay for it, but I had a copy from a friend, a pirate version. This happened four years ago. From this I learned to update frequently my antivirus and firewall, to update Windows frequently and to clean the hard disk from strange items or programs. Now I only have the necessary programs. Now I only have Office, MSN, Limewire, Google Earth, DVD player, printers, sound, and two or three other programs.

Like Christos, most participants were not able to pinpoint the reasons behind, for instance, the slowness of their machines. Usually, it would be attributed to a virus; however, they were never completely sure of being free from an infection after scanning their computers. This effective obscuring of computer technology in participants' eyes is part of what we call the *simplification* of technologies that renders otherwise complex technologies into common objects that can be accommodated in participants' lives. In our view, the simplification of technologies occurs as part of the process of accommodation. A person needs to identify first a feature in a system or technology that can be put to some use. In this process many more features and possibilities in the technology are unintentionally closed, obscured or simply ignored. In this sense simplification and accommodation are different since the former makes the latter possible.

As indicated before, most of the participants who had access to computers and the Internet at home during their adolescence did it under the understanding that these technologies would aid the educational endeavour (cf. section 4.1.1 *Domestication* on page 99 and Panna's experience in Ext 8 on page 90).

Nevertheless, some participants indicated use of information technology as an aid in education even in university education was not that common (see Danae's experience in Ext 9 on page 90).

As with other issues in adolescence, computers and the Internet seemed to have represented one more source of concern to participants' parents because of their alleged detrimental impact on study-related activities—which is ironic given the reasons why they were provided. Ping [Ext 20; 32-40], a 22-year-old female Chinese masters student in Glasgow, recalled her ongoing struggle with her parents during her teens in the following words, *"I would use the Internet only on weekends. My parents were, 'Don't chat too much on the Internet, you have to study!' I used to chat at night, maybe for two to three hours on weekends, when my parents went to sleep"*.

Other parents openly manifested their fears regarding the use of certain technologies. Nilaya, a 21-year-old female Indian masters student in Glasgow, recalled her dad's advice regarding the use of chatrooms when she was given Internet access at home as a teenager:

[Ext 21; 23-30] I had a computer at home when I was in eight grade, I was thirteen years old. It was a laptop. ... It was always in the living room and I had certain restrictions. I could not chat or use ICQ. The chats were creating a lot of problems, you know, some girls would meet some guys and they would be involved in serious accidents. I heard about these things in newspapers and TV series. My dad told me he was giving me Internet access but I should use it constructively to learn and talk to my friends, but that I should not talk to anyone who is unknown because it could be very dangerous.

In time, however, it appeared to be that, as with other issues in life, parents developed trust in the maturity of their children to balance work and play.

Participants used computers as a sort of multifunctional entertainment centre to download and watch movies, chat, access online social networks, play video games, call people, or simply to relax browsing the Internet. However, under certain circumstances, even the use of information technologies for entertainment was not always a straightforward matter. For instance, Panna [Ext 22; 776-782] did not put the type of entertainment made possible by information technologies on par with other forms of entertainment like actually going out or going to the cinema. For some participants, the type of entertainment experienced in front of a computer screen was more like an amusement or a sort of diversion after extended periods of concentration.

Perhaps the particular situation of some participants accounts for their difficulty in seeing information technologies as a real form of entertainment. Participants in the study conducted in Glasgow did spend an unusual amount of hours indoors. Most of the activities that would otherwise take place elsewhere in a regular house took place in their bedrooms (for more details on this issue see section 5.1.3 *Architectural Layout* on page 139). This issue, some may say, was compounded by the usual weather in the city of Glasgow.

In any case, for the most part, and given the right set of conditions, information technologies were used by our participants to pursue leisure and entertainment activities on a regular basis. It would appear to be the case that the success of ICTs was, in fact, due to the ability of these technologies to serve as additional channels of leisure and entertainment for very specific tastes in everyday life.

3.1.2.3 Online Commerce

A third category of activities in which participants frequently engaged and in which information technologies played a prominent role were those that appeared to produce an economic benefit. Across the sample and countries surveyed, participants used online services to sell all sorts of items including computers, bicycles, second-hand books, etc. Others used the same service to acquire the same type of goods like clothes, food, airplane, train and music concert tickets, beauty products, books, mobile phones, and music and films in digital format. It was more common to find participants who had acquired goods online than those with experience selling online. Jun, a 22-year-old female Chinese postgraduate student in Nankai University, described her considerable experience with online commerce in the following terms:

[Ext 23; 229-241] I like to buy things online, like clothes including this pair of jeans. I buy from Taobao. It was very cheap, less than 60 yuan and offline I would have to pay more than 80 yuan, at least. I bought them more than one year ago. I also buy books and I like buying books in Amazon, but what I like to buy the most online are clothes. I also bought t-shirts, and one coat, and this scarf. The highest price I have ever paid was 160 yuan for a piece of clothing. I pay with my online credit. I put money into this account charging it online through a bank card where I have money and I can get the money through the Internet and transfer it to the other account. The last time I was buying something was four days ago; I bought a t-shirt and offline it's very expensive and I don't have that amount of money; it would cost me 200-300 yuan and I just bought it for 78 yuan. Maybe I will receive it this afternoon. It will come straight to my dormitory.

The above fragment also hints to several of the reasons why participants resorted to online commerce including: 1) convenience in delivering goods at home (Figure 33); 2) the possibility of paying for goods through various forms of payment such as credit cards, cash cards, electronic transfer of funds from mobile phone accounts, and direct charge to mobile phone accounts; and 3) the competitive price advantage of online retail when compared with bricks-and-mortar shops.



Figure 33 In China it is common to deliver goods purchased online through bicycle couriers. In this picture one courier delivers goods at Nankai University campus. Couriers will not go right to the door of a student flat to deliver the goods but will call the recipient to collect her package on the street. This girl is trying to find her package in the trailer attached to this courier's bicycle. Photograph taken on 15 October 2008

Some participants experienced anxiety when using online systems in which money was involved. Padma, a 21-year-old female Indian masters student in Glasgow, described her fears with online banking in this manner:

[Ext 24; 274-280] I can check my accounts online. I transfer whatever I need from the savings account to the daily account. I use it once in a while whenever I need some money. I hope it's secure. I'm a little finicky about these things because you are not handling it by yourself but the computer, so anyone can break your password. I trust in God, I hope. But they do have some other security questions so I'm hoping they can't get through everything.

Others, however, readily embraced online services not previously available in their countries of origin. Using online commerce participants acquired plane and coach tickets to travel, or books through popular and long-established systems like Amazon. Osman described his experience with iTunes in Glasgow very excitedly in this terms⁹:

[Ext 25; 506-513] I have seen the radio stations on iTunes but in India I could never get the signal, but here it's fantastic. Here I listen to Atlantic Song Factory and is the whole day playing and then at night I listen to a German radio station called Radio Veronica that plays 70s and 80s indie song in the night and a few German songs and they are really nice. They also have radio stations from different universities in the US, and there's another thing called *People Talk* and so you can listen to news, like Fox. It's fantastic the service.

3.2 Conclusions

In this section we have only described five types of activities—communication, studying, finding a job, leisure and entertainment, and online commerce—in which ICTs appeared to play a prominent role. This section has also illustrated how those five activities structure the way in which ICTs are adopted, used and appropriated to satisfy the needs engendered by those activities themselves.

It could be argued that the type of activities explored in this section have a certain 'nature' that renders them fit for their prosecution through ICTs. We, in fact, argue that there is a mutual process of structuration that renders or presents an activity in terms of the capacities and limitations of an ICT, while a (design) process in the opposite direction strives to produce ICT better fitted or tuned to the activities here described.

In our view, then, the transformation of information and communication technologies into everyday objects cannot be understood only from the point of view of the ICT used to pursue an activity or from the point of view of the activity that appears to require an ICT to be successfully completed. Thus, we think that a better approach to this matter is by understanding how an activity has been rendered (almost completely) intelligible in terms of the possibilities of an ICT. In other words, it is clear that for some activities (like the ones illustrated in this section) ICTs appear to be the only or most 'natural' way to pursue them, but who or what determined so? How did people conceptualise the activities described in this section in terms of the limitations and affordances of ICTs?

⁹ Ming was planning to buy the latest Harry Potter book in its English version through Amazon UK [820-825].

By contrast, if we observe our everyday environment, we will realise that there are, surprisingly, a number of activities in which information and communication technologies play but a marginal role so far. For instance, cooking, self-care and grocery shopping are activities where only minor attempts have been made to incorporate ICTs on their achievement. To put it differently, we are yet to see how these three common activities can be reconceptualised in people's eyes as information or communication activities, or how can they be re-expressed as activities in need of a digital prop to be successfully completed.

This type of transformation is what we argue has already taken place with the types of activities explored in this section. We think there are a number of forces or 'social structures' acting in the background of any place of interaction between humans and computers that both produce this transformation ('structuration') and sustain it. In general, we could say these social structures play two roles. First, they support encounters between humans and machines, and second, they determine how the interaction between them takes place (cf. section 2.3.1 *Structuration Theory* on page 61). The following two chapters will explore what those other forces or social structures in the context of use are and how they structure the forms of human-computer interaction we observe all around us in everyday life in, at least, the five activities described in this chapter.

Thus, while in this chapter (and throughout this work) we have emphasised an utilitarian view of ICTs that suggests that in order to produce their appropriation it is necessary to have technologies that 'clearly' fit the task at hand, we also recognise that this, in itself, is not a sufficient condition to produce the appropriation of ICTs. As will be seen in the following chapters the transparency of this fit is, in reality, produced by many elements in the context of action.

Chapter 4 – The Social Layer – Socialisation

In this chapter we will analyse the role of socialisation, the second element of the most exterior layer of our model, in the process of appropriation. Some issues described in this chapter bear a strong relationship with issues previously discussed. As indicated before, this is to be expected since a clear division between all the social influences in the process of appropriation is problematic.

4.1 Socialisation

Existing practices in places such as schools, offices, clubs and other organisations make certain ICTs the *de facto* standard to conduct an activity. For instance, the University of Glasgow encourages use of a ‘Moodle’ system, an online e-learning platform, among its staff and students to post and access educational resources. Even though use of this system among staff and, therefore, among students varies greatly, a student enrolling in this university is tacitly forced to comply and adapt to the ongoing practices established in this setting. The same event takes place at various other levels. For instance, people may decide to use Facebook, Hi5, Bebo and other online social networks to socialise with new and existing friends. Both examples illustrate how people are directly and indirectly compelled to acquiesce with the ongoing practices of a given setting.

In this section we will explore the influence of context in terms of the social pressures that influence people to adopt, use and appropriate ICTs; what we generically call the *socialisation* of ICTs. We will do this exploring the socialisation of ICTs from two perspectives. First, we will discuss the *domestication* of ICTs or the integrations of ICTs into family dynamics. Later we will explore influences beyond the family unit in terms of peer support, government and organisational regulation, and the media. At the onset it is clear that considerable seepage exists between the home setting and the other influences mentioned and that a definitive separation of these elements is unpractical and misguided. Nevertheless, we distinguish these two areas of influence to better describe the process of socialisation of ICTs and how it contributes to the appropriation of ICTs, ultimately, an individual process.

4.1.1 Domestication

The domestication of technologies takes place when these become part of the ongoing dynamics of a household (Birnbaum 1985). ICTs are also adopted and integrated in the activities of the family hub and thus they are *domesticated*. Across the countries surveyed, the prominence of parents as the original facilitators of ICT was always evident. Several factors influence parents in providing their children with various digital technologies, most prominently computers, the Internet and mobile phones.

4.1.1.1 Computers and Internet

As indicated in section 3.1 *Activity* on page 85, parents provided their children with computers and the Internet to enhance their possibilities to succeed in school. This was a frequent justification among our participants regarding the reasons why they were provided with these technologies by their parents. The case of Wen, a 23-year-old female Chinese masters student in Glasgow, was typical. She recalled in this manner the presence of a computer at home:

[Ext 26; 5-11] The first time I had contact with a computer was in junior high school. I was about fifteen or sixteen years old. My parents thought we needed a computer and we bought a computer for the whole family. ... At that time using a

computer was popular in China. ... Chinese parents think using computers is very good for their children. They encourage their children to use them.

Usually, participants were provided with computers and Internet by their parents during puberty¹⁰, around the time they were attending middle and high school. Not everyone, though, had access to computers and the Internet at home. Participants would also resort to Internet cafes, if available, to access these technologies.

Succeeding in education was, of course, not the only reason why computers and the Internet arrived home. Several participants recalled having access to these technologies not because they were provided for them, but because their parents brought them home to continue working out of office hours. Daichi [Ext 27; 8-26], a 23-year-old male Japanese student, recalled using a word processor at his grandmother's home in his childhood. The word processor was used by her grandmother to help his aunt with some office work. A few years later, around the time he was 14 year old, his dad brought a computer home to check his email. Since the computer was placed in the living room he was allowed to use it, as well as the Internet¹¹.

As discussed before, the provision of ICTs to support education was not a straightforward affair. Just as with other family issues, computers, the Internet and mobile phones are also contested between parents and children regarding the reasons why they are provided and their actual uses. This very struggle resembles the process previous technologies such as telephones experienced and highlights how ICTs have been incorporated into the daily affairs of a home setting, in other words, domesticated. Christos' experience [Ext 28; 11-28] was illustrative of the various ICT skills gained because of the productive and leisure uses of these technologies. He described how in Greece, after having finished high school, he visited an Internet café on a daily basis. There he sent emails, browse the Internet for personal interests like football and music, and chatted with people abroad whom he met as an exchange student in Italy. At 18, when he got a computer and Internet at home, he began using Kazaa, and later Limewire, to download music from his favourite bands. Similarly, most of the skills with computers and the Internet participants developed appeared to have originated at this point in their lives, but not necessarily because of the educational use given to these technologies.

For the most part, participants were provided with a personal computer by the time they enrolled in university. Hyun-Shik [Ext 29; 48-53], a 25-year-old male Korean student, suggested having a personal computer among Korean students when enrolling in university was a "necessity"; so much that all his roommates did have a personal computer with them in his first year of university education. The reasons for this provision remain the same as before: the benefits of ICTs in education. Rare were the cases where this did not happen. If it did, as in Bo's case [Ext 30; 26-31, 169-174], a 20-year-old female undergraduate student at Nankai University, it was usually due to the family not being able to afford this expense.

Parents not only provided the technology, but also covered the expenses it generated much in the same way as they did with other utilities like water, gas, electricity and cable TV. Hei [Ext 31; 94-105], a 22-

¹⁰ In India Panna got a computer at home during her 10th grade (see Ext 8 on page 90).

¹¹ Sun had access to a computer at home for basically the same reasons [81-83].

year-old female Korean student, recalled an occasion in which her excessive use of mobile Internet to download ringtones and games, and access Cyworld, the most popular social network in South Korea, raised her mobile phone bill to 100,000 won (approx. £55.00). Her parents covered this bill, but she was asked to be more careful¹². The act of covering the bills generated by personal or family use of ICTs, as well as the provision of digital services as standard household amenities, seemed to favour the appropriation of ICTs over the long term.

4.1.1.2 Mobile Telephony

Mobile phones were provided by parents for a different set of reasons. Parents provided their children with mobile phones as a sort of more immediate and reliable channel of communication than alternative communication technologies. Mobile phones were usually provided in two circumstances. The first, as in the case of Panna [Ext 32; 123-126], usually took place during high school when children began spending more time away from home because of an increased number of activities (e.g., music clubs, sport practice, study rooms, academies, preparation for the *Gao Kao*, the Chinese National Higher Education Entrance Examination, etc). The second, as in the case of Zhi [Ext 33; 79-85] took place when children moved to a different city to attend high school or university.

Parents provided their children with a brand new phone, but it could also be a hand-me-down handset. Mothers sometimes simply handed over their mobile phones to their children for a period of time during special circumstances, for instance, when a phone was stolen as was the case with Aeneas [Ext 34; 76-80], or just before children were given their own¹³.

Children corresponded likewise, for instance, by giving their parents older models, as was the case with Eurydice [Ext 35; 85-89], a 23-year-old female Greek masters student, who gave her mother her first discarded handset. The practice of passing down mobile phones not only extended the useful life of these devices, but it was also more likely to be displayed within the family nuclei.

In the provision of mobile phones in the above-mentioned scenarios, parents saw a clear utility in this technology. It was possible to distinguish how, at least in parents' eyes, providing a mobile phone equals to providing a 'protective blanket' on their children, and somehow on themselves as well. It is as if the immediacy of communication afforded by mobile telephony automatically guarantees wellbeing both to the children exposed to life's risks and to anxious parents who were dealing for the first time with an empty nest.

Another way of seeing the provision of mobile phones to children is as a form of control over their whereabouts, a sort of 'digital leash'. Padma [Ext 36; 90-95] was given a mobile phone by her parents with the specific direction to report home, "'Please, get in touch with us!'" during her night outings. Clearly, this behaviour did not remain forever. As a matter of fact, when visiting home during Christmas holidays, Padma [Ext 37; 1206-1216] was surprised by the fact that she was not receiving any calls from her parents enquiring on her whereabouts while at a dinner with her friends. In the end, she ended up calling them at 11.30 pm only to find out they were planning to call her but at midnight. Padma's

¹² An unusually high mobile phone bill because of a girlfriend covered by his mother was also reported by Soo [227-232].

¹³ Riko used her mother's mobile phone for three months before finally receiving her own [9-17].

experience illustrated the confidence parents seem to develop in the abilities of their children to take care of themselves.

Interestingly, children can turn in their favour the ‘control’ parents believe to exert on them. For instance, since leaving home to attend university in Thessaloniki, Eurydice [Ext 38; 77-80] always avoided giving her parents her landline number, presumably because she was staying over at her boyfriend’s and did not want her parents to find about it by calling her flat and not finding her there.

In general, the provision of communication technologies like mobile phones among participants in our study attended to the need to strengthen the family nuclei and bridge the diaspora all families eventually experience as children become independent.

As with other fashionable items like clothing and shoes, parents also provided mobile phones and video games as rewards for good performance in school. Riko [Ext 39; 9-17] finally received her mobile phone in high school three months after she had been using her mother’s phone and after she “studied a lot”¹⁴.

Parents also provided phones because these devices appeared to favour the inclusion of their children among their peers. Riko not only received her mobile phone after getting good grades or using her mother’s phone for three months, but also because she “needed” it to communicate with her friends (see also Ext 39)¹⁵. As will be seen on section 4.1.2 *Peer Support* on page 105, participants had to adapt to the established communication practices of a setting to avoid being ostracised by their peers.

4.1.1.3 Other Aspects of the Domestication of ICTs

Naturally, not only parents contributed to the domestication of ICTs by providing and funding prolonged use. Older siblings and the extended family (cousins, uncles, aunts, etc.) also introduced and provided ICTs and supported their use at least by using them as communication channels or by solving problems with these technologies. For instance, every time Bo [Ext 40; 39-53] spoke with her parents in Qiqihar, Heilongjiang, China, she did it through the computer her uncle, a mobile phone seller, owned. Because this computer also had a webcam they were able to see each other too. This example illustrates the manner in which the family, in general, also acts as a sort of dedicated technical support desk easing the adoption of ICTs among family members who are less technologically ‘savvy’¹⁶.

Even though, with few exceptions¹⁷, both parents are always perceived as lacking computer skills, the mother is always perceived as the least interested in ICTs at home. In China, Ping’s mom [Ext 41; 808-867] ran a family business, a recycling factory, for the previous three years. As a consequence, she did not have fixed working hours and, therefore, she was at work from 9-10 am in the morning until 11 pm. Fortunately, her office was just a short distance walk from home. Ping’s mom enjoyed playing cards in her spare time. Ping did not communicate directly with her mom through Skype because “she [was] not

¹⁴ Soo in Korea received a computer after he got good grades [78-80].

¹⁵ Even though Soo was given a pager in his teens by his parents, he requested a mobile phone to communicate with his friends in middle school [116-128].

¹⁶ Adara made her first inroads into the digital realm as a game partner for her younger brother when she was 13. Her brother brought the Internet home and taught her how to download music and use email. Adara’s first mobile phone in 2006, a Nokia 3310, was also a gift from her brother who worked for a mobile phone repair shop [4-18, 44-62, 64-76, 140-144].

¹⁷ As an IBM employee “responsible for all the machines coming from the US”, Aeneas’ mom was quite familiar with various communication technologies [152-160].

good with computers”. The pictures Ping sent to the family email account of her Christmas dinner in Glasgow had to be shown to her mother by her brother¹⁸.

It is not clear why mothers are usually perceived as less technology-inclined. As in the case of Ping’s mother, it may have to do with a larger number of tasks mothers occupy their time with; some of them may have to balance a full time job and the more traditional role of being the home’s main administrator. Whatever the case, we lack data to fully explicate why mothers are usually perceived as the less skilled with ICTs at home, and whether this is a consequence of their unwillingness to invest time ‘fiddling’ with computers or the other way around. As will be seen later, this situation is different in the case of mobile telephony.

Some participants reported their fathers developed an interest on the Internet. Akane [Ext 42; 139-145], a 36-year-old female Japanese PhD student, was puzzled by her father’s use of the Internet since he did not have many Internet skills and was not emailing anyone. In any case, even though he may have been “pretending” to use the Internet, he was not happy when Akane used his computer for a long period to access the Internet¹⁹. As will be seen next, however, the familiarity of some fathers with some computer applications did not guarantee competence when dealing with a different type of communication technology.

In time, there is a sort of reversal of roles at home between parents and their children regarding the use of ICTs. In some occasions children provided their parents with technologies (hardware and software) that helped them communicate with their children. Before going to Finland for six months as an exchange student, Hyun-Shik [Ext 43; 39-46], a 25-year-old male Korean student, bought his parents a computer and began the hard process of teaching them how to turn it on, log onto MSN, and double-click on his ID when they wanted to chat with him. As could be expected, after this ‘crash course’ some parents were never able to log into these systems again by themselves. Some encountered all sorts of mysterious problems that prevented them from establishing successful communication with their children abroad. Hui [Ext 44; 797-816], a 22-year-old female Chinese masters student in Glasgow, said communication with her parents through Skype was not very successful as “Skype [did not] work very well”. For reasons unknown, Hui’s parents’ web-cam had to be reinstalled by a cousin. As a consequence, she used instead her mobile phone to call them whenever she needed to talk for over 20 minutes.

4.1.1.4 Accommodation of ICTs and Domestication

In the use of a variety of technologies to communicate with their families we, once again, see the process of *accommodation* described by the middle layer of our model of appropriation (cf. section 6.2 *A Method of Accommodation of ICTs* on page 150). For instance, patterns of communication with parents via Internet Messaging varied; the least preferred method was chatting (typing) since parents, like Ping’s [Ext 45; 840-843], were usually perceived as slow typists. Video and voice conference through Internet

¹⁸ Adara’s mother in Greece was also described as not being familiar with computers [298-305].

¹⁹ Hui’s father played online Chinese chess for the past seven years, since her family got Internet at home. He liked playing against other people and usually did this after coming home from work [774-783].

Messaging were the preferred methods as these allowed almost real time communication, bypassing the need to type to use the application²⁰.

The most preferred method of communication with parents was, nevertheless, through mobile phones and fixed lines. This is particularly true when, as seen above, parents either lacked ICT-related skills or a computer at home. Akane's parents [Ext 46; 177-196] went as far as sending her a mobile phone handset from Japan when she was doing a masters degree in Edinburgh to avoid all the hassle caused by Skype and calling cards. This was done despite the fact that she would have to pay £3 per minute when receiving a call. Thanks to this phone, Akane's parents called her once every weekend. Favouring phone communication, mobile or otherwise, apparently was due to the seemingly pedestrian nature of this medium that made participants perceive it as reliable and fuss-free; simply, the most adequate channel to communicate with their parents.

Given various infrastructural conditions and family habits, participants called their parents' landline at home or ring their mobile phones. Interestingly, despite the fact that, as indicated earlier, mothers were usually seen as the least computer savvy at home, most phone communication, mobile or otherwise, was established prominently with them. Yin [Ext 47; 145-148], a 20-year-old female Chinese student at Nankai University, called her family every Thursday and Sunday night. The call was usually made to her mom or to her home's landline since her dad was always "very busy" and his mobile phone would always charge him for incoming calls²¹. Mothers, somehow, always appeared to be readily available for their children whenever they called. This situation may illustrate the manner in which the mediating role of mothers in the family is still being preserved in the digital age.

As indicated before, when children leave home to study in another city, province or country a high volume of communication with their parents was observed during the first weeks of separation as they adapt to the new environment. In time, however, this volume of communication diminished until it settled into a weekly call in most cases, or a sporadic call once per month or less in some extreme cases. Ping [Ext 48; 840-843], for instance, used Skype to call her parents back home. She called home every day during her first week in Glasgow. Later, however, she settled in a weekly call on Saturdays. She always tried calling at the same time at night-time in China as she knew her parents would always be at home then²².

As expected, the length of communication varied according to the message that was to be transmitted and the technology used. Rare were the cases encountered in which parents communicated on a regular basis through email, IM or online social networks. Email was used when the regular communication channel, telephony, was not available or under special circumstances. Ping, [Ext 49; 969-975] for instance, suspended her weekly call home after the Christmas holidays because, like her friends, she failed to prepare for her upcoming exams. She had to email her dad explaining the situation and asking him not to expect her usual call the following weekend.

²⁰ Ming's reasons for video-chatting with her mom were the same, she was not "good at typing" [185-195].

²¹ Yen [130-136] and Nuwa [113-117] in China also preferred calling their mothers over their fathers. Danae [787-790] in Glasgow, however, preferred calling her father because her mom was never mindful of her phone. Ping [808-867] in Glasgow also preferred calling her dad simply because, as she put it, "[she didn't] have much to say [to her mom]".

²² Zhi [225-232] and Ming [948-956] also called home weekly from Glasgow.

Communication through some form of telephony was the preferred method of communication between our participants and their parents as the latter appeared to favour the immediacy of communication and the intimacy afforded by phones. As indicated earlier, this channel of communication is also favoured given its pedestrian and uncomplicated nature. In their propensity to use phones to communicate with their children we can also see how parents accommodated these technologies according to their knowledge and abilities with ICTs.

4.1.2 Peer Support

ICTs are embraced by members of social groups into their ongoing and emergent practices. The integration of these technologies into group dynamics among peers (i.e., friends, acquaintances, classmates, etc.) was quite influential on their appropriation.

Across the countries surveyed the most common reply to the question: *‘Why did you acquire (or begin using) X technology?’* was that *‘everybody else was doing it’* and/or simply *‘to communicate with friends’*. Fai [Ext 50; 87-91], a 24-year-old male Chinese graduate student in Nankai University, for instance, began writing a blog three years earlier after “lots of [his] friends” began writing one. Upon closer scrutiny, however, such an event reveals a larger set of issues associated with the adoption and eventual appropriation of ICT thanks to the influence of peers.

As discussed before, the domestication of ICT among our sample—i.e., the integration of these technologies into household dynamics—usually took place during puberty, around the time participants attended middle and high school. Developmental changes at this stage are characterised by the need to construct an individual identity. This identity is usually constructed within the influence of a group of friends. It is no surprise then that just as with previous technologies—notably the telephone, but also less technologically sophisticated items like, for instance, comics and fashion clothing—ICTs were also called to support, complement and mark this construction of identity among participants and their peers. Thus, the claim of having adopted an ICT just to communicate or because everybody else was doing it reveals, in fact, the use of a technology to address the universal need to be integrated, to belong and to be part of a group. This idea is central to this section as we describe participants’ behaviour regarding the adoption, use and appropriation of ICTs and the definitive influence of peers in this process.

4.1.2.1 Socialising and ICT

The incorporation of ICTs into group dynamics may explain behaviour observed throughout the sample. For instance, (Classen 1996) describes how the introduction of the first shopping centre in Ticuman, a city in North-western Argentina, took over the place reserved for the ‘plaza’ (i.e., the city centre) as the locale where different groups of people used to socialise, while at the same time it expanded the notion of socialisation to include other activities usually associated with consumer culture. Similarly, ICTs have been integrated in socialising practices. Some male participants from Greece, India, China and South Korea recalled their visits to Internet cafés to play and hang out with their friends during their teens. Osman recalled organising a computer game competitions through Orkut, at the time the most popular social network in India, in the following fragment:

[Ext 51; 147-161] We could create communities in Orkut. We had a gaming community, an instead of calling them or sms them we could just put the

information in this community and all the guys who were members of the community would check and see what's happening. In this way we arranged game competitions. They would all come to our place, so we had teams coming; a team was made of five people for Counter-Strike, so we would advertise the dates, the price and the rules and regulations. We used to have regular tournaments. Ten teams used to come. There would be an entrance fee because all the money put together would be the prize money for the winner. The first time we organized it it took three or four days; we didn't know how to organize it, for the second time we learned so we would finish in one day, a Sunday.

In our view, these rituals of friendship, socialising and belonging were more directed at increasing group cohesion than to the use of ICTs per se. In Greece, Christos [Ext 52; 30-45] reported a similar experience to Osman's. Christos actually stayed overnight at an Internet café with his friends to play LAN games like *Counter-Strike* and *Medal of Honor*. His account of these events was reflective of the thrill of battling with his friends other people. Christos's and Osman's experiences were more reminiscent of the opportunities of meeting like-minded people than of simply using a technology, even one as engaging as computer games.

4.1.2.2 Direct Influence

As indicated on sections 3.1.2.2 *Leisure and Entertainment* and 4.1.1.1 *Computers and Internet* on pages 93 and 99, respectively, social activities mediated by computers were very important in terms of the knowledge gained about ICTs. Peers, particularly close friends, encouraged the appropriation of ICT in several other more active ways. Encouragement to use ICTs came through a simple verbal advice on what technologies were supposedly more convenient to have and why. Participants were thus influenced to adopt all sorts of technologies, services and systems. Zhi [Ext 53; 220-222], for instance, began using Maxthon, an Internet browser, simply because her boyfriend told her it was a better alternative²³.

Peer advice appeared to form a sort of *electronic folk knowledge* regarding ICT. Consider, for instance, the use of antiviruses. Chihiro [Ext 54; 100-103], a 27-year-old female Japanese office worker, was told by a friend she needed to install an antivirus to protect her computer against hackers and viruses. Interestingly, and contrary to her friend's advice, she eventually uninstalled it to increase the speed of her machine²⁴. Friends also provide explanations to the 'mysterious' behaviour sometimes observed in IM clients. Jun's roommate [Ext 55; 190-194] told her the reason why she was not able to use her MSN account for the previous six months was because her ID was stolen, along with those of many other people²⁵.

Peers encouraged appropriation of ICT by demonstrating new systems and their features. Danae [Ext 56; 537-541], for instance, explained her cousin how to use Facebook; a system her cousin, like herself, recently adopted, but one she was having problems getting familiar with²⁶.

²³ Chin shared with his friend a paid account for an illegal service to download movies known as *iDisk* in Korea. Chin thought the service was legal because they paid for it [256-262]. Mei, a 22-year-old female Chinese postgraduate student, began using MSN the previous year because she heard it had less spam mail than QQ, a very popular IM client in China [96-98].

²⁴ Following a friend's advice, Panna also installed a new antivirus in addition to her current one. Her friend attributed the slowness of her machine to a virus and to not having a "clean" hard disk [1571-1579].

²⁵ It is worth mentioning Aeneas experience in this regard. He claimed to have had his Skype account stolen by some 'hacker', presumably a girl he met through this system, who was later impersonating him as they chatted [413-432].

²⁶ After coming back to Korea, Yon signed up for a Cyworld account due to peer-pressure. Her friend helped her setting up her homepage in this system [140-151].

Peers supported appropriation by performing repairs on broken systems. Yin [Ext 57; 76-87] in China had her friend repair her laptop twice in the past. Her friend told her problems with her laptop were a consequence of failing to update frequently the antivirus. Her friend did not charge for the repair and it was done quickly. Yin thought the new antivirus she was using was better as her computer performance had not yet decreased²⁷. Curiously, it was usually male friends who acted as technical support.

Peers also supported appropriation by lending their ICTs. Ming [Ext 58; 820-825], a 24-year-old female Chinese masters student in Glasgow, borrowed her friend's credit card to buy some biology and database books online through Amazon. She was also considering buying the fifth Harry Potter book in English as the previous four she read before in Chinese. Participants also borrowed mobile phones to make calls²⁸ or online accounts to download movies from the Internet²⁹.

In some cases, peers supported appropriation by actually giving away outdated models of technologies like mobile phones from which it was difficult to obtain any further practical benefit. Hyun-Shik's Korean [Ext 59; 153-160] friend in London gave him his Motorola mobile phone when he left the United Kingdom at the end of his holidays there³⁰.

4.1.2.3 Indirect Influence

Peers also supported appropriation indirectly simply by making active use of a system. Several participants described their experience with online social networks and blogs indicating how the appeal of these systems, and their desire to engage with them, actually came from noticing others doing the same. As Jun [Ext 60; 148-177] put it, her use of QQ Space during her undergraduate degree was mainly due to the fact that people around her were also using it frequently. At the time her friends would read and comment on her own posts; in return she would read and comment on her friends' posts. For the past 2-3 months, however, her use of QQ Space diminished greatly. She was turning more to Nankai University's BBS. There she was getting feedback on some concerns she expressed like the merits of a postgraduate degree as opposed to joining the workforce, and the proper attire for a job interview. As illustrated by Jun's experience, the diminishing participation of friends in a system led to a sort of withdrawal from and, eventually, abandonment of the system³¹.

In the appropriation of ICTs there was a high degree of imitation. Participants often appropriated technologies to communicate, or get informed, simply following the manner established within a group. Using any given technology appeared to be more a matter of consensus on the intangible benefits of using ICTs (e.g., community, image or fashion), than a result of the technical possibilities of new technologies. For instance, Shiori [Ext 61; 6-40], a 33-year-old female Japanese office worker, one of the only two participants across the sample with any experience with pagers, recalled the popularity of these devices during her teens. This was despite the fact that, at the time, it was only possible to send sequences of

²⁷ Hua in China also had her laptop repaired by her friend after she got infected by a virus [237-251]. See also Panna's case in Footnote 24 above.

²⁸ In high school, Adara borrowed her friends' mobile phones when she needed to make a call. At the time she thought owning a mobile phone was a "waste of time and money".

²⁹ See Chin's case in Footnote 23 above.

³⁰ Yin's laptop broke before National Holidays, however, her roommate left hers with Yin so she could download and watch some movies and TV series. Yin downloaded around 50 movies and episodes during that period [89-98].

³¹ Mei joined Xiaonei (now Renren, the most popular social network in China) when she was a student in Tianjin University, the university next door to Nankai University where she was pursuing postgraduate education. Even though she did not use Xiaonei frequently because she thought it was not "real life" and her friends didn't update their information frequently, she did post about catching a cold (and being sad) one month earlier. She received several comforting replies at the time [171-182].

numbers that everybody would have to memorise to decipher the meaning of messages. In fact, Shiori would carry those codes in a piece of paper (e.g., 0840, because of its pronunciation in Japanese, meant *Ohayō* or Good Morning (Katsuno and Yano 2002; Kohiyama 2005).) Later, as mobile phones became popular she had to stop using pagers not only because mobile phones were more convenient, but also because everybody else was doing the same. Interestingly, they had to bring the number codes used in pagers to mobile telephony since back in those days there was a 15-30 word limit per SMS, and an additional charge per every extra word sent.

We believe this example illustrates the utilitarian view of ICTs that our model of appropriation tries to convey. This example illustrates how people effectively take control of a technology (despite its limitations) to address very specific needs or the activity through which the need is expressed. This, we argue, is both the drive behind the process of appropriation and its ultimate goal. This is the same reason why we say that appropriation of a technology is more a matter of social consensus than of technical sophistication. Not that a technology does not make things possible—clearly, pagers made mobile communication a reality—but this is always secondary to the need it satisfies: communication. More colourfully put, if most people were using smoke signals to communicate, the rest would have to comply as well. Smoke signals being the technology; use of smoke signals being the consensual social practice. This is also the reason why we argue the appropriation of technology is an ongoing process subsumed to the changing circumstances (needs, activities, goals, etc.) of people.

4.1.2.4 Accommodation and Peer Support

Accommodation of ICT was more evident when participants entered new settings or environments. As seen in section 3.1.2.1 *Studying* on page 89, participants began using certain digital technologies in earnest not necessarily because they were provided with their very own personal computer or mobile phone when entering high school, attending university or going abroad, but because they had to comply with established social practices in the new setting. For instance, Yen [Ext 62; 91-98] preferred Xiaonei (now Renren, the most popular social network in China) over MSN Spaces because it was very popular among her university friends. She started using it just during the previous four months³². Conversely, others like Nalin [Ext 63; 219-224], a 20-year-old Indian masters student, adopted Facebook, at least during his time abroad, because this was the established channel of communication among international students at the University of Glasgow. Similarly, others returned to use local and perhaps more popular options when going back home. This situation was observed among participants with experience abroad who, coincidentally, were interviewed after coming back to their own countries. Such was the case of Cho [Ext 64; 137-156], a 22-year-old female student, who, at the conclusion of her exchange program in the USA, went back to using NateOn, the most popular IM client in South Korea, since MSN was no longer relevant to her situation.

This may also explain why, regardless of the abilities of novel ICT to inform about the whereabouts of friends across the world, participants appeared to display a preferential awareness for those in closer proximity; people who may have had a more direct bearing on their own situation. A marked influence by those in close proximity may also explain why at Nankai University in China, regardless of the popularity of Xiaonei, an ‘old’ system such as a BBS maintained by the university was the preferred medium of

³² Jun [204-206] joined Xiaonei for the same reason. See also Mei’s experience in Footnote 31.

communication among students there. Students like Chen [Ext 65; 219-231], for instance, used the BBS system at Nankai University in a more integrated manner with their daily activities than any other online system. Chen used the University's BBS every evening to find information about all things happening on campus and, more particularly, to find information about the events of her clubs like the badminton club, or to read posts in the boards of the International Economics Research group and the College of Economics group, organisations to which she belonged.

In turn, the influence of those in close proximity may explain why, in time, use of certain systems remained, but in a more passive manner. Nuwa [Ext 66; 63-66] began using QQ, the most popular IM client in China, five years earlier. She said she had over 130 contacts in her account, but was only in touch with about ten of them; most of her contacts were in other universities or working already³³. As illustrated by Nuwa's case, the disuse into which some systems have fallen may be due to the fact that they were appropriated in early stages of life and, consequently, they may eventually end up populated by virtual strangers who no longer have any bearings on their current environment.

Many ICTs were also adopted simply as complements to existing practices or as alternative communication channels in particular settings. Danae [Ext 67; 803-809] was not used to text messaging in Athens, Greece because most of the time she was out somewhere driving her car. In Glasgow, however, she had to use SMS to communicate with her friends since this was one of the most popular channels of communication among students. The fact that, upon returning to Greece, she was likely to go back to her previous practices with mobile phones would only stress the manner in which the appropriation of ICTs is dependent on local social practices and environmental conditions (cf. section 5.1.3 *Architectural Layout* on page 139).

From this perspective it is also possible to suggest an explanation to a behaviour observed in the sample. It appears to be that for some people ICTs have some form of *rigidity*. In other words, the features of certain ICT appear fixed for people as they seem to associate them with the specific functions they fulfil within a group. Participants seemed to assign a mode of communication per technology per group, regardless of whether that mode reflects the mode of communication the technology proposes. Thus, for instance, participants found hard reconceptualising MSN (now Microsoft's Messenger Live) as an online social network. Similarly, people may find problematic reconceptualising Facebook as an Internet Messaging client, even though the system now incorporates this feature, or decry the incorporation of Twitter-like features on Facebook (cf. section 6.3 *Simplification* on page 154).

The idea of *rigidity* is contained within what we call the *simplification* of digital technologies, which refers to the closing in practice of the multiple possibilities of digital technologies rendering them as less complex, uni-dimensional objects (i.e., as non-digital objects) that can be given a specific order and function (a place) in the horizons of objects one possesses and activities one performs (*accommodation*).

Patterns of communication established within groups and with the exterior reflect offline behaviour in everyday life. As indicated in section 3.1.1.1 *Accommodation and Communication Activities* on page 88, people expect others will use ICTs according to tacit or explicit rules of behaviour established, in some

³³ Hua [72-73] and Yin [219-222], also students in Nankai University, had similar experiences with their contacts in QQ.

cases, before the advent of digital technologies. Yin [Ext 68; 185-188] did not hesitate in leaving her mobile phone number at the computer repair shop to be notified on its status. People may share private details, such as mobile phone numbers with commercial venues, because it is expected they will only be used for the agreed reason. Disruption of these agreements is not welcomed.

Similarly, participants avoided revealing personal information, like their mobile phone numbers, to their peers until they were able to judge whether they want the other person as a friend at all. To deter others from having access to this type of information Cho [Ext 69; 183-186], for instance, upon meeting a new person offered instead her NateOn ID in place of her Cyworld ID³⁴. Disclosing such a private detail as a mobile phone number or a social network ID did not guarantee, however, establishment of a closer relationship.

Whether through mobile phones, IM clients or online social networks, participants displayed a preferential treatment for their close relationships (e.g., girlfriends and boyfriends, parents and best friends) above that of their peers. Hui [Ext 70; 716-737] contacted her boyfriend in China every day through QQ or through her mobile phone. She also emailed him if she needed to clarify some disagreement. Interestingly, when a disagreement arose during a phone conversation with her boyfriend, because she could feel his emotions, she avoided pursuing the matter further. On the contrary, through QQ, because she did not really feel his emotions through this channel, she readily engaged in a needed discussion with him.

As illustrated by Hui's communication with her boyfriend and by Cho's offering of her NateOn ID upon meeting new people, all access doors appeared open to close relationships; peers, however, were kept at bay across all communication channels. This differential treatment of people through different communication technologies may help explain why those who list tens of people as 'friends' in their online social networks or in their contact list on IM clients will be, in fact, only having communication and 'following' the activities of a few.

Even though we argue that in the accommodation of ICTs to communicate with peers and be informed of their whereabouts participants were deeply influenced by peers, we nonetheless acknowledge this is an individual process. In this process participants exert a high degree of *reflexivity* examining, questioning and monitoring their own and others behaviour, and *agency* in deciding how to order technologies according to their circumstances to pursue some specific end. This issue will be discussed further in Chapter 4 on page 147.

In communicating with their peers and families, we distinguished a simple method participants appeared to display when choosing to use an ICT; we call this method 'accommodation' and we distinguish four steps: (1) The accommodation of a technology begins with a reflection on the type of message participants were trying to convey. The type of message being transmitted limits the number of technologies that can be used to this end. (2) Participants considered who their audience was. An evaluation of their intended audience further discriminated the type of technology that was used to convey

³⁴ In Nankai University Yong, for instance, was 'forced' to share his phone number with two first year students interested in studying abroad whom he stumbled upon a few days after an activity in which he was introduced to a large crowd of junior students [186-195]. Initially, he did not share his phone number with them fearing being flooded with calls asking all sorts of questions.

a message to that audience. (3) Participants considered their situation and the convenience of using a technology at a particular time and place. This issue calls for an understanding, even when partial, of their context of use and whether a technology is ‘welcomed’ and supported in and by a given setting. Finally, (4) participants always evaluated the costs of operating a technology. A particular technological choice resulting from the previous steps may be ultimately rejected if its costs of operation exceed a given budget. More details on this process of accommodation in section 6.2 *A Method of Accommodation of ICTs* on page 150.

The process described should not be taken to imply that participants were constantly going through this cycle of reflection. They appeared to use some schemes that sped the process described. For instance, as indicated in section 4.1.1.4 *Accommodation of ICTs and Domestication* on page 103 participants assigned, as if by default, phone calls to communicate with their parents. As illustrated earlier through Hyun-Shik’s (Ext 43 on page 103) and Akane’s (Ext 46 on page 104) cases, participants had already proved that communicating with their parents through other channels like Internet Messaging is unsatisfactory at best because their parents can not touch type, or because it requires going to a computer, turning it on, and login into the IM client. As seen, these were not trivial tasks for many parents.

Nevertheless, these schemes were revisited when different circumstances altered them and participants needed to accommodate their technologies to a new environment. For instance, upon arrival to the UK, Panna [Ext 71; 228-239] experimented with diverse options including email, SMS, miscalls, room extensions, GTalk and Facebook until she found a good combination of technologies to communicate with her parents and friends back home, as well as her local friends. After this period of trial and error, a new communication scheme with her parents and her local and distant friends was formed. This communication scheme remained in place until new circumstances altered it once again. In some cases, though, novel environments rendered some technologies fully unsuited to communicate. A more detailed elaboration of these issues is presented in section 6.2 *A Method of Accommodation of ICTs* on page 150.

4.1.3 Institutional Regulation

In this section we describe the influence institutions and other organisations exert on the appropriation of ICT when implementing policies and measures that ultimately enforce behaviour. We believe this influence is not the same as that of peers in that, as will be seen in this section, it tacitly or explicitly *forces* people to observe a certain conduct while within the influence of the organisation. Granted, people can still avoid complying with these organisational regulations but, as will be shown, that always comes at a price.

Across the countries surveyed, we documented the influence of at least four different organisational settings in shaping the behaviour of participants towards everyday ICTs. In some cases the real motives behind the regulations imposed were unclear. The fact remains, though, that organisations, because of their role in participants’ lives, structured what technologies were available and how participants could use them. We think it is important to understand the powerful influence diverse organisations exert in everyday life as this indeed had an impact on our sample’s appropriation of ICT.

The following analysis is split into four parts corresponding to different organisations we encountered throughout our study. It does not attempt to be an exhaustive list of all organisations that affected our sample, but to illustrate how varied and pervasive was their influence.

4.1.3.1 Masterpoint and the University of Glasgow Student Accommodation

As indicated before, one of the requirements to take part in the first study conducted at the University of Glasgow was that participants had to be living in university housing. This requirement proved valuable in that it allowed us to have a common setting that might somewhat reduce the diversity of the sample. This requirement also helped us document different strategies participants undertook in the same setting, in order to cope with the restrictions on Internet connectivity imposed by the Internet Service Provider (ISP), Masterpoint, in university accommodation.

Soon after occupying their dormitories, Panna [Ext 72; 309-315], like every other participant, realised to her dismay that the exclusively wired broadband Internet service provided in university's halls of residence had a number of restrictions. Specifically, at the time of the study, Masterpoint provided a free, basic Internet service of up to 512 kbps. The basic service blocked all P2P traffic, as well as any voice or video connectivity. Further restrictions prevented an upgraded connection—Premium Service as Masterpoint called it—to be shared through a router between, say, flatmates. Thus, whoever upgraded an Internet connection was forced to foot the bill alone. These details are worth mentioning given the fact that in the UK, at the time of this study in late 2007, no other public ISP offered such a poor and restricted connection for such an expensive price. Changing ISP while in university accommodation was simply not possible.

As a matter of fact, one year before this study was undertaken, this author was involved in a complaint to the Accommodation Office, the organisation in charge of students housing, at the University of Glasgow against Masterpoint. At the time, officers from the Accommodation Office, personnel from Masterpoint, a member from the Student Representative Council, and a few students had a meeting to discuss the meagre capacity of the Internet serviced provided by Masterpoint across University of Glasgow's student housing. Sadly, the only outcome from that meeting was the assurance from Masterpoint to increase the bandwidth of their free Internet service to 512 kbps at some future point in time. Apparently, Masterpoint did fulfil its promise next school year when we conducted our study. Their reason for providing such a poor service was simple: lack of capacity.

In the face of these restrictions in Internet connectivity participants had to *accommodate* to the prevailing conditions. Thus, participants had to comply and use this Internet service within its limitations, pay the fee to upgrade their service, or simply abandon some of their practices like, for instance, downloading movies. If they did stop downloading movies, they probably also sought for alternatives to satisfy this form of entertainment.

From the entire sample, only two participants, Eurydice and Aeneas, were willing to pay to upgrade their Internet connection. Beyond a few days' disruption while the upgrade took place, Eurydice [Ext 73; 187-195] was able to establish video calls. She was not able to download movies or songs as the plan she chose did not include that feature. This was a case of *compliance*.

Most of the participants, however, were like Christos [Ext 74; 172-178], unwilling to pay and annoyed by having to pay extra fees to upgrade their Internet service. Their reasons were simple; some of them were already paying over £10,000 in school fees, plus £410 per month in rent. In the face of this, some participants simply *abandoned* the practice of downloading movies and TV series through P2P networks.

Others, however, developed more creative ways to deal with these restrictions. Ming [Ext 75; 949-956] recalled having to get up early on Sundays to be able to establish a somewhat delay-free video call through Skype with her mother in China. Others like Padma [Ext 76; 195-234] juggled a large variety of communication options including free mobile phone minutes, pirate phone access numbers, prepaid international phone cards and Internet Messaging clients to maintain contact with their families back home. Another group shared movies and TV series through storage devices or CDs/DVDs. A few of them like Panna [Ext 77; 316-320] made a habit of accessing wireless points available in some coffee houses in Glasgow's West End³⁵. These examples illustrate cases in which participants sought *alternatives*.

Interestingly, despite restrictions on their service, Masterpoint did offer two advantages: a private telephone extension in each participant's bedroom that allowed free³⁶ calls within the same student residence and free IPTV (digital television delivered over an Internet network). As could be expected, participants like Padma [Ext 78; 228-231] incorporated room extensions to the variety of channels available to contact friends living in the same dormitory³⁷.

Others, however, were unsure about what to do with the free IPTV service. In the UK there is a strict policy regarding TV licence fees. Participants were made aware of this policy by post shortly after occupying their student residence; they were also reminded of this issue on a frequent basis afterwards (Figure 34). Given the threatening, but ambiguous, tone of these letters participants were confused by the availability of this free service through their laptops and the possibility of unknowingly breaking the law. Padma [Ext 79; 903-906] expressed her confusion with the IPTV service in this manner, "*I'm not using IPTV because you need to get a TV license for that. My flat got two notices and the second one was in bold letters like someone was using it!*"

³⁵ Christos visited with his girlfriend a popular café known as *Beanscene*. To enjoy access to an unrestricted Internet service they ordered separately; in this manner they had two 'free' hours to browse the Internet [738-748].

³⁶ This service, of course, was not really free. It was already being charged as part of the rent. The same happened in the case of the 'free' basic Internet service provided.

³⁷ Panna relied on room extensions to contact her friends but until after she could ascertain where their new acquaintances lived [233-236].



Figure 34 Detail of a typical TV Licensing letter received by participants living at the University of Glasgow’s student halls

4.1.3.2 Subways in Japan

Ever since the introduction of mobile phones in Japan, there has been an ongoing struggle to regulate use of this technology in public places. One such area of concern is the subway system. According to some participants there, this struggle dates back to the popularisation of mobile phones in the late 1990s. Interestingly, the regulation of mobile phones seems to have originated with the belief that mobile phones cause interference in pacemakers—During the course of our investigation, we came across a news article from 1997 discussing this issue in the American press (CNN 1997). In light of this, it is no wonder that, as Riko put it [Ext 80; 139-142], in the city of Sapporo, loudspeakers and advertising posters were used throughout the subway system to remind people to switch their mobile phones off while riding the subway (Figure 35).



Figure 35 Advert found in the Sapporo subway system. It reads: 1) Let’s make the ride comfortable, 2) No smoking, 3) Don’t rush into the car, and 4) Power off. Photograph taken on 31 July 2008

The pernicious effect of mobile phones on pacemakers seems to be reflected in the fact that adverts against use of mobile phones were usually placed above or next to priority seats across subway trains. Shiori [Ext 81; 104-111] even suggested that as long as mobile phones were not used next to these seats there was no risk involved for any party (Figure 36 and 37).



Figure 36 Priority seat in the Sapporo subway, Japan. Adverts like the one depicted in Figure 35 are usually placed above priority seats. Photograph taken on 31 July 2008

None of the participants, however, would actually switch off their mobile phones while in the subway. Like many other passengers, Riko (see also Ext 80 above) continued using her mobile phone to send text messages while riding the subways as long as there was no audible sound that might upset people around her. Participants emphasised that making calls through mobile phones while in the subway was an act frowned upon by people in the vicinity. Shiori [Ext 82; 122-125] actually stared reprovingly at other passengers making phone calls while in the subway.

4.1.3.2.1 Social Pressure in Public Places

Social pressure in public places beyond peers, but not necessarily exerted by organisations, also appeared to have an influence in the use of ICTs. Riko and Shiori related incidents in which they were made to comply with certain behaviours. Riko [Ext 83; 142-144] was asked by a member of the subways staff to turn the volume down on her mobile phone as she inadvertently listened to music aloud. Shiori [Ext 84; 119-121] recalled an occasion in which a young child sitting next to her enquired about her use of her mobile phone while in the subway. The embarrassment she felt on that occasion was enough to make her stop sending a SMS.

Nevertheless, these organisational norms were apparently enforced differently across the subway system in Japan by staff and train users. This was noted by Shiori (see also Ext 81 above) who insisted that in Tokyo, unlike Sapporo, it is tolerable to receive and make phone calls while in the subway despite adverts we eventually observed indicating the opposite (Figure 37).



Figure 37 Advert in the Tokyo subway. It reads: 1) Don't make a bad guy, 2) Priority Seats, 3) Please switch off your mobile phone near priority seats, 4) Please switch off your mobile phone near priority seats on behalf of customers with medical devices such as pacemakers, 5) Please use the 'manners mode' (silent mode) away from priority seats and refrain from making voice calls, and 6) CCTV in operation. Photograph taken on 15 August 2008

Behaviour towards mobile phone use in the subway in Japan was in stark contrast to behaviour observed in Seoul, South Korea (Figure 38). In the Seoul subway, nobody appeared to have second thoughts regarding the use of mobile phones to make calls.



Figure 38 Two people making phone calls in the Seoul subway. Photograph taken on 30 August 2008

As can be seen in Figure 38, it appeared to be that in the Seoul subway system there was no official regulation regarding the use of mobile phones for voice calls. During our fieldwork in Korea we came across advertisement that formed part of a public campaign in favour of a more measured use of mobile phones in Seoul's subway. Figure 39 depicts an advert placed by this campaign.



Figure 39 Advert in the Seoul subway: *Set your mobile phone to vibration mode. Speak quietly on the phone.* Photograph taken on 30 August 2008

Unlike the behaviour observed in Japan, scores of people in Seoul's subway were commonly seen using all sorts of digital devices including music and video players, portable video games, TV tuners and, of course, mobile phones to play games, text, call, watch TV, browse the Internet, or listen to music (Figure 40).



Figure 40 Scores of people use digital technologies in the Seoul subway system. Photograph taken on 23 September 2009

Differences in the use of mobile phones in the subway system in Japan and South Korea appeared to be the consequence of different regulations enforced by similar organisations in each country. As illustrated by the example of Shiori (See Ext 82 and 84 above) and the scenes depicted in Figure 38 and Figure 40, passengers were also influential on the use of mobile phones by reinforcing an expected behaviour towards mobile phones and other gadgets in the subway.

4.1.3.3 Military Service in South Korea

Military duty in South Korea is compulsory for all able males from the age of 18. Depending on the unit they are assigned to, males spend anywhere between 24 to 27 months in an army camp. By coincidence, all male participants in our study in Korea had already fulfilled this duty. This was a welcomed circumstance that allowed us to explore that organisational setting and its influence on the appropriation of ICTs.

With one single exception, and without considering days on holidays spent off the military base, all participants characterised the period of military service as a complete blackout from information and

communication technologies. When questioned about his military duty experience, Hyun-Shik described it in this manner:

[Ext 85; 61-71] Every communication device is absolutely prohibited because technically you could reveal confidential information from the military, so it's prohibited. Mobile phones are allowed for officers. I think things have changed, but we didn't have computers at that time. While I was in the military I was not allowed to use computers. They have computers connected to the Intranet. I was in radio communications so I had no chance to use computers. I had vacations seven times during the military service. During vacations I would surf the Internet. In total, every soldier has 45-50 days holidays split in 4-5 days. Depending on the type of holidays I would go home or stay around the military base.

As illustrated, use of computers, the Internet, and mobile phones within a military compound was completely forbidden in order to minimise the risk of espionage, since South Korea is in a permanent state of alert towards their northern neighbours, the Democratic People's Republic of Korea or North Korea. Those who do otherwise were at risk of being arrested. These very particular conditions forced participants into an extreme case of accommodation by abandonment of technologies. Unlike previous circumstances described in this work, there were no alternatives participants could procure under these conditions.

In the face of these strict regulations, participants were not able to do anything but comply and adapt to whatever means of communication they had at hand. Hyun-Shik [Ext 86; 133-137] took a more basic approach to this situation and began writing letters home. He recalled penning around 100 letters to his parents. If accurate, that represents an average of about one letter per week for the time he was conscripted. He also made use of two public phones available for his 200-men unit. Calls, of course, were only possible during non-working hours.

The only exception we encountered to the above situation was the case of Hyun-Ki [Ext 87; 50-58], a 22-year-old male student in Ajou University, who, following a friend's advice, enrolled in a joint program between the South Korean and the USA army known as KATUSA (Korean Augmentation to the United States Army). The experience of this participant was unlike any of the other participants in that he had access to all sorts of information and communication technologies during the time he was serving his military duty. Apparently, this was possible because, unlike those serving regular military duty elsewhere in South Korea, he was sharing accommodation with US soldiers who were full time employees of the US Military Forces. As such, American soldiers were allowed to have all the amenities of modern life including large plasma TVs, computers, Internet connections and game consoles. It was these circumstances that allowed Hyun-Ki to continue enjoying access to ICTs throughout his military duty. As indicated, this was in marked contrast to all other cases encountered.

4.1.3.4 The BBS at Nankai University

While conducting our research in China we came across a BBS system widely used among the student body at Nankai University (Figure 41). We decided to explore the impact of this system for two reasons. First, it was the clearest example we encountered of the purposeful intervention of an organisation, Nankai University, on the appropriation of an ICT by providing it and regulating its use. Second, wide use of this BBS, an otherwise outdated technology, among students at Nankai University underpins one

of the underlying arguments of this work, namely, that novel or more sophisticated ICTs *per se* do not necessarily lead to adoption, use and appropriation.



Figure 41 Nankai University's Bulletin Board System (BBS)

Invariably, all participants confirmed visiting the university BBS at least once per day. This was evidently necessary for every student given the wide range of activities and needs the system covered on campus. For instance, Yin [Ext 88; 134-138] checked the system before going to bed every day to keep abreast of various activities related to her studies such as lectures, assignments, other course work, and the various clubs on campus³⁸. Yin also used it [Ext 89; 189-196] to find study-partners to help her prepare for the TOEFL test. Hua [Ext 90; 36-38], and in fact all participants recruited for our study in Nankai University found out about our study thanks to a post made on our behalf to this system. As a result we received more than enough contacts from people interested in taking part in our study.

The BBS was also used to buy and sell items and all manner of goods were available there. Yen [Ext 91; 141-153], for instance, bought her past 3 bicycles, a very popular medium of transportation in Nankai University and in the city, Tianjin, through the BBS. Interestingly, bicycles advertised in the BBS were quite rusty, second- and third-hand goods such as the ones shown in Figure 42. This, however, seemed the preferred strategy to keep bicycles from being stolen as new-looking ones were on high demand among thieves operating on campus. This in itself seemed as another form of compliance to social pressures to acquire goods (through the system or otherwise) that were deemed undesirable by thieves.

³⁸ See also Chen's use of the BBS on Ext 65 on page 108.



Figure 42 Rusty bikes like these were on high demand among students in the BBS in Nankai University. Photograph taken on 30 September 2008

The BBS also acted as a sort of informal database of popular knowledge on campus. Participants informed students would resort to the system to ask all manner of questions ranging from the best universities abroad, to the best dress code when attending a job interview (see Jun’s experience on Ext 60 on page 107 above), to, as reported by Hua [Ext 92; 43-51], judging whether someone’s girlfriend was pretty enough.

Finally, the BBS was the preferred medium of entertainment on campus. Nuwa [Ext 93; 48-56] downloaded 6-7 movies per week using BitComet, a BitTorrent client, with a speed of up to 2Mbps. The only requirement for those downloading films and TV series was deleting the file after viewing them. Plenty of Hollywood films and TV series, as well as local productions, were available through the BBS. During interviews all sorts of popular titles were reported by participants including *Rambo*, *Son of Rambow*, *Friends*, *Desperate Housewives*, *Gossip Girl*, *Lost*, *Prison Break*, etc.

Participants did have access to external websites, but this always came at a price, first, because Nankai University had a metered Internet service for 20 RMB (almost £2) per month for accessing websites outside the university intranet. Second, because accessing external websites, especially those in English, was always slower than local options. Because of both restrictions, Hua [Ext 94; 194-199, 221-235] rarely ventured beyond the university intranet. We did not try to ascertain the reasons behind the sluggishness of international websites and whether this was due to restrictions placed specifically by Nankai University or by the so-called *Great Firewall* of China. It suffices to say several participants highlighted this issue³⁹ and this researcher did experience the poor speed mentioned while staying in Nankai University accommodation.

As seen in the above examples, organisations have a definitive role in the transformation of information and communication technologies into common objects in everyday life by implementing policies and measures that determine which technologies can be used and how. In general, organisations seem to resort

³⁹ Chen [121-128] and Bo [91-129] shared the same views regarding the speed of websites beyond the intranet and the availability of enough sources of entertainment within it.

to a few strategies to achieve this. First, as in the case of Masterpoint at the University of Glasgow, organisations seem to impose regulations regarding the use of ICT because of infrastructural limitations (this issue will be expanded later in section 5.1.1 *Infrastructure* section on page 129). Second, as seen in the case of Japan’s subway system and South Korea’s military service, organisations implement policies regarding the use of ICTs to, for instance, control behaviour in public places and to restrict the flux of information to unknown parties. And finally, as in the case of the BBS system at Nankai University, organisations seem to encourage a particular behaviour by providing technologies that may satisfy the information and communication needs of their members and increase, we presume, cohesion and allegiance among the student body.

In this section we have highlighted the definitive influence a few organisational settings had on the samples studied across the countries surveyed. Plenty more organisations and settings are encountered on a daily basis. They all regulate the use of ICTs with different emphases; people take into account these tacit or explicit regulations in the course of their everyday activities accommodating use of ICTs to various settings.

4.1.4 Government Regulation

During the course of our studies in the UK and abroad we encountered another influence on the adoption, use and appropriation of ICT which, although not as direct as the previous issues discussed earlier, did have an impact on participants. We refer to regulations enacted at a national level that might impact people’s access to ICTs albeit indirectly. We identified only four cases of government regulation across the sample.

Chinese participants had a vivid recollection of their last year in high school because of the gruelling task of preparing for the *Gao Kao*, the Chinese National Higher Education Entrance Examination, that takes place during ‘Black June’. This educational regulation enacted at a national level did have an impact among Chinese participants in at least two ways. On the one hand, it postponed the adoption of some computer technologies. Wen [Ext 95; 50-60], a 23-year-old female Chinese student in Glasgow, recalled that even though she became familiar with QQ during high school, she had to delay its use until after the exam because she, like her friends, was really focused on that important event. On the other hand, the Entrance Examination also fostered the adoption of mobile telephony. Hua [Ext 96; 164-176] recalled receiving a mobile phone to remain in touch with her parents as she used to return home from high school every night at 9 pm while preparing for the exam⁴⁰.

As seen in the section 4.1.3.3 *Military Service in South Korea* on page 117, military service among male South Koreans impacted use of ICT among this population. Clearly, the South Korean government has its reasons to impose such behaviour among those fulfilling their military duty. What we highlight here is that this, again, is a case in which the use of ICT has to be postponed to comply with regulations enacted at the highest level. It appeared to be that, at least in this setting, the possibilities of ICTs to, for instance, establish mobile communication, were more than rejected.

⁴⁰ The reason why Hua received a mobile phone is reminiscent of the ‘protective blanket’ character of mobile phones mentioned in section 4.1.1.2 *Mobile Telephony* on page 101.

4.1.4.1 ICTs in Education

Akane [Ext 97; 7-110] described the role of the Japanese government in introducing computers and the Internet in schools and the effects this had on herself and her colleagues. Back in 1994, Akane began working as an English teacher at a high school in Japan. She remembered how, at the time, use of computers and the Internet was very rare among her colleagues. She did have access to these technologies out of personal curiosity and thanks to the support of another colleague who was always at hand to help her sort out her problems with these technologies. Use of email and other ICTs to aid in education was, however, completely absent from the school where she worked. A few years later in 2002—after coming back to Japan from a two year post in the USA as a teacher of Japanese—she was surprised to find out the high school where she got a teaching post was fully connected to the Internet. Apparently, the Japanese government, through the Education Board, launched a program to have all Japanese schools wired to the Internet. Given the availability of this free service at work Akane kept her laptop at work overnight and did not even try getting Internet access at home. According to her account, most other teachers would follow suit or carry their laptops to work every day. A high level regulation such as the one described seems to have had an influence in the way this participant and her colleagues embraced certain ICTs and how these were eventually integrated in education.

4.1.4.2 Piracy

It has been documented that in developing countries government regulations towards the production, sale and use of pirate software and films is very relaxed. The absence of government regulation on these matters has resulted in people's ability to acquire at very affordable prices, or even for free, software applications that are otherwise too expensive. People's ability to acquire any piece of software (almost) for free, or almost any digital content to consume, has also resulted in the appropriation of ICTs.

This circumstance was evident in our studies. Hui [Ext 98; 111-120], for instance, stored around twenty movies in her external hard-drive before coming to Glasgow. Like Hui, Chinese and Indian participants in the first study came to the UK loaded with films stored in their external hard drives—a rather common item among Chinese students at the University of Glasgow—or in actual CDs and DVDs in the case of Indian participants. Throughout the first study we found the distribution of these items among friends was very common. This might be explained by the fact that, as indicated earlier, participants could neither access P2P applications nor watch online video and, therefore, had to resort instead to handling physical media among friends to satisfy their entertainment needs. Furthermore, during the first study, all Chinese and Indian participants, as well as some Greek participants, reported acquiring all software applications installed in their computers by borrowing them from their friends or directly downloading them from the Internet⁴¹.

In section 4.1.3.1 *Masterpoint and the University of Glasgow Student Accommodation* on page 112 we indicated only Eurydice and Aeneas were willing to upgrade their Internet connection to the Premium Service offered by Masterpoint. Aeneas [Ext 99; 143-149, 180-193] was an assiduous user of BitTorrent, a P2P protocol. During the three months in which this participant took part in our study he frequently

⁴¹ As an undergraduate student back in China, Ming stored in her hard-disk movies downloaded at home [165-175]. Danae was familiar with Limewire and Torrentspy to download songs and movies, respectively [135-143]. Eurydice “downloaded many songs” using eMule, Limewire and BitTorrent [35-39]. Nalin did not want to break the law in the UK by downloading illegal material from the Internet, but he borrowed some TV series his flatmates had DVD [166-172].

mentioned his use of BitTorrent to acquire all the software applications he needed. For instance, he claimed to have downloaded ten films just during the first day of his upgrade to the Internet Premium Service. Later, because he was having problems running a version of Adobe Illustrator on Windows Vista, he downloaded the newest version of this software, although to no avail; his problems running this application in Windows Vista remained all through our study. Even though participants were somewhat aware of the illegality of this practice this did nothing to deter them from downloading, copying and distributing films and software applications as needed.

In China we encountered a similar practice among participants, but in a larger scale. As indicated in section 4.1.3.4 *The BBS at Nankai University* on page 118, participants had access to Nankai University's BBS where using the BitTorrent protocol they could not only download as many films and TV series as they wanted, but also all manner of software applications for free. Yin [Ext 100; 89-98], for instance, used her roommate's laptop, since hers was broken, during National Holidays to download fifty movies and TV series like *Desperate Housewives* and *Gossip Girl*. As a matter of fact, a stand for pirate movies was set up every evening outside one of the dining halls in Nankai University selling a wide range of foreign and national films (Figure 43).



Figure 43 A street stand selling foreign films in Tianjin, China. A similar stand was found every evening outside one of the dining halls in Nankai University. Each item of DVD quality was sold for about 15 RMB (£1.50). Photograph taken on 1 October 2008

Governments across the world will continue having an important role in the adoption of ICTs by implementing policies that facilitate or hinder this process. The press has reported at least three such developments. The first case took place in Mexico. To great popular discontent, the Mexican government launched on 10 April 2009 the 'Registro Nacional de Usuarios de Telefonía Celular' (National Registry of Mobile Phone Users), a new program to, arguably, protect its citizens from a rising wave of crimes including kidnappings, threats and extortion in which mobile telephony always plays a prominent role. This new law attempts to keep a record of the over 70 million users of mobile telephony in that country. From this date onwards anybody acquiring a new mobile device or line will be required by law to present an official identity and will have their fingerprints taken⁴². Those with existing services will have one year from this date to supply their details to their mobile phone providers. Otherwise, their services will be suspended (Milenio 2009).

⁴² This is a similar measure to one already implemented in India, although over there is justified by laws dealing with terrorism.

The second case takes place in the UK. The British government has endorsed a Universal Service Obligation (USO)—a commitment to ensure the availability of a baseline service to all its residents—to ensure every household in this country can have access to an Internet connection of up to 2 Mbps by 2012. The reported released indicates that its aim is allowing everyone to

... experience the benefits of broadband, including the increasing delivery of public services online. It will also offer advantages to UK businesses, both those located in areas that will benefit from the network upgrade and those that make use of online channels to engage with their customers (Timms 2009, p. 81).

Finally, in the USA President Barack Obama has promoted health care reform to improve the quality and reduce the costs of the health care system of that nation. To this end President Obama has approved a stimulus package of 19 billion USD over the next two years to improve use of electronic health records and use of information technologies in hospitals and among other health-related practitioners. Apparently, the USA lags behind other four industrialised nations in its use of electronic records among doctors. Currently, only 1.5 percent of 3,000 hospitals surveyed make comprehensive use of electronic records within certain important clinical units in those hospitals (The New York Times 2009). It is expected that such a stimulus plan to introduce ICTs in the health sector will, at least, address the scarcity of resources available to invest in the development of e-health systems. There are, however, a number of other issues yet to be addressed including maintenance costs, lack of staff with technical expertise handling ICT, resistance from doctors (The New York Times 2009) and privacy (The New York Times 2009).

As seen, the role of government regulations, even when indirect, cannot be ignored in any study of the adoption, use and appropriation of ICTs in everyday life.

4.1.5 The Media

Across our studies, particularly when enquiring about the reasons behind the adoption of an information or communication technology, participants frequently mentioned the technology in question (e.g., computers, the Internet, IM, etc.) was becoming popular at the time they began using it. In Korea, for instance, Soo [Ext 101; 115-128], a 23-year-old male student, and the second participant across our entire sample with experience using pagers, recalled receiving one so that his parents could contact him anytime. He also used the pager to be in touch with his friends. At the time, these devices could not send text; therefore, upon receiving a message one had to call back the number displayed.

As discussed before in section 4.1.1 *Domestication* on page 99 and in section 4.1.2 *Peer Support* on page 105, adoption, use and appropriation of ICT are matters in which the family nuclei and peers have a marked influence. Nevertheless, we believe that despite their influence on this phenomenon they are only but one part of the explanation behind the appropriation of technologies. We could rightly ask, where did the idea of using pagers or mobile phones to keep track or children originate? Similarly, where did the idea of using computers to support education come from? Even though parents may have, in turn, acquired those ideas and beliefs from their peers and so on, we believe that, as with other issues of life, many of society's beliefs and expectations are shaped by the media.

Our awareness of media's role on the adoption, use and appropriation of ICT comes from our early forays into this topic. During our pilot study interviewing Panos, a 25-year-old male Greek masters student in Glasgow, we recorded a candid answer to the question of why he acquired a mobile phone a few years earlier:

[Ext 102] To be honest, I got a mobile phone because I was envious... I saw a picture of someone who was really handsome with a mobile phone so I said to myself, 'If you want to be handsome, get a mobile phone.' No one else my age had a mobile phone, so I did it. It was strange to have a mobile phone in those days.

Mass forms of communication seem to exert a powerful influence in the promotion and subsequent use of ICTs by directly or indirectly promoting technologies and by tacitly or explicitly demonstrating when and how these are supposed to be used. As with other issues of everyday life, ICTs are also *socialised* when they are ingrained in public consciousness thanks to media's intervention. Needs finally solved by ICT, personal images acquired by the use of the latest gadgetry, and new horizons arguably opened by novel digital technologies seem to be the standard discourse about ICTs on the media.

For instance, on 27 May 2009 the BBC news network in Britain aired a report analysing the state of broadband connectivity in the UK and how some rural areas in this country still have to put up with dial up connections to access the Internet. The illustration is exacerbated when a teenager featured in the report claims to have to wait up to five minutes to access Facebook's homepage. The report then goes to contrast the experience of this rural area of the UK with another rural area in the south-west of Japan (Figure 44). According to the BBC Japan has the fastest connection to the Internet in the world. The news report proceeds to describe the manner in which a design and marketing consultant is able to keep in touch with his clients remotely thanks to the 48 Mbps Internet connection available in his village (Figure 45). The designer claims that thanks to the Internet connection his life "changed dramatically" and he is now able to enjoy life in the village.

It is claimed the state of the Internet in Japan has not only made possible the improvement of job prospects in rural areas, but almost ensures the success of future e-Health systems that will connect doctors in the city with patients in rural areas (Figure 46). Currently, 90% of Japan has access to broadband connection, but the government is expected to secure access to the Internet for 100% of its population by 2011. The report ends with a shot of the rural designer fishing while the reporter asserts: *'Back in the Southwest, Naoki's country life means he can spend more time on his hobbies. His Internet could soon become even faster. He is hoping to get an optical fibre connection, maybe even a wi-fi connection for the entire valley.'* (Figure 47) (BBC News 2009).



Figure 44 A village in Southwest Japan



Figure 45 A rural worker using the Internet to keep in touch with his clients



Figure 46 e-Health systems are almost a reality thanks to the penetration of broadband Internet in that country



Figure 47 'Bliss is ensured' thanks to abundant broadband Internet connections in Japan

TV is, of course, not the only outlet for this type of examples highlighting the wonders of novel ICTs and the need to have them. Let us consider the case of Facebook on a popular and respected newspaper such as *The New York Times*.

Facebook is a company launched in February 2004 in Cambridge, Massachusetts by Mark Zuckerberg. As of 5 September 2008, the online version of *The New York Times* listed a total of 144 articles classified under the *Facebook* topic (The New York Times 2008). However, the word *facebook* itself appeared in 786 different articles at the time (The New York Times 2008). The first mention of Facebook in this newspaper dates back to 1 December 2004 (Applebome 2004), that is, just 10 months after Facebook was launched. The evolution of the discourse on Facebook in this newspaper is a case study by itself. It goes from labelling Facebook as “the Swiss Army knife of procrastination” (Applebome 2004) to passing references of Facebook as (1) a representative example of one-way communication on the Web (Richtel 2008); (2) a widely popular system of communication in various parts of the world (Heffernan 2008); (3) the battleground between Hasbro and the Agarwalla brothers for the hearts and minds of the users of their Scrabble-like application (Timmons 2008); and (4) as one of the more likely destinations of your recently-taken pictures thanks to the new features of the latest mobile phone handsets (Tedeschi 2008). More extended analyses of Facebook’s impact can also be found in this newspaper. For instance, Facebook is portrayed as (1) a valuable tool, along with other online social networks, for job hunting (Tribble 2008); (2) the most important online venue for Fox News to reach a specific online audience (Stelter 2008); and (3) as a place of comparison for newer online social networks focused on specific interests such as sports (Sandomir 2008). More surprisingly, though, is that all these direct and indirect references to Facebook were made in the month of August 2008 alone.

We argue the media has an important role in bringing ICTs to public consciousness through real or distorted images of the benefits, if any, of these services. This circumstance did have an impact among participants in our study. Adara [Ext 103; 44-53] recalled a time in Greece when, being fond of radio, she heard advertisement sponsored by Internet Service Providers. At the time advertisement focused on the use of IM to chat with friends and not to search for information. In the technical magazines his brother bought she also saw Web addresses which, with the help of her father, she understood to be sources of information. For many participants like Adara the next step was almost natural: learning about computers and the Internet, or acquiring these technologies. Others investigated the purpose of Web addresses displayed on TV or the relevance of having an email address. In any case, the media appeared to plant the seeds of the possibilities of new ICTs as avenues to personal and popular interests.

Participants appropriated novel ICT, mainly computers and the Internet, by accommodating them with existing practices already established to access information through traditional channels of mass communication. Participants accommodated alternative technological resources in order to keep their information habits as undisturbed as possible. This was observed when different circumstances negatively impacted existing patterns of information consumption. Participants did this by exploring alternatives and/or complements. For instance, since it was no longer possible to receive the paper versions of the morning and evening newspapers in India, Osman [Ext 104; 683-689] resorted instead to the newspaper website while in Glasgow. Aeneas [Ext 105; 450-458] also had to be content accessing only the main (scanned) page of his favourite sports newspaper in Greece after this was posted online. In these circumstances participants also appeared to appropriate the mass media character of these ICTs⁴³.

Changing circumstances like the ones described before (e.g., moving to another country) also led to the use of ICT to access information that was previously unavailable. As mentioned earlier, Osman was able to access through iTunes in Glasgow radio stations restricted in India (see Ext 25 on page 97).

Finally, the media not only prompts adoption of ICTs but also instructs on their use. As illustrated by Nilaya, there was a time in India in which she avoided use of chatrooms and IM because, around the time she got Internet access at home, the news were abuzz with cases of girls abused by people met online (see Ext 21 on page 95). These days the media continue shaping people's views on the use of novel ICTs, like online social networks, under basically the same reasons (Barnard 2007; Pogue 2008).

4.2 Conclusions

In this chapter we have described all social influences we were able to identify throughout our studies as impacting the appropriation of ICTs. First, we described the family nuclei and the important role parents and other relatives have in providing and sustaining the appropriation of technology over the long term. We described the manner in which the parents of our participants tacitly accepted popular views on the benefits of digital technology in education. As a consequence, they provided their children from a rather young age with those tools they consider will act to the advantage of their children. Similarly, parents provided mobile telephony following ideas associated with the protection these technologies are supposed

⁴³ We think Internet Service Providers emphasise this turn of ICTs into mass media channels by offering Internet connection, telephone lines and cable TV in bundled deals. More on the role of *marketing* in the next section on page 133.

to provide, the integration of children among their peers, and the bridging of the gap that invariably opens as children mature and move away from the family home.

Children, in turn, favour simple technologies to remain in touch with their parents. As will be explored in more detail in Chapter 6, participants consciously discriminated in their technological choices to communicate with their relatives and peers.

Peers influenced the appropriation of technology in a variety of ways. Their influence was felt directly and indirectly. Direct influences ranged from verbal advice to actual demonstration. Indirect influence was seen in communal and prolonged use of certain technologies in particular contexts. Participants in our study were aware and conscious of these choices and adapted their use of ICTs to harmonise with ongoing and/or occasioned practices across the social settings they traversed.

In their daily activities participants navigated a number of settings where a variety of institutional regulations impact their use of ICTs. The reasons why different organisations regulate the use of technology differently within their influence was not always a straightforward matter. As illustrated, some organisational regulations appeared to follow infrastructural limitations, while others simply sought to preserve harmonious interaction. In other cases it was possible to distinguish attempts to preserve social customs already observed before the popularisation of digital technology.

National governments represent a special kind of institutional regulation whose influence in the lives of our participants was felt more remotely but also in a more encompassing manner. Governmental policies made the presence of computers in education a given; governmental latitude also made possible the availability of technologies otherwise inaccessible for our participants. Governmental intervention indeed affected the manner in which ICTs were appropriated.

Finally, the media was identified as yet another influence in the appropriation of technology. As illustrated, there is a role the media plays in the appropriation of technology by demonstrating why, when and how digital technologies are supposed to be used. Under more stringent circumstances, however, media's role in the appropriation of technology among participants was severely limited.

Chapter 5 – The Social Layer – Place

In this chapter we will analyse the role of the last element of the most exterior layer of our model of appropriation. In our view, elements discussed in this section, infrastructure, marketing and architectural layout, can never be bypassed or subverted by participants and, we think, the general public⁴⁴. People appear to be invariably subdued to these influences even when they might not be aware of them. This is precisely the reason why we call this section *place*. A related set of considerations illustrated by the individual layer in Chapter 4 on page 149 we call *location* to represent an individual and partial knowledge people have of their settings of interaction.

5.1 Place

Any ICT requires an *infrastructure* (electricity, cell towers, etc.) that makes its use possible. Infrastructural limitations affect the uses people give to the technologies they own and operate. All ICTs and the services necessary to operate them are made possible by corporations large and small, for whom these technologies and their services represent a source of revenue. Thus, ICTs only exist in the manner in which these corporations make them available through their *marketing* practices. Finally, *architectural layouts* and the socialising practices already performed in them constrain the manner in which people adopt, use and appropriate ICTs. Perhaps in the levelling influence of the elements discussed in this section lies part of the success of those ICTs we call ‘everyday’.

5.1.1 Infrastructure

It may be obvious to say that ICTs can only be used where and when they are available. What may be less obvious to appreciate is that, to make use of those technologies as ‘intended’, it is first necessary to have an underlying technological foundation that sustains their use: an infrastructure. For instance, computers need electricity to operate; access to the Internet is only possible when the proper cabling is in place; and mobile telephony is only a reality when cell phone towers have been deployed. It is in this sense that we will use the term infrastructure in this section to refer to underlying, and sometimes invisible, technologies that facilitate other more specialised systems and services. We think it is important to highlight the obvious, but important role of infrastructures in the appropriation of ICT and how their limitations influence use.

As indicated, infrastructures provide the platform upon which other services or software applications can be executed. Our studies illustrated how services or software applications can also be seen as infrastructures or platforms for even more specialised services and so on. For instance, computers can be said to be the infrastructure needed to access the Internet; the Internet can be said to be the infrastructure required to access email, P2P networks, video on demand, etc; and finally, P2P networks are the infrastructure required by, for instance, software applications like Skype.

Infrastructures, thus, can be found in different layers. In each layer, infrastructures offer possibilities and restrictions determining the type of service that can be executed on top of them. For instance, in South Korea, where high speed Internet is pervasive (International Telecommunication Union 2008), Hyun-Ki [Ext 106; 123-148] preferred having his friends download a movie from the Internet than copying it from his USB. He chose this option for two reasons. First, because downloading from the Internet was faster.

⁴⁴ That is until a new vulnerability is discovered or a new technology takes advantage in a previously unseen manner of the existing infrastructure, as in the case of P2P networks.

Second, because the price for downloading a movie from a pirate (but subscription only) website was only 3-4,000 won (£2), more or less equivalent to a soda can. Clearly, this practice was only possible where the underlying infrastructure supported it.

In other cases, however, a service might not be implemented even though the infrastructure is already in place. For instance, in China and South Korea it is possible to purchase goods online by debiting the amount directly to a mobile phone bill. This service, apparently, is not available in Japan and the UK. Naturally, this has no relevance for users in these latter countries as other alternatives are in place to pay for goods. The example is simply used to illustrate different services implemented in similar infrastructures.

5.1.1.1 Organisations and Infrastructures

As seen in section 4.1 *Socialisation* on page 99, different social groups and organisations have a large influence on the adoption and use of ICTs. This is possible because organisations invest resources in the provision of infrastructures and services. Organisations and groups have different reasons to provide infrastructures that support use of ICT. These reasons range from the purely altruistic (e.g. it could be argued that the main purpose behind the provision of the BBS at Nankai University was the increase of group cohesion among its students) to those aiming at the promotion of an image, to those with a clear aim to make a profit (e.g., mobile carriers deploy cell towers in order to make a profit for the service they provide).

Sometimes, however, infrastructures habituate systems and services to the detriment of the organisations that put them in place. This is, of course, the case of computer viruses, worms, trojans and other pests of the digital age, and of systems like P2P networks that are all possible thanks to the infrastructure of the Internet.

As seen in section 4.1.3 *Institutional Regulation* on page 111, groups and organisations tend to exercise some control over the infrastructures they put in place by regulating their use to some extent. Although, as seen in that section, organisations exercise these regulations through policies and codes of conduct, these restrictions might be, in fact, due to the actual limitations of the underlying infrastructure. For instance, it was never clear for this author what the nature of the limitations imposed by Masterpoint in student housing at the University of Glasgow were since Masterpoint was, indeed, able to provide their own IPTV (Internet Protocol Television) service in the face of their alleged bandwidth limitations.

Naturally, infrastructural restrictions are not only the provenance of wired connections. Mobile telephony has a stringent set of infrastructural restrictions limiting what users can do with these technologies. In Japan, as previously mentioned, Shiori (see Ext 61 on page 107) recalled a time when it was not possible to send text through pagers, but only strings of numbers that were used to convey messages because of their pronunciation in Japanese. For instance, according to (Katsuno and Yano 2002) and (Kohiyama 2005) ‘0840 meant *Ohayō* or *Good morning*. Later, these codes were also used in mobile phones when mobile service providers would charge per word sent and when there was a 15-30 word limit per text message. Shiori [Ext 107; 71-77] also recalled a time in which mobile phone providers were restricted on

the range of emoticons they offered and in their ability to send them across networks. The variety of emoticons available did influence her in choosing DoCoMo as a service provider⁴⁵.

Also, it was not long ago that South Korean and Japanese participants had to change mobile phone numbers every time they changed service provider as the CDMA standard in South Korea and the PDC, CDMA and WCDMA protocols used in Japan imposed this change (Furniss and Challender N/A). Chin [Ext 108; 136-153], a 24-year-old male student at Ajou University, bore the inconvenience of notifying his friends of his new mobile phone number because of the promise of a new handset when changing service providers⁴⁶.

To be more precise, it is unclear if the limitations of mobile communication just illustrated are due to infrastructural limitations or organisational decisions. For example, an article in *The New York Times* affirms that operational costs for mobile phone operators do not change, whether they handle a million messages or a hundred million, since the communication channel between handsets and cell towers is always available whether a message is being transmitted or not. Thus, according to this article, it is not justified to increase the price of text messages in the face of steady growth in mobile phone adoption in the USA (Stross 2008). More on the role of *marketing* in the adoption and use of ICT later in section 5.1.2 *Marketing* on page 133.

5.1.1.2 Infrastructural Limitations and Their Impact on Users

Participants did perceive the limitations of the technologies they used and owned and, as illustrated, sometimes they even worked around those restrictions. Participants interchangeably blamed the organisation providing the service, the technology used, or their own inadequacy when confronted with infrastructural limitations. For instance, when questioned about the speed of the Internet access in Nankai University's intranet, Chen [Ext 109; 121-128] thought the speed was reasonable. He was aware, however, of other students' complaints about it. Chen thought their problems were due to outdated computers rather than the connection speed.

Restrictions imposed by infrastructures—whether these are due to real limitations or because of organisational policies, or whether these are real or simply perceived—have a detrimental effect on the use of ICT. As illustrated in section 4.1.3 *Institutional Regulation* on page 111, participants were able to *accommodate* to the limitations of the infrastructure. As indicated in that section, some would comply by living within the capacities of the infrastructure; others would abandon technologies or some of their features; and others would seek alternatives.

5.1.1.3 Personal Infrastructures

As indicated above, personal computers can also be seen as an infrastructure with their own sets of limitations in storage, speed, reliability, robustness, etc. The same could be said of other technologies participants owned such as storage units, webcams, digital cameras, etc. To deal with the limitations of the technologies they own, participants apply the same coping strategies just mentioned, i.e., compliance,

⁴⁵ Chihiro, on the contrary, abandoned DoCoMo in favour of AU after she conducted a personal inspection of the emoticons available in each network [151-156].

⁴⁶ Shiori had to go through the same process notifying her friends of her new number every time she changed providers. Nowadays, however, even though changing numbers is no longer imposed when changing providers, DoCoMo, and presumably all the other providers, has a system to notify all contacts of a new phone number [90-93, 98-103].

abandonment and alternatives. For instance, four years earlier, after being hit by a virus, presumably because he did not have a legal antivirus, Christos [Ext 110; 50-60] learned to keep Windows, the firewall application, and the antivirus updated. Not only that, he constantly monitored his computer to make sure it was free from “strange items or programs”. For this reason, he only had the “necessary programs” installed. In another case, Hyun-Shik [Ext 111; 196-201], a 25-year-old male Korean student, ascribed the need to change mobile phones to the fact that their batteries have a finite number of charges. Since he was already half-way through them when we met him, he thought he would soon have to change handsets.

Regardless of the limitations imposed by some infrastructures, the perceived benefits a new technology brings would be so that users are willing to put up with its drawbacks. A classic example of this, and one frequently ridiculed in the media, is the proliferation of mobile telephony despite the poor service offered in some areas or at certain periods in time during its development⁴⁷. In this we see, as with other areas of life, people’s ability to accommodate to changing infrastructures modifying their use of ICTs.

Hyun-Shik [Ext 112; 139-151], a participant with experience abroad, first in Finland as an exchange student and later in the UK as a language student, recalled his initial frustration and disappointment with Internet connectivity in Finland as he tried to continue checking his usual Korean websites. Later, however, while in the UK, he did not recall worrying anymore about Internet connectivity, not necessarily because of a better infrastructure in the UK, but because he stopped caring about Korean websites as his current environment led him to explore different interests and adapt to its ‘limitations’.

We think the incapacity of people to pinpoint the cause of, for instance, decreased computer performance or slow Internet access by distinguishing the role of each infrastructural layer (e.g. the ISP or the computers’ storage capacity or a virus), a kind of *digital functional illiteracy*⁴⁸, is indicative of the way ICTs and their infrastructures are effectively closed for participants. Nevertheless, we think this is a necessary mechanism people develop to effectively reduce the complexity of digital objects and incorporate them with the multitude of non-digital objects people encounter in everyday life. This phenomenon we call the *simplification* of information and communication technologies and is described in more detail in section 6.3 *Simplification* on page 154.

Increased infrastructural capacity sometimes opens the door to more sophisticated or specialised uses of a technology. Zhi [Ext 113; 38-47] recalled first using BT to download movies when she was 18 years old at the time she enrolled in university. Later, she also adopted Xunlei, the most popular BitTorrent client in China, due to a friend’s advice. She used both clients to download movies, but to download songs she used Baidu, the most popular search engine in China. Zhi recalled downloading files on campus was slow

⁴⁷ The same can be said these days of Twitter, a popular micro-blogging system, whose downtime appears to be a somewhat common trait of this service Kincaid, J. (2008). 'Apparently You People Don't Really Care About Twitter Downtime.' Accessed on 1 July 2009, available at: <http://www.techcrunch.com/2008/07/08/apparently-you-people-dont-really-care-about-twitter-downtime/>, Pingdom. (2008). 'Social network downtime Jan-Apr 2008.' Accessed on 1 July 2009, available at: <http://royal.pingdom.com/2008/05/06/social-network-downtime-jan-apr-2008/>.

⁴⁸ My use of functional illiteracy follows Nash, R. (1990). 'The Three Kinds of Illiteracy.' Accessed on 5 May 2009, available at: http://reformed.org/webfiles/antithesis/index.html?mainframe=/webfiles/antithesis/v1n5/ant_v1n5_illiteracy.html. Nash argues that an illiterate person is someone who is ‘ignorant of the fundamentals of a particular art or area of knowledge.’ In a sense, of course, we all are *digital functional illiterates* as we may lack competence regarding some aspect of ICTs, and yet we manage to get by with these technologies.

because of the number of students connected to the network. Downloads would be faster at night. Nevertheless, downloading from own home would be even faster.

As illustrated by Zhi's experience with the use of various technologies to download files and the habits formed around them, the role of infrastructures and their capacities, and their dependence on the organisations that put them in place through their regulations and business practices, is undeniably an important factor in the appropriation of ICT.

5.1.2 Marketing

According to the American Marketing Association, marketing is defined as:

The activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large (American Marketing Association 2007).

Our insight into the role of marketing on the appropriation of ICTs also came to our attention early during our pilot study. As indicated in section *4.1.5 The Media* on page 124, at the time we met Panos who recalled acquiring a mobile phone out of his interest to imitate some advertisement for mobile telephony (see Ext 102 on page 125). Panos comment also brought to our attention the role companies have through their marketing practices in structuring the manner in which ICTs are commercially available, which ones are affordable for different groups, how people are expected to use them, and why.

Our following discussion of the role of marketing on the appropriation of ICTs will be made around mobile telephony as its influence seems to be more evident in this area. Unlike mobile phones, the Internet (or, rather, the Internet service commercialised by Internet Service Providers) tends to be more generic in nature and, therefore, people find it harder to differentiate between some of its distinguishing attributes such as speed, reliability or download caps. This does not mean (as seen before in section *4.1.3.1 Masterpoint and the University of Glasgow Student Accommodation* on page 112 and in section *4.1.3.4 The BBS at Nankai University* on page 118) that people are not conscious of these issues; it simply suggests that these issues are more difficult to gauge unless they are evident.

Business corporations establish infrastructures to commercialise services that depend on them. Common ICTs such as mobile telephony, the Internet, email, Internet Messaging, online social networks, and blogs all depend on such an infrastructure to reach their users. Even though it may not be apparent, everybody pays directly or indirectly to access those services. For instance, one could access Facebook from a coffee house; in many cases, however, this access is restricted to patrons of these establishments. One could also post pictures to Facebook almost in real time using a mobile phone; nevertheless, there is always a cost associated with every single use of a mobile phone that is evident in, at least, the line rental or the payment made to use a mobile telephony line.

There is a large variety of needs that different infrastructures and services satisfy. Their relevance to satisfy needs may come from the value people assign them or from the real value they offer. Here we are not questioning whether some needs are created by the structure of our society. For instance, one could hardly think of heating (at least in the city of Glasgow) and electricity as superfluous services; however,

some would hesitate on putting these basic services on par with, say, cable TV. Nevertheless, we simply want to emphasise that we all depend on different services to go about our lives. Because of this, we are also willing to pay to continue using them; deprivation from them is undesirable.

Similarly, information and communication technologies become everyday objects not only because they can be adopted, used and appropriated but, more importantly, because they are available for mass consumption and having been *commoditised* they are susceptible of being adopted, used and appropriated by large numbers of people. We use the term commoditisation⁴⁹ in this section as the turning of goods into commodities—a product that is the same no matter who produces it—in the eyes of consumers where the only distinguishable factor between one brand of an ICT and the next appears to be price alone (Rushkoff 2005).

As with other services before them, the availability of ICTs and their infrastructures, along with the structuration of activities and social practices around them, transforms digital technologies into indispensable elements of everyday life as they now satisfy previously non-existent needs or existing needs in a new mode. For instance, people have always had the need to communicate with one another; whether that need is for some satisfied through a *tweet* is another matter.

We think that in regards to mobile telephony, our focus of attention in this section, the impact of marketing on the appropriation of ICT is both wide and nuanced. There are two guiding parameters we can use to analyse the role of marketing and its impact on people, these are: costs and perceived value. Both concerns are encapsulated in peoples' minds in the common business adage: value for money.

Mobile telephony is a special case of the *commoditisation* of a technology in a very short period of time. The United Nations' agency for information and communication technologies predicted there would be 4 billion users of mobile telephony worldwide by the end of 2008 (Wray 2008). The impact of such an event produces fierce competition among mobile telephony service providers manifested through various marketing practices such as price elasticity, network coverage, loyalty plans, customer service, value added services and market segmentation (Wray 2008). This circumstance can be readily seen, for instance, in the offerings of *The Carphone Warehouse*, an independent mobile phone retailer based in the UK. As of this writing on May 2009 The Carphone Warehouse offers 'pay as you go' service through nine different mobile phone models ranging from as little as £4.95 for a Sony Ericsson J132 all the way to £199.95 for a Nokia 5800 Red (Figure 48).

⁴⁹ This neologism originated in Business theory in the early 1990s is different to the Marxist idea of *commodification*. The latter refers to the process whereby an item such as an idea is assigned an economic value. Marx's commodification replaces social values with market values turning existing social relationships into commercial relationships Rushkoff, D. (2005). 'Commodified vs. Commoditized.' Accessed on 14 May 2009, available at: [http://rushkoff.com/2005/09/04/commodified-vs-commoditized/..](http://rushkoff.com/2005/09/04/commodified-vs-commoditized/)



Figure 48 Pay as you go deals offered by The Carphone Warehouse on 13 May 2009 in the UK

Many decisions regarding the consumption of mobile telephony by participants came from the perceived value for money it offered. The perceived value of mobile telephony is a very subjective matter usually based, on the one hand, on whatever business organisations choose to offer the public and, on the other hand, on consumers' partial understanding of available offerings, range of services, prices, etc. Participants in our study used their partial understanding of an overwhelming number of restricted offerings devised by network operators (Schwartz 2004) to make decisions regarding the type of mobile phone service they would acquire. Chihiro's experience is representative of this situation. She described her reasons for changing handsets and mobile phone operators in the following manner:

[Ext 114; 151-161] I changed [handsets after graduation from high school] because the battery was not working fine. I used to use DoCoMo first for three years. Then I changed for AU because at that time AU was getting cheaper and the emoticons were better than DoCoMo. I knew it because I compared three companies; I did it with my friends' mobiles and I also went to the shops and check on the Internet. At that time lots of friends of mine had AU. Recently I changed to Softbank because it provides a system to call for free other Softbank users from 1 AM to 9 PM and email it's free. The system it's a special plan, so it's not for everyone. Some of my friends changed to Softbank but I talk a lot so I found it was better to change, then other friends changed. Actually, before I changed other Japanese friends had it.

This example illustrates how, across the settings explored, participants reported joining a particular network simply because they thought it was cheaper than another option, or because it offered a bulk number of free minutes and SMS messages, or because a new handset was offered when changing service provider. These are all issues in which participants were never completely sure of having chosen the best deal available. It was, however, the best deal available within their expectations. Only Miho [Ext 115; 122-129], a 52-year-old female Japanese artist, ever commented on basing her decision to change her

service provider on a more practical issue such as better network connectivity while living in the mountain area of northern California several years before.

The reality of the commoditisation of mobile telephony—a service that is the same no matter who provides it—is evident in participants’ changing network operator as soon as possible. There is no, as it were, customer loyalty for a particular brand. Participants hopped from network to network enjoying the perks each one offered such as a new handset for leaving another service provider. Shiori’s [Ext 116; 70-89] first phone provider in Japan, for instance, was J-Bank. Later, she changed to DoCoMo because of the emoticons available through this carrier. She stayed with DoCoMo for 2-3 years after which she changed to AU in order to acquire a more fashionable handset. She also changed to AU because calls between AU users were cheaper and, at the time, she had a boyfriend also using this provider. Sometime afterwards she changed service provider once more to Vodafone, formerly J-Bank. She did it because she would be able to get a new and cheaper handset. Eventually, she went back to DoCoMo, the provider she used when we met, because of its family plan.

When available and affordable—and this is again a subjective matter depending on the economic resources available to each participant—participants also based their decision regarding mobile telephony in other aspects beyond utility such as handset size, shape, colour and even the number of emoticons available per network. This issue was highlighted by Yon [Ext 117; 101-108] who, having studied high school in the USA, returned home to attend university. She was surprised by the large variety of mobile phone shapes, colours and sizes available in South Korea, as well as the fashionable aspects ascribed to this electronic device. This appeared to Yon in stark contrast to the use of mobile phones in the USA where, in her opinion, they were perceived more as a practical necessity to call and send messages than as a fashion statement.

Costs and handset design are not the only marketing methods used to differentiate mobile phone operators. Many services continue being added along with the standard capabilities of mobile phones. These include TV, radio, mp3 players, Internet access, digital cameras and electronic wallets, to name only those we came across. What remains puzzling to some degree is the fact that these additional features did have an influence on participants’ decisions to acquire their phones, but then use of these features is sporadic at best across the settings explored. One month before we met, Yen [Ext 118; 118-122] acquired in China her latest mobile phone for 288 RMB (£28 approx.). Interestingly, she acquired a “cheap one” because she only needed a handset to call and send text messages. She did this as she realised that most of the features of her previous Sony handset like MP3 player, camera and Bluetooth were of no use to her⁵⁰.

We think the situation illustrated may have at least two explanations. The first comes from what has been mentioned above: participants do take into account the costs of operating mobile telephony. This is especially evident in the fact that, unlike the Internet, in mobile telephony there is always a clear record delivered to the user of the type, length and cost of the service(s) used. In Korea, Soo [Ext 119; 227-234] had to resort to his mother to cover a higher-than-usual bill of 200,000 won (£108 approx.) he incurred

⁵⁰ Hei in Korea, on the other hand, wanted to change her 2-year-old handset for a newer model. She hesitated in doing this because she would have to invest at least 300,000 won (£163 approx.) to do so. She really wanted, however, Samsung’s Haptic phone, although its price tag of 700,000 won (£380 approx.) was outside her budget.

once because of a girlfriend who liked talking on the phone “a lot”. Like Soo, other participants in Korea and Japan using additional services like mobile TV or mobile Internet were aware of their costs and voiced their concerns on exceeding their regular monthly phone bills when questioned about their use. In China and the UK this was not the case as these services are just being introduced or unavailable, respectively.

The second explanation, and the one we are trying to make across this entire piece, is that novel services available through mobile telephony have not become ‘everyday’, that is, they have not yet reached the stage in which they have been *socialised* to the point that users *must* appropriate them to address real or perceived needs. This will be explored further in the *Triviality* section in Chapter 7. At this point, however, special services delivered through mobile telephony are still perceived as a costly amusement in everyday life. Chin [Ext 120; 229-235] highlighted both issues when commenting on the reasons why he did not use video calls through his mobile phone. First, he thought video calls were more expensive than standard calls, and second, he thought people would think he was crazy if they saw him staring at his phone on the street.

Despite the fact that several participants did indulge themselves with the latest mobile phone models, and at least Riko [Ext 121; 87-96] in Japan carried in her handbag two handsets, a WILLCOM to contact her friends and a DoCoMo for her job and landlord, others were quite content with a basic model with standard features. This situation was particularly evident among those with experience abroad who, in those events, returned to more practical considerations of, for instance, cost. Hei [Ext 122; 75-85], for instance, was content with a basic phone to call and send messages while in Finland. This, however, was not the case in her choice of handset in Korea because, as she put it, “... *in Korea we are very sensitive about design and which functions it has*”. Others, like Yon [Ext 123; 61-65], went as far as not even owning a mobile phone at all during her time abroad, relying more on other communication technologies such as IM, international phone cards to call home and even email. This is another case of *accommodation* displayed against forces impacting use of ICTs.

As illustrated throughout this section, mobile operators, thanks to their advertising campaigns in the media, play an important role in teaching people how, when and why mobile telephony should be used and this, in turn, is another important element in the socialisation of ICTs (cf. section 4.1.5 *The Media* on page 124). As seen in section 4.1.1 *Domestication* on page 99, the idea of providing a mobile phone to children entering high school or going away to university is not only a sort of rite of passage of our age, but one also fostered by corporations. Cho [Ext 124; 251-257] in Korea illustrated this circumstance. Cho used a mobile telephony plan from SK telecom for over ten years intended only for teenagers that included 550 free text messages and 60 free minutes for voice calls. Even though the service was supposed to need upgrade as soon as a user turned 18 years old (the service provider would call notifying of this), she was still able to use it four years afterwards—most likely due to a computer glitch. In Japan, on the other hand, as indicated by Chihiro [Ext 125; 133-143], people under 20 required a legal guardian to sign a contract approving the acquisition of a mobile phone.

More blatant attempts to influence behaviour and perceptions towards mobile telephony are depicted in Figure 49-52. Three of these ads associate the glamour of stardom with using mobile phones. The

consumer is thus encouraged to take part of the same life style of the famous even when, as in the case of South Korea, those characters can only be associated with mobile telephony by bending time posthumously. Figure 52 is included to indicate the linking of mobile telephony to local values.



Figure 49 Advertisement for Softbank depicting Cameron Diaz. Photograph taken in Tokyo, Japan on 16 August 2008



Figure 50 Advertisement for Cyon, LG Electronics mobile phone brand, depicting Audrey Hepburn who died on 20 January 1993 before the advent of mobile telephony. Photograph taken in Seoul's subway on 22 September 2008



Figure 51 David Beckham, arguably the most famous English footballer ever, advertising Nokia in an ad found in Tianjin, China. Photograph taken on 30 September 2008



Figure 52 Advertisement found in a convenience store in Aju University in South Korea. Raison is the most famous brand of cigarettes in South Korea where smoking seems to be still perceived as fashionable. Notice the mixing of this with an equally popular issue in that country such as mobile phones. Photograph taken on 7 September 2008

Furthermore, as indicated in section 5.1.1 *Infrastructure* on page 129, organisations exert control over their infrastructures. This is nowhere clearer than in the control network providers have over the mobile telephony infrastructure. As seen many times since the introduction of the iPhone SDK, even novel platforms open to third-party developers continue to be, some would say, arbitrarily restricted regarding their use of network resources (Peel 2008; Ray 2009).

Mobile telephony then only exists within the possibilities made real in specific places by different corporations for whom the commercialisation of the features of this technology is a source of revenue. Within this structure, users can only appropriate those technologies and features that are commercially available and. We believe the influence of marketing in the appropriation of ICTs in everyday life cannot be ignored.

5.1.3 Architectural Layout

As illustrated before, our sample faced a number of constraints that modified their use of ICT given *organisational regulations* and *infrastructural* conditions illustrated on pages 111 and 129, respectively. Also, as seen on section 3.1 *Activity* on page 85, for our sample, succeeding in a postgraduate degree, especially in a different country, was a task that demanded a number of tradeoffs with other (less important) activities. Combined, those three influences have a defining role in the use of ICTs. Those, however, are not the only forces affecting participants. We also documented the influence of the architectural layout of living arrangements in the use of ICTs among our participants.

By architectural layout we mean man-made arrangements of the material world we inhabit and through which we physically move. Unlike many forms of infrastructure, we can perceive the architectural layout with the naked eye. The infrastructure, for instance, in the form of wireless networks, seems to be able to cross physical barriers in ways that extend beyond our grasp. The infrastructure only seems to be restricted by its deployment or its own limitations. For instance, where there are no mobile phone masts it is impossible to access mobile telephony. On the other hand, the maximum range of a GSM mobile phone mast is, apparently, 40 km on flat terrain, but only 8 km on a hilly terrain⁵¹. The architectural layout, on the other hand, is where we perform most of the activities of modern life. It includes places and spaces purposefully designed to support a range of activities such as socialising, self-care, trade, education, etc.

Even though we explored four different settings in four different countries, we will describe with more detail only one setting: student accommodation at the University of Glasgow, given the nature of our first study and our own first-hand experience living there for two years.

As previously indicated, our first study was conducted among international students living in the student accommodation provided by the University of Glasgow. As a matter of fact, this was one requisite for participation in our first study. We did this assuming this requisite would normalise previous dissimilar conditions participants may have experienced at home back in their native countries. In the end, this decision paid off, as we were able to observe different coping strategies in the face of similar restrictions. All participants, however, came from fairly standard Western-style housing; their homes were equipped with bedrooms, toilets and shower rooms, dining and living rooms, and kitchen rooms.

Coincidentally, all Greek participants lived in the same student complex called *Queen Margaret Residences*. Having been inaugurated in 2002, this accommodation complex was the newest student housing offered by the University of Glasgow. It is situated in a middle class area of Glasgow's West End at about 20 minutes walk from the main campus. It offers self-catering accommodation for both undergraduate and postgraduate students in separate buildings. Each flat is self-contained with single *en suite* bedrooms. Each bedroom is furnished with a bed, duvet, pillow and bedlinen; desk, desk lamp, 2 chairs, book shelf and noticeboard; and a wardrobe and storage shelves (Figure 53-54).

⁵¹ http://en.wikipedia.org/wiki/Cell_site



Figure 53 Internal view of a bedroom in Queen Margaret Residences



Figure 54 Another view of a bedroom in Queen Margaret Residences

Each flat offers common dining and kitchen areas. Kitchens are equipped with electric cookers, fridge and freezer, microwave, kettle, toaster, dining table and five tall chairs, and individual cupboards (Figure 55-56). Weekly rent fees of £104.92 (as of the school year 2008-09) include utilities, Internet access, personal possessions' insurance; access to on-site laundry facilities and, when available, a minibus service to and from campus. University of Glasgow manages this university housing in partnership with Sanctuary Housing Association, thus the university retains its role as landlord and is in charge of rent collection (University of Glasgow 2009).



Figure 55 Internal view of a kitchen in Queen Margaret Residences



Figure 56 Another internal view of a kitchen in Queen Margaret Residences

All Indian participants and two Chinese participants in the first study lived in a different student accommodation provided by the University of Glasgow known as *Kelvinhaugh Gate*. This complex is also situated in Glasgow's West End about 15 minute walk from campus. This is also self-catering accommodation for undergraduate and postgraduate students. Flats are self-contained with 3-5 single study bedrooms and common living and kitchen areas. This housing complex offers *en suite* bedrooms. Each bedroom is furnished with a bed, duvet, pillow and bedlinen; a desk, desk lamp, 2 chairs, bookshelf and noticeboard; and wardrobe and storage shelves (Figure 57-58).



Figure 57 Internal view of a bedroom in Kelvinhaugh Gate



Figure 58 Another view of a bedroom in Kelvinhaugh Gate

Each kitchen provides a cooker, fridge and freezer, microwave, kettle, toaster, dining table and chairs, and individual cupboards (Figure 59). As with Queen Margaret Residences, fees are £104.93 per week inclusive of utilities, Internet access, personal possessions' insurance, access to on-site laundry facilities and, when available, a minibus service to and from campus. The University of Glasgow also manages Kelvinhaugh Gate in partnership with Sanctuary Housing Association retaining its role as landlord in charge of rent collection (University of Glasgow 2009).



Figure 59 Internal view of a kitchen in Kelvinhaugh Gate

Finally, the remaining three Chinese participants lived in a third student accommodation known as *Kelvinhaugh Street* situated next to Kelvinhaugh Gate about 15 minute walk to campus. These are also self-catered flats for undergraduate and postgraduate students. This complex offers single study bedrooms and common living and kitchen areas, as well as—and this is the most significant difference with the previously described student accommodations—common shower room and toilet facilities (Figure 60-63). Weekly rent is £86.38. Beyond the common shower room and toilets facilities, this student accommodation is in any other respect like the previous two (University of Glasgow 2009). However, for those living there, there are in fact substantial differences between the quality of these three housing complexes which are evidenced, for instance, by the signs of damage caused by students found throughout Kelvinhaugh Street (which are not evident in the figures provided below), or by the fact that the walls of those apartments are quite thin and it is easy to hear all that takes place in the next room.



Figure 60 Internal view of a bedroom in Kelvinhaugh Street



Figure 61 Internal view of a lounge in Kelvinhaugh Street



Figure 62 Internal view of a kitchen in Kelvinhaugh Street



Figure 63 Another view of a kitchen in Kelvinhaugh Street

One of the most important impacts of the architectural layout of student housing in participants' use of ICTs came from the fact that these quarters were not shared with family members. The range of activities usually associated with a Western-style housing, for instance, kitchens as places to store and cook food, bathrooms for self-care, living rooms to relax or receive and entertain people, etc., were greatly reduced by this circumstance. The fact that this otherwise private sphere was transformed into a semi-public space forced participants to continually renegotiate it with other inhabitants when performing common activities such as cooking, eating, socialising and, in some cases, personal care. Under these conditions, the seemingly more definitive role of each room within a Western-style household became blurred. Consider, for instance, the description provided below by Zhi, a Chinese masters student living in Kelvinhaugh Gate accommodation and who, during our study, shared a flat with four other female students from England, Thailand, Nigeria and China. It is worth quoting to some extent a fragment of an interview conducted with this participant on 9 November 2007 as it provided a description of several items illustrated in Figure 64 and 65:

[Ext 126; 475-501] [In the first picture you see] my textbook and these are the slides for the course material. They gave me this textbook. I write and highlight the textbook. I printed the slides from a model and I put it in this red folder. My phone and watch are there. The toilet paper is also close by. My laptop is an IBM. On my desk there's also food. I have chocolate powder, biscuits, kiwi, which I like, oranges, and a toaster I bought for bread. I have this food here because it's more convenient and I don't have to walk out. The bread for my toaster is also in my room; it's more convenient. I'm lazy. I don't have a kettle, I plan to buy one but I haven't. I like tea, Wen [another participant in our study] has one, she likes tea very much of any kind. She brought some Chinese tea and also bought a lot here. She also likes inviting friends to her flat to drink tea and chatting. I invite some to have toast.

...

When I received the message [you sent] I was cooking and eating my supper and when I came back I saw your message. I was having dinner in the kitchen. I will have dinner in the kitchen if someone is also there and I would talk with that person. If I'm alone I would prefer to have dinner in my room. I would have dinner and listen to music and surf the Internet. If it's at noon and it's lunch I would chat with my friends. I don't watch movies because it's quite a long time and if I can't finish I can't concentrate on my studies. If I watch it I should finish it.



Figure 64 Zhi's desk as a study center



Figure 65 The other side of the same desk acting also as a cupboard

Just like Zhi, most participants in the study in Glasgow⁵² retreated to the only area where privacy could be ensured, that is, their own bedrooms (and when available, toilet and shower rooms). Participants thus transformed their bedrooms into a sort of multi-functional space where different activities, which would otherwise be performed elsewhere, took place. Like Zhi, in the confined space of a bedroom participants performed activities such as entertainment, self-care, meals, rest, study, partying and communication. Across this range of activities digital technology might play or not an essential role. This *cocooning* strategy was used in order to reduce possible frictions among flatmates for what any of them might consider 'inappropriate' use of a shared space.

As seen, while ICTs, and particularly mobile technologies, may open new horizons for their use, these technologies are still effectively constrained by real physical *layouts* and social customs that must be negotiated with regard to other people's activities (cf. section 4.1.3.2 *Subways in Japan* on page 114). Furthermore, as explored in section 5.1.1 *Infrastructure* on page 129 restrictions in university housing at the University of Glasgow further modified use of common P2P and IM applications like BitTorrent and Skype.

The influence of housing layout on the use of ICTs was also evident in the study conducted in South Korea and China. Some participants at Ajou University in South Korea also lived in student accommodation which, unlike that at the University of Glasgow, was even more restrictive since there would be up to four students sharing a single bedroom, a shared bathroom per floor and a few communal dining rooms for the entire student body living on campus. Hyun-Shik [Ext 127; 48-53] described the common sight in any student bedroom as akin to an Internet café: dim lights and roommates prostrated in front of their computer monitors late into the night. It was possible to allocate this many people in one

⁵² Besides her books to work on an assignment, Ping also had in her desk cheese biscuits and hot dogs she would eat raw, as she didn't like cooking; potpurri to relax when feeling tired; grape juice; and wine, a sip of which she drank every night to sleep well. Even though she didn't like visiting the gym, Ping also practiced some yoga in her bedroom [410-429].

single room thanks to the use of bunk beds with individual desks underneath. Clearly, this layout was not the most desirable as indicated by Yon [Ext 128; 115-121], also a student at Ajou University, who preferred commuting to campus than having to put up with unreliable heaters during winter, shoddy coolers during summer time, and the incessant noise of her roommates chattering deep into the early morning during her first year living on campus.

We found similar conditions at Nankai University in China. Most students shared a communal bathhouse and three very large dining hall buildings. Students were allocated to different housing according to their study level (i.e., undergrad, masters, PhD). Some bedrooms were therefore shared among four or six undergrad students, while others assigned to PhD students were shared between two people only. In the face of this, it was not surprise that, as described in section 3.1 *Activity* on page 85, some participants studied in empty classrooms rather than in their bedrooms. Others, of course, were more likely to stay in their dormitories given more favourable conditions to concentrate.

To sum up, we argue that despite the liberating power ascribed to portable ICTs, these are effectively restricted by the layout of the place in which they are invoked. Similarly, as suggested by the case of Japan's subway system on page 114, there are others places of human interaction where the use of ICTs is also constrained not only by the architectural structures of public, semi-public (e.g., movie theatres, restaurants, museums, hospitals, etc.) and private spaces (e.g., homes, individual offices and even motor vehicles), but by the practices already performed in them or agreed upon in certain contexts.

Finally, it is worth noting that most ICTs in everyday life have been absorbed into existing layouts and infrastructures, and that few new spaces have been created entirely on behalf of these technologies—perhaps therein lies part of their success. For instance, as indicated above, in Western-style housing each room tends to have a definitive identity regarding the range of activities that can be performed in each one of them. Thus, although it is possible to, say, eat in the toilet or clip finger nails at the dinner table, for some people these would be considered odd places to perform these activities regardless of the technology used. In the same way ICTs are subsumed into existing architectural structures, their layouts and the activities already performed in them. On the other hand, we can only think of Internet cafés as the only infrastructure and architectural layout sometimes purportedly built to (almost) exclusively house access to the Internet as an activity all by itself.

5.2 Conclusions

In Chapters 3 to 5 we have described the social layer of our model of appropriation of ICTs in everyday life listing all external influences we were able to identify and document as having an impact on the adoption, use and appropriation of ICTs among participants across our studies. In this we have tried to convey not only an ecological view (macroview) of the appropriation of ICTs but also how this phenomenon, in fact, appears to be the result of many other factors beyond merely those found in the convergence of a tool used by a person to perform some activity.

In Chapter 3 we described how communication, studying, finding a job, entertainment and online commerce were prominent activities pursued with ICTs across our sample. We indicated how the turn of ICTs into everyday objects might also be due to the fact that the activities mentioned in many cases appear to be intelligible only in terms of the technologies used to perform them in contemporary society.

At a high level, the use of digital technology by our participants simply reflects the process of structuration or their incorporation into the fabric of contemporary life.

The incorporation of technologies in everyday life was the main concern of Chapter 4. In that chapter we described the influence of two important spheres of influence in participants' lives: the family and society at large. We illustrated how both settings introduced participants to ICTs and in the process not only sustained their use over the long term, but also engendered a number of expectations around digital technologies, ultimately shaping their actual use.

In this chapter we described the last element of the social layer of our model of appropriation. We illustrated three definitive forces or social structures, namely, infrastructure, marketing and architectural layout, that shape the manner in which technology is made available and within which people have to accommodate it. Even though, from a certain point of view, the influence of these forces would only appear restrictive, we think it is also important to recognise that they have made ICTs a somewhat stable staple of contemporary society by fomenting a particular view of ICTs and their uses and by, more or less, delivering that use.

In general, we argue all elements presented in Chapters 3 to 5 structure the way our participants ultimately use ICTs in everyday life in at least three ways: first, they shape expectations on the utility, purpose and manner of use of digital technologies; second, they incorporate these technologies in the prosecution of diverse social practices; and third, they regulate the manner in which digital technologies are put to use.

Throughout these chapters we also illustrated some strategies participants followed to accommodate ICTs to changing environments in order to satisfy their needs. These accommodation strategies will be analysed with more detail in the next chapter, the individual layer. Our goal in Chapter 6 is, therefore, illustrating how, in our view, the accommodation of ICTs is an individual process displayed in the face of constraining and facilitating influences such as the ones described in Chapters 3 to 5.

Chapter 6 – The Individual Layer

In Chapter 3 we explored all contextual elements we could identify as having an influence on the adoption and use of ICTs in everyday life. In a sense, participants do not have control over those elements; whether participants are conscious of them or not, in one way or another they are always there enabling and constraining use.

In this chapter, on the contrary, we will turn to consider some elements participants purportedly manipulated within the frames of action provided by the environment. Elements explored in this chapter integrate what we call the *individual layer* of our model of appropriation of ICTs in everyday life. The actual process participants used to order technologies in daily activities we call *accommodation*. We will also discuss what we believe to be a precondition necessary to accommodate ICTs; we call it the *simplification of digital technologies*, and this refers to the idea that participants seemed to deprive digital technologies of at least some of their multi-functionality, and so render them as tools with more specific functions and features.

6.1 Elements of the Accommodation of Information and Communication Technologies

As explored in the previous chapter, there are a multitude of social influences and environments participants encounter daily as they go about their regular activities. Across these locales, participants may use technologies to pursue activities whose resolution satisfies a need. Even though the multi-functional character of a digital technology would appear to fit many scenarios of use, we documented many instances in which this does not occur and participants would instead resort to using different systems or applications, or only a subset of features, to pursue similar ends. For instance, it could be argued that mobile telephony, because of its support for voice communication, is one of the most faithful types of communication as it can easily convey many of the subtleties of language. If that were the case, one could assume mobile telephony as being the preferred method of communication, at least among all co-located parties. Nevertheless, as seen throughout the different settings of our study, mobile telephony was not the only technology used to communicate among participants living in, say, the same accommodation or attending the same university. Participants instead alternated between different IM clients, social networks, email, etc. according to different considerations. In some cases, they even went without them. On returning home to India for Christmas holidays, for instance, Padma [Ext 129; 1223-1221] avoided her laptop for 4-5 days. She wanted to distance herself from a device she had been staring at for three months while in Glasgow; a device through which she had to do it all. This was despite the fact that even her boyfriend complained because of her online absence.

Furthermore, because our participants have had first-hand experience with the ups and downs of various technologies since their teens, there would appear to be a steady progression towards more robust and sophisticated technologies to communicate and explore information. However, this is not always the case; according to our analysis, the mere presence of a novel technology or system is never reason enough to motivate adoption, use and accommodation of a technology. In everyday life, issues of efficiency, productivity, speed and ease of use, such as those promoted by the media and the technologies themselves, do not necessarily translate into the adoption of a technology. As a matter of fact, participants were able to ‘downgrade’ the technologies they had come to embrace, as in the case of Yen who, as indicated before (see Ext 118 on page 136), would rather go back to using a basic mobile phone rather

than one loaded with features she never used; or modify habits formed around them, as in the case of Riko who had to forego her mobile phone altogether while in Canada as an exchange student (see Ext 4 on page 87).

Our analysis of these circumstances led us to identify some elements over which participants appeared to exert control as they negotiated their activities through digital technologies. The purposeful manipulation of these elements within the context of their perceived reality—that given by influences explored in the previous three chapters—would ultimately determine whether a technology was used and to what end. These elements include: audience, costs, location, message and time.

6.1.1 Message

There were different reasons why participants communicated. Regardless of their similarities, not all ICTs can transmit the same type of information in the same manner. To communicate the greatest sense of intimacy, for instance, participants would tend to rely on those technologies that afford a more direct and faithful level of involvement with another party. This was observed in the use of phone calls and video conferences—arguably, more intimate channels of communication—to speak with family and others with whom participants had more intimate relationships. It was due to this higher sense of intimacy that Hui [Ext 130; 716-737] avoided arguments with her boyfriend over the phone. Whenever she detected some misunderstanding in her conversation with him, she dropped the subject and pursued it further but in a less ‘direct’ medium like email or IM.

As can be gathered from Hui’s experience, intimacy is a subjective issue differently expressed and understood by different people. This may explain why public and semi-public virtual spaces like blogs and social networks were also used by, for instance, Fai [Ext 131; 99-105] to share her happiness and her thoughts with her friends.

In contrast, when the type of message to be transmitted is of a different nature, participants used anything from SMS, to email, to status updates on social networks to communicate and exchange information. Nilaya [Ext 132; 929-934], for instance, used to her advantage the simplicity of email as an opportunity to express her affection and congratulate her boyfriend on his 23rd birthday by sending him twenty-three emails with the words “Happy Birthday!” in different fonts and colours. Participants had individual conceptions regarding the suitability of a technology to transmit a certain message and this was a factor influencing the technology chosen to meet a particular activity.

6.1.2 Audience

Participants appeared to classify their relationships assigning them different channels of communication. A clear case of this distinction was observed when participants communicated with their parents when they were studying abroad. Being aware of their parents’ limited skills with ICTs forced participants like Hyun-Shik [Ext 133; 39-46, 121-127], to resort to the simplest communication channel, that is, fixed and/or mobile telephony, to be in touch with his parents when visiting Finland. Like Hyun-Shik, other participants also adopted, used and appropriated Skype exclusively to contact their parents via voice conference (cf. section 4.1.1.4 *Accommodation of ICTs and Domestication* on page 103).

Peers and friends also receive such a differential treatment. Yen [Ext 134; 155-161], for instance, only shared her mobile phone number on a first-time basis with those she regarded as worth her friendship. Interestingly, this subjective evaluation of friendship potential was never made when sharing her phone number with her lab providers⁵³.

6.1.3 Location

Another element participants take into account when using ICTs was their location. Regardless of the portability of novel digital technologies participants were still conscious of the many influences that keep them from using them anywhere. These influences can come from social practices already established in particular settings regarding the use of digital technologies (see Riko's and Shiori's experiences in section 4.1.3.2 *Subways in Japan* beginning on page 114); others come from the lack, or availability, of an infrastructure that supports certain practices (see Hyun-Ki's experience in Ext 112 on page 132); finally, there were also physical restrictions that prevented use of technologies in particular locales given, for instance, the conditions on which they are inhabited (e.g., when rooms are shared among non-relatives or strangers), or the activities traditionally performed in them (see Zhi's description of her desk in Ext 126 on page 142).

Furthermore, as illustrated by the case of Padma earlier in this chapter (Ext 129 on page 147), some participants also occasionally separated themselves from ICTs in order to engage in a different type of activity, even if this was just resting or relaxing (cf. 3.1.2.1 *Studying* on page 89). From a different perspective, this could also be seen as a rejection of the portability of technologies in order to reinforce a more definitive spatial distribution of activities and the tools used in them.

6.1.4 Time

Just as with location and the portability of technologies, in many situations participants appeared not to welcome some or any of the functionalities of ICTs because they represented potentially powerful sources of disruption from more pressing activities. This was manifested in the fact that participants voluntarily went into a sort of 'withdrawal' from ICTs or from some of their features. During holidays, again as in the case of Padma above, some participants almost fully abstained from using computers and the Internet. In other cases, for example, during periods of high stress because of exams, assignments, or finding a job, as was the case of Nuwa and Chen (Ext 16 on page and Ext 17 on page 93 and 93, respectively), participants actively avoided some of the possibilities of digital technologies as entertainment channels to focus better on more pressing activities. It would not matter if the activity at hand was simply enjoying having nothing to do or attending a different sort of issue, participants used their technologies differently in these types of situations by partially or fully withdrawing from them.

Participants also used technologies differently according to the schedule of their daily routines. For instance, Chen [Ext 135; 210-215] in China insisted she only used the Internet at night in her bedroom, as she spent the morning hours studying in the library, but away from computers. Hui [Ext 136; 197-205] in Glasgow chatted on her computer, watched movies and listened to music, but away from books after dinner and a full day's work.

⁵³ Mei essentially expressed the same view when questioned on this matter. She shared a less direct channel of communication with people recently met, like an email account—communication she could always ignore when contacted in this manner—instead of her mobile phone number [137-147].

6.1.5 Costs

Participants were generally aware of the fact that all uses of ICTs incur a cost, and they appeared to consider this when adopting and using ICTs. This was evident, for instance, in the case of Hei (Ext 122 on page 137) who did “not imagine a world without mobile phone”, even when it had to be a cheaper model while in an exchange program in Finland.

In similar circumstances, participants were more aware of having to live, usually, within a tighter budget. Because of this, they adopted additional technologies to compensate for possible disruptions in communication. To communicate back home, for example, instead of relying in a single application or technology they had to juggle several alternatives. While in Glasgow, to communicate back home, Zhi [Ext 137; 848-862] used Mobile World, a mobile phone provider, with a 6p per minute rate for international calls (and, strangely enough, 16p per minute for local calls). In December, however, she acquired a phone card for £5 from the Post Office that gave her only during that month free calls on Saturdays and a flat 15p charge for any number of calls on Sundays⁵⁴.

In other cases, for example, to avoid paying the extra fee required to access the Premium Internet Service offered by Masterpoint in student housing at the University of Glasgow, participants like Panna (Ext 77 on page 113) formed new habits visiting coffee shops to access unrestricted Internet services, download files using P2P technologies, and watch video online. Others relied on friends to exchange physical media, such as recordable DVDs, to watch movies and TV series (see also section 7.2.1 *Commoditisation* on page 162).

6.2 A Method of Accommodation of ICTs

Participants in our study routinely integrated the above-described elements in those daily activities where ICTs play a role. In our view, this integration was not random but had an underlying rationality. Such a rationality would imply there was an actual method whereby participants accommodated technologies in the face of changing environments. We will attempt to illustrate this method by portraying participants as going through a series of queries that integrate the above elements as they evaluate the suitability of using a technology in a particular context. Nevertheless, we do not assume that participants acted in exactly this rationalising way. We will use the case of communication technologies to illustrate this method of accommodation of ICTs. As indicated in section 3.1.1.1 *Accommodation and Communication Activities* on page 88, communication activities, given their shared nature, appear to involve a wider array of elements between the parties involved in this activity.

In the prosecution of information activities participants also appeared to assess their use of information technologies according to similar considerations as the ones described below. The accommodation of information technologies is illustrated through the example of *FamilySearch*, a genealogy online application, in Chapter 8.

Any intention to adopt or use a digital technology appears to arise from the conflict motivated by the satisfaction of a need regardless of whether this need is as trivial as watching a movie or playing a game, or as important as writing an assignment or preserving filial ties with relatives scattered around the world.

⁵⁴ To be in touch with his girlfriend in India, Osman used Skype, email and GTalk. Nevertheless, he also bought a phone card to call her during Christmas [1085-1097].

The conflict participants face when in this situation is exemplified in the following fragment in which Padma expressed her frustration at not being able to cope with the demands of her ‘online social life’ and those of a masters student:

[Ext 138; 711-720] I am really busy and everyone is complaining that I haven’t been in touch on Orkut. I haven’t even checked it in a very long time. One reason is because my computer was not working but even before that I was finding difficult to make time because I had a lot of work to do all of a sudden. When I was free I would rather just sleep rather than sitting and telling people I’m fine. Orkut is more for the people I don’t really know much and with whom I would say, ‘Hi!’, ‘Hello!’, ‘How are you?’ With these people I often scrap when I’m bored, small talk, but even the same through MSN. Not all of them are on my MSN. On Messenger I have more close friends. I also have contacts with whom I haven’t spoken in a long time, but on my Messenger there are not many contacts, 15 of them; I think, not many. I added a few more now, but that’s it.

It is in the context of such situations that we argue participants went through the process of accommodation we will describe below. This process begins with the question:

1. *What am I trying to communicate?*

Participants considered using a technology when this was believed to be useful in the prosecution of an activity or when the satisfaction of a need can be expressed in terms of the features of a technology. If participants were, for instance, trying to communicate information they were also more or less aware of its nature. The **message** participants tried to convey, whether long or short, trivial or important, urgent or not, provided the first criterion by which a technology was evaluated and reduced the number of technologies considered for this end.

Padma’s experience [Ext 139; 1017-1051] is again useful to illustrate this point. After exceeding 20 hrs of free talk over mobile telephony with her boyfriend in Leeds, Padma still felt the need to send him an email to reproach him for never paying any attention to anything she said. She thought an email was more effective in preserving the things she considered important which, apparently, he failed to notice.

This choice is further restricted by the following query that results from the nature of the message being conveyed.

2. *Whom am I trying to communicate this message to?*

The nature of a message or the type of information that needs to be communicated presupposes an existing relationship with an intended **audience**.

According to our observations, participants treated their relationships differently and their use of technologies reflected this.

As seen earlier, participants avoided using IM clients to chat with their parents since most of them had difficulty operating a keyboard (see extracts quoted in section 4.1.1.4 *Accommodation of ICTs and Domestication* on page 103). Similarly, participants like Adara [Ext 140; 788-791] now tended to avoid forwarding emails to their friends with photos illustrating their life abroad, but instead updated their

online social network status and posted their pictures there reflecting such an event (see also Fai's and Nilaya's experiences in extracts 131 and 132, respectively, at the beginning of this chapter for their experiences with different technology to contact different people).

Having reduced the number of options at their disposal by the previous two considerations, participants then considered their physical location.

3. What technologies do I have at hand in this moment to communicate this message to this audience?

Participants were observed as being mindful of their **location** since both infrastructural limitations (e.g., use of VoIP and P2P networks is problematic when bandwidth is limited) and local customs (e.g., Yin [Ext 141; 220-227] was expecting to apply for a MSN account upon securing a job in China as she thought this was the right thing to do in such a setting) did have an effect on their use of technology, even when their grasp of these issues was incomplete.

Not only that, participants also accounted for the **time** of the day in which a particular technology can be used to reach a person and communicate a message. Zhi [Ext 142; 225-232] in Glasgow, for instance, did not only try to reach her parents' phone in China because it was the simplest of technologies, but also because, given the time zone difference, she was more likely to reach her parents wherever they might be through this communication channel.

Moreover, there was also a sort of seasonality in the use of ICTs. Use of communication technologies among participants tended to decrease during periods of high stress like exam season, finding a job, etc. (see Padma's case in Ext 138 on page 151), and increase during holidays. During the Christmas break in Glasgow, for instance, Zhi [Ext 143; 972-989] finished a full season of a Chinese and a Korean TV series each in only two days. She said she began watching these episodes early in the morning until it was time to go back to bed again. This, of course was not necessarily the rule (see Padma's experience during the same Christmas break in Ext 129 on page 147).

Location and time further reduced the number of options participants had at their disposal to communicate. At this stage, one final element is left to consider before actual use of a communication technology.

4. Can I afford to use this technology at this particular moment and place to communicate this message to this audience?

As we have argued, there is always a **cost** involved in the use of any ICT even when this is insignificant or not evident. Participants were more or less aware of the cost of operating a technology—awareness that was more conspicuous in the use of mobile phones—and this, in fact, prevented them from, for instance, using a mobile phone to call friends on the other side of the world; from downloading large files using mobile Internet; or from using video calls. Adara [Ext 144; 286-293] began using Skype as a cheaper alternative to call her parents in Athens, Greece because she had already spent £60 in phone cards during her pre-session course in Glasgow (see also extracts in section 5.1.2 *Marketing* beginning on page 133).

The costs of operating a technology represented the last element we believe was assessed by participants in our study in the accommodation of communication technologies. It is at this point that we argue participants actually went and used a particular technology to satisfy a need in a given context.

Nevertheless, since participants were never completely sure of the context of their intended audience, and the latter's availability to engage in communication, they may further review their choice according to the imagined (changing) context of their audience. This reflexivity to imagine the activities of another was illustrated by Zhi [Ext 145; 751-756] who was in constant communication with her boyfriend in China. Even though they met online on a regular basis, they rarely called each other. Moreover, she avoided sending him pictures of herself through MSN because she assumed that, being a PhD student, he was always in a lab surrounded by his peers, which might have rendered this type of communication inconvenient or embarrassing for him.

Even though we want to suggest the above method of accommodation was always displayed whenever participants used ICTs, we do not want to imply that participants actually reported using it, or that we literally observed them using it, whenever they related their daily experiences with ICTs. This method is simply a representation that attempts to convey the coherence displayed by participants (in the form of agency and reflexivity) as they described their use of technology within the possibilities and restrictions of the environment they inhabited.

We think participants developed schemes that sped the process of accommodation described. For instance, as indicated above, participants habitually used certain technologies to communicate with certain people, as well as certain technologies to communicate particular types of information (e.g., telephony to communicate with their parents, email for formal matters, etc.). These *accommodation schemes* remained in place until they had to be revisited because environmental circumstances rendered them unfit to the task at hand. It is in those occasions when participants were more likely to go through the above described process in order to re-accommodate their technology use to a new environment. For instance, upon arrival to the UK some participants experimented with diverse options to call home including calling cards, free access numbers, Skype, etc. until they found an option they believed to satisfy best this need. At this point a new accommodation scheme on the use of communication technologies with their parents formed; it remained in place until new circumstances affected it once again.

Sometimes, however, environmental conditions were such that no adjustment could be made that guaranteed continuous use of a technology. When that was the case, participants resorted to (temporarily) *abandoning* a technology until more favourable conditions were in place, or sought *alternatives* to that technology whose use was no longer possible. Abandonment was observed among those participants who, for instance, were no longer able to download files using P2P networks because of network restrictions (see section 4.1.3.1 *Masterpoint and the University of Glasgow Student Accommodation* on page 112 and section 5.1.1 *Infrastructure* on page 129) or among those who stopped using digital technologies altogether while on military duty in South Korea (see section 4.1.3.3 *Military Service in South Korea* on page 117). Accommodation by alternatives was observed among those who, for instance,

had to go without a mobile phone relying instead on, say, public phones to call home (cf. section 3.1.1 *Communication Activities* on page 86 and section 5.1.2 *Marketing* on page 133).

Participants also adopted and accommodated alternative technologies following the above described elements precisely because changing environments made them a reality. As previously illustrated, this was observed in the case of Osman (see Ext 25 on page 97) who readily embraced some content available through iTunes in the UK.

In our view, participants in our study were not the only ones displaying the method of accommodation described above. We infer that others with whom our participants had contact also developed accommodation schemes in their use of ICTs. Participants apparently relied on the accommodation schemes of others (e.g., friends and family) assuming they used ICTs in a similar fashion to their own (a sort of ‘mutual reflexivity’ or ‘mutual intelligibility’). This was also how participants came to realise that in particular contexts certain technologies were the ‘agreed’ mode of communication (for instance, Facebook at the University of Glasgow, but Cyworld in South Korea to share photographs, banter, or chit-chat) they had to embrace. This, in turn, further sustained a communication practice with and through an ICT, and demonstrated and validated it to those who came afterwards (cf. with extracts in section 4.1.2.3 *Indirect Influence* and section 4.1.2.4 *Accommodation and Peer Support* on page 107 and 108, respectively).

The existence of compatible accommodation schemes that were mutually understood or intelligible would also explain why participants did not hesitate in sharing their mobile phone numbers with commercial firms as they expected these would only be used in the agreed manner (see Yen experience on Ext 134 on page 149).

The presence of accommodation schemes beyond our sample could also explain why some of their parents stayed with a mode of communication regardless of the cost incurred (see Akane’s experience while in Edinburgh in Ext 46 on page 104).

6.3 Simplification

In the previous chapter we introduced the idea that participants in our study appeared to have a tendency to obscure the multi-functionality of ICTs. We argue they assigned, as it were, a more unique or definitive functionality per technology out of their need to reduce the complexity of digital technologies. We think this was a necessary step or pre-requisite in the accommodation of ICTs simply because a person can not review and assess all potential accommodation schemes that may result from evaluating all the features of a technology whenever a new context is encountered. The simplification of digital technologies (or the closing of the many possibilities of ICTs) may explain participants’ unwillingness or inability to fiddle with digital technologies and their features, experiment with new applications and systems to ‘facilitate’ their activities (see the case of *EndNote* in section 2.3.3 *Analysis* on page 64), or why some took a major step like performing a full system reinstallation instead of seeking first a less radical alternative to solving a computer’s decreased performance (see Yin’s experience reinstalling her laptop in Ext 57 on page 107)

The simplification of digital technologies was observed in the actual use of ICTs. Most participants viewed themselves as lacking computer skills and, in fact, were neither able to understand how digital technologies work and solve the problems they experienced (e.g., Hua [Ext 146; 237-251] was never able to pinpoint how she got infected with a virus. She variously ascribed this circumstance to some websites she visited or to USB memories used), nor how they could be applied to different tasks (i.e. those they are supposed to address), nor how could they (re)interpret their problems only in terms of the possibilities of a technology.

This behaviour we call *digital functional illiteracy*. In one sense or another, most people are digital functional illiterates, making the best out of the limited knowledge they have of digital technologies to accommodate them in their lives. Nevertheless, this would appear to be regular human behaviour just as not everyone can even properly wield as simple a tool as a hammer and yet we can use hammers with a certain degree of effectiveness.

People's inability, unwillingness or plain lack of knowledge regarding digital technology is reflected, we think, by the low number of features used in any given technology. For instance, participants almost unanimously declared their use of mobile phones was limited to phone calls and text messages—and in some cases in South Korea not even the latter—despite the many features and possibilities of these devices. In this manner, even when some acknowledged purchase of a new mobile phone was motivated by its novel features like mp3 players, digital cameras, and video conference, these features were barely used in practice. Nevertheless, as indicated in section 5.1.2 *Marketing* on page 133 this behaviour can not be fully explained simply as inability or unwillingness to fiddle with digital technology, but as a consequence of more practical economic considerations around which technologies can not be accommodated. Also, this issue deals with social practices among groups of people who may agree on using a specific form of communication regardless of available alternatives (see section 4.1.2 *Peer Support* on page 105).

The simplification of technologies and participants' digital functional illiteracy would appear to render digital technologies as more *rigid* than what they really are, for instance, mobile phones only for calling and texting and little else. While this is useful in the accommodation of technologies as it would give them a more unique and simple role in the performance of activities, it would also prevent people from further experimenting with additional features. The reliability and consistency of technologies to perform what is expected of them and in the same manner they have always done it, would further enforce this rigidity as technologies would tend to be likened, we believe, to more one-dimensional, non-digital objects always with the same function. We believe this circumstance is reflected precisely in the formation and display of accommodation schemes. As indicated above, participants assigned a mode of communication per technology per group even when the mode assigned did not reflect the mode of interaction proposed by the technology. This could explain why it is difficult to reconceptualise MSN as an online social network or Facebook as an Internet Messaging client and a micro-blogging service, despite the fact that these features are now offered by those services (cf. section 7.2.2 *Usability Issues* on page 164).

Ultimately, though, we argue the simplification of technologies is a reaction to the complexity resulting from multi-functionality. In practice, participants simply were not able to devote a long period of time to master or understand all the features of a digital technology, as they had to attend to more immediate issues in everyday life. Fiddling with technology for its own sake was never mentioned by participants when describing their uses of ICTs in their daily activities; they always served a purpose, even when unique, and therein lied their worth.

From a different perspective, it could also be argued that participants only used a few (features of) ICTs to pursue a narrow set of activities because there appears to be a concerted social effort to render some activities intelligible only in terms of a few features of technologies while the rest are simply ignored (cf. section 4.1 *Socialisation* on page 99). For instance, these days it is difficult to conceive, say, writing a university assignment across the settings explored without a computer (cf. section 3.1.2 *Information Activities* on page 89). For this reason, all participants across the settings explored strived to own a computer by the time they enrolled in university. In this situation, it was not only the participant who aimed at owning a personal computer, it was also the form in which assignments were expected to be submitted, and also the manner in which some parents believed their children were properly equipped for this stage of education (cf. section 4.1.1 *Domestication* on page 99). All these issues influenced and sustained the use of a technology, but they did not necessarily dictate the proficiency with a technology participants had to develop or the number of features they had to use.

On the other hand, we think other important areas of life like assisting the elderly, or more mundane matters like cooking and personal care, still lack the same type of commitment or concerted effort to (or intelligibility in terms of) digital technology from all the parties involved in the different aspects of these other activities. For instance, even though considerable investment has been announced to make e-health a reality by some countries like the USA, it is also recognised that a number of issues should also be coordinated to make this a reality including maintenance costs, lack of staff with technical expertise handling ICT, resistance from doctors (The New York Times 2009) and privacy (The New York Times 2009). As can be gathered, this goes well beyond the suitability of a technology to address the task at hand and more into the role of various social elements that structure activities around tacitly approved forms (cf. sections 4.1.1.2 *Mobile Telephony* and 4.1.3 *Institutional Regulation* on pages 101 and 111, respectively) that are provided for their prosecution and that sustain them (see also section 5.1.1 *Infrastructure* on page 129 and section 5.1.2 *Marketing* on page 133).

6.4 Conclusions

In this chapter we have illustrated what we believe to be the method whereby participants in our study accommodate ICTs within the social structures that both facilitate and restrict the adoption, use and appropriation of these technologies.

The method of accommodation here presented illustrates a number of issues whereby participants took conceptual control over the technologies that surround them to pursue everyday tasks. The method described seeks to highlight participants' conscious choices in the face of changing environments even when they are based on incomplete knowledge. We argue all participants accommodate technologies

through accommodation schemes that are formed and revisited whenever their environment is altered. Accommodation schemes speed the process of accommodation and give it stability.

To accommodate a technology, participants need to first grasp a purpose for it. As participants do so they form accommodation schemes with technologies; in this process, other features and possibilities of digital technologies are unintentionally, but effectively, obscured in practice. The simplification of digital technologies, however, is necessary to fit technologies within the horizon of activities one performs in everyday life. In our view, the (unintentional) closing of the many features and possibilities of novel technology is at the root of people's digital functional illiteracy, or their incapacity to master ICTs.

In the next chapter we will review the last part of our model of appropriation. This stage is characterised by the formation of individual views and meanings regarding ICTs in the context of social influences. These, in turn, sustain use of digital technology over the long term and assign them a more definitive 'place' in everyday life.

Chapter 7 – The Digital-Tool Layer

In this chapter we will explore the last layer of our model of appropriation of ICTs: the *digital-tool layer*. We use this label to emphasise some attributes, characteristics or images we think ICTs acquire as they are accommodated in practice. Sometimes, however, even before digital technologies are used, they may already be ‘loaded’ with these images or attributes. Each one of the three attributes we will discuss in this chapter are highly subjective and represent what ICTs come to stand for or represent in each participant’s life after they accommodate them within the social structures they encounter on a daily basis.

In section 6.3 *Simplification* on page 154 in the previous chapter we discussed the simplification of digital technologies into uni-functional objects. We argued this phenomenon was observed in the way participants in our study obscured in practice the multi-functionality of complex technologies to accommodate them in their daily activities. We suggested this phenomenon could also be seen as a consequence of the way social structures inhibit the use of some of the features of ICT via costs, infrastructural limitations, social practices, etc.

We argue the structures of society (those explored in Chapter 3) are behind the images or attributes frequently associated with ICTs even before they are acquired and used. In this manner, for instance, mobile phones were mainly acquired to enjoy the benefits of mobile telephony. iPhones, for instance, could also be acquired to use as *spirit levels* (Posimotion 2009), nevertheless, this is not the main feature or function society has come to expect from mobile phones in general, but one that may become evident afterwards under particular circumstances.

Assuming then that the simplification of digital technologies is not a unilateral process for which a person is solely responsible, but one also influenced by the social environment, we will now propose three simple characteristics, images or attributes ICTs acquire as they are appropriated including relevance, triviality and meaning. According to our analysis, these attributes can be identified among those ICTs participants appropriated.

As in the case of the elements of the accommodation of ICTs (see section 6.1 *Elements of the Accommodation of Information and Communication Technologies* on page 147) these characteristics ICTs acquire are our interpretation of participants’ behaviour around these technologies. For us, these attributes stand for the ultimate integration of digital technology within a person’s environment. In other words, for us the endowment of these attributes, relevance, triviality and meaning on ICTs represents appropriation.

We want to emphasise again these attributes, characteristics or images ICTs acquire were highly subjective resulting from individual processes of accommodation whereby these technologies were ordered within each participant’s perception and use. Even though digital technologies were portrayed by society precisely as relevant, trivial and meaningful tools for a variety of tasks (see *Chapter 3 – The Social Layer – Activity* on page 85) this alone did not produce appropriation. Technologies, we argue, can ultimately acquire these images and be appropriated after going through a sort of ‘filtering process’ in which they were made part of accommodation schemes (see *Chapter 6 – The Individual Layer* on page 147). Accommodation schemes can only be formed or retrieved in novel or common situations because there exists the *experience* or *expectation* that a technology will fit the task at hand. To better illustrate

how these attributes or characteristics are associated with ICTs sometimes even before they are acquired, let us consider the following extract. Aeneas portrays the typical experience among participants across the settings studied regarding the adoption of computers and the Internet:

[Ext 147; 27-31] I was fifteen when I requested an Internet connection. The computer was in my bedroom. I wanted the Internet because we were learning about it and surfing in classes in school and I liked it. In school we were asked to search information about our assignments and also to translate information from Greek to English.

Our interest at this point is not with those elements we explored in the previous chapters such as institutional regulations, infrastructures, etc. or the accommodation process itself. Now we want to focus on those images or attributes associated with ICTs that can be gathered from common events such as the one described. In this case, in our view, the incorporation of personal computers and the Internet in the educational program of at least one Greek school around the year 1999 has transformed the otherwise mysterious nature of sophisticated technologies into one of relevance, triviality and meaningfulness for or in the educational endeavour.

We think this was achieved in the following manner. By reason of being effectively available in this school, computers and the Internet suddenly became common and accessible objects (*trivial*) within this school's ecosystem. The integration of these technologies in the educational program of this school appeared to promote the *relevance* of these technologies in education. This was done to such a degree that for Aeneas there appeared to be nothing else to do but requesting access to the Internet if he was to successfully complete his assignments. That Aeneas' parents obliged to this request also indicates their implicit acceptance of the relevance of these technologies in education. In turn, the provision of a computer and the Internet by Aeneas' parents may be seen as an act whereby they uphold their commitment and allegiance to their role as providers for their child. In this sense these technologies became *meaningful* as they came to represent enhanced educational opportunities for a child and not a simple technological amusement. For Aeneas himself the computer also came to represent a meaningful object of the educational endeavour and of his (augmented) chances to succeed in it.

We will now proceed to explore in more detail each one of the mentioned characteristics, which we believe represent the appropriation of ICTs.

7.1 Relevance

As indicated in previous chapters, ICTs exist to pursue activities that can be interpreted in terms of their features. Usually, these activities are those classified as information and communication activities. Nevertheless, across the settings explored not everyone had the same conception regarding the relevance of ICTs even in these types of activities. Different people appreciate differently the same technologies and, therefore, the relevance of ICTs to satisfy information and communication activities is both *perceived* and *practical*.

7.1.1 Perceived Relevance

The relevance of an ICT may only be *perceived*. For instance, some participants had strong images of the type of people using certain ICTs. Ping [Ext 148; 57-58; 150-151] described in this manner her reasons to

adopt MSN, “*I started using MSN because it was more international, more global. QQ is only known in China.*” Ping later recalled why she adopted MSN Spaces: “*I started using MSN Space because it had more features than QQ Space. MSN was faster and foreigners can see your website; the QQ Space is limited to China.*” A similar view of MSN was echoed later when conducting our study in China. Jun [Ext 149; 195-198], for instance, began using MSN because she knew that, “... *in many companies people communicate with others with MSN rather than QQ*”. Apparently, QQ is an IM client whose use was discouraged in office settings, presumably as a consequence of the volume of spam plaguing this network. These examples illustrate the manner in which MSN was perceived as a relevant tool/application and assigned this characteristic or image even when its relevance was not yet justified in practice. As such, MSN was also made part of an accommodation scheme that would be eventually applied in a particular situation, for instance, upon securing a job, and therefore evaluated in practice.

The perceived, but perhaps unrealised, utility of a technology in a certain context may explain behaviour described earlier, for instance, in the acquisition of a new mobile phone. As indicated, some participants indeed strived to acquire new mobile phone models with many novel features such as mp3 player, digital camera, radio, video conference, etc. but in the end hardly used these features at all (see the experiences of various participants in section 5.1.2 *Marketing* on page 133). In our view, there was a perceived image of the utility of these features that in practice was never achieved and, therefore, no lasting accommodation scheme could be formed; if one was indeed formed based solely in an expectation this was ultimately discarded.

Similar expectations were manifested in the acquisition of brand new laptops. Some participants informed their decision to acquire a new laptop was based on the fact that they were starting a masters degree and, therefore, their old model needed replacement for a faster model. Before coming to Glasgow, Zhi [Ext 150; 212-215] also acquired a new laptop because her previous model “sometimes didn’t work” and because it was “manufactured in China”⁵⁵. Even though it would surely require a more organised approach to undertaking a masters degree without a personal computer, this was in fact the norm not long ago. The same could be said of having a faster computer unless one is, of course, in the business of rendering 3D animations. In all these cases we see a perceived expectation of what participants believe was possible to achieve with the latest technology—As argued elsewhere, this also reflects the tight integration in contemporary society of ICTs with specific activities that can be expressed as information and communication activities, of which studying happened to be one and the central concern of our sample.

7.1.1 Practical Relevance

We have described several situations in which environmental conditions affected the manner in which technologies were used by participants in our study (see, for instance, section 4.1.3.1 *Masterpoint and the University of Glasgow Student Accommodation* on page 112). In these types of situations, participants evaluated their resources or technologies, accommodating them and forming schemes to deal with novel situations. For instance, Skype was adopted by some participants and became part of an accommodation scheme for two reasons: (1) the service was free (when communicating with a person with a Skype

⁵⁵ Ping [129-132], Aeneas [129-130], Christos [71-76], Nalin [149-153] and Padma [126-132] acquired laptops before coming to Glasgow. Nilaya [189-196] was the only participant without a laptop during the first few months of her masters degree in Glasgow.

account) or at least offered a competitive price against other options (e.g. mobile phones, international phone cards, etc.); and (2) the protocols implemented in Skype allowed this application to effectively bypass network restrictions imposed on the student housing network (see various experiences in section 4.1.3.1 *Masterpoint and the University of Glasgow Student Accommodation* on page 112). Under this particular set of environmental circumstances Skype was not only integrated in an accommodation scheme, but also became or acquired the image of being *practically relevant* as it effectively made voice communication possible.

The relevance of ICTs, whether real or perceived, is not definitive. As seen many times through the experience of our participants, what was relevant in one context may not be so in a different one and, therefore, a new accommodation scheme was required. Facebook, Skype and other technologies were adopted by participants while in Glasgow but later abandoned in a different context (see section 4.1.2 *Peer Support* on page 105). Similarly, participants came to use computers and the Internet to do actual school work until they entered university and beyond, but rare were the cases before that (see section 3.1.2.1 *Studying* on page 89).

As will be seen in the next section, the image of relevance ICTs acquire appeared to be related to its triviality.

7.2 Triviality

In everyday life, people face a number of tasks and decisions in the prosecution of their normal activities. Those who have appropriated digital technologies may consider whether these can help them in meeting their daily, mundane challenges in various scenarios. Those who have appropriated digital technologies may be able to frame their problems, with different degrees of success, in terms of the possibilities of ICTs within the horizon of expectations engendered by the structures within which they live (cf. Chapter 3); others cannot.

As seen in section 6.2 *A Method of Accommodation of ICTs* on page 150, participants in our study formed accommodation schemes assessing those technologies they have access to in order to find the most suitable to the task at hand. To put it differently, the most *trivial* technologies are those at hand or those available and, therefore, prone to be considered as part of an accommodation scheme. In our view, different factors contribute to the *trivialisation* of a technology or to making a technology pervasive in everyday life and, therefore, prone to be made part of an accommodation scheme including commoditisation, usability issues, its socialisation, and the place of interaction.

7.2.1 Commoditisation

Formulated back in 1965, Moore's Law maintains that the number of transistors (microprocessor performance) doubles every two years. Three are the main economic consequences of Moore's Law including the growth of the semiconductor industry, the emergence of the software industry, and the commoditisation⁵⁶ of computers (Liddle 2006). Of these consequences, the latter seems to have the most direct impact on users. Vast numbers of new applications, services, and digital devices have been

⁵⁶ This neologism originated in Business theory in the early 1990s is different to the Marxist idea of *commodification*. The latter refers to the process whereby an item such as an idea is assigned an economic value. This process replaces social values with market values turning existing social relationships into commercial relationships Rushkoff, D. (2005). 'Commodified vs. Commoditized.' Accessed on 14 May 2009, available at: <http://rushkoff.com/2005/09/04/commodified-vs-commoditized/>.

developed for consumer use (Keyes 2006). A market thus saturated necessarily leads to the commoditisation of digital goods, that is, a state in which the sole differentiator between similar goods is price. This effect was also felt by our participants at different stages in their lives and with different technologies, from the emergence of personal communication technologies like pagers, all the way to the popularisation of digital cameras, mp3 players and mobile phones. In the following fragment Osman conveyed his own experience regarding the commoditisation of mobile telephony:

[Ext 151; 99-102, 109-112] I got my first mobile phone when I was 17 years old. Mobiles just started in India at that time 1999-2000, but now is like everybody has one, even the sweeper, who is in utter poverty carries a mobile because it's very cost effective, incoming calls are free in India. To make a call is peanuts. ... I was the first in my family to have it in India. Now everybody has one. When I got it, it was costly, hardly people had it. That was in 1999-2000. In 2002 it picked up. My dad gave me a handset. My cousin took my first mobile, my second my dog chewed it, the third was lost by a friend, and the fourth was the last one.

The commoditisation of at least the basic services of mobile telephony and the existence of low-end models appeared to turn these digital objects into disposable items than can be used and discarded almost at will. As a matter of fact, some participants received their first mobile phone during their mid-teens; in their early twenties, some of them were already using their fifth or sixth model, as in the case of Hua [Ext 152; 106-111, 120-123]⁵⁷.

The commoditisation of mobile telephony has made possible that, by the end of 2008, 4 billion people in the world own a mobile phone. This event, in turn, has created fierce competition among service providers to differentiate their products through marketing practices based on price elasticity, network coverage, loyalty plans, customer service, value added services and market segmentation (Wray 2008) (see also section 5.1.2 *Marketing* on page 133). Participants evaluated what technologies to use according to their imperfect understanding of the value for money this or any other technology represents. Upon arriving to Glasgow, for instance, Nilaya [Ext 153; 778-790] acquired a pay as you go number with Orange because she needed a connection. Eventually, she changed for Vodafone because she was told this was a cheaper option to call India. In the process, however, she was also using O2 as they had unlimited free calls to India.

Not all ICTs, however, are commoditised at the same pace and not all participants had the same views regarding the costs associated with using ICTs. No matter how old, it is still difficult to picture someone as being as careless with a laptop computer as Osman (see Ext 151 above) was with his mobile phones. The depreciation⁵⁸ of laptop computers, at least among our sample, appeared to be slower and even though most participants did acquire a new laptop before coming to the UK, others continued using older models perhaps for lack of resources to acquire a new one or, like Ming [Ext 154; 156-163], the only participant doing heavy computation in her bioinformatics masters course, simply because her computer still performed its functions as expected. Similarly, the fact that mobile phones have been commoditised in such a peculiar manner does not imply that everyone under any circumstance is eager to change models on an ongoing basis. Some participants indeed appeared to be quite content with an old mobile phone

⁵⁷ It is worth mentioning what Hua added to this observation in the validation phase of this study. Hua suggested mobile phones are replaced not only because they have been commoditised or because they are fashionable items, but also because, being the target of thieves due to their associated cost, they are prone to being stolen or 'lost'.

⁵⁸ Depreciation is the decrease in value of an asset due to obsolescence or use.

with the most basic functions; others had to adapt to more stringent economic conditions when abroad (see section 6.2 *A Method of Accommodation of ICTs* on page 150).

The commoditisation of technologies, therefore, contributes to the trivialisation of technologies and this in turn influences their accommodation, but it is not the decisive factor of this process (cf. section 6.1.5 *Costs* on page 150).

7.2.2 Usability Issues

From a pure usability perspective, popular ICTs like blogs, online photo sharing, and online social networks would appear to be successful because they have reached a level of ‘usability maturity’ in which even first-time users can operate them with a certain degree of proficiency within a short period of time (Nielsen 1993). For instance, before the creation of YouTube it was possible to share video online; however, this operation would require specialised skills and resources mostly reserved to a few. The creation of YouTube, and of the many copycat services that followed it, not only popularised the idea of sharing video online, but also eliminated the need to have any of the technical skills previously required. Data provided by the Digital Ethnography group at Kansas State University illustrates YouTube’s success: as of 17 March 2008 78.3 million videos have been uploaded only to YouTube, with an average 200,000 videos uploaded per day of which 80.3% are amateur productions (Digital Ethnography Group Kansas State University 2008).

Usable interfaces do facilitate the operation of ICTs, nevertheless, as we have been arguing throughout this thesis, usability by itself does not guarantee accommodation and appropriation. As illustrated through Shiori’s experience memorising sequences of numbers to convey messages when pagers with LCD screens were popular in Japan (see section 4.1.2.3 *Indirect Influence* on page 107), or by the popularity in many parts of the world (but not in all) of SMS via a numbered keypad, accommodation and appropriation defy explanation strictly in usability terms.

At a minimum, users will always need to learn the bare essentials of the visual, sound and word language used to represent and convey information through digital interfaces. Thus, even the ‘simplest’ of interfaces will always appear difficult, and therefore not trivial, for those who lack the minimum ‘language skills’ required to use an interface. Not only that, users will also need to grasp the conceptual model proposed by an interface (e.g. management of friendship through online social networks, background awareness in internet messaging and status updates through micro-blogging services, etc.) and evaluate its relevance in the performance of everyday routines.

The usability of an application, and therefore its potential to be considered trivial and eventually accommodated, is always affected by issues intrinsic to the process of accommodation such as the message that is to be transmitted, the audience of that message, and the location and time where an application can be used (see also sections 6.1.1 *Message* to 6.1.5 *Costs* beginning on page 148). In other words, what may be usable in one scenario may not be so in another. For instance, it could be argued voice communication through mobile phones is a feature with a high level of usability, so much that it can be experienced along a whole spectrum of activities like walking, watching TV, eating and even driving a car. Hence, we think, at least part of its success. The same is not the case, or so we think, with SMS. The usability of this latter feature as implemented in current technology is so that other activities may have to

be put on hold to engage in typing a message. The accommodation schemes formed around these features are, therefore, different due to the usability of each feature.

We think ICTs also become trivial when in practice they ‘disappear’ in the background of an activity by reason of being perceived as consistent and reliable. Technologies are reliable when they perform what is expected of them (see our discussion on this matter in section 6.3 *Simplification* on page 154). Technologies are consistent when they perform in the manner they have always done it. Because of both circumstances, people can engage in the prosecution of an activity ‘in the usual manner’ without conscious thought about the technology used to that end or its inner workings. This remains true whether engagement in an activity is protracted, as in the case of writing an essay, or brief, as when updating a personal status in an online social network. The ‘transparency’ of a technology or its ‘readiness-to-hand’ is thus not the same for everyone (Chalmers 2004).

A technology that breaks would not only disrupt the activity performed but also the image of triviality people may have formed—since it would no longer be consistent and reliable—and its possibilities of remaining part of an accommodation scheme. In our view, these two issues, consistency and reliability, also contribute to the accommodation of these technologies in people’s lives (cf. section 6.3 *Simplification* on page 154).

7.2.3 Socialisation & Space-Place

In our view, ICTs also become trivial as they are embedded in a cultural horizon that realises and sustains their use. This occurs not only through infrastructural conditions and marketing practices that make these technologies both effectively available in certain geographies and subject to various restrictions, but also through social practices that first, create expectations around digital technologies and second, demand and regulate their use across different settings to pursue common activities. Eurydice’s experience [Ext 155; 485-520, 884-891] with Facebook is illustrative of the issues mentioned. Several weeks after her arrival to Glasgow, Eurydice finally acquired an account with Facebook due to the insistence of a German friend she met several years before. At first, she did not know how to operate this application and was confused with all the features available. In time, however, she began adding more friends and eventually even assisted her mom (through MSN) in acquiring a Facebook account so that she could see her pictures and those of a cousin’s baby. Eurydice’s boyfriend also signed for a Facebook account, but only to see her pictures as he was having problems downloading the pictures she sent by email. By the time Eurydice went home for Christmas holidays, she logged on Facebook to send her friends Christmas and New Year’s Eve cards. (A more detailed account of the influences here mentioned in the appropriation of technology can be found in sections 4.1 *Socialisation* and 5.1 *Place* on pages 99 and 129, respectively.)

In practice, the issues illustrated through Eurydice’s experience were evaluated by participants in terms of the audience of a message (cf. section 6.1.2 *Audience* on page 148) and the location of interaction (cf. section 6.1.3 *Location* on page 149). Their assessment of these matters further shapes what technologies can be considered trivial and suitable for accommodation and appropriation.

7.3 Meaning

One of the consequences of humans’ ability to have a representational system is their capacity to continually assign and reassign meanings to a changing environment and the objects within it (Bourges-

Waldegg and Scrivener 1998). In our view, ICTs fall within this process and may even be given meanings that may have no relationship with the practical issues whereby they come to exist or the activities they are called to support (Philibert and Jourdan 1996). For instance, as indicated earlier, Jun (Ext 149 on page 160 above) adopted MSN because using this application symbolised moving away from being a student and into a more self-sufficient life style as an employee. Others upgraded mobile phones when possible—as seen, not necessarily because of their many features that will ultimately lie unused—but because their aesthetic design places them as fashionable consumption items (see again section 5.1.2 *Marketing* on page 133).

In our view, and in accordance with our conception of appropriation—i.e., an individual display of human ingenuity whereby digital technologies become embedded in the landscape of everyday life according to local needs and customs—ICTs are appropriated when they are endowed with meanings by individuals.

In the example at the beginning of this chapter, we suggested Aeneas' parents gave computers and the Internet certain meanings. This occurred not necessarily because his parents were directly interacting with these technologies, but because of the role these technologies are supposed to fulfil in the larger context of the parent-child relationship as supportive of the educational endeavour. In fact, these days it would be hard to conceive of parents deliberately keeping their children from using computers.

In other cases, however, meanings associated with digital technologies are indeed a consequence of their features. For instance, in the earliest pager models the entire interface of these devices was contained in a single beep that signalled the need to return a call to the only possible originator of that communication request. It could be argued that such a primitive interface was, nevertheless, almost entirely responsible for the realisation of the idea of personal, mobile communication. Since pagers were initially provided by corporations to their employees, these items apparently stirred the earliest debates regarding company surveillance beyond the workplace and the dissolution of boundaries between home and job. Pagers were also responsible for a whole new culture of 'intimate' communication (Okada 2005).

Given the nature of the information gathering endeavour, usually a solitary activity, meanings assigned to information technologies seem to be given on an individual basis. Osman [Ext 156; 183-194, 260-273], for instance, was quite pleased with his ability in Glasgow to listen to a BBC radio show at 2 am called *The Men from the Ministry* and would listen to it on a regular basis. In situations such as this he was not concerned with pursuing this activity according to some agreed consensus with somebody else; whatever he did with these applications was entirely in his hands and thus meanings were individual.

Another way in which ICTs become meaningful is when they come to stand or represent an activity or, conversely, when an activity becomes synonymous with an ICT. This is observed, for instance, when one no longer refers to searching information online as 'searching', but as 'googling'⁵⁹ or when 'facebooking'⁶⁰ and 'twittering' come to represent, say, a form of wasting time and a sort of awareness of the whereabouts of another, respectively. For Hui [Ext 157; 603-620], for instance, the use of Wulong and Kucco, two BBSs, to share interesting things through new posts started by herself or to ask questions about schooling in the UK was very common in her daily routine. Just like Hui, other participants in our

⁵⁹ <http://www.urbandictionary.com/define.php?term=googling>

⁶⁰ <http://www.urbandictionary.com/define.php?term=facebooking>

study discussed their experience with technology in a similar fashion, as if it was understood by everyone that an ICT (e.g., a laptop computer) was the ‘natural’ way to perform certain activities (e.g., writing an assignment or watching a film) for which there are no other alternatives but only those made available by these technologies.

Beyond the actual utility of technologies to perform certain tasks, meanings bestowed on them appeared to induce use and sustain it over the long term. Notice, for instance, the manner in which Nalin described his reasons for adopting Facebook while in the UK and how his decision is influenced by the character this application had among his friends in the University of Glasgow:

[Ext 158; 219-224] I joined Facebook around five days ago. I have 50 friends [now]. I joined because most of the people over here [in the University] use Facebook than Orkut. My flatmates, they are not from India. There are other friends of mine and most of them use Facebook. My cousin in London, he uses Facebook to keep in touch with all his friends, so I thought than instead of sticking to Orkut I would join Facebook and I wouldn't lose anything and get more friends, and it's an easier way to keep in touch with everyone [in the UK].

Facebook (and any other social network for that matter) is, therefore and in certain contexts, more than a technology to administer friendship, but one whose acceptance and ‘mastery’ is necessary to remain included as a functional member of contemporary society, knowledgeable of its ways and embracing them as expected.

This extract also serves to emphasise what we discussed in section 6.2 *A Method of Accommodation of ICTs* on page 150, in other words, that meanings given to communication technologies do not depend solely on issues of efficiency, reliability, speed, etc. but on different considerations including message, audience, location, time and costs on which the accommodation of ICTs depends.

In this way, MSN Messenger is not only an Internet Messaging client, but for Hui [Ext 159; 20-24] it was the channel to communicate with foreign people; Skype was for Adara [Ext 160; 286-305] not just another IM application, but the only viable channel to contact her family; and Facebook was for Nalin (see Ext 158 above) not only the latest fad, but a way to remain involved with his friends in a certain context. It is in this symbolic way that ICTs become meaningful or ascribed with a meaningful place in society's landscape.

The above should not be taken to suggest that ICTs are only appropriated when endowed with positive associations. During our entire study, Aeneas [Ext 161; 129-142, 180-185, 765-769] had a problematic relationship with Windows Vista, the operating system in his laptop. He complained about Vista's inability to run some applications he needed to complete school assignments, even after several re-installations of the application, and of the random memory errors produced even after an upgrade to 2 GB of RAM memory. In time, such was Aeneas frustration with Vista that upon further questioning on the matter he replied deeply upset that he rather not talk about it. We suggested a downgrade to Windows XP and he even considered this route during his December holidays back in Greece. Nevertheless, in the end, he did not do it and, somehow, learned to cope (or accommodated his habits) with the limitations of Windows Vista.

It is very likely that few positive feelings can be associated with the experience just described. However, even in this situation the participant had to continue using this technology and accommodate it because, despite all the quirks of his laptop and/or Windows Vista, no alternative was at hand to perform his work in the meaningful manner accepted within his context (school assignments, communication with friends, etc.). Exploring, for example, an alternative operating system may further unbalance the equilibrium upon which the appropriation of ICTs rests and this is a price not everyone is willing to pay.

7.4 Conclusions

In this final chapter analysing elements of our model of appropriation of ICTs in everyday life, we put forward three characteristics, namely, relevance, triviality and meaning, which we technologies acquire as they are appropriated.

Even though some technologies are perceived as relevant this may not be so in practice. Only those technologies that can successfully undergo the process of accommodation can be said to be part of an accommodation scheme. Accommodation schemes are retrieved and assessed and, if necessary, modified to keep ICTs as part of the performance of an activity. This process necessarily leads to a subjective view of technologies as these may be relevant for some people in certain circumstances, but not for other people in different circumstances.

People integrate in accommodation schemes only those technologies whose access they perceive as trivial. The triviality of a technology is given by how well it matches those elements (i.e., message, audience, location, time and costs) we argue people evaluate in the process of accommodation. Different technologies are trivial for different people as this also depends on their commoditisation, usability and integration within the structures of society.

Finally, ICTs acquire different meanings for people as they are integrated in different activities. This may come as a consequence of their features, but may also be the result of an association that comes from the place they are made to occupy in society. In this manner, technologies may come to represent or signify different processes of contemporary society.

To sum up, social structures constraining and enabling the use of ICTs are filtered on an individual basis through a process of accommodation whereby accommodation schemes are formed around digital technologies. Accommodation schemes render otherwise 'foreign' technologies into items with a place in people's lives. As digital technologies become so rendered, people bestow on them images, attributes or characteristics (relevance, triviality and meaning), that indicate the operational and conceptual control (even when limited) people have taken on them. This final stage represents the last step of the process of appropriation. In our view, only those technologies that have reached this stage and acquired these images, attributes or characteristics can be said to have been truly appropriated by individuals.

Chapter 8 – Exploring Settings of Interaction

In this chapter we will illustrate the use of our model of appropriation of ICTs in everyday life to guide the analysis and organisation of data of an ethnographic study conducted after the previous studies reported so far. The study described in this chapter was conducted among a religious group in Mexico exploring their adoption of an online genealogy application known as *FamilySearch*.

We believe that by using our model of appropriation, the analysis of data is streamlined and facilitated since our model highlights a number of focal points that often seem to have an important role in the appropriation of ICTs. This is complemented by the underlying views that sustain our model, including the idea that ICTs are more likely to be appropriated when the adequate environment is in place to sustain this phenomenon; that appropriation is an individual process shaped by environmental circumstances; and that in the process of appropriation technologies ‘lose’ some of their features to ‘make room’ for accommodation schemes. As will be seen in this chapter, this perspective appears to remain useful in the analysis of a setting of interaction that differs in several important aspects from the studies reported so far in this work.

Chapter 1 highlighted two issues that have received considerable attention in the HCI field, namely, understanding how the appropriation of ICTs in everyday life takes place and how we can craft, borrowing from Heidegger, *ready-to-hand* technologies that can be seamlessly used, understood and appropriated. Concern with these issues has naturally spilled into a particular area of technology use beyond office settings. We refer to the use of digital technology for spiritual purposes, which is the topic we are concerned with in this chapter.

The use of technology for religious purposes has received some attention in the field. Early work in this area includes, for instance, (Bell 2006) (Wyche *et al.* 2006). Bell explores the manner in which use of technology in spiritual practices represents a critique of dominant visions of technology’s future. In Bell’s view, techno-spiritual practices, or the use of technology to support religious practices, suggest an alternative path for the envisioning and development of ubiquitous computing and other technological trends. In her study, Bell describes how digital technology is repurposed to meet spiritual needs never in the mind of those who designed them. Such an observation leads her to suggest there can be no Ubicomp if spiritual needs are not taken into account in its design.

That humans repurpose technologies for spiritual ends, however, is not new. Throughout the history of civilisation humans have always used available technology to express their spiritual aspirations. Thus, if we understand technology as the practical application of knowledge, it could be argued that, for instance, writing technology is at the root of two of the largest religious traditions, as both the Judeo-Christian and Islamic faiths are based in written accounts of the affairs between God and His people. It could be argued then that as long as they are accessible, people have never stopped to consider whether the use of a technology for a purpose other than that intended, religious or otherwise, is warranted. People seem to have a natural ‘gift’ for adopting and adapting technologies to whatever ends they see fit regardless of the original intention behind a technology (Leong *et al.* 2005).

Wyche *et al.* (2006) study this human ability to adopt and adapt technology in support of, as they call it, “spiritual formation” analysing the process whereby ministers use technology to help others align their lives to the guidelines of a particular faith. Wyche *et al.* list several cases of these techno-spiritual practices ranging from the “ancient”, such as the printing press that, as indicated, made religious scripture available to the masses, to traditional channels of mass communication like TV used in televangelism, to modern digital technologies like the Internet and its role in the appearance of online religious communities. Wyche *et al.* classify uses of technology among pastors in three categories: research and reflection, sermons, and pastoral care.

In exploring home automation among twenty American Orthodox Jewish families, Woodruff *et al.* (Woodruff *et al.* 2007) conclude that notions of control embodied in the standard ‘smart home’ may, in fact, obstruct its appropriation. Woodruff *et al.* argue there are other issues that should also be considered when designing home technologies including surrender of control, support for long-term goals and life-style choices, and respite from technology. Presumably, all these issues would have a positive role in the expression of spirituality at home and, therefore, in the appropriation of technology to this end.

From reading these studies of ongoing practices, one may be tempted to conclude the use of digital technology for spiritual purposes is a given, even when unintended by its designers. As a matter of fact, ever since the first church newsletter was prepared on a personal computer this has been the case. The novelty of this line of research appears to come from the fact that our field is just beginning to take notice of these so-called techno-spiritual practices and, of course, to devise ways in which we can ‘enhance’ these activities through “techno-spiritual design” (Wyche *et al.* 2008) to ease the adoption of a technology (see also Gaver’s design for appropriation in (Gaver *et al.* 2009)).

Wyche *et al.*, for instance, make some suggestions for the design of large displays (like those commonly used in *megachurches*) (Wyche *et al.* 2007), and for the design of mobile applications to remind practicing Muslims on the proximity of their praying times (Wyche *et al.* 2008). Beyond a recognition that traditional issues of functionality, efficiency and productivity may not be important considerations in techno-spiritual design, Wyche *et al.* remain puzzled by as yet unknown factors that should be taken into account when designing for religious practices. To this question, however, Wyche *et al.* later provide an answer. In their view, religious imagery can be used in the design of digital technology both to move away from considerations of efficiency and to enhance the religious experience itself (Wyche *et al.* 2009). We are never told, however, how religious imagery *per se* can achieve both things.

As we pause to ponder the contributions of the above perspectives, we cannot fail to notice that none of these studies appears to provide an explanation for how, in fact, information and communication technologies came to be integrated in the performance of religious or spiritual activities in everyday life. To be clear, by documenting these practices the above-cited studies do open a new area of enquiry regarding the appropriation of ICTs in everyday life to spiritual ends. However, they fail to document the manner in which such a circumstance arises or comes to pass in the first place.

This is precisely the issue we want to tackle in this chapter. We want to answer the question, How does a techno-spiritual practice first develop and, consequently, how is the appropriation of digital technology for a religious purpose possible? In trying to answer these related questions in the context of a single

information technology (different from those explored before) we will present our analysis following the path laid out by our model to both a) unfold, as it were, how this process is possible and b) illustrate the practical utility of our model to analyse and organise qualitative data. After describing the methodology followed in this study, in section 8.2 *Foundations of a Socio-Technical Practice* we use the most external layer of our model, the social layer, to elaborate on the socio-technical setting where the techno-spiritual practice of interest unfolds. This section will help us visualise once more the important role of the environment in inducing and sustaining the appropriation of technology. Later, in section 8.3 *Personal Adjustments in the Appropriation of FamilySearch*, we will use the insights provided by the second layer of our model, the individual layer, to analyse the individual process participants underwent to functionally integrate an otherwise foreign technology into their everyday practices within the restrictions and possibilities of a socio-technical setting. Lastly, in section 8.4 *Symbolic Aspects of the Appropriation of FamilySearch*, we will illustrate what we see as the subjective character acquired by (or invested in) a technology as it is integrated in the prosecution of daily routine. This last section will follow ideas introduced in the presentation of the innermost layer of our model, the digital-tool layer.

As before, it should be noted that a clean distinction between the elements we have ascribed to each layer is difficult and misguided. Relations between the elements considered important in the appropriation of technology often cross the distinctions we have deemed relevant to impose on our model. Nevertheless, we believe the artificial order we have imposed facilitates somewhat the comprehension of an otherwise chaotic world. With this in mind, the reader should remain untroubled because our narrative in this chapter does not follow strictly the same order of the material presented in the previous chapters.

8.1 Methodology

From mid-November to the end of December 2008, we conducted fieldwork in San Andres Tuxtla, a south-eastern town in the province of Veracruz, Mexico among members of The Church of Jesus Christ of Latter-day Saints (hereafter the LDS Church or simply the Church). We were interested in exploring the manner in which *FamilySearch*, an online genealogy database application recently introduced among the congregation, could be integrated in the performance of a religious activity.

We gathered data in the following manner. We conducted participant observation once every week for a total of four weeks at the Family History Center (FHC) located in the meetinghouse of the LDS Church in this town. The centre was opened to members of the Church every evening from Tuesday to Friday and during weekends. Besides documenting use of the system, we also used our visits to familiarise ourselves with *FamilySearch* and to lend a hand troubleshooting problems that appeared during those sessions. For instance, we fixed the network setting so all three PCs available in the FHC could print directly to the printer; we clarified some concepts related to the operation of the system (e.g. duplicity, deleting records, deleting inexistent family relationships, etc); and we also added data into the system to demonstrate it to participants.

Participants in our study were recruited from those more actively involved in genealogy. They included four women and two men representing four different families: the Mora⁶¹ (2), the Ramirez (2), Mrs. Perez and Mrs. Hernandez. Mrs. Ramirez was the youngest person at 48; Mrs. Perez was the eldest at 65. Mrs. Hernandez was the most recent convert to the LDS faith joining only five years before; everybody else had been a member of this Church for over 30 years. We interviewed each participant exploring their experience doing genealogy before and after the introduction of *FamilySearch*. We were also interested in understanding their main motivation in coping with the challenge of learning to operate a computer and *FamilySearch* to perform work they deemed sacred.

8.2 Foundations of a Socio-Technical Practice

In the analysis presented in the previous chapters we argued that technologies may become appropriated, or embedded in the performance of daily routine, when an environment supportive of this process is present. We observed the appropriation of ICTs among university students has been preceded by, on the one hand, the availability and commoditisation of these technologies (see Chapter 5) and, on the other, the tacit or explicit acceptance by parents and various other social institutions of a popular discourse portraying ICTs as supportive of the educational endeavour, facilitators of social integration, and protective blankets in an uncertain world (see Chapter 4). Thus, for participants in the studies described in the previous chapters, the integration of digital technology in activities that have been expressed as information or communication activities like studying, finding a job, online commerce, and leisure and entertainment (see Chapter 3) seems to be as much a matter of complying with the dispositions laid out for them, as well as one of simply making use of the tools available to their generation.

The argument in the following sections is similar to that advanced so far; in other words, that the circumstances illustrated in Chapters 3-5 can be identified elsewhere, and that these are necessary conditions upon which the appropriation of ICTs rests. Accordingly, section 8.2.1 *Theology of the LDS Church* presents the set of beliefs that justify the use of *FamilySearch* for members of a religious community; section 8.2.2 *Infrastructure of the LDS Church* describes the rather vast infrastructure deployed by a social institution to facilitate the use of a technology; and finally, section 8.2.3 *Saving the Dead with Computers* illustrates actual use of the *FamilySearch* system among participants in this study.

8.2.1 Theology of the LDS Church

To better understand the socio-technical context of the techno-spiritual practice explored in this chapter, we think it is necessary to appreciate the set of beliefs on which it is based. To this end we will introduce some of the theology of the LDS Church. Information in this section was compiled from www.lds.org and www.mormon.org. This section may be seen as a counterpart to section 4.1.3 *Institutional Regulation* where we explored some of the justifications for the regulations imposed by various institutions on the use of ICTs across various settings.

All beliefs of the LDS Church are encapsulated in what is known as its three-fold mission that includes proclaiming the gospel, perfecting the saints and *redeeming the dead*. In this chapter we will only focus in the latter of these missions exploring the manner in which the Church and its members incorporate *FamilySearch* in the redemption (i.e., salvation) of the dead.

⁶¹ All names have been changed to protect the identity of participants.

The LDS Church believes that all human beings possess unique, individual *spirits* that are, as it were, the force that propels their bodies. It is believed that when people die, their spirits separate from their bodies and go to a place known as the *spirit world*. The spirits of all people are believed to gather in the spirit world after death. It is also believed that all spirits remain in this place awaiting the *resurrection*, that is, the moment when spirits and bodies will be again reunited to be judged by God and receive rewards according to their deeds. The LDS Church believes the *gospel of Jesus Christ*—the series of beliefs that constitute the doctrine of this church—is taught in the spirit world to those who died without the opportunity to receive it in this life.

The LDS Church believes every human being is given the opportunity, in this life or the next, to hear the gospel of Jesus Christ so that everybody can be judged according to the same standard. Those who accept it (here or in the spirit world) should manifest their allegiance by performing sacred acts known as *ordinances*. The Church believes that, besides living a moral life, it is essential to perform these ordinances in order to attain *salvation* or the opportunity to live with God after the resurrection and judgement. Ordinances deemed essential to attain salvation include (1) baptism, (2) confirmation, (3) ordination to the priesthood (for men), (4) temple endowment, and (5) marriage sealing.

Those who have died can still receive ordinances 1-5 *vicariously* or by proxy, that is, by a member of the LDS Church acting on behalf of a deceased person. All ordinances performed *vicariously* or on behalf of the dead can only be performed inside *temples*; they are generically known as *temple ordinances*. The LDS Church believes the spirits of those who have died retain their free agency and, thus, at a later time during the resurrection, can accept or reject temple ordinances performed on their behalf by members of the Church.

8.2.2 Infrastructure of the LDS Church

In this section we explore the infrastructure deployed by the LDS Church to facilitate the use of *FamilySearch*. As can be gathered from the above, use of FamilySearch is, ultimately, the material expression of a spiritual belief. As such, a material infrastructure is necessary to sustain its use. Information in this section parallels information presented in Chapter 5, more particularly sections 5.1.1 *Infrastructure* and 5.1.2 *Marketing*, as well as section 4.1.5 *The Media*.

For members of the LDS Church, temples are, literally, the ‘House of the Lord’. This is the essential difference between two prominent facilities of the LDS Church: the temple and the meetinghouse. The LDS Church has meetinghouses by the thousands scattered all over the world. These buildings are used on a regular basis for Sunday worship and for other social activities. As of July 2010, the Church only has 152 temples in operation throughout the world.

Being one aspect of its three-fold mission, the LDS Church places special emphasis on performing ordinances for the dead (i.e., saving or redeeming the dead) through what the Church generically calls ‘family history’ or ‘genealogy work’. The LDS Church is famous for its huge investment in collecting, sorting and storing genealogical records from all over the world. These records had been made freely available to the whole world through microfilms. The Church has provided around 3,000 of its meetinghouses with microfilm readers in what is known as a *Family History Center* (FHC).

Apparently, the Church has also provided 4,500 of its FHCs with computers and Internet access to facilitate the work of redeeming the dead through *FamilySearch* (www.familysearch.org), a purportedly-built online database system that holds the records of several million deceased people. Access to this online service is free of charge; however, only registered members of the Church can use certain features in the system. Features not available to the general public include data regarding temple ordinances performed on behalf of deceased people.

The LDS Church invests considerable resources to provide the infrastructure to operate FHCs. The Church covers these expenses through the *tithe* (ten percent of income) its members pay. These funds are used to pay for the expenses of building meetinghouses and providing them with basic services such as electricity, running water, coolers and heaters. The FHC we studied was equipped with three new Dell desktop computers, a laser printer, a broadband Internet connection and a microfilm reader. It also had AC and ceiling fans.

The Church actively encourages its members to assist to temples on a regular basis several times per year. It also actively encourages members to do family history to procure the salvation of the dead by making use of the resources described. Doing family history essentially involves three steps: 1) using the Church's resources to track one's ancestors through *FamilySearch* or through individual fieldwork gathering data through relatives, 2) filling special forms known as *family group record* with ancestors' details (name, date of birth, date of death, etc.), and 3) submitting family group records to a temple in order to have temple ordinances (1-5) indicated earlier performed on behalf of one's ancestors. If members of the Church so desire they can perform personally temple ordinances on behalf of their deceased relatives. Details of temple ordinances performed on behalf of the deceased are eventually updated in the *FamilySearch* system.

Whenever the Church is established, it organises its members by geographical areas called *stakes* or *districts*, which are in turn formed by smaller units called *wards* or *branches*. In some places it is common to have one or more stakes per city; sometimes, however, a single stake is constituted by several neighbouring cities. Each stake appoints regular members as *coordinators* of family history; there are several coordinators per ward. Each stake has a *director* of family history who is, in turn, in charge of coordinating the efforts of ward coordinators. The LDS Church does not have paid ministers and thus all those who perform any administrative or ecclesiastical duty (i.e., those who have been *called to serve*), like coordinators and directors of family history, do so on a voluntary basis.

The LDS Church also makes use of mass media to reach its membership. At a general level, the Church does so through its two semi-annual general conferences transmitted via satellite from its headquarters in Salt Lake City, USA to its various meetinghouses across the globe; the provision of training for those in leadership positions transmitted in the same manner; real time video of these events transmitted over the Internet from its official website; a number of magazines distributed monthly among its membership; and a YouTube channel and an online radio station. At a local level there are two semi-annual stake conferences, social activities and weekly meetings on Sundays. Across this variety of communication channels and activities members continue being reminded, in one way or another, of the three-fold

mission of the Church: preaching the gospel, perfecting the saints and redeeming the dead, and of their duties on these matters.

The entire infrastructure described above (i.e., beliefs, facilities, appointed personnel, and mass media) has been established by the LDS Church with the purpose of redeeming the dead in order to comply with one of its more fundamental doctrines. As found in one of its sacred books known as *Doctrine and Covenants* section 128 verses 15 to 18, members of the Church themselves cannot be saved if they do not do everything within their power to perform temple ordinances in favour of their deceased relatives. Conversely, their deceased relatives cannot be saved if someone does not perform temple ordinances on their behalf. Hence the need to identify as many deceased relatives as possible through *FamilySearch* and have temple ordinances (1-5) performed on their behalf.

8.2.3 Saving the Dead with Computers

Let us now consider in more detail the activity in which *FamilySearch* is put to use. This section and the next are both counterparts to Chapter 3, where various activities in which ICTs are used among university students were explored, as well as section 4.1.2 *Peer Support*, where we described the role of peers in introducing and supporting prolonged use of ICTs. Unlike previous studies reported in this work, the level of detail we provide in this chapter in our description of the use of *FamilySearch* is far superior since we were able to observe it first hand. Interestingly, in the use of this technology we see once more a display of what we see as the simplification of technology in practice (see section 6.3 *Simplification*).

Members of the LDS Church believe that one of their most bounding duties upon joining this faith is working actively in what they consider to be the redemption or salvation of the dead. In practical terms this has always included collecting data on their immediate deceased relatives and then working backwards tracking as many relatives as possible in their genealogical tree. Traditionally, this involved doing actual fieldwork visiting relatives and gathering details from stories or from face-to-face contact with their relatives, and by collecting details officially recorded in birth and death certificates, and even actual gravestones. To varying degrees, all participants did have some experience performing this type of fieldwork.

Some participants in our study also had some experience handling microfilms and microfilm readers as they were part of the tools used before the introduction of *FamilySearch* in the work of redeeming the dead. Members of the Church would request microfilms to the Church's headquarters to explore old birth and death certificates stored in this manner. This was a slow process that few did. The process of extracting data from microfilms is now a distributed effort performed online through *FamilySearch Indexing* (http://www.familysearch.org/eng/indexing/frameset_indexing.asp).

In its efforts to make the process of redeeming the dead more efficient the Church previously developed, and made available among its membership, an offline application known as *Personal Ancestral File* (PAF) with which some participants in our study also had some experience. Essentially, this was an application like any other application used to build genealogical trees. Only Mrs. Mora had any experience using this application in the past.

The processes described, however, were only part of the work involved in doing genealogy. Later, it was necessary to fill family group record sheets and submit these to the nearest temple in order to have temple ordinances performed on behalf of those deceased relatives thus identified. As can be gathered, this process was prone to failure at various stages; only those really dedicated to genealogical work would be able to be productive in this manner. For instance, before the introduction of *FamilySearch*, the Ramirez had only been able to have temple ordinances performed for around ten relatives. Mrs. Perez, in contrast, had been remarkably successful in performing temple ordinances for around two hundred of her deceased relatives since she became a member of the Church thirty years earlier.

It was only with the introduction of *FamilySearch* that a more comprehensive solution was made available to members of the LDS Church to streamline the work of redeeming the dead. *FamilySearch* provides an integrated solution to: 1) identify deceased relatives through name and date queries; 2) prepare family group records to conduct temple ordinances on their behalf; and 3) keep track of the type of ordinances performed on behalf of each deceased relative. While *FamilySearch* is open to the public for various uses, for members of the Church this system has one function, that of assisting in the work of redeeming the dead.

Every participant recognised that from the moment they joined the Church they were invited, and constantly reminded, to actively work doing genealogy in order to contribute to the salvation of at least their deceased ancestors. The assimilation of this belief by every participant in our study was evident during our interviews; each participant invariably paraphrased the fundamental teaching of the Church indicated earlier in words such as this: “*we cannot be saved without them [our deceased ancestors]*” (cf. Doctrine and Covenants 128:15-18).

8.2.3.1 Help Thy Neighbour

As indicated above, the Church does not have a paid clergy, thus it resorts to its own membership to ensure its doctrines are implemented in practice. Not having a paid clergy results in an embedding of the regulations of the Church with the idiosyncrasies of the members of each unit. This takes place in the following manner, the Church will *call to serve* its members to different leadership positions; all participants in the study had been called recently as coordinators or director of family history in this unit of the Church. As such, they were responsible not only for tracking their own ancestors, but more importantly, for motivating other members of their wards to work doing genealogy by collecting information of their deceased ancestors through their relatives or by visiting the FHC and using *FamilySearch*.

Results were mixed. Many members of the Church will look at the work of doing genealogy with indifference adducing other more important commitments even within the Church itself. As a matter of fact, all participants have gone through similar dry spells in genealogy work, when other activities would take precedence over their available time. In most cases, it would appear to be that it is only until someone is explicitly called to serve as a genealogy coordinator that they would actually work in this activity.

At the time of our visit, Mrs. Mora, the director of the FHC, had just implemented a program to increase membership participation in family history, which up to this point had been lagging in this unit of the

Church. She claimed to have been inspired to set up a program in which a representative from the ward that performs the largest number of temple ordinances (i.e., the unit that identifies the largest number of deceased ancestors through *FamilySearch*) would have the special privilege of addressing the entire congregation during their next stake conference. Mrs. Mora was concerned with the productive aspects of her calling, specifically with three things. First, collecting names and data for at least 80 individuals for whom to perform ordinances during their next stake trip to the temple on 27 December 2008. Second, ensuring the FHC was being used 80 hours per week. Finally, training as many people as possible in the use of *FamilySearch* so that everyone could do their work autonomously and independently without her direct intervention.

Perhaps the most striking feature observed in every visit to the FHC to conduct participant observation was the friendly atmosphere of these sessions (Figure 1). Participants in the study had known each other for years and were more or less aware not only of each other's problems when operating *FamilySearch*, but also of their health and family issues, and even of issues pertaining to their deceased ancestors. Jokes and good humour regarding their own difficulties operating the system or in trying to account for all the children and multiple partners of a deceased relative were quite common.



Figure 66 Mrs. Mora (center) explains some procedures with *FamilySearch*

These gatherings appeared favourable to overcome some practical issues when operating the system itself. No one, except Mrs. Mora, had any experience with computers. Mrs. Mora acquired these skills through a course she took in 1998 out of her personal desire to work doing genealogy with Personal Ancestral File (PAF), the previous systems developed by the Church to this end. She later honed her computer skills when she had access to a computer and Internet at home. Her knowledge of *FamilySearch* came from studying the actual *FamilySearch* User Guide after being called as the director of the FHC. Apparently, Mrs. Mora invested every evening for a month in reading this guide and learning how to operate *FamilySearch*. All in all, Mrs. Mora's expertise with computers, the Internet and *FamilySearch* was not very sophisticated.

The low level of computer expertise among participants produced a large number of problems before actually using *FamilySearch* productively. There were problems handling the mouse, finding keys in the keyboard and combining keys for special characters like accents, common in the Spanish language. A

particularly troublesome spot was remembering and inputting correctly the 32-character password to access the system, which required a combination of upper- and lower-case letters and numbers. As could be expected, participants simply wrote down their passwords or shared them with others who then acted as a sort of human Post-it note.

Mechanical operations were, however, eventually overcome. Problems remained to understand the more subtle features of the system. For instance, one of the reasons why the LDS Church developed *FamilySearch* was to eliminate record duplicity pervading its own records of temple ordinances performed by its own membership; a circumstance that was prone to occur when the process was performed offline. To do this, participants were encouraged to delete duplicated records if they thought they belonged to the same person. Problems arose when two different records representing the same person had different data (e.g., a different place of birth or a misspelled detail), which made difficult to assert whether two different records were, in fact, the same person. Nevertheless, when merged, details of both records were preserved. If a *FamilySearch* user did not understand the concept of record duplicity, and avoided deleting duplicated records, she could end up adding data to a record (e.g., a parent, spouse or a children) that was not the same record to which other living relatives elsewhere may be adding more data to. These types of database concepts were notoriously difficult to explain to participants. We advised them to do the following: 1) check for duplicated records and if any is found then, 2) merge them into one, and then 3) add details to that unified record.

To overcome some of the many problems faced when using *FamilySearch*, participants sat in couples per computer (Figure 2). For this researcher, it was the first time that two people per computer actually made sense. One person was thus in charge of typing to input data; the second person kept an eye on the screen to confirm data entered was correct (e.g., accents, name capitalisation, proper abbreviations), while at the same read data to the first person to input in the system. This process was a sort of double, less-than-accurate validation process with the system because, despite the fact that two people were verifying data added to the system, it still tended to be misspelled. This process, however, was more effective in procedures consisting of several steps (e.g., to find an ancestor and create a link to his or her children), as one of the two involved could remind the one operating the system the next step of such a procedure.

Given the manner in which *FamilySearch* was used, participants appeared to acquire but the most rudimentary understanding of the inner workings of the system. As a consequence, this translated in difficulty to overcome ‘simple’ problems posed by the system. For instance, when faced with the problem of having to remove a literal *parent-child* relationship between relatives, and not being able to because of a restriction placed on a record that prevented such an operation, participants would venture the explanation that this was due to the *spirit* of that person not wanting to be left ‘orphan.’ This example is not used here to magnify the computer illiteracy of our participants—nor their gullibility in spiritual matters—but to illustrate the manner in which the complexity of this application was reduced by attributing its ‘mysterious’ behaviour simply to a reason beyond their grasp.



Figure 67 Two participants working with *FamilySearch* on a single computer

Participants also simplified *FamilySearch* by failing to understand the finer details of the system that could ease their task. For instance, after querying *FamilySearch* for a name, the system displayed in order of importance records that were more likely to be the one sought for. Participants reviewed scores of records without realising that only the ones on top were the most likely to match their query. Participants also failed to understand the concept of duplicity and its pervasiveness throughout the system. As a result, they had problems understanding why two records with slightly different details represented, in fact, the same person; or why two records with apparently the same information were actually two different people. In (unwillingly) failing to grasp the finer details of *FamilySearch* participants also reduced its complexity and, in the process, unwillingly obscured some of the features of the system. Interestingly, these various strategies allowed participants to bypass ‘minor’ problems and focus instead in those tasks they could accomplish in the system within their limitations.

8.3 Personal Adjustments in the Appropriation of *FamilySearch*

Despite the fact that *FamilySearch* was readily available for our participants because the entire technical and social infrastructure described above was in place to support its use, and that our participants felt a strong spiritual conviction regarding the importance of its use, the integration of *FamilySearch* into daily routines was ultimately an individual process that had to be negotiated on an ongoing basis against the limitations placed by other circumstances of daily life.

In our view, the integration of *FamilySearch* into daily routines followed individual considerations around at least three important issues including costs, location and time. Information in this section thus corresponds to ideas introduced in section 6.1 *Elements of the Accommodation of Information and Communication Technologies*. It is worth noticing the manner in which the role of these elements is once more highlighted even when participants in this study differ in many aspects (e.g., age, proficiency with technology, role in society, education, etc.) from those in the studies previously reported. Those very differences would appear to demand from participants in this study a more radical modification of their habits in order to appropriate *FamilySearch*. To put it differently, university students from the previous studies would need to make fewer adjustments to appropriate *FamilySearch* than those observed among participants in this study.

8.3.1 Costs

Earlier we described the manner in which the LDS Church provides its FHCs with the amenities necessary to operate them, including computers, printers and an Internet connection. Such a provision greatly minimised the expenses of using *FamilySearch*; however, it did not eliminate them fully. Members of the Church still needed to travel to the nearest meetinghouse and its FHC; for many in the congregation this implied an expense that cannot be afforded more than once per week. On the other hand, a decision to use *FamilySearch* independently, away from the FHC, not only demanded a consideration of the costs associated with acquiring a computer and/or accessing the Internet at home, but also a consideration of being deprived of the social network that, literally, enabled its use. As indicated earlier, Mrs. Mora was the only person with experience using computers and, therefore, the only person truly able to use *FamilySearch* independently.

In Mexico, the costs associated with having a computer and Internet at home were not negligible. Besides not being aware of the benefits, if any, of the Internet, the Ramirez, for instance, lacked the resources to acquire this service. At the time of this study, Telmex, the largest ISP provider in Mexico, offered fixed telephony and Internet connectivity through plans starting at 389 Mexican pesos (30 USD approx.) per month for a 512 Kbps connection. The costs of accessing the Internet in Mexico can be put in a better perspective if we observe the minimum wage in the country ranges from 51.95 to 54.80 Mexican pesos (4-4.15 USD approx.) per day. This can also illustrate the effort Mrs. Perez made a few weeks before our study began to acquire through Telmex an overpriced Dell desktop computer for 1,384 USD to pay in monthly instalments of 38 USD over three years.

8.3.2 Location

As indicated in the previous point, using *FamilySearch* implied visiting a specific location, the nearest Church meetinghouse and its FHC. Life in a small town does not imply all geographical points are immediately accessible. The decision to visit the FHC had to be balanced against other competing activities in the life of each participant. Thus, it is only when a visit to the FHC can be made to harmonise with other competing activities to accomplish during a regular day that participants were able to start visiting the FHC. This, in turn, may eventually lead to productive use of the system.

8.3.3 Time

The last consideration made by participants is the time investment required to, first, learn the basics of computers; second, learn to operate *FamilySearch*; and third, actually use it—In practice, however, participants integrated all three steps in a single leap with a rather brief, but steep learning curve. All participants appeared to have their days so full with other activities that finding time to visit the FHC to use *FamilySearch* was an accomplishment in itself. For instance, Mrs. Hernandez had a computer at home that she now dared to turn on and off all by herself; however, at night time she was so tired from her daily activities—which at least included cooking for her family, tending to her grandchildren and cleaning the house—that any productive use of *FamilySearch* by herself was practically out of the question. This is indeed one of the reasons why she had to continue visiting the FHC to give herself time and space to use the system. Mrs. Mora was also a full-time housewife and invested her time in at least the following activities: cleaning, cooking, grocery shopping, doing laundry, watching TV, running a small business from home, and doing homework as she was attending high school every Saturday. The Ramirez were

both working full time and since they did not have Internet at home they were only able to use *FamilySearch* in the FHC.

8.4 Symbolic Aspects of the Appropriation of FamilySearch

Beyond the practical life adjustments participants needed to make in order to incorporate *FamilySearch* into their daily routines, they also seemed to bestow on this system rather intangible qualities that, in our view, signalled the symbolic place this technology came to occupy in their lives. Following on the ideas introduced in Chapter 7, we will describe these subjective qualities in terms of relevance, triviality and meaning. As will be seen in this section, the symbolic character bestowed on *FamilySearch* differs from that bestowed on the ICTs explored in previous chapters. *FamilySearch* is, consequently, not a tool to study, find a job, buy or entertain, but a sort of effective mediator between the living, the dead and God; *FamilySearch* is not a facilitator of the task of saving the dead due to its usability, but to the fact that there are no other alternatives approved by the Church; and finally, *FamilySearch* is not an empowering tool because of the equal ground created between its users, but because of the distinction created between its users and non-users, and because its use also stands for a tangible expression of their faith. As before, we argue that it is only until a symbolic place is given to a technology that this is truly appropriated. Furthermore, we suggest the appropriation of technology, *FamilySearch* included, is not a terminal state, but an ongoing process prone to change.

8.4.1 Relevance

As seen above, given the way in which the LDS Church structures its organisation around its three-fold mission, it is soon made clear to those joining this faith that one is expected to take an active role in the work of redeeming the dead. As indicated earlier, this used to imply having to conduct fieldwork to obtain details of one's ancestors through relatives or requesting microfilms to search for data. This data was eventually submitted to a temple where ordinances would be performed on behalf of deceased relatives. Presently, however, the work of redeeming the dead has been (almost) completely absorbed by *FamilySearch*. For members of the Church, *FamilySearch* has become synonymous with redeeming the dead and doing genealogy. To put it simply, for members of the Church, but more particularly, for participants in our study, use of *FamilySearch* literally implied *redeeming the dead*.

8.4.2 Triviality

There are two ways in which *FamilySearch* became a trivial application for our participants. First, as indicated before, this application was effectively available for participants in that a whole technological infrastructure supported its use anytime at home or at more restricted hours in the FHC. As described earlier, there was also an equally important social structure embodied in the Church's organisation supporting use of *FamilySearch*. Both structures have reduced the previously laborious task of collecting data offline which, at least among most participants in this study, was never really successful.

Another way in which the triviality of this application was manifested was through its usability. There was no doubt *FamilySearch* ranked high in its compliance with the standard usability aspects of contemporary online applications. Nevertheless, the use of computer technology requires at a minimum learning a whole new 'language.' To make successful use of *FamilySearch* participants had to learn this

new language but, as illustrated, even when explained in the most basic of terms, it was never fully understood. Consequently, and paradoxically, *FamilySearch* was appropriated regardless of its usability.

In other words, despite the fact that *FamilySearch* featured the standard elements of contemporary online graphical user interfaces, the application existed as part of a foreign and remote ‘culture’ whose influence in participants’ lives was only felt obliquely, at most. As gathered from interviews, participants were in fact more or less aware of computer technology (e.g. through their families, the media, and at work), as well as its significance in contemporary society. Nevertheless, up to the moment in which they actually placed their hands on the keyboard and mouse to use *FamilySearch*, they had been able to live a life almost completely unencumbered by direct interaction with computers. Having lived an existence, as it were, apart from computing technology, participants, were not able to appreciate the benefits of having, for instance, predictive text as they typed the name of a city in a text field; or the purpose of having query results displayed in order of relevance; or the utility of opening two or more tabs in a Web browser to facilitate the comparison of records. From their interaction with *FamilySearch* we gathered these features, standard in contemporary online applications, were instead perceived as distracting from or complicating the activity at hand, that is, finding the record of a dead person to ‘redeem’. To deal with the complexity of *FamilySearch* participants simplified the operation of this application to such a degree that it was reduced to its essential features, i.e., searching for a record/ancestor, adding it to a genealogical tree, and printing a sheet of paper representing that record/ancestor for whom to perform temple ordinances.

The trivialisation made possible by *FamilySearch* can then be seen, on the one hand, as a reduction of the formerly complex task of doing genealogy offline and, on the other, through the practical reduction of its operation to a seemingly mechanical task.

8.4.3 Meaning

Participants in this study listed an interesting number of reasons why they were performing genealogy including being a commandment from God; a requisite to attain personal and kin salvation; personal interest in getting to know their deceased ancestors and living relatives; following on the admonitions of their church leaders; and having received spiritual confirmation that someone in the spirit world cared for the work they were performing on their behalf.

The same participants, however, were plagued by all sorts of issues that in the past prevented them from being more productive doing genealogy or from learning how to operate *FamilySearch*. Mrs. Ramirez, for instance, was recovering from lymphoma and was advised against using computers because of the alleged negative effects of computer radiation on people recovering from this disease. Her disposition towards computers was not helped by a networked system introduced a few years earlier to the hospital where she worked as head nurse. Although she did not operate the system directly, her work was impacted by the frequent crashes of the system. Mrs. Ramirez also thought her neurons were damaged by the chemotherapy and radiations received during her cancer treatment; this, she believed, had impaired her learning ability and prevented her from learning to operate *FamilySearch* faster and, therefore, being more productive with the system.

Mrs. Perez wanted to learn to use computers for several years. As a matter of fact, she enrolled with Mrs. Mora in a computer course in 1998. However, she dropped out shortly afterwards as she was not able to

see the writing on the blackboard. Mrs. Perez's visual decline increased on time; nevertheless, as indicated before, she still went into debt to procure herself a PC and Internet at home to learn to use *FamilySearch* and continue her previously productive work doing genealogy.

In the past, it never occurred to Mrs. Hernandez there was any value in learning to use computers despite the fact that she had access to one at home. Mrs. Hernandez suggested her attitude towards computers was linked to the fact that she never went to school. As a child, her mother only allowed her to attend first grade for a few days. Her mother believed school was not for women, but for men; that women had other more important things to learn at home. Mrs. Hernandez learned to read, write and perform some basic arithmetic 'in life'.

In the face of these various individual circumstances, the appropriation of *FamilySearch* by participants in this study to perform an activity they deemed a commandment from God came to stand for a tangible and productive way of living their faith. Moreover, beyond an expression of their beliefs, the mere act of using computers and Internet also represented a personal accomplishment few in their local cohort have achieved. In at least both counts the appropriation of *FamilySearch* was a meaningful event in the lives of our participants.

8.5 Conclusions

Even though, as illustrated, the use of *FamilySearch* was far from proficient, participants in the study surprisingly managed to gather the records of 62 dead ancestors for whom to perform temple ordinances during their next visit to the temple on 27 December 2008. Sixteen people from two wards were actually involved in gathering these records. In one way or another, our six participants were very influential in this outcome whether by encouraging others to come to the FHC; by helping others find their ancestors through *FamilySearch*; by actually inputting data on behalf of those with even less knowledge of the system; or by identifying their own ancestors. By the end of our fieldwork, however, it was still unclear how they would ever achieve the productivity goals required by their church leaders including use of the FHC for 80 hrs per week and gathering of details for 80 deceased ancestors per ward on a monthly basis. Nevertheless, it is worth observing the environment needed to sustain this techno-spiritual practice (or the appropriation of *FamilySearch*) appeared already in place, as suggested by the 223 records gathered after the conclusion of our study from December 2008 to March 2009 by the only two wards actively working with *FamilySearch*. Whether this propitious environment would remain beyond this period of time is a question still open.

Despite the fact that the image under which ICTs are usually promoted (i.e., as time savers, organisers of a chaotic world, and productivity enhancers), there appears to be a consensus in the HCI field with these issues not being of practical concern regarding the appropriation of ICTs in everyday life and their integration in techno-spiritual practices (see for instance (Bell 2006; Wyche *et al.* 2006)). Throughout this chapter, however, we provided some evidence to suggest that under certain circumstances issues of productivity are also important in the development of techno-spiritual practices. As illustrated, productivity was, in fact, behind the development of *FamilySearch*. Through the very structures the LDS Church has in place, it has tacitly conveyed to its membership the importance of being productive in the work of redeeming the dead. As a consequence, participants in the study had been made part of the

productivity ethos surrounding genealogical work to a larger extent than those not using *FamilySearch* within the same congregation.

More interesting is the fact that participants in the study managed to be productive with *FamilySearch* despite their low expertise with computers. As described above, this can be at least partially attributed to the manner in which participants were able to bypass (or simply ignore) those roadblocks hindering the task at hand, i.e., finding a record. In practically obscuring, closing or ignoring ‘inaccessible’ aspects of the system they managed to reduce the complexity of *FamilySearch*. We think this strategy is an expression of a larger phenomenon in the use of digital technology in everyday life in general. Given the complexity of digital technology and its vast array of features it is impossible for most people to adapt it (Dourish 2003) to their ongoing activities. As a consequence, most features of digital technology remain dormant or not used. In our view, this inability to manipulate a piece of technology also represents a form of appropriation different, and we think more prevalent, from that presupposing a certain degree of dexterity to adapt it to ongoing activities. Nevertheless, while the obscuring of certain features may render technology intelligible and graspable, it also obscures or hides some of its potential and possibilities (e.g., participants struggle with the concept of duplicity resulted in an impaired ability to manipulate *FamilySearch* in a more sophisticated manner). Such a circumstance may explain one of the reasons why people use a reduced number of features in their technologies.

The last point we would like to make here is the manner in which a number of structures needed to be in place before the appropriation of *FamilySearch* could take place. A number of spiritual beliefs, a technological infrastructure, and social relations were identified as paramount in this process. However, as indicated by the fact that only a few people beyond our participants managed to produce any results with the system, these elements *per se* are not enough to produce the behavioural change necessary to appropriate or incorporate a technology in daily routines. At least an individual commitment (here explored through issues of cost, location and time, as well as those of a symbolic nature) is also necessary to integrate an information technology in the prosecution of an activity. The interplay between contextual elements and human agency illustrated in this study leads us to suggest an alternative view of appropriation as *an individual display of human ingenuity whereby digital technology is integrated in the performance of social practices engendered by a given milieu*. This alternative view of appropriation tries to convey the idea that in the design of novel digital technologies perhaps we should move past an excessive concern with producing the ideal ‘ready-to-hand’ technology ‘self-evident’ on first encounter (Suchman 1987) towards a greater concern with the study of the manner in which we can affect the environmental conditions where novel technologies are rendered meaningful for their intended users. As illustrated in this chapter, this may require the practitioner to develop a heightened sensibility for the user setting where, as seen, hard-to-control, large-scale social processes (e.g., marketing, the media, entrenched beliefs, and group and organisational regulations) vie for people’s limited resources.

Ultimately, our main focus in this chapter has been with illustrating how elements and relationships mapped by our model in previous chapters also appear to be prominent in achieving the appropriation of ICTs in a different setting. Because our model was derived from the appropriation of ICTs in everyday

life, we posited that it would be useful in directing our attention to the issues that make this possible but in a setting different from that of the previous studies. It was a rather felicitous coincidence that we were present during the development of the case of appropriation here reported. Our previous relationship to the setting and people described made us rather weary of this event taking place at all. Nevertheless, regardless of the eventual outcome, we felt it was a useful test for our model at least to assess its utility in the study of a different setting of interaction. Consequently, we did make use of the path laid out by our model to dig deeper into those particular areas we considered relevant in this setting. For instance, in previous studies the use of ICTs is ancillary to the development of many practices among a younger generation. In the case of *FamilySearch* this application is barely an appendix, even though important, in the prosecution of daily routine.

Even though participants in previous studies reported in this work and those explored in this chapter differ in many aspects, we believe our model has been useful in suggesting what elements to look at when unearthing how the appropriation of ICTs is possible within the ‘microcosm’ of this religious community. Our model has also expedited analysis of data suggesting what relationships to look at to explain this event, but without imposing a rigid way of looking at them.

A particularity of this study is that, unlike the previous ones, we have been able to observe the actual *in situ* experience with technology among participants and how this is affected by the larger cultural and religious setting in which the appropriation of *FamilySearch* is rooted. Once more we have documented what we believe to be the simplification of technologies that comes as a consequence of their complexities. As argued earlier, the simplification of technologies is, nevertheless, a necessary precondition for the integration of ICTs in everyday life through what we call accommodation schemes. Unlike our analysis in section 6.2 *A Method of Accommodation of ICTs* on page 150 dealing only with communication technologies, this time we have only been able to identify the role of three elements (costs, location and time/season) in the accommodation of information technologies.

In the next chapter we discuss the overall findings of this work and our contributions to the field.

Chapter 9 – Discussion of Findings and Contributions

In this chapter we summarise and selectively discuss the findings of our research. In Chapters 3 to 7 we presented findings from a qualitative exploration of the appropriation of information and communication technologies in everyday life among (almost exclusively) university students in four different cities in the UK, Japan, South Korea and China. We organised and discussed the findings reported in these chapters following the structure of a three-layered model of appropriation we built from analysis of data collected during our fieldwork. Our data analysis was informed by Structuration Theory and Grounded Theory. Both tools were helpful in abstracting and organising data collected in order to identify elements and relationships inducing and sustaining the appropriation of digital technology. Through our work we sought to expand knowledge of the appropriation of ICTs in everyday life, portraying it as a process always occurring within a social horizon that shapes the manner in which digital technology is organised to satisfy the needs and activities engendered by the same.

In Chapter 8 we further established some of the notions introduced in previous chapters. We used our model of appropriation as a lens to organise and analyse data gathered in a final field study conducted in Mexico where we explored the use of *FamilySearch*, an online genealogy system, among a religious group. Through this activity, we further illustrated the social character of the appropriation of ICTs and how this process would ultimately appear more a consequence of large-scale social forces inducing and sustaining it than simply the result of the features of a technology.

Unlike a well-established practice in HCI concerning the expected outcome of ethnographic and qualitative research, in this chapter we will avoid summarising our findings into “a delimited set of short-term requirements or constraints upon the design of contemporary or shortly anticipated technologies” or in providing design suggestions listing “people’s needs, goals and meanings” and how technology should support this (Dourish 2007). Nevertheless, even though it may look at odds with the previous statement we seek to continue opening the design space *beyond* just the shape of a technology or device (Dourish 2007). We do this by exploring user experience (i.e., appropriation) outside a reductionist and isolationist approach to this matter.

In the following sections we will elaborate on the two main contributions of our work. First, we will review once more, in a rather condensed manner, the structure of our model and the views sustaining it. This section is presented to illustrate at a general level the utility of our model to analyse other settings of interaction and the manner in which it complements other views of the process of appropriation. Later, we will provide some answers to the three specific research questions our work meant to tackle. Firstly, an exploration of the forces that appear to produce and sustain the appropriation of ICTs over time; secondly, an assessment of the impact of a changing context in social practices around digital technology; and lastly, insight into the process whereby people organise multiple digital technologies with seemingly overlapping features into their activities. While the answers provided to those questions are necessarily framed by the particularities of the settings and technologies here explored, they purport to illustrate the type of analysis and insights that can be produced through the application of our model.

The reader should keep in mind two caveats when considering our discussion below. First, all qualitative research, ours included, is perspectival (Postulate III on page 52) and, therefore, it is outside of its philosophy to attempt full transferability of its findings (Postulates V and VI on page 53). Qualitative

research, notwithstanding, aims at being objective not only by acknowledging these limitations, but by being concerned with building a body of knowledge around different phenomena open to scrutiny—a longer discussion of the particularities of qualitative research can be found in section 2.2 *Qualitative Research as a Scientific Perspective* on page 51.

Second, as indicated early in this work (see section 2.1.2.3 *Findings* on page 50), this is not a study of cultural specificity. Therefore, none of our findings are grouped under some classification of culture, but under that of identified patterns (see Postulate VI on page 53); i.e., those integrating the different components of our model. For us the particularities of each setting of interaction are not the result of looming cultural forces shaping the actions of people, but of localised social practices impacting the use of ICTs—practices which, interestingly, are remarkably similar across the countries explored. With these two caveats in mind we present the findings and contributions of our work to the researcher and designer tasked with the development and introduction of novel ICTs, or with the assessment of standard ICTs in new environments. We believe both will find useful insights in the perspectives of our research.

9.1 A Model of Appropriation of ICTs in Everyday Life

The model of appropriation of ICTs illustrated in Figure 68 depicts our understanding of the process whereby certain large-scale social structures and their relationships have created the conditions favouring the success of various digital technologies like computers, the Internet, mobile phones, online social networks and Internet Messaging. These technologies seem to hold a special place in some segments of contemporary society by reason of the role they play in it and because of the number of users behind them.

In the identification and description of elements inducing and sustaining the process of appropriation, however, we have only been able to go as far as, in the language of Grounded Theory, conceptual ordering (Strauss and Corbin 1998, pp. 19, 25).



Figure 68 A Model of Appropriation of ICTs in Everyday Life

Three traits make our studies and findings worth some attention. First, our study in Glasgow documented the experience of participants over a three-month timeframe beginning with their arrival in the UK in September 2007 all the way to the establishment of daily routines as international students in mid-January 2008. Such a time span allowed us to document strategies and adjustments made in the use of ICTs under two different conditions (i.e., home country vs. the UK), as well as the reasons why these adjustments had to be made (and re-made). The findings of this first study constitute the basis of our model of appropriation.

Second, through three consecutive studies conducted in Japan, South Korea and China we gathered information from participants who, unlike the previous group, had not experienced a recent re-structuration of their activities. Nevertheless, some participants in this second stage of our research were able to reminisce and draw from their own experience studying abroad or in previous educational stages and contrast them with their current situation. Thanks to this second stage of our research, we were able to explore the transferability of the findings of our first study *across different locales or settings of interaction*. Such an event helped us expand our initial findings. As explained in Chapter 2 - Methodology, we incorporated this enlarged understanding into our model in the form of an additional layer that explains a process we called accommodation.

Finally, while participants in our studies in Glasgow, Japan, South Korea, and China represented a rather homogenous group, those in Mexico provided an interesting contrast to our previous observations given key differences between these two groups in terms of age, education, experience with digital technology, and occupation. The fact that our model was able to provide a useful lens to explain the appropriation of a *different technology among a different type of users* suggests that its utility may transcend the confines of the present piece. (A more detailed discussion of the differences between these two groups will be presented below in section 9.2.1 *Producing and Sustaining the Appropriation of ICTs in Everyday Life* on page 194.)

9.1.1 The Social Layer

The model of appropriation of ICTs shown in Figure 68 is integrated by three layers. The most external layer of the model, the social layer, attempts to convey the idea that the type of ICTs explored in this work exist in environments that can be analysed from three complementary perspectives including the activities performed with and through them; the people and organisations behind and around them; and the specific architectural spaces where these activities are performed and where these technologies are used.

Because the types of activities in which various ICTs are used are not performed in a cultural void, their performance is enacted within the limitations, possibilities and social conventions of various locales of interaction. Examples of group and organisational conventions, as well as of the manner in which the possibilities and limitations of those locales of interaction affect the performance of daily practices supported by ICTs, have been provided in Chapters 3 to 5. From the examples presented, it can be gathered there is an infinite variety of locales of interaction from the family home to the school and from the individual bedroom to the subway system in a major metropolis and that, consequently, the size and complexity of these settings varies greatly. Nevertheless, it would appear that those elements identified by

the most external layer of our model are a constant across all these locales and, therefore, a useful starting point to analyse them. (In section 9.2.1 *Producing and Sustaining the Appropriation of ICTs in Everyday Life* below we better exemplify the role of the structures composing the social layer of our model in regards to the appropriation of the technologies explored in our studies.)

The researcher will notice this is, of course, not the first work to identify the social character of the process of appropriation. Section 1.3 *Appropriation as a Social Process* on page 26 reviewed a number of alternative approaches exploring social factors that frame the process of appropriation. What makes ours a contribution to this body of literature is the number of large-scale social structures identified as relevant, as well as the level of detail provided regarding their combined effect on the appropriation in everyday life of the ICTs explored in this work.

In exploring more particularly these social structures, we sacrificed on the level of detail we were able to provide on the actual use of any of the technologies here explored. Nevertheless, we addressed this situation, to some extent, through the study conducted in Mexico. As will be seen throughout this chapter, but more particularly in section 9.2.1 *Producing and Sustaining the Appropriation of ICTs in Everyday Life*, the study in Mexico provided an important contrast with the other studies here reported.

Our emphasis on the social structures that sustain the process of appropriation also seems to have been useful in addressing a major concern of technology adoption studies through the Technology Adoption Model (TAM). As observed in sections 1.4.1 *TAM Criticism* and 1.4.2 *HCI and TAM* on pages 32 and 34, respectively, one of the major criticisms of this model is its failure to properly account for and elaborate on the reasons why a technology is found to be ‘useful’ and/or ‘easy to use’ to address some activity. Usually, technology adoption studies start with these attributes as a given; nevertheless, as Wu et al. (2008) argued in their analysis of an emergency response system, even in ‘simple’ technologies these attributes are difficult to locate since they are tightly linked to the setting where technologies are deployed.

Our elaboration above of the three elements from which a setting of interaction can be analysed—i.e., activity, social practices, and place—purports to provide at least a partial answer to this issue. In our view, then, the usefulness and ease of use of a technology does not ‘emanate’ from the tool *per se*, but from the match between the technology and the conditions where it exists. As stated at the beginning of this chapter, for us the appropriation of technology is a process that occurs within a social horizon that shapes the manner in which digital technology is organised to satisfy the needs and activities engendered by the same context.

Put differently, the suitability of a technology to aid in the performance of the activities of a locale of interaction in accordance with occasioned social conventions is, in fact, what renders a technology useful and easy to use. (In this work, however, we prefer to use the more insightful and complete term usability (Nielsen 1993). In section 9.1.3 *The Digital-Tool Layer* below we will discuss how, in our view, the usability of an application is relative to the users and settings of interaction.) In the following section we describe the dependence we see between the features of a technology and the setting of interaction.

9.1.2 The Individual Layer

The middle layer of our model, the individual layer, is integrated by five elements identified as fundamental in securing basic access to the ICTs explored in this work. These five elements include message, audience, location, time and costs. In section 6.1 *Elements of the Accommodation of Information and Communication Technologies* on page 147 we described how the satisfaction of the basic considerations imposed by these elements guarantees access to any given ICT.

We observed, however, that access to a technology does not automatically imply its use and eventual appropriation. Nonetheless, use and appropriation of an ICT can never occur in the absence of access; hence the importance of those five elements as a sort of *precondition* of the appropriation of ICTs.

In other words, to consider an ICT as part of the repertoire of tools to perform an activity, a user must find a technology suitable to the transmission of a given message to an intended audience at a given place and time, and within the possibilities of her purchasing power. If a technology fails to meet these preconditions, said user will either have to readjust her outlook regarding those five elements (for instance, by reformatting the message she wishes to transmit so that it suits another option or by increasing her budget), do without the ICT, or find an alternative that better fits her use frame. (See a more detailed elaboration of this issue in regards to our studies in section 9.2.2 *Impact of a Changing Context on the Appropriation of ICTs* on page 200, below.)

At a fundamental level—i.e., at the level of securing access—users of communication technologies must necessarily consider each one of the five elements mentioned in every interaction mediated by them given the fact that communication activities always involve at least two parties. On the other hand, users of information technologies must only consider the last three, namely, location, time and costs, since information activities are so often an individual affair.

Individual evaluations of the five elements mentioned are necessarily constrained by the conditions of the environment where technologies may be used in terms of, again, the activities that may be pursued according to the social conventions of various physical locales of interaction. By placing the individual layer of our model within the space delimited by the social layer we want to convey the notion that access and use of an ICT is contingent or framed (i.e., enabled and limited) by those elements accounted for in the previous layer. Because the use of ICTs is so conditioned, it follows that their use responds to the demands or conditions engendered by said environment. Put differently, in general, an ICT will be used ‘simply’ to satisfy the demands, needs or requirements engendered by a given environment but not others. This rather obvious fact creates the first barrier on the number of uses—and therefore features—for which an ICT can be employed. A second barrier on the number of uses given to any ICT comes from individual considerations of the five elements mentioned above.

The two barriers on the use of technology have at least two effects. First, they force people to develop what we called accommodation schemes that give ICTs a rather ‘fixed’ place in the performance of daily routines. Accommodation schemes tend to remain in place until the conditions that make them stable change; that is, until the conditions set by the elements of the social layer are altered—a discussion of this phenomenon in the context of our work can be found in section 9.2.2 *Impact of a Changing Context on the Appropriation of ICTs* below. The second effect of the above mentioned barriers is that they limit the

possibilities of ICTs rendering them, in practice, as more uni-dimensional, static devices than what they really are. In practice, therefore, ICTs are simplified—an illustration of this event in our studies can be found in section 9.2.3 *Co-existing Information and Communication Technologies in Everyday Life* below.

In our view, ICTs may also acquire a more uni-dimensional, static character not only as a consequence of individual considerations within particular environmental conditions, but also because, for all the popularity of digital technologies, these devices are still a minority in a sea of analog objects. People are simply more used to deal with the possibilities (or to ‘grasp the handles’) of tangible objects than those of digital ones by reason of being more exposed to the former. Nevertheless, even the proverbial hammer is an ‘opaque’ object whose mastery depends not only on familiarity, but on the development of an intimate knowledge of its form and function. As with the hammer, proficiency with a digital device may also come not only as the result of prolonged exposure, but of a conscious effort to become acquainted with its form and functions, that is, with its possibilities (within an enabling environment).

On the other hand, just as with the hammer, intimate knowledge of an analog object is not a precondition for use; a minimum degree of usability seems to be necessary to operate ICTs at some basic level. However, as gathered from our studies, the usability of an application is not an absolute property since it would appear ‘legible’ only to those already familiar with the ‘language’ of digital technology; that is, with the visual array, metaphors, conventions, and input devices and methods (i.e., the ‘handles’) of ICTs. For those familiar with digital technology, these handles appear more salient, obvious or evident and, therefore, use of a novel device or system can be built on previous experience.

However, as documented in the study conducted in Mexico, under different conditions, for instance, when users lack the economic resources to acquire ICTs or when they are complete neophytes and lack the basic ‘language’ to operate them, the usability of an application would appear to play a less decisive role in achieving basic use of an ICT. Together with individual considerations along issues of message, audience, location, time, and costs, the support peers and other institutions provide seems more decisive in the appropriation of ICTs under these other conditions—this circumstance will be better illustrated through the case of *FamilySearch* in section 9.2.1 *Producing and Sustaining the Appropriation of ICTs in Everyday Life* below. Consequently, not only the conditions whereby people from different backgrounds (in terms of age, education, occupation, and familiarity with digital technology) secure basic access to ICTs are different, but the resources from which they draw to actually use ICTs are different too.

The reader will be right to observe that our observations above are in marked contrast to those of traditional studies of appropriation found in the literature. For instance, in a study of Second Life, a virtual world, Shin (2009) concludes that synchronicity, empathy, and self-efficacy can improve the popularity of these applications; for Tan and Chou (2008), the uptake of mobile information and entertainment systems may depend on, among other things, developers’ emphasis on the usefulness of these applications which, in turn, is a consequence of improved quality, productivity, performance, and speed associated with the tasks a user can perform with them; finally, for Serenko (2008), the success of interface agents for email may rest on the development of agents that cater to a variety of more and less playful users. (See an extended review of TAM studies in HCI on page 34).

When compared to the implications for design of these other appropriation studies, our observations above regarding the minimum conditions necessary to secure access to a digital technology may come out as pedestrian or simply too obvious. While some may see this as a limitation in the practical application of our work, we see it in fact as one of its strengths. We argue that in the appropriation of technology it is premature to talk about issues of empathy, self-efficacy, quality, performance, etc. when the minimum conditions needed to secure access to a technology have not been met.

To be clear, we are not saying that empathy, self-efficacy, quality, performance, etc. may not be important elements behind the appropriation of various digital technologies. What we are saying is that they are irrelevant when a user can not first afford access to a technology due to its price, or when a technology can not be used to communicate with a party of interest, or to access information of relevance to oneself, or when a desired message can not be transmitted with the technology at hand, or when it is impossible to use one at a given location or time. Unlike other perspectives and models of the appropriation of technology, ours highlights the need to meet first the basic conditions that ensure access to a technology before the process of appropriation can even begin to develop.

Clearly, once the conditions described in this layer of our model have been satisfied and access has been secured, a number of other considerations may enter into play across different combinations of technologies, users' characteristics and locales of interaction. As documented in our studies, participants across our studies would be able to look past these basic considerations only when not constrained by any external force; they would thus be concerned with the acquisition of a new handset on fashion grounds alone, or with the emoticons they could include in their messages, or with the speed at which they could access their websites. Certainly, these considerations would also influence the appropriation of ICTs in everyday life, but unlike the most basic ones, they would constitute what we could call a *second level* of considerations regarding the appropriation of digital technology—i.e. to be considered only after the first level has been secured.

Our model provides limited insights into this second level of considerations. Thus, the researcher using our model, after having explored the first or basic level of considerations around the process of appropriation described above, would have to resort to other methodologies or models to achieve a finer level of detail on, for instance, the drawbacks of a 'somewhat' established ICT limiting its uptake. As has been argued throughout this work, our model is concerned with explaining the general conditions that induce and sustain the appropriation of the technologies here explored, rather than the overall effects of any individual feature.

On the other hand, our model also seems useful in the assessment of the deployment of novel technologies like prototypes, as well as those that only appear as 'new' to their intended users—see, for instance, the case of *FamilySearch* in Chapter 8. We argue this to be the case given the fact that our model was derived from the analysis of already popular ICTs. Consequently, our abstraction of this process, our model, can be used as the lens to approach a setting, organise data, and compare whether a novel technology (in both senses indicated) fulfils the very conditions that made 'older' digital technologies successful or, in other words, an affordable, consistent, and reliable part of the daily

landscape; indeed, (digital) objects upon which people's subjective meanings can be inscribed, as will be seen next.

9.1.3 The Digital-Tool Layer

Given the social environment in which ICTs exist, many people beyond the actual users of these technologies form expectations regarding their role in contemporary society. As gathered from the experience of our participants, the images of digital technology carved in the public consciousness are such that even non-users seem to associate them with a full spectrum of images ranging from the 'right' way to remain involved and cognisant of the ways of contemporary society, to the privilege and achievement of a few. This phenomenon we call perceived relevance.

Images endowed by society on ICTs are thus also partially responsible for their appropriation. Nevertheless, the perceived relevance of ICTs to address some activity is, again, not condition enough to have access to and use them. When the five basic conditions mentioned in the previous point are met, the perceived relevance of ICTs becomes practical since the user has effectively satisfied the minimum conditions that secure use.

In our view, the 'transition' of an ICT from being perceived as relevant to actual use (practical relevance) is tightly linked to its commoditisation and to its usability features. The former makes a digital technology an affordable reality; the latter reduces the degree of technical acumen necessary to operate a sophisticated technology. Once more, both circumstances are not absolute but relative to the prevailing conditions of a setting of interaction. As documented in our study in Mexico, even the acquisition of an Internet connection may not yet be a trivial matter for many people in that country. Similarly, even a high degree of traditional usability may have no impact on whether a person can use a technology since, as elaborated above, the use of a technology depends on more circumstances than this attribute alone.

The innermost layer of our model of appropriation, the digital-tool layer, tries to capture the transition of ICTs from perceived to practical relevance; its dependence on the commoditisation and usability of digital technologies relative to a setting of interaction; and the subjective images people endow on them as they become part and parcel of the performance of routine activity.

In our view, it is only after individuals endow ICTs with subjective images that they are truly appropriated. *FamilySearch*, for instance, came to represent for participants in Mexico not only the means to conduct a task but, literally for them, the whole apparatus to save their deceased ancestors and themselves. Similarly, among the other participants and their families, computers and the Internet came to be seen as the means to improved educational opportunities, even when their role in this endeavour was in reality non-existent or contested with the other possibilities of ICTs as entertainment channels.

More specialised technologies like online social networks also have come to be strongly associated with offline activities pre-dating their emergence. By embracing them, the user tacitly agrees to experience 'friendship', at least to some degree, through the possibilities afforded by these technologies. In doing so, the image of online social networks as the means to befriend in (some segments of) contemporary society is both established at the individual level and entrenched at the collective.

The subjective dimension digital technology acquires has been identified elsewhere although, as far as we are aware, it has not necessarily been recognised as part of the process of appropriation. Mobile telephony among young people, for instance, is for Taylor and Harper (2002) the modern vehicle of gift-giving and rivalry, whereas for Ling (2001) it is the conduit to independence; among adults mobile phones are ‘cognitive artefacts’ to support concurrent activities (Palen and Hughes 2007) and vehicles to preserve a sense of identity among transnational groups (Williams *et al.* 2008).

By integrating this subjective dimension in our model, the researcher using our approach to analyse the appropriation of a technology will necessarily have to account for that stage in which it moves from being considered a mere ‘gizmo’ to becoming the normal way (or at least an important resource) to conduct an activity in some segment of society. In reaching this point in our model, we think the researcher would have covered the same ground we have, moving from an analysis of the prevailing conditions of a setting of interaction and their impact on the practice of interest to an analysis of actual use of a technology framed by that very setting to the place the technology of concern occupies in the ‘toolbox’ of a member of contemporary society.

As will be seen later in section 9.2.2 *Impact of a Changing Context on the Appropriation of ICTs* on page 200, the appropriation of ICTs is not, however, a permanent state. As individuals traverse various environments, both in time and place, their conditions call for constant individual re-assessments of the basic elements previously described that ensure access to an ICT and the possibility of use. In some cases, such assessments may result in the use of an alternative technology or in the complete abandonment of an ICT.

Let us now consider some more particular aspects of the process of appropriation according to the three research questions this work is addressing. As will become evident, the answers we provide are framed by the components of the model just described, as well as by the conditions of the studies conducted.

9.2 Three Aspects of the Appropriation of ICTs

9.2.1 Producing and Sustaining the Appropriation of ICTs in Everyday Life

In Chapters 3 to 5 we explored all elements we identified as having a role in the production and continuation of the appropriation of ICTs in everyday life. In other words, to be available and thus prone to be appropriated, ICTs depend on several elements. We classified those elements in three broad categories: activity, socialisation and place. We arranged these elements as the outermost layer of our model to convey the idea that the process of appropriation of ICTs is framed by the conditions prevalent in a particular social environment, i.e., by its social structures. Just as with existing structures, ICTs also provide rules and resources that constrain and enable the organisation of ongoing and new social practices. The use of ICTs in the performance of routine activities, notably those to communicate and get informed, further entrenches their role in contemporary society.

The use of ICTs among our sample was pervasive. Their habitual pursuit of five prominent activities (i.e., communication, studying, finding a job, leisure and entertainment, and online commerce) through digital technology was deeply rooted and, given their condition as university students, one of the central concerns in their lives. Our exploration of these activities and how they were performed through a variety of digital technologies illustrates what Giddens calls the *duality of structure* (Giddens 1984, 19, 25). In other words, ICTs (structures) become the medium whereby social practices (studying, finding a job, etc.) are possible due to their features (rules and resources that constraint and enable). The medium, in turn, becomes reinforced and further established because of the continuous reproduction of the social practices it supports.

Interestingly, among participants in Mexico, use of *FamilySearch* remained almost as an isolated activity apart from all other routines performed by each member of this group; with the sole exception of *FamilySearch*, all other ICTs would appear to remain remote from these participants' daily concerns. This circumstance is perhaps exacerbated by the fact that, even when some participants had access to a computer and the Internet at home, they still had to visit the Family History Centre to use with some degree of success this application. The foreignness of ICTs among this group may also stem from the rigid character of *FamilySearch* when compared to other information technologies or the Internet at large; in other words, no other activity beyond gathering data for dead ancestors can be pursued with this software application. Nevertheless, even in the restricted task of 'saving the dead' it was possible to observe how *FamilySearch* overtook—or more properly put, was developed to overtake—an activity formerly performed almost without any use of digital technology. In this event we see another instance of the duality of structure since *FamilySearch* effectively restructured the work of 'redeeming the dead' along the features it provided and, in the very act of using this application, participants in our study reinforced its role as the only channel to do so.

Many other activities like cooking, self-care and grocery shopping, however, also continue appearing to our younger participants as foreign or detached from ICTs as most other activities for older participants. It could be argued this may be a consequence of only minor (or unsuccessful) attempts made so far to incorporate digital technology into these other mundane activities; the particular experience of our participants that has not yet found a connection between the digital and the analog realm; or a consequence of the nature of these latter activities that prevents them from being re-conceptualised as information and/or communication activities. Nevertheless, in our view, the type of 'transformation' absent from these other activities has already taken place with those information and communication activities explored in Chapter 3. So, how did participants in our earlier studies come to appropriate ICTs to pursue mainly those activities identified, but not others?

According to our analysis, the mere presence of a novel technology, no matter how 'simple,' is not reason enough to appropriate it or to incorporate it in the prosecution of an activity. In this we reach a similar conclusion to Wu et al.'s (2008) regarding the reasons why an emergency alert system among university students is not used. There are a number of elements that, when combined or present, seem to induce or facilitate this process; in the absence of these elements the process of appropriation is unlikely. The integration of ICTs in people's lives is, therefore, an intersection of different elements or social structures

that facilitate and sustain this integration. Chapters 4 and 5 described what those large-scale social processes are and their role in the process of appropriation.

For instance, among participants in our studies in Glasgow, Japan, Korea and China, the appropriation of ICTs may begin at home through what we called the domestication of technology. Parents may provide digital technology for a whole range of issues ranging from those associated with furthering the educational prospects of their children to those dealing with their security, the preservation of communication across space, children's social integration among peers or simply as rewards. In the provision of technology to these ends, parents and children use these technologies within the possibilities of their features, but more importantly, in tacit agreement with the public discourse regarding the benefits and role of these technologies in contemporary society.

As seen, the appropriation of *FamilySearch* by our participants in Mexico was also based in a peculiar discourse or belief. In this case, however, it dealt with the spiritual aspirations ingrained and embraced by these participants from the moment they joined the LDS faith. As illustrated through our brief introductory summary of the practice of genealogical work among the LDS Church in Chapter 8, this organisation has made use of any available technology to perform this work. An online application is, therefore, but the latest vehicle to express in practice an old belief among this community.

Beyond the family hub, peers exerted a considerable influence on the appropriation of ICTs. In general, this seems to be a consequence of the integration of technology in existing social practices such as the use of mobile phones for voice communication or the use of online social networks and SMS for everyday chat or to remain aware of the activities and thoughts of co-located and distant 'friends'. Peer influence on the appropriation of technology was manifested directly in various forms including advice to use (or not use) a device or online service because of some perceived benefit (or danger); demonstrations of system functionality; repair and other forms of technical support; and by lending or even giving away electronic devices like mobile phones. Peers further encouraged the appropriation of technology indirectly simply by recognising others' efforts in using ICTs to communicate according to social practices already established within a group.

The influence of peers was even more evident in the study conducted in Mexico. As described in the previous chapter, the appropriation of *FamilySearch* was heavily influenced by the friendly environment of the Family History Centre. Such an environment was the product of relationships developed sometimes over the course of thirty years. In our view, this welcoming environment greatly reduced the anxiety typically experienced by those unfamiliar with technologies like computers and the Internet. From a different perspective, the support provided by those with more familiarity with *FamilySearch* to those with less was simply a continuation of the practices enacted by this religious group (away from ICTs). In other words, the very purpose of formally organising an LDS ward or branch in any given geographic area is to have members of this faith support each other in the everyday living of their religious beliefs but away from the meetinghouse and Sunday services.

Larger and seemingly less direct influences on the appropriation of ICTs are found beyond peers and domestic settings in the form of institutions. A strict separation between the influences of these forces, however, is not clear-cut as considerable seepage exists between them. The influence of institutions is,

nevertheless, important. A wide range of institutions encountered by our participants on a daily basis implement policies and regulations aimed at enforcing certain behaviour towards the technologies these institutions provide or towards the use of personal ICTs within their spheres of influence. We documented the influence of four such institutions across our studies including those dealing with transportation, housing, education and civic duty. Even though it was difficult to ascertain the motivations behind regulations imposed by these institutions regarding the use of ICTs, their influence is undeniable in structuring the role of digital technology in social practices according to their policies.

On the contrary, with a certain degree of detail we described the motivations and entire infrastructure deployed by the LDS Church to help its membership fulfil one of its three main missions. As seen, this infrastructure was not only limited to the provision and maintenance of meetinghouses and other more specialised venues known as temples where ‘common’ religious practices were enacted. The infrastructure provided by the LDS Church also covered dedicated facilities known as Family History Centers (FHC) whose functions were almost exclusively the use of *FamilySearch*, a software application that can be seen as the latest addition to that very infrastructure. Moreover, along with regulations imposed on the use of FHCs, there were also productivity targets that units equipped with one were expected to meet. As seen, the FHC studied provided, literally, a housing for the development of a techno-spiritual practice which, for reasons described in Chapter 8, was unlikely to develop elsewhere among those participants.

Apart from institutions encountered on a daily basis, national governments exert the widest influence on the appropriation of digital technology because their regulations are expected to affect the majority of citizens. Besides compulsory military duty among male South Koreans and the GaoKao, the Chinese National Higher Education Entrance Examination for high school students in China—both of which discourage use of ICTs at least for a time—we documented the role of national governments in two more circumstances affecting participants in our studies. In one instance, the Japanese government facilitated the adoption of computers and the Internet, launching a national program to provide public schools with these technologies. In another case, and judging from personal experience and the experiences reported by participants, the Chinese and Indian governments are largely oblivious to issues of digital piracy. Governments also facilitate the resources that make access to ICTs a reality. As documented by our studies, one of the many consequences of a government with lax regulations regarding the illegal distribution of digital goods or the manufacture of counterfeit items is the possibility of acquiring applications, digital devices and content at affordable or negligible prices. Furthermore, the consumption of abundant content, legal or pirated, is another important element in the appropriation of ICTs.

As indicated above, in the domestication of technologies, student participants, their parents, and their peers embraced digital technologies according to popular media discourses regarding their benefits. These discourses are usually based around needs solved by ICTs, and personal images acquired by the use of novel devices. Just as in other aspects of daily life, the media plays an important role in shaping participants’ perceptions towards digital technology and thus it can be credited with creating expectations towards it and with providing at least basic instructions to operate them.

Mass media's role in the appropriation of *FamilySearch* was more difficult to distinguish; nevertheless, we were able to identify its indirect influence on the appropriation of this technology. The LDS Church makes extensive use of various communication technologies, from the pedestrian like magazines to the sophisticated like satellite and Internet broadcasts, to remain 'in touch' with its membership. This is done with the sole purpose of reinforcing the beliefs and practices of this church. In continually emphasising the work of redeeming the dead through these various communication channels, the church tacitly reinforces the importance of this techno-spiritual practice and, therefore, of the appropriation of an ICT.

To operate, all ICTs require technical infrastructures that secure a more or less equal access to the services they facilitate. Services and systems can also be considered as infrastructures necessary to execute more specialised services. Even when done unknowingly, our participants encountered on a daily basis different infrastructures. Some infrastructures may be provided by governments, others by different institutions, as was the case with the LDS Church or the various universities explored. Even though some infrastructural restrictions are the result of actual technical limitations, others are simply applied on an *ad-hoc* basis by the institutions behind them. Naturally, these restrictions impact the types of services and systems that people can use and the practices they can develop as a consequence. Masterpoint at the University of Glasgow, for instance, blocked the use of P2P protocols; in China, however, Nankai University encouraged the use of this very technology in the school's intranet. On the other hand, it could be said that the productivity records set by the LDS Church regarding the redemption of the dead were at the very heart of the appropriation of *FamilySearch* among the community explored in Mexico.

ICTs become available for mass consumption as they are commoditised. Corporations behind digital goods and services are thus forced to devise marketing strategies to maintain and increase their market share and revenue within a saturated market and a seemingly endless stream of technological innovation. In mobile telephony, marketing practices include price elasticity, network coverage, loyalty plans, customer service, value added services and market segmentation. Participants in our study could not have a full understanding of all offers available in the market; their decisions were, therefore, limited by their partial understanding of these offers. Many decisions were based on what we called earlier a second level of considerations, that is, subjective appraisals of ICTs centred in aesthetic or fashionable elements or in expectations regarding, for instance, the services and features offered by a particular phone carrier.

The influence of marketing practices on the appropriation of ICTs in the study in Mexico was in stark contrast with our previous studies. During our interviewing and observations in Mexico participants never made any single allusion to the aesthetic, fashionable, or the usability features of the digital technologies they used during the study. Unlike participants elsewhere, their main concern seems to have been a more fundamental one, namely, the cost of owning or operating a technology. As reported, a participant couple simply did not have the economic means to access the Internet at home and, consequently, their home computer was 'sitting' idle. Although she did not appear to consider it so, another participant acquired what we then described as an overpriced computer. Her computer was overpriced when compared to the prices of machines with similar specifications in, for instance, the American market, and when we consider the actual price she would eventually pay over the span of her credit in such a fast-deprecating market as that of PCs.

Among participants in Mexico, *access* to computers and the Internet seems to have been a more primordial issue in the process of appropriation. This could be a consequence of several circumstances. First, as illustrated, most participants in Mexico were making their first inroads into the digital realm as our study developed; therefore, issues of aesthetic design or fashion may be inconsequential in this situation. Incidentally, this may also explain why participants in this study did not seem to appreciate and, therefore, benefit from the usability features inbuilt in *FamilySearch*. In other words, their inexperience with other digital technologies and their ‘language’, not to say with other genealogy applications, precluded them from valuing the features provided by *FamilySearch* to ease the task of finding deceased ancestors. Second, the task of redeeming the dead was, from a certain perspective, a utilitarian one; consequently, other considerations beyond productivity may have been irrelevant. Finally, as indicated, an evaluation of the cost of accessing a computer and the Internet at home vs. the Family History Center simply made the latter the most cost-effective solution.

The last element we identified as having an influence on the appropriation of technology was the architectural layout. All public, semi-public and private spaces in which our participants resided or those they encountered in the performance of their daily activities encouraged or effectively contested their use of ICTs in them. This may be a consequence of the actual layout of these locales or a consequence of social practices already performed in them. As seen, the domestication of technologies in the family home may be considered as the starting point of the long-term involvement of our student participants and ICTs. The malleability to technological change of the physical structures of the locales of interaction explored, and of the practices performed within them, were both important factors on the appropriation of ICTs.

On the other hand, it is interesting to note that all participants in the study in Mexico alluded to a variety of circumstances *at home* that discouraged their use of *FamilySearch*. One participant informed her life at home was so full of household chores that it was difficult to find time to practice her recently acquired skills with *FamilySearch* on the family computer. Another participant in fact bought her PC because her grandson then living at her home would not let her use his laptop to access *FamilySearch*. Even the director of the local Family History Center, the only person with some expertise with *FamilySearch*, would struggle to find time to use this application at home amidst a large number of household activities. In a sense, it was as if the Family History Center provided participants with the needed respite to make use of *FamilySearch* literally away from other daily concerns; certainly a housing to promote and sustain the appropriation of this technology, as suggested earlier. Perhaps this artificial isolation created by the Family History Center can partially explain why participants, at least during the duration of the study, were indeed able to use *FamilySearch* but not any other service available online.

As seen, each one of the above described elements has a role in the appropriation of ICTs. It was not our intention, however, to assess the degree of influence each one of these elements exerts in the overall process. Nevertheless, since we did identify each element described by our model across all settings explored, we consider it safe to say they all seem to be necessary to produce the conditions that facilitate the appropriation of digital technology.

The combined influence of all the forces identified as being in the social layer of our model integrates digital technology into social practices, making them part of the repertoire of tools a member of society must ‘master’ to successfully navigate a given milieu. We argue this transformation has already taken place—and, in fact, took place while conducting the study in Mexico—with many technologies generically known as information and communication technologies like those explored in this work, i.e., mobile phones, online social networks, computers, the Internet and IM. We further suggest this very transformation renders technologies *useful* within a given environment. As suggested earlier, the role of these elements in rendering a technology useful can be advanced at least as a partial answer to a long-standing concern of technology acceptance studies through the Technology Adoption Model (see section 1.4 *The Technology Acceptance Model*), namely, the need for a better understanding of the elements that make a technology be perceived as useful and easy to use (Sun and Zhang 2006; Wu *et al.* 2008).

In Chapter 8 we illustrated the process whereby an environment shapes the perception of a technology but in a more succinct manner. There we described how *FamilySearch*, an online genealogy application, was given a ‘cultural place’ within the religious group explored. As seen, the structures deployed to this end provided, as it were, the handles our participants grasped to make sense of this technology. Such a circumstance resulted in our participants being able to integrate *FamilySearch* in the course of a few weeks in the prosecution of an activity previously devoid of any digital prop. As argued then, the success of *FamilySearch* can hardly be attributed to the features of this application. The appropriation of technology in everyday life seems to be, therefore, the achievement of more elements than simply a technology, its users, and an isolated locale of interaction. ICTs like the ones explored in this work are, therefore, successful because they are sustained by multiple structures that weave them across social practices; in other words, ICTs are successful because the environment where they are made to exist makes them so. In our view, this purposeful shaping of technology is equivalent to the process of structuration described by Structuration Theory (see page 61) that adds new tools and objects to the social landscape.

9.2.2 Impact of a Changing Context on the Appropriation of ICTs

Elsewhere in this work we suggested that it is important to pay attention to the transformation in time of social practices supported by technology. In this section we discuss this transformation of practices in time given the fact that the characteristics of our studies gave us a wide panorama over the process of appropriation of ICTs in everyday life under changing circumstances. Most prominent among these circumstances was the three-month timeframe invested in the study conducted in Glasgow, in which we studied adjustments to the use of technology in a new setting. Also important, however, were the more fortuitous circumstances we faced in Japan and South Korea where we met participants with experience studying abroad.

As seen above, a number of elements structure the manner in which ICTs are encountered and experienced, but what happens when these conditions change and how do they impact on the use of digital technology?

Even though the central concern of our student participants was succeeding in their studies and, therefore, their use of ICTs would be in accordance with this aim, this is neither the only activity occupying all their

waking hours nor the only activity they will ever be devoted to. It was possible to distinguish a few occasions in the lives of our participants in which ICTs ‘suddenly’ became objects of interest. In general, participants were first drawn to ICTs in their puberty during high school, or a few years later when entering college. At the time, they may have been provided with a personal or family computer, Internet access and a mobile phone. In general, their first forays into these technologies may have been motivated by regular social bonding practices with their peers, the prospects of enhanced educational opportunities through digital technology, or as a safety net. Most student participants in our studies, however, did not recognise serious use of ICTs in education until years later, usually by the time they were university students or beyond. In a sense, it would appear the more specialised their studies, the more they relied on ICTs. An alternative explanation would not necessarily link this reliance on ICTs to their educational level, but simply to the length of time in which ICTs have been a constant element of their daily activities.

As observed in the previous chapter, unlike student participants, participants in Mexico had lived lives unencumbered by ICTs up to their use of *FamilySearch*. To be clear, while these participants have witnessed the rising presence of ICTs along their life spans, their activities had surprisingly remained almost completely offline. One consequence of this circumstance may be what we described earlier, namely, that their level of comfort with multiple digital technologies was rather low while their prospects regarding the utility of these technologies was also limited. Also, as observed opportunely, an appraisal of the daily activities of our participants in Mexico would reveal a vast list of activities where the role of ICTs among people of the same age in a similar environment is still minimal including cooking, caring for the infirm, child rearing, worshipping, running a home business, and the performance of leisure activities like soap opera watching, book reading or exercising.

As the conclusion of university or postgraduate studies draws near, there was a shift on the use of technology among our younger participants from study-related activities to those aimed at finding a job. In this stage many participants, especially those in China, insisted most of their use of ICTs was almost exclusively devoted to finding a job; other systems like online social networks and IM would almost fall into disuse at least during this period. The use of ICTs then appears to be seasonal and ancillary to the main activity in which participants were engaged. Free time would, therefore, usually be associated with an increased use of ICTs for leisure-related activities. Holidays, however, especially when travelling, would usually be associated with decreased use.

Besides changes in the use of ICTs according to developmental and educational stages (cf. (Ling 2001)), there were an important number of adjustments made by our student participants in related occasions, for instance, when moving to a different location. One of the most reported, at least immediately after changing location, deals with an increased volume of communication between participants and their parents to seek emotional support. This was reported whether participants moved to another city or another country to attend high school, university or postgraduate education. On time, however, communication with family and relatives would again decrease and return to ‘normal’ levels. Most communication reported between participants and their parents took place through mobile phones, landlines, and Skype, although the latter option was usually used only by one party involved, the participant.

Despite initial reticence to learn how to operate computers and the Internet, some of the fathers of our young participants would eventually be drawn into computers and the Internet to explore hobbies and play games, and for more specialised uses like communicating with their children. Mothers, however, when reported, were usually depicted as having no interest in computers and the Internet. Apparently, their regard for computers never changed. Nevertheless, mothers did own personal mobile phones and they were participants' preferred point of contact when calling home.

Interestingly, the study conducted in Mexico may have provided some insights into this circumstance. As observed in the previous chapter, the lives of our older female participants, even when not raising their own children anymore, appeared so full with daily chores that they literally needed to leave their homes to find the space and time necessary to learn how to operate *FamilySearch*. This situation suggests that traditional roles performed by each member of the family unit may act counter to the uptake of ICTs among housewives in traditional family arrangements. Furthermore, it is worth noticing that the use of ICTs among housewives does not appear to receive the same attention from the media when compared to, for instance, the use of these technologies among school children. As suggested earlier, the media favours the appropriation of ICTs by creating expectations around the role of these technologies in society and by instructing on basic use. A powerful and pervasive discourse on the use of ICTs among housewives seems absent from the public sphere. On the other hand, we should also consider that traditional media may already be providing all the informational resources this segment of the population requires. In any case, it is worth highlighting that, for various reasons, the very same environment (i.e., the family home) that appears welcoming for one group (children) also appears hostile for another (housewives) regarding the provision of the conditions supportive of the process of appropriation of ICTs.

Upon relocation to new environments, young participants would adjust their use of ICTs to imitate local communication practices or, as in the case of those coming to study in Glasgow, according to occasioned practices apparently only in operation during their stay in this city. Adjustments to their communication habits were observed, for instance, in the use, even when temporary, of particular IM clients like MSN (aka Windows Live Messenger) to chat, Skype to call home, and online social networks like Facebook to maintain friendship while abroad. Participants met during fieldwork in South Korea also recalled similar adjustments on their use of ICTs while studying abroad; upon returning to Korea, however, they would go back to popular local options such as *Cyworld*, a social network, and *NateOn*, an IM client. A similar event took place among Chinese participants when attending Nankai University; in this case, however, the applications of choice were *Xiaonei* (now *Renren*), the most popular social network among university students in China, and the university's own BBS. Not everyone, of course, would embrace to the same extent local social practices and the technologies used in their performance, and not everyone would readily discard them upon returning to their home countries or graduating from college. Overall, there is a marked preference for using ICTs according to local practices even when these may go against more popular or better recognised alternatives from an international perspective.

Student participants not only modified their use of ICTs to harmonise with their peers according to local social practices, but also to comply with the restrictions and possibilities intentionally or unintentionally imposed by the infrastructures of those settings and by the people within them or by the organisations

behind them; an adaptation we called accommodation; we will explore the role of accommodation in juggling multiple ICTs in the next and last section of this chapter.

Infrastructural, organisational or social restrictions in different locales generally lead to using a technology in compliance with the manner available or imposed (e.g., passengers in the Japanese subway would abstain from making voice calls), even when this may lead to a sort of ‘downgrading’ of technology since it is preferable to, for instance, use a spotty mobile network connection or a very basic handset rather than having no mobile phone at all. Nevertheless, compliance with local restrictions and limitations may lead to abandonment (e.g., participants were not able to download files using P2P protocols while in the University of Glasgow’s student housing. Others in China were not able to access Facebook because it was blocked by the Chinese government). Restrictions, in turn, may encourage the development of alternative practices to bypass them (e.g., exchanging movies and TV series through physical media).

On the other hand, the possibilities of new settings of interaction may also encourage the adoption of alternative or complementary technologies (e.g., participants in the UK began using services like iTunes, Amazon and IPTV upon arrival to this country); the use of new or additional features (e.g., mobile TV and Internet); and the development of new practices (e.g., changing service provider in order to change mobile phone handsets for ‘free’ as frequent as possible or downloading large files instead of copying them from a USB stick to another given fast speed Internet access in South Korea).

A final type of adjustment made in the use of technology comes as a consequence of the actual layout of the setting of interaction. This circumstance was most evident in our study among participants living in university accommodation since they neither lived in a regular household arrangement nor shared it with family members. Like other issues pertaining to sharing living arrangements, their use of ICTs, regardless of its features (e.g., the portability of technology may suggest the possibility of use in any room), was restricted by the social dynamics established under these circumstances as this may be a source of friction among flatmates.

9.2.3 Co-existing Information and Communication Technologies in Everyday Life

Student participants routinely accessed a considerable number of services, systems and devices. From a purely technical standpoint, many of these technologies have overlapping functions, for instance, communication can be achieved variously through email, IM, online social networks, blog posts, and mobile phones. Nevertheless, the very fact that participants kept at their disposal and used a variety of systems would suggest each one of them fulfils a certain role within their routines that in practice is not overtaken (or can not be overtaken) by an alternative technology regardless of its sophisticated or pedestrian nature. Salovaara (2007) argues technology is appropriated as users experience it discovering novel “resources for action”. In our view, however, technology is appropriated not only because people discover its ‘hidden’ resources, but more importantly, because they need to continue performing those activities in which certain technologies play a role amidst changing circumstances; the digital technology, therefore, becomes a sort of ‘anchor’ for relatively stable activities in a sea of change. The purposeful accommodation of technologies within changing environments is subject to the limited knowledge people

have of them. As seen in the previous two sections in this chapter, a variety of elements and the manner in which they are encountered influence how ICTs are actually used.

Furthermore, as observed throughout our studies, participants would appear to remain oblivious to many of the possibilities of ICTs focusing on a subset of features from which they ‘grasp’ a technology and incorporate it into their ongoing activities. As argued in the previous point, particular environmental conditions reveal or made manifest the ‘handles’ or technological features that make a technology relevant—or *useful* in the language of TAM—for a task even when other features in the same technology may be obscured in the process. This process we call the simplification of technology and argue it is far more prevalent than the dexterity implied by other views of appropriation as a precondition of the appropriation of technology (Dourish 2003).

The simplification of technology, in turn, favours the formation of accommodation schemes whereby different technologies (systems, services or devices) are assigned a particular role in the development of rather similar social practices. For instance, to communicate people may use, say, email and IM; however, the use of any of these options responds to different individual considerations of the elements advanced in Chapter 6 including message, audience, location, time, and costs which secure basic access to these technologies. The concept of accommodation schemes is similar to Huysman *et al.*'s (2003) idea of “media stickiness” that suggests patterns of media use are developed shortly after the introduction of technology and how these tend to be resilient to future modifications.

Accommodation schemes remain in place until environmental conditions induce change. When they do, existing technologies may be less suited to address the task at hand. Under these circumstances, alternative or complementary technologies may be necessary in order to keep the social practice previous technologies supported as undisturbed as possible. New (and perhaps provisional) accommodation schemes are developed around alternative or complementary technologies. In the lives of our participants this process makes possible the co-existence of technologies with seemingly overlapping features or purposes that in practice, nonetheless, attend a number of considerations beyond the purely technical.

Accommodation schemes formed by student participants in which various ICTs are made to co-exist appear more evident in communication practices. Software systems are used to bridge a rich variety of multiple social relationships to communicate different messages across different time-space arrangements and economic considerations. Information activities, on the other hand, being a rather private affair (i.e., a user consuming information does not have to account for another party's conditions) would apparently result in more straightforward, and perhaps more resilient, accommodation schemes. An extreme case of this circumstance was observed in the study conducted in Mexico. Users of *FamilySearch*, at least during the length of the study, only came to see computers and the Internet as a sort of uni-dimensional system or device whose only purpose was finding ancestors to ‘save’. All the other possibilities of computers and the Internet remained as if hidden since the environment in which *FamilySearch* was appropriated did not appear to reveal any other “resources for action” (Salovaara 2007).

9.3 Conclusions

In this chapter we reviewed once more the underlying perspectives sustaining the model of appropriation of ICTs introduced in this work. We also presented an overview of findings regarding three research

questions we identified earlier as in need of further exploration. These questions included the production and maintenance of the appropriation of ICTs in everyday life; the impact of a changing context in practices around these technologies; and the manner in which technologies with similar features co-exist in people's lives. Discussion of these findings was based on data presented in Chapters 3 to 8 and in our interpretation of this material.

We also discussed the utility and limitations of the model of appropriation advanced in this work. The idea of a model would appear to run counter to the spirit of qualitative research like ours; this would indeed be the case if through our model we were attempting to enforce a rigid way of looking at settings of interaction.

What we are trying to do through our model is merely to provide a perspective embodying our take on the process of appropriation and a simple method to analyse a setting of interaction from this perspective. Through this lens the researcher interested in conducting a qualitative exploration of a setting of interaction may facilitate her work and explore with different degrees of detail some of the fruitful and intersecting avenues of inquiry we have identified and organised.

Through the use of our model the researcher could potentially save on the time needed to (re)identify those structures affecting the technology of her concern. At the same time, however, the researcher resorting to our model would have to provide an account of the structures already proven important in inducing and sustaining the appropriation of certain ICTs—and perhaps others we have not identified—but in direct relation to the particular conditions of her research project.

Furthermore, by assessing whether her object of interest fulfils the minimum conditions of access relative to the locale explored, she would be able to determine whether it is relevant to analyse the effect of individual features on the process of appropriation. If that were the case, our model would give her the freedom to apply complementary perspectives that emphasise detailed analysis of feature use while at the same time grounding those findings within the frame delimited by those large-scale social structures highlighted by our model.

In accounting for the subjective dimension we argue some technologies acquire, the researcher would necessarily provide a perspective of technology not limited to its functional characteristics. We think this breadth of analysis promoted by our model would more faithfully reflect the place a digital technology achieves when it is appropriated in the performance of daily routines in the setting of interest.

Lastly, an important implication derived from the above discussion is the manner in which the limitations of our role as designers of new technology become clearer since the process of appropriation is subject to large-scale social processes outside of our control. We expect technology developers will appreciate this limitation and, thanks to those insights generated by our discussion above and by the application of our model, devise ways in which they can harness to their advantage those other influences identified as important in the process of appropriation.

The following chapter concludes this thesis reflecting on some methodological issues of this work and offering some suggestions for future avenues of research derived from our findings.

Chapter 10 – Conclusions

This chapter will summarise the research presented in this thesis by outlining its two main contributions in the form of study findings and an analytical framework. We will also discuss some methodological limitations in our work and some lines of future research derived from them.

10.1 Thesis Contributions

In this thesis we investigated the appropriation of information and communication technologies in everyday life among university students and mature people. To that end, we reviewed literature pertaining to this topic and identified some issues in need of a more careful appraisal by the HCI. These issues were used as our research questions; they include the identification of elements favouring the process of appropriation; the effect of a changing context on this process; and the co-existence of seemingly overlapping ICTs in people's lives.

The presentation of material from our studies in Chapters 3 to 8 followed the structure provided by a model we built from the same. Throughout these chapters we documented the appropriation of various pervasive technologies in contemporary society including computers, the Internet, online social networks, Internet messaging and mobile phones. Furthermore, each one of our observations around what we consider to be the main aspects of this process was illustrated with interview extracts.

Data gathered from the studies conducted was used in Chapter 9 as the source material from which we drew answers to the research questions posed in this work. As indicated previously, our overall work was not solely the exploration of the minutiae of use of the various digital technologies considered relevant for this study. Our interest also covered the provision of an ecological account that could complement and expand on issues identified in the literature as relevant in the process of appropriation; an account that could stand apart from any specific technology. Naturally, the answers we advanced in this work are coloured by the aims of our work, our methodology, and the conditions of our fieldwork.

This thesis detailed a number of intersecting large-scale social processes or structures that, apart from a single, individual technology, provide the resources and restrictions upon which the process of appropriation of digital technology rests. These social structures include governments, various-sized private and state-owned organisations, the media, families and peers, as well as marketing practices, technical infrastructures and architectural spaces, and the activities traditionally performed within them. While digital technologies would indeed appear to act as the catalytic element of new social practices, or of the performance of existing social practices in novel ways, large-scale social structures provide the material world that induces, sustains and regulates the development of these novel or modified socio-technical practices. While certain regulations on the use of digital technologies across different locales of interaction respond to technical limitations or social conventions, in other occasions it is difficult to ascertain their actual motivation.

Not everybody is equally affected by the social structures that induce and sustain the appropriation of technology. Traditional roles performed by various individuals, even in the same locale of interaction (e.g., the family home), affect their outlook on the use of digital technologies.

The appropriation of technology may begin at home, through what we identified as the domestication of technology, and continue throughout the life of people to suit their changing conditions. The use of digital technology also follows media's discourse around their benefits and role in contemporary society. Digital technologies then are used to satisfy the emerging and ongoing needs and demands of a given environment regardless of these being mundane, like accessing pirate content online, or spiritual, like saving one's soul. Consequently, the appropriation of a digital technology is not a definitive state, but a stage in an ongoing process.

At the same time, however, the number of activities that can be pursued through ICTs is relative. Some users pursue a large number of activities through various digital technologies, while others use them to pursue isolated activities. This circumstance seems to be a consequence of prolonged exposure to digital technologies across different stages of life (e.g., across the different stages of formal education). The use of multiple digital technologies across multiple activities, however, does not necessarily guarantee proficiency with them. Nevertheless, a certain degree of familiarity with the language of digital technology that comes from prolonged exposure to them seems to reveal more of the possibilities of digital technology.

People adapt to changing circumstances. In doing so people strive to preserve, where possible, access to the technologies they have incorporated in their daily routines. Routines are delimited by the restrictions and possibilities of a given environment, and use of digital technology is contingent on it since the environment reveals or makes manifest the usefulness (i.e., the handles) of a technology in the prosecution of an activity. Routines, however, are not permanent and people embrace and discard digital technologies accordingly.

People assign specific roles to each digital technology owned or used through what we called accommodation schemes. Accommodation schemes simplify technology in practice as each one of them reduces the work of having to re-assess the features of a technology when facing routine use conditions. Technologies are appropriated as they are simplified. In our view, this is a far more prevalent precondition behind the appropriation of technology than that which implies proficiency as a precondition of appropriation.

Accommodation schemes tend to prevent a technology from overtaking the role of another despite their apparent similarities. Accommodation schemes are formed around five basic considerations that, in our view, secure the possibility of using an information or communication technology including message, audience, location, time and costs.

When the conditions that secure access to a digital technology can not be satisfied, the process of appropriation can not take place. In our opinion, many new developments, as well as existing technologies in new environments and among new users, find themselves in this situation. We believe that under these conditions, that is, when basic access can not be guaranteed, it is premature to discuss the role of individual and perhaps more specialised features in the process of appropriation. When basic access has been (permanently) secured and ICTs have become a staple of the daily landscape, a number of (second level) considerations (e.g., aesthetic elements and usability and specialised features) seem to become an important factor in selecting a technology, service or system over another.

People tend to align their use of digital technology to harmonise with that of co-located others. These occasioned practices may only be exhibited for a period of time. Occasioned practices, however, are not readily discarded and may be preserved even after further re-location. Occasioned practices around the use of certain ICTs may contrast with more popular options from an international perspective.

Occasioned restrictions, whether of a technical or social nature, imposed on the use of ICTs may engender different strategies to cope with them. These strategies include the downgrading of a technology in order to preserve some degree of access to a service; complete abandonment of a technology or practice; and the use of alternative technologies, services or systems. Novel locales of interaction may also facilitate the use of digital technologies and services previously unavailable or restricted.

Our non-deterministic view of the process of appropriation is in harmony with contemporary approaches to this phenomenon in HCI (see section 1.3 *Appropriation as a Social Process* on page 26). Furthermore, like similar approaches, ours highlights the difficulty of relying on the attributes of a digital technology alone to predict or anticipate such a complex process as the appropriation of technology in everyday life (see section 1.4 *The Technology Acceptance Model* on page 29). Part of this thesis' contribution is to offer new detail and structure of how environments strongly influence how technologies are perceived as useful or relevant with regard to the tasks those environments engender. Through our descriptions of the manner in which various influences induce and sustain the process of appropriation, we believe readers of this thesis will be in a better position to take an informed and broad view of the dissemination of their novel developments.

This thesis introduced a model of appropriation of ICTs in everyday life. We believe our model can contribute to a better understanding of such appropriation by reason of the model's bridging of micro- and macro-perspectives. While pre-eminently a tool to simplify and guide the qualitative analysis of settings of interaction, we believe the perspective our model embodies—one where people's interactions with technology are not seen only as a finite event, but as a node within a network of environments, objects, other humans, and a changing physical landscape—can contribute to the ongoing expansion of HCI's focus of interest. Such a broad perspective, in turn, emphasises the idea (Sellen *et al.* 2009) that, for all the variety of disciplines that HCI has integrated so far, a holistic view spanning a still wider set of disciplines is required. For example, architectural and political aspects of appropriation are required, as well as sociological and cognitive aspects.

In mapping what social structures affect the process of appropriation and how they affect it, we reinforced the importance of the interdependent efforts of a number of stakeholders including governments, corporations, the media, and smaller social organisations like the family and religious groups. As such, the process of appropriation, we argue, can not be produced on demand simply by the mere appearance of a new technology, device or system no matter how 'simple' it may appear (Wu *et al.* 2008).

Moreover, like similar perspectives in our field, we argue the process of appropriation of a technology can not be studied from an isolationist or reductionist perspective as this necessarily presents an incomplete picture of this event. Our model of appropriation embodies an analytical orientation to aid in the provision of an ordered, ecological perspective of this process; it does so by providing (1) a list of influences on the process of appropriation identified across all settings explored, that structure the manner

in which a technology is encountered in daily life (Chapters 3 to 5); (2) a rationale behind people's incorporation (accommodation) of digital technology in their daily routines according to their own understandings of their technologies and their environments (Chapter 6); and (3) an illustration of the subjective character digital technologies have, as well as those they acquire, as people appropriate them (Chapter 7).

Given the limitations of our approach (see next section), and the fact that, as has been properly established, all interactions between people and digital technology are situated or contingent on environmental resources (Suchman 1987), it would be misguided to try to establish our model as the only lens through which the appropriation of ICTs in everyday life can be explicated (see also Postulate V on page 53). We rather view our answers to the research questions posed, as well as our model, as a contribution towards an enhanced understanding of this process; one that highlights the limits of our influence as technology designers in the face of large-scale social processes inducing and sustaining the appropriation of technology. Moreover, as indicated above, our model seeks to harmonise with updated views of HCI's role in contemporary society (Sellen *et al.* 2009). The perspective underlying all insights presented in this work may thus contribute to an expanded view of the process of appropriation than that provided by more mainstream and positivist conceptions (see relevant criticism of TAM in section 1.4 *The Technology Acceptance Model* on page 29).

As seen in the review of pertinent literature, much research in HCI appears devoted to finding the right combination of features that produces, as Suchman (1987) puts it, a self-evident technology that can be seamlessly understood, adopted, used and appropriated on sight [p. 18]. Usually, this aim is embodied in the 'implications for design' section of research papers that summarises researchers' experience with a system (Dourish 2006; Dourish 2007). With few exceptions, however, the practice under study and, therefore, the implications for design derived, are set within the context of the structures that gave rise, in the first place, to the practice studied. This can produce short-sighted recommendations that say nothing about how the structures that sustain the activity *as studied* will now sustain an upgraded technology and, therefore, the new social practices they will engender.

Since people's interests and (central) activities and, therefore, their use of ICTs, change as a natural part of life, even when some new technical feature could be made available overnight there is no assurance that those who are supposed to benefit from it would, in fact, see it as relevant to their routines. Thus, in its emphasis on the structures that make a socio-technical practice possible, this thesis helps show the researcher how to take the structures' presence or absence into account and in this way better put in context any implication for design formulated.

10.2 Future Work

As explained in Chapter 2, this thesis work used Grounded Theory to collect and analyse qualitative data gathered across several settings in which we explored a variety of ICTs commonly seen in use, and elaborated on the process of appropriation. This methodological orientation allowed us to explore with varying degrees of fidelity different themes we considered relevant to this work (e.g., the domestication of technology, the BBS system at Nankai University, the non-use of digital technology among Korean males during military duty, etc.). We employed several methods of data gathering including, for the most

part, interviews, as well as observations. As emphasised earlier, the focus of our investigation was on the context of use and how this provides a fertile ground for the incorporation of certain digital technologies into different social practices. As such, with the exception of the exploration of *FamilySearch* in Chapter 8, we avoided focusing on the use of any particular technology and, in fact, on a detailed description of features being used at any given moment.

Our approach proved fruitful in painting a bigger picture of the various settings of interaction explored. Following Grounded Theory's orientation we built a model of appropriation of ICT in everyday life inspired by Structuration Theory and which integrates all elements we could identify as relevant in this process. As suggested earlier, we departed from other approaches in HCI that seem to ignore the background of a setting of interaction and its role in inducing and sustaining the practice under study.

We also drew from Giddens's notions of structure, structuration, and duality of structure, as well as knowledgeability, agency and reflexivity. Our use of these concepts underlies all of this work. For instance, we see all elements acting in the background of a setting of interaction, as well as the technology under study, as the structures, or rules and resources, that both constrain and enable the organisation of practices in a situated manner. We sought to emphasise an ecological view of the process of appropriation that, as Giddens puts it, recognises that no "strip of interaction" or individual occurrence can be apprehended independently, but as part of a social practice made possible by larger structures constraining and enabling it (Giddens 1984, p. 142). On the other hand, even though we recognise the important role structures play in providing the conditions where appropriation can occur, we recognise this process is, ultimately, an individual and idiosyncratic display of agency and reflexivity. In other words, people appropriate technology in whatever way they see fit *within* the conditions provided by a given context to meet the demands engendered by that very setting of interaction.

Like other qualitative work, there is a limit to the transferability of our findings that should be kept in mind when evaluating our contributions. We will use the limitations of our work to suggest some research avenues that may expand on the contributions of our work.

First, the model of appropriation of ICTs introduced in this work was derived from analysis of data gathered, for the most part, among university students; a group best described as young, literate, somewhat affluent, and with a characteristic proclivity to address a number of communication, information, and entertainment needs online via various-sized screens. Even though the elements of our model were later identified as relevant in the analysis of a completely different setting of interaction in terms of the technologies used and the users involved (see Chapter 8), this is an issue that demands further research. Thus, future research on the process of appropriation of ICTs in everyday life along the path we have delimited could further investigate the transferability of our model assessing its utility in investigating other settings of interaction apart from those we have explored, as well as other technologies. A complementary path could take the elements we identified as necessary to create the conditions of appropriation and assess their individual influence in the overall process. As suggested by Grounded Theory, this could be done by exploring the effect of varying the conditions of each element identified as important in this process.

Second, although integrated by different nationalities, participants in our studies in the UK, Japan, South Korea and China appeared as a quite homogenous group regarding age, occupation, interests, technology use, etc. This situation was compounded by our emphasis in identifying similarities across settings instead of their differences. Even when we explored four different locales (see section 4.1.3 *Institutional Regulation* on page 111) across the countries surveyed, where prevailing conditions negatively impacted the appropriation of technology, bias towards the effect of only the structures identified in our model may have limited our observations. Further research on this issue could be directed at exploring in more detail, for instance, whether similar social practices around different ICTs can arise in different locales *regardless* of the presence of those structures in our model we argue make the practice possible.

Third, because most participants were students, their lives and, therefore, their use of ICTs, revolved around one main activity, studying. As indicated elsewhere studying—as well as communication, entertainment, finding a job, and, naturally, e-commerce—is an activity that nowadays only appears intelligible or ‘natural’ among university students when performed through digital technology. The proclivities of our participants in the UK, Japan, South Korea and China to digital technology would thus appear heightened when compared to similar groups elsewhere. In fact, this situation is magnified when contrasted with the study conducted in Mexico where the use of *FamilySearch*, important as it was for these other participants, appears almost as an isolated event in their daily routines. It would seem possible that as digital technology continues penetrating more and more aspects of daily life, future generations will develop stronger and earlier associations between digital technology and the activities they facilitate than those observed among our participants. Further research in this direction would demand: (1) a reassessment of the relevance of the structures presently identified as inducing and sustaining the appropriation of future technologies; (2) an exploration of the manner in which future digital technologies will be accommodated in the prosecution of different future activities; and (3) an elaboration of the images future digital technologies may acquire as they are incorporated in as yet unidentified activities.

Finally, because of our emphasis on the identification of elements and forces at work in the background of a setting of interaction (i.e., the point where technology and people meet), we addressed this as if obliquely. Thus, even when there is a wealth of information in our data regarding use of various bits and pieces of technology, our analysis of these events, except in the case of the study conducted in Mexico, is for the most part based on abridged, colloquial accounts given by interviewees. Our analysis of these events, particularly in relation to issues such as the simplification and accommodation of technology (see Chapter 7), even when observed in practice in the study in Mexico, should, therefore, be taken with the reserve due to any other interpretive perspective. In the previous chapter we encouraged the use of other methodologies and models when a high (*second*) level of detail is required in the study of a practice. Future research on the process of appropriation from the perspective of our model should strive to expand its micro-perspective to provide a more complete and robust analytical tool. Such an addition would ensure more balanced accounts of device use that could potentially better map relationships between available structures and the manner in which these constrain and/or enable the use of individual features in digital technologies.

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Glossary

Accommodation	A reflexive, individual and purposeful process whereby people exert their agency in adapting or fitting existing and novel digital technology to their routines and emergent practices. In our conceptualisation, communication technology is accommodated according to five parameters including message, audience, location, time and costs given its shared nature. On the contrary, information technology, given its individual and private nature, is accommodated according three parameters only, namely, location, time and costs.
Activity	One of the structures integrating the social layer of our model of appropriation. It emphasises the utilitarian nature of information and communication technology and how this is always integrated in the performance of practices (play, communication, study, etc.) delineated by existing social structures. At present it is only those activities that can be expressed as information or communication activities, or both, the ones that would seem to be a good match for the current state of the art ICT. Other mundane activities like cooking, grocery and clothes shopping, and self-care are still not widely acknowledged as information or communication activities.
Adoption	The point in time in which an information and communication technology is acquired, purchased or comes to belong to an individual. It also represents ownership, for instance, when accounts in online services are first acquired. The adoption of technology is, therefore, a circumstance that may occur several times in the life of a person. The adoption of technology does not, however, imply appropriation. Some digital technologies may be appropriated without being personal property as in the case of technologies meant to be shared or used in public spaces.
Agency	People's ability to pursue or not any course of action and to stop at any stage of its completion.
Appropriation	An individual display of human ingenuity whereby information and communication technology is integrated in the performance of social practices in order to satisfy the needs and activities engendered by a given milieu. The appropriation of technology is a process in constant flux as people negotiate a changing environment through their use of ICTs
Architectural layout	Man-made arrangements of the material work purposely built to support a range of human activities such as socialising, self-care, commerce, education, etc. The use and appropriation of ICT is also affected by the distribution of such spaces as well as the practices already performed in them.
Audience	One of the elements of the process of accommodation. Users evaluate multiple communication technologies in terms of their suitability to transmit a message to a particular audience. The suitability of a technology to reach a particular audience does

not depend solely on its technical features but, more importantly, on the social practices performed with them.

Commoditisation

A state of affairs in which the sole differentiator between similar digital technologies is price alone. Not all digital technologies are commoditised at the same pace—the mobile phone would appear to be an extreme case of this process—every person has different views regarding the costs associated with different technologies. The commoditisation of technology contributes to its trivialisation and this, in turn, to its accommodation.

Consistency

A characteristic of technology that contributes to its simplification. It refers to the ability of digital technology to continue performing its functions as it usually performs them.

Costs

One of the elements of the process of accommodation. The selection of a particular technology to transmit a message to a particular audience, or to access information, from a given location is always influenced by the costs incurred in its use. The use of every information or communication technology always incurs a cost, even though negligible.

Digital-Tool Layer

The innermost layer of the process of appropriation introduced in this work. It illustrates three subjective characteristics, relevance, triviality and meaning, that information and communication technologies acquire as they are appropriated. The endowment of these characteristics on digital technology indicates people's operational and conceptual control over them, even when limited. Only those technologies that have reached this stage can be said to have been truly appropriated.

Domestication

Refers to the integration of ICT in the dynamics of a household. This integration plays an important role in the individual adoption, use and eventual appropriation of digital technology. It is usually the household head who is in charge of providing common ICTs as an additional service to standard utilities. The provision of computers and Internet at home is usually predicated on the grounds of enhanced educational opportunities; the provision of mobile telephony during puberty normally arises out of security concerns.

Duality of structure

The ability of structures to sustain social practices through their rules and resources, while at the same time being reinforced by the performance of the very actions they sustain.

Government regulation

Policies and dispositions enacted at a national level that impact, although in some cases indirectly, the adoption, use and appropriation of ICT in a broad segment of a country's population. As in the case of institutional regulation, under this type of restrictions users of technology must necessarily follow one of three alternatives: compliance, abandonment or adoption of alternatives (i.e., services or technologies).

Individual Layer

The middle layer of the model of appropriation introduced in this work. It describes the process whereby people accommodate ICT in their everyday activities according to five elements including message, audience, location, time and costs.

Infrastructure	The underlying technological foundation that makes the availability and use of ICT a real possibility. Infrastructures can be found at different levels; at each level they enable and restrict the execution of different services and, therefore, the performance of different practices around digital technology.
Institutional regulation	Policies and dispositions whereby institutions directly or indirectly regulate use of ICT within their spheres of influence. Even though in some cases it is difficult to ascertain the reasons why some organisations impose regulations these, nonetheless, delimit what digital technologies are allowed and available and how they should be used. Under these circumstances uses of technology necessarily follow one of three alternatives: compliance, abandonment or adoption of alternatives (i.e., services or technologies).
Knowledgeability	See Reflexivity.
Location	One of the elements of the process of accommodation. Users evaluate multiple technologies in terms of infrastructural limitations and local customs when selecting a technology to transmit a message to a particular audience or to access information.
Marketing	Through their marketing practices (e.g., price elasticity, network coverage, loyalty plans, market segmentation, etc.) companies structure the commercial availability of ICTs, their affordability for different social groups, and the manner in which people are expected to use them.
Meaning	One of the elements of the digital-tool layer. It refers to the symbolic character some digital technologies acquire because of the role they play in the performance of different activities in contemporary society. Meanings, therefore, are not necessarily a consequence of their features. ICTs are truly appropriated when they are endowed with various meanings by different individuals including those who are not direct users. While communication technologies tend to be assigned meanings on a collective basis, information technologies may receive them on an individual basis.
Message	One of the elements of the process of accommodation. Users evaluate multiple communication technologies both in terms of their suitability to transmit a particular message and in terms of the social practices established through them.
Peer Support	One of the social influences in the process of appropriation. It refers to the integration of ICT in the practices of a co-located or distant group of meaningful others. Peer support leading to appropriation is manifested directly in the form of verbal advice, demonstration, technical support, lending and gifting of ICT. Peer support is also manifested indirectly through continuous use of technologies around which social practices have been established.
Place	A structure of the social layer of our model of appropriation. It is integrated by three elements, infrastructure, marketing and architectural layout. In our view, in their use of ICT people are

invariably subdued to these elements even when unaware of them.

Reflexivity	People's ability to keep track or be aware of their own actions in the performance of their activities. Also their ability to keep track of the physical and social environment surrounding them. People expect others to display the same type of awareness of their own actions. Also known as knowledgeability.
Relevance	One of the elements of the digital-tool layer. Refers to the perceived or practical suitability of a technology to address a certain activity or task. Expectations regarding the advantages or benefits of novel digital technology are shaped by particular milieus. However, the perceived relevance of a technology does not necessarily translate into practical relevance. The real or perceived relevance of a technology is not fixed and is, therefore, dependant on the environment where it is used.
Reliability	A characteristic of technology that contributes to its simplification. It refers to the ability of digital technology to produce the expect result or to perform what is expected of it.
Simplification (of digital technology)	A strategy to reduce the complexity of digital technology whereby, in practice, this is deprived of its multi-functionality and thus rendered as more rigid or fixed. Even though the simplification of technology reduces people's ability to experiment with and explore their technology it is, notwithstanding, a precondition of the process of accommodation. Costs, infrastructural limitations, social practices and other influences may also foster this simplification.
Social Layer	The outermost layer of the model of appropriation introduced in this work. It describes the structures that provide the rules and resources that shape the manner in which ICTs are adopted, accommodated, used and appropriated.
Socialisation	A structure of the social layer of our model of appropriation. It refers to a range of social practices or pressures in a given milieu that act on people influencing their adoption, use and appropriation of ICT.
Structure	According to Anthony Giddens' 'The Constitution of Society', structures are the rules and resources of settings that enable and constraint the continuous reproduction of social practices thanks to the ability of people to perform them according to various contexts of action. It is in this sense that the term is also used in this work
The media	One of the social influences in the adoption, use and appropriation of ICT through its tacit or explicit promotion and demonstration of the uses of digital technology to satisfy needs, acquire certain personal images valued by society, or open new knowledge possibilities.
Time	One of the elements of the process of accommodation. Users align their choice of technology to transmit a message to a particular audience, or to access information, according to seasonal patterns that may depend on the types of activities

performed throughout the year (e.g., holidays, term time, job hunting, etc.) or during the day (e.g., working, attending school, leisure time, etc.)

Triviality

One of the elements of the digital-tool layer. Trivial technologies are those readily available for their incorporation in accommodation schemes. Several elements intervene in the trivialisation of technology including commoditisation, usability issues, the place of interaction and the socialisation process around a given technology; trivial technologies are, therefore, context dependent.

Use

In the context of this work, use of information and communication technology simply refers to the utilization of such a technology to pursue an activity. When thus used we are not concerned with whether the technology in question has been appropriated, that is, incorporated in the performance of everyday practices according to local conditions, or not. When thus used we simply refer to the utilitarian aspects of a technology.

Appendix 1

No.	Author(s)	Title	Source	Vol/Issue/Pages
1	Chan, H.C. and Teo, H.-H.	Evaluating the boundary conditions of the technology acceptance model: An exploratory investigation.	ACM Transactions on Computer-Human Interaction (TOCHI)	14 (2). 9.
2	Bueno, S. and Salmeron, J.L.	TAM-based success modeling in ERP.	Interacting with Computers	20 (6). 515-523.
3	Cyr, D., Hassanein, K., Head, M. and Ivanov, A.	The role of social presence in establishing loyalty in e-Service environments.	Interacting with Computers	19 (1). 43-56.
4	Henderson, R., Rickwood, D. and Roberts, P.	The beta test of an electronic supermarket	Interacting with Computers	10 (4). 385-399.
5	Pianesi, F., Graziola, I., Zancanaro, M. and Goren-Bar, D.	The motivational and control structure underlying the acceptance of adaptive museum guides - An empirical study	Interacting with Computers	21 (3). 186-200.
6	Roberts, P. and Henderson, R.	Information technology acceptance in a sample of government employees: a test of the technology acceptance model	Interacting with Computers	12 (5). 427-443.
7	Schaik, P.v. and Ling, J.	An integrated model of interaction experience for information retrieval in a Web-based encyclopaedia	Interacting with Computers	23 (1). 18-32.
8	Serenko, A.	A model of user adoption of interface agents for email notification	Interacting with Computers	20 (4-5). 461-472.
9	Shin, D.-H.	User acceptance of mobile Internet: Implication for convergence technologies	Interacting with Computers	19 (4). 472-483.
10	Shin, D.H.	Understanding purchasing behaviors in a virtual economy: Consumer behavior involving virtual currency in Web 2.0 communities	Interacting with Computers	20 (4-5). 433-446.
11	Shin, D.H.	The Evaluation of User Experience of the Virtual World in Relation to Extrinsic and Intrinsic Motivation	International Journal of Human-Computer Interaction	25 (6). 530-553.

12	Shin, D.H.	Understanding User Acceptance of DMB in South Korea Using the Modified Technology Acceptance Model	International Journal of Human-Computer Interaction	25 (3). 173-198.
13	Tan, F.B. and Chou, J.P.C.	The Relationship Between Mobile Service Quality, Perceived Technology Compatibility, and Users' Perceived Playfulness in the Context of Mobile Information and Entertainment Services	International Journal of Human-Computer Interaction	24 (7). 649-671.
14	Davis, F.D. and Venkatesh, V.	A critical assessment of potential measurement biases in the technology acceptance model: three experiments.	International Journal of Human-Computer Studies	45 (1). 19-45.
15	Featherman, M.S. and Pavlou, P.A.	Predicting e-services adoption: a perceived risk facets perspective.	International Journal of Human-Computer Studies	59 (4). 451-474.
16	Hassanein, K. and Head, M.	Manipulating perceived social presence through the web interface and its impact on attitude towards online shopping.	International Journal of Human-Computer Studies	65 (8). 689-708.
17	Henderson, R. and Divett, M.J.	Perceived usefulness, ease of use and electronic supermarket use	International Journal of Human-Computer Studies	59 (3). 383-395.
18	Konradt, U., Christophersen, T. and Schaeffer-Kuelz, U.	Predicting user satisfaction, strain and system usage of employee self-services.	International Journal of Human-Computer Studies	64 (11). 1141-1153.
19	Roca, J.C., Chiu, C.-M. and Martínez, F.J.	Understanding e-learning continuance intention: An extension of the Technology Acceptance Model	International Journal of Human-Computer Studies	64 (8). 683-696.
20	Teo, H.-H., Chan, H.-C., Wei, K.-K. and Zhang, Z.	Evaluating information accessibility and community adaptivity features for sustaining virtual learning communities	International Journal of Human-Computer Studies	59 (5). 671-697.
21	Thong, J.Y.L., Hong, W. and Tam, K.-Y.	Understanding user acceptance of digital libraries: what are the roles of interface characteristics, organizational context, and individual differences?	International Journal of Human-Computer Studies	57 (3). 215-242.
22	Yi, M.Y. and Hwang, Y.	Predicting the use of web-based information systems: self-efficacy, enjoyment, learning goal orientation, and the technology acceptance model	International Journal of Human-Computer Studies	59 (4). 431-449.

23	Wu, P.F., Qu, Y. and Preece, J.J.	Why an emergency alert system isn't adopted: the impact of socio-technical context	Proceedings of the 22nd British HCI Group Annual Conference on People and Computers: Culture, Creativity, Interaction, (Liverpool, United Kingdom, 2008), British Computer Society	2008
24	Heerink, M., Kröse, B., Wielinga, B. and Evers, V.,	Measuring the influence of social abilities on acceptance of an interface robot and a screen agent by elderly users	Proceedings of the 23rd British HCI Group Annual Conference on People and Computers: Celebrating People and Technology, (Cambridge, United Kingdom, 2009), British Computer Society.	2009
25	Gaul, S. and Ziefle, M.,	Smart Home Technologies: Insights into Generation-Specific Acceptance Motives.	Proceedings of the 5th Symposium of the Workgroup Human-Computer Interaction and Usability Engineering of the Austrian Computer Society on HCI and Usability for e-Inclusion, (Linz, Austria, 2009)	2009
26	Satzinger, J. and Olfman, L.,	A research program to assess user perceptions of group work support	Proceedings of the SIGCHI conference on Human factors in computing systems, (Monterey, California, United States, 1992), ACM.	1992

Appendix 2

Would you like to earn £15.00 per month and help the advancement of science?

Then please keep reading...

If you are from **China, Greece** or **India** and fulfil the following conditions:

- Currently doing a masters degree in a subject other than computing science in the University of Glasgow
- Living in University of Glasgow accommodation
- Not having arrived to the UK before September 2007

then get in touch with me!!!

I am conducting a study exploring how international students use different *information and communication technologies* (for instance, the Internet, MSN, Skype, Facebook, MSNSpaces, etc.) to *adapt to life in the UK*.

The study mostly consists of 30 min weekly interviews for a period of at least three months.

Interviews take place in the [International Office](#) (the place with the yellow balloon).

At the end of **each month** you will receive **£15.00** for your participation!!!

If you are interested in taking part (or if you know someone who might be interested) and you fulfil the above conditions, then select an available time slot on [My Calendar](#) (click the "Week" tab in the top right hand) and get in touch with me by email jose.rojasr@gmail.com, mobile: **07962878378**, or through [Facebook](#) and provide me with the following information:

- First Name
- Last Name
- Age
- Course
- Accommodation
- Date of arrival to the UK
- Email
- Mobile phone
- Date of first appointment (according to the time slots available in [My Calendar](#))

Thanks,

Jose Rojas
jose.rojasr@gmail.com
PhD Student
Department of Computing Science
<http://jose.rojasr.googlepages.com/>

(Interviews will be recorded and transcribed. All the information you provide will be kept strictly confidential.)

Last Modified: 1 October 2007

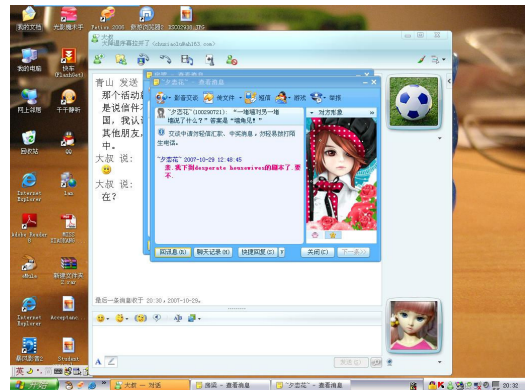
Appendix 3

Participant: _____

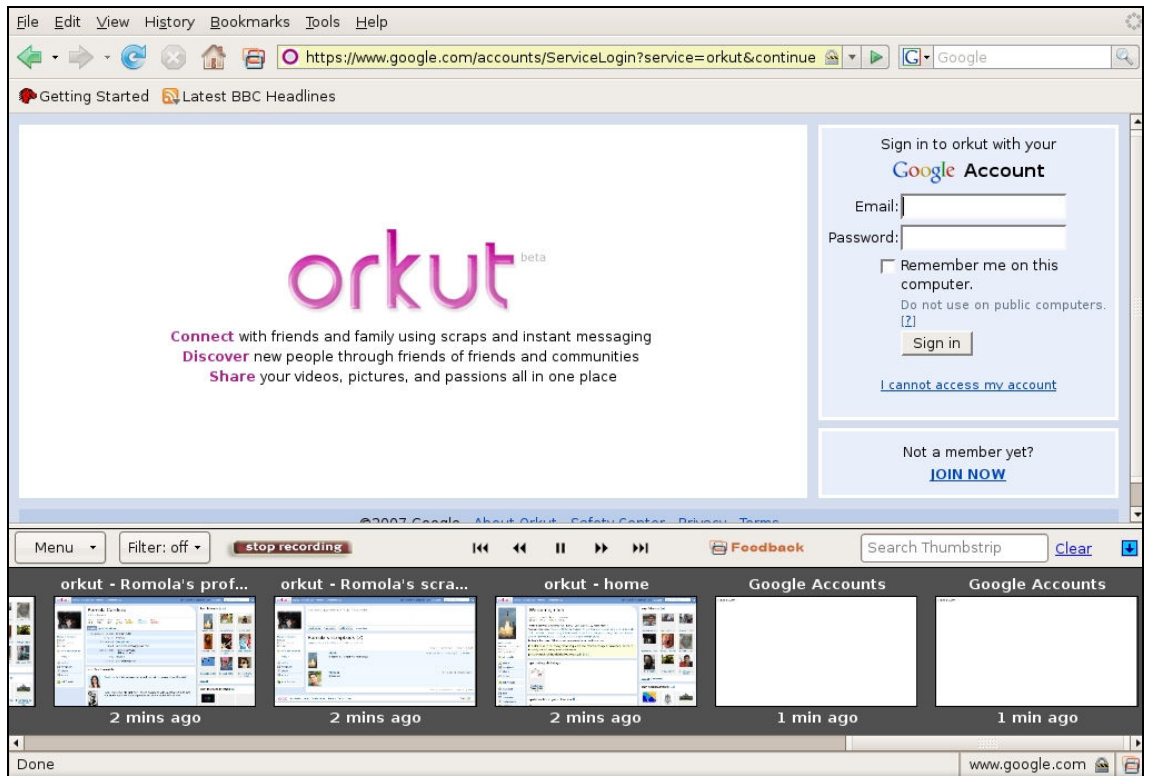
Date: _____

- Where are you from? Why are you here? How old are you?
- When was your first contact with computers? (Age, circumstances, activities)
- When do you think you have access to the Internet for the first time? (Age, circumstances, activities)
- When do you think you have access to broadband Internet?
- When did you get your first email account? (Age, circumstances, reasons)
- When did you start using Internet Messaging (e.g., MSN, ICQ, QQ, Yahoo!Messenger, etc.)
- When did you get your first mobile phone? (Age, circumstances, reasons, uses, volume of communication)
- Do you know what are social networks (e.g., Orkut, MSNSpaces, MySpace, Facebooks, Flickr, etc.)?
- Do you have an account? (Age, circumstances, reasons)
- Tell me about your social life/activities back in your country
- Describe me a normal day back in your country?
- How many hours per day were you online in your country?

Appendix 4



Appendix 5



Appendix 6

No.	Name	Tinyurl	Sex	Age	Hometown	Occupation	Extracts Used
1	Adara	http://tinyurl.com/2b6cfsw	Female	23	Athens, Greece	MSc in Adult Education	1, 9fn, 40fn, 58fn, 103, 140, 144, 160
2	Aeneas	http://tinyurl.com/24p5non	Male	23	Athens, Greece	MSc in Information Technologies and Cartography	12, 34, 41fn, 55fn, 99, 105, 147, 150fn, 161
3	Akane	http://tinyurl.com/2b9jfrn	Female	36	Sapporo, Japan	Graduate Student	42, 46, 97
4	Bo	http://tinyurl.com/2clagxd	Female	20	Qiqihar, Heilongjiang, China	University student	30, 40, 94fn, 135
5	Chen	http://tinyurl.com/27nkn4r	Male	24	Changsha, Hunan, China	Graduate Student	17, 65, 88fn, 94fn, 109, 136
6	Chihiro	http://tinyurl.com/29q2gjx	Female	27	Engaru, Japan	Office Worker	54, 107fn, 114, 125
7	Chin	http://tinyurl.com/265tren	Male	25	Pusan, Korea	University student	53fn, 58fn, 108, 120
8	Cho	http://tinyurl.com/2fk4z3c	Female	22	Seoul, Korea	University student	64, 69, 124
9	Christos	http://tinyurl.com/2bdetu7	Male	23	Athens, Greece	MSc Banking, Finance and Economics	19, 28, 52, 74, 77fn, 110, 150fn
10	Chul	http://tinyurl.com/2evu8wl	Male	25	Haenam-Gun, Korea	University student	N/A
11	Daichi	http://tinyurl.com/2fveftw	Male	23	Yokohama, Japan	Masters student	27
12	Danae	http://tinyurl.com/24w84pv	Female	24	Athens, Greece	MSc Human Nutrition	7, 9, 47fn, 56, 67, 98fn
13	Eurydice	http://tinyurl.com/2fjcn4v	Female	23	Drama, Greece	MRes Biomedical Science	35, 38, 73, 98fn, 155
14	Fai	http://tinyurl.com/2efz86b	Male	24	Shandong, China	Graduate Student	50, 131
15	Hei	http://tinyurl.com/2488x3h	Female	22	Seoul, Korea	University student	31, 118fn, 122
16	Hua	http://tinyurl.com/2863ahs	Female	21	Tianjin, China	University student	11, 57fn, 66fn, 90, 92, 94, 96, 146, 152
17	Hui	http://tinyurl.com/2eq5con	Female	22	Hefei, China	MSc Banking, Finance and Economics	7fn, 42fn, 44, 70, 98, 130, 136, 157, 159

18	Hyun-Ki	http://tinyurl.com/23z8c7o	Male	22	Pohang City, Korea	University student	87, 106
19	Hyun-Shik	http://tinyurl.com/282x4n3	Male	25	Yang-pyeong, Kyeonggi-Do, Korea	University student	29, 43, 59, 85, 86, 111, 112, 127, 133
20	Jun	http://tinyurl.com/2evffxt	Female	22	Renqiu City, Hebei Province, China	Graduate Student	16fn, 23, 55, 60, 149
21	Mei	http://tinyurl.com/2acz3gd	Female	22	YunCheng, Shanxi, China	Graduate Student Microbiology	53fn, 60fn, 134fn
22	Miho	http://tinyurl.com/2achdum	Female	52	Sapporo, Japan	Artist	115
23	Ming	http://tinyurl.com/2caqwqu	Female	24	Tianjin, China	MRes Bioinformatics	25fn, 45fn, 48fn, 58, 75, 98fn, 154
24	Nalin	http://tinyurl.com/2dee5yp	Male	20	Porbandar, India	MSc Medical Genetics	63, 98fn, 150fn, 158
25	Nilaya	http://tinyurl.com/27sh32f	Female	21	Bangalore, India	MSc Space Mission Analysis and Design	15fn, 21, 132, 150fn, 153
26	Nuwa	http://tinyurl.com/2egnhw2	Male	21	Ankang, Shaanxi, China	Graduate Student	16, 47fn, 66, 93
27	Osman	http://tinyurl.com/23qvjj6	Male	23	Mysore, India	MLitt War Studies	2, 25, 51, 104, 137fn, 151, 156
28	Padma	http://tinyurl.com/2bvopxd	Female	21	Bangalore, India	MSc Medical Genetics	1fn, 8fn, 24, 36, 37, 76, 78, 79, 129, 138, 139, 150fn
29	Panna	http://tinyurl.com/268sd2f	Female	21	Mumbai, India	MLitt in Film & TV Studies	8, 18, 22, 32, 54fn, 57fn, 71, 72, 77, 78fn
30	Panos	http://tinyurl.com/23j5mnw	Male	25	Athens, Greece	MSc International Economics	102
31	Ping	http://tinyurl.com/2cjlpk7	Female	22	Guangzhou, Guangdong, China	MSc Management HR	20, 41, 45, 48, 49, 126fn, 148, 150fn
32	Riko	http://tinyurl.com/29a59of	Female	22	Sapporo, Japan	Office Worker	4, 15, 34fn, 39, 80, 83, 121
33	Shiori	http://tinyurl.com/2bbbrjp	Female	33	Sapporo, Japan	Office Worker	61, 81, 82, 84, 107, 108fn, 116
34	Soo	http://tinyurl.com/2fz82uv	Male	23	Seoul, Korea	University student	15fn, 26fn, 31fn, 39fn, 101, 119
35	Sook	http://tinyurl.com/27runls	Female	21	Song Tan, Korea	University student	13
36	Sun	http://tinyurl.com/2fz82uv	Male	24	Pusan, Korea	University student	15fn, 27fn
37	Wen	http://tinyurl.com/2e4rf93	Female	23	Meizhou, Guangdong, China	MSc Management Business	1fn, 26, 95

38	Yen	http://tinyurl.com/2f35fao	Female	21	Tianjin, China	University student	6, 47fn, 62, 91, 118, 134
39	Yin	http://tinyurl.com/23o8uat	Female	20	ZhengJiang, China	University student	47, 57, 59fn, 66fn, 68, 88, 89, 100, 141
40	Yon	http://tinyurl.com/22v7py6	Female	21	An-yang, Kyung-gi, Korea	University student	3, 56fn, 117, 123, 128
41	Yong	http://tinyurl.com/2bbch5g	Male	21	Guizhou, China	University student	5, 69fn
42	Zhi	http://tinyurl.com/2562cxf	Female	23	Nantong, Jiangsu, China	MSc Management Marketing	10, 14, 33, 48fn, 53, 113, 126, 137, 142, 143, 145, 150

Appendix 7

Ext	Footnote	Participant	Lines	Cross-reference	Text
1		Adara	1033-1041		<p><i>How frequently do you have communication with them?</i></p> <p>Everyday, perhaps three times per day via Skype. Yesterday I called them five times. The first call was at 10 am; the second at 12 pm; the third at 4 pm; then at 6 pm; and finally at 10 pm. Most of the time I use Skype, but sometimes I call them over the phone. Yesterday I called them three times using Skype and the other two using my phone. Each one lasted around 15 min. Sometimes they might take longer, sometimes one hour. Usually longer calls are in the evening or late at night. My parents would usually have time for me, but sometimes they are busy, but whenever I ask them they are willing to talk to me.</p>
1	fn	Wen	535-544		<p><i>Are you in touch with your parents as much as in the beginning?</i></p> <p>Not as much as in the beginning. When I was in China I had very frequent communication but here I use Skype to call them and sometimes I use video-chatting. At least I would call them once per week. When I arrived to this country it was almost the same because when I arrived here I didn't add money to my Skype account as soon as possible so it was until half month later when my family added money to it, so I couldn't call them so often; my sister's husband in who did that. When I got Skype it was much frequent. I was using Skype for just around two months before I came here. I think I knew the Skype one year before that and I think some friend told me I could use it. I call my parents to a computer at home.</p>
1	fn	Padma	206-211	76, 78	<p>I've been using it just for two weeks. I talk with my parents everyday in the evening after my classes. When I call them is night time for them; they are six hours ahead of us, when I call them is 10-11 pm India time so they are free. During weekdays I chat with them generally; my dad gets online and my mom is there but my dad chats basically and on weekends I speak with them for half an hour or something. I chat with them using Yahoo! Messenger. When I chat with them we just chat, no voice.</p>
1	fn	Padma	1123-1159		<p>I talk with my parents everyday. Today I will speak with them once I get home. When they call me it's around 11:30-12:00 in India at night so my dad has to be back and like I said since we moved to Bangalore it's been better. Since I have come here he's been missing me. They usually call at around 6:30 here everyday. We speak for 15-20 min. With my dad I generally speak for 5 min and with my mom I speak more. I actually tell my mom about everything more or less even stupid things.</p>

Do you feel involved with your family despite the distance? Do you think you are aware of what is going on at home?

No, not really, not everything. At times it really irritates me when they call because I have work and I'm telling them the same thing every day and what am I supposed to tell them? I can understand my mom wants to talk because she's really missing me and wants to know what's going on, but sometimes I'm really busy and it's more of a distraction because at times you don't really know what to talk any more. Now she keeps asking me if I'm ready to come, but I tell her that I have lots of work and I have to finish.

If I could choose I think I would reduce the number of calls, I think so. It kind of gets monotonous every day; what am I going to tell them now?

They call me to my landline; it's very irritating because I have to be there! I can't do video-chatting from my room. They haven't seen me. I sent pictures; I use the Yahoo! feature to change my display picture. We don't chat, but when I'm online she knows I'm there and I also know they are there and they are about to call; she has to log in anyways. She would just send a one-liner: "Are you there? Should I call?" I replied to say yes or to call later. The account is to her name; I made it just before coming and I taught her how to log in. Yahoo! logs in every time the computer is started. The computer is on only when they are about to call me.

I don't send them emails because my mom and dad are not really tech savvy. There's a computer at home and they call me over voip to my landline, but I do chat with my brother; I don't call him. The last time I chatted with him was 3-4 days ago when I got my lab report and I was really pissed off because I got a B. Actually I talk to her fiancé more than I talk to him; she's in the US right now and is online most of the time. She works over there. They have been together for seven years. She's been working there for a year. They just got engaged last month. He went to the US to propose; she didn't know he was coming. Very romantic!

Do you have communication with your extended family?

Yes, my cousins by email. I have a cousin and I'm very close to her; she's in Bangalore studying. I communicate with her by email. If she comes home I would speak to her if my mom calls.

2		Osman	3-176	51, 151	Osman said when he was 6 or 7 years old he would play Prince of Persia in the computer his mom used to type students' homework. Later, during his undergrad degree he was required to use a computer for his assignments. In 1998, when he was ?, he got his first email account with Hotmail, later changed to Yahoo! and has been using a GMail account for the past two years. At 18 he became familiar with MSN chatrooms through which he would chat with "random people". Later, he acquired a Yahoo! Messenger account that he would use to keep in touch with his relatives abroad. At 17 his father gave him a mobile phone despite the fact that they were costly. He was the first in his family with a mobile phone. Finally, two years ago he began using Orkut and even though eventually he cancelled his account, he later opened another Orkut account in which he has no friends. In between this, about a year ago he opened an account with Facebook because it was more interesting and gave him more things to do. In the beginning, however, he didn't know how to use it and a friend had to show him how.
3		Yon	159-177		<p>- <i>Did you write in your diary?</i></p> <p>Yes, before it was just once a month. Now I think I do it more frequently, when I'm not busy I do that, but when I'm busy I don't do that. I use a journal in handwriting almost every day, so I used to do that, but I thought in a computer is kind of easier and faster, so I think is kind of useful. Sometimes I want to announce and get people's attention when I'm doing something and they can look up in my diary. Then they know what I'm doing and how to react.</p>
3		Yon	263-268		<p>- <i>When did you start writing a paper journal?</i></p> <p>Long time ago and I was writing every day until High School. I have a bunch of journals. Starting university made me write journals frequently, but not every day, so I would write twice a week. Still I write but kind of infrequently. The things I write in both places are kind of related but not related. I like the diary style for daily feedback, when I read some books I write reviews or my thoughts, but my lifestyle and my thoughts and my worries and everything I write in my journal. That kind of stuff is never online. I write 70 percent in Korean and 70 percent in English both online and in my journal. My friends don't complain about it; somehow they can figure it out. In Cyworld you can make it private or that everybody can see that, so sometimes I do that in English a lot because and my friends make fun of me, so I don't want to hear that.</p> <p>- <i>Why are you still writing on boards and on the diary?</i></p> <p>On the diary is to try to get people's attention and their interest or whatever, and writing in boards it's because it's kind of quick email. Email is kind of for longer and more specific and kind of infrequently, but through Cyworld I can just ask, 'How are you doing?' It's the same with Facebook, but more people use it, so I think I use it more.</p>

4		Riko	111-116		When I was in Canada I was using MSN Messenger a lot to chat with my friends in Japan. I would call my parents and once a week I would send an email. I would call my parents from a public phone. I bought phone cards for 10-20 dollars. Every card would allow me to call for 1-2 hours. I would use a card several times until I finished the credit. I would call my parents once a week. I would call them in the morning but not for long, perhaps 15 minutes.
5		Yong	186-195	69fn	<p>- <i>Tell me the last time you gave your mobile phone number to someone?</i></p> <p>I think it was last week when I met some stranger who recognised me but I didn't. He was a younger sister and brother from the first or second year. They wanted to ask me some questions about studying abroad. I met them in the bank of the lake when I was reading a book. I think they met me during some activity because I was introduced to everyone. They asked me for my mobile phone because I don't want to share with lots of people my mobile phone because if many people know your number they will call you with questions and they will disturb you. I think that happens to me every day; I receive phone calls from people asking me stuff, this has happens for a long time, so I don't want to share with more people my number.</p>
6		Yen	155-161	134	<p>- <i>When will you give your phone to a new person you meet?</i></p> <p>Maybe if we continue meeting each other I will give my phone number. Sometimes I have to give some person my telephone number because, you know, like the people who sell the kits for experiments. If they have the product we want they will call me and we will order it. On a personal basis, in the tae kwon do club when you meet a new person, and if you think they are good enough, then I will give my telephone number. They will usually ask for my number, I would offer my phone not very often.</p>
7		Danae	209-227		I had to produce an essay and I had one month to submit it, so I studied a little every day. I started last Monday. I wrote it for two nights. It was a 3,000-word essay and I wrote 3,400 words. I had downloaded a lot of (information) but I had it on the computer but didn't read it. The topic was "Iron during pregnancy." I found the information through the library using my Athens account and also some other journals I had registered. I was searching for "iron during pregnancy." I selected some of them and download some PDF. The other journals are not from the university; you have to pay for them.

				<p>I'm a member of the Medical Society in Greece and we have access. You register with the Society and you pay an annual fee. This is my first year in this Society. I joined before coming to Glasgow. I paid 35-40 EUR. I made different folders one for "iron and nutrition" another for "iron and metabolism" and separate them. I had 4-5 folders but when I started writing the essay I produced 5-6 Word documents. Usually I print those documents but here I haven't purchased a printer so I read them on the screen. I prefer having them on paper so I can highlight something but now instead of highlighting something I just copy that part and put it in another document, that's why I had a lot of documents. I don't like working under pressure but I haven't got used to working in advance. I had to submit by Friday. I printed only half an hour before I had to submit. The last day I finished at 3 am. I usually go to sleep at 1 am.</p>
7	fn	Hui	683-692	<p><i>What is this?</i></p> <p>This is my friend's blog also in Soju; the next one is mine; then the university's webmail but I didn't open it that day. I was also searching information on Baidu about my essay. I worked all the night. Last night I didn't sleep I just worked on my essay. The next day was my deadline and I changed half my essay.</p> <p>I was also checking a translation website from Chinese to English; I was translating some financial terms. Later I was checking Baidu for the deflation conditions in China's Monetary Policy and some special report from the Bank of China.</p> <p>I was using both Firefox and Maxthon because in one place I can open one website and in the other another at the same time. I don't know how to open multiple tabs.</p>
8		Panna	16-29	<p>My dad thought it could help me and as soon as we got the computer, within the month, we got Internet also. My dad was thinking of the educative aspects because in India the 10th grade is a state exam, so he thought it would help me accessing the Net and using referential material. This exam is admission to junior college. You study for this exam the whole year round and you have lots of practice exams; if you put your mind to it is not tough.</p> <p>I think the computer was helpful educationally because it was around the time I was introduced to encyclopaedias online and a few cousins of mine told me how to use the Net to find stuff. I think around that time I got introduced to MSN as well. If I remember right, my dad had a subscription to Encarta, the online version.</p> <p>There was this big project we had on dinosaurs and I had the workbooks at home, but it was very good to go on the Internet because at times they had videos which made the things really interesting. I think I did it because I had the computer at home, otherwise I would have used the workbooks.</p>

8	fn	Padma	126-132	150fn	<p>When I was planning to come here I bought a laptop in India. I paid around £400.00. I got it so I can use Yahoo! and GTalk. Other than that I had to do lots of research for my course and laptops are handy. I spoke to one of the former students who advised me on getting one because she said it would be required, so rather than coming here and then buying one I just got it from back home. It's a Lenovo. I explained to my parents that I needed it for so and so reasons, and if they wanted me to be in touch with them.</p>
9		Danae	4-24		<p>I had my first contact with a computer in Middle School, I think. I was around 12 years old. I had contact with this computer at home. Initially, only to play games and things like this. In my school I was about 15 years old.</p> <p>My brother bought this computer. He was around 16 years old. He bought it because he wanted to play games. There were other reasons: because everybody has one and we didn't have one, and other reasons. My brother was playing games from the start. I would play games too but not very much.</p> <p>When I was 15 years old I had to submit an essay so I wrote it on the computer at home. I think it was during the last year of Middle School. You could also produce it in a typewriter. Not everyone had a computer; if someone didn't have they could use the computers in the school.</p> <p>We had some course to learn how to use computers. These lessons were once per week for 45 min. Everybody had to attend these lessons. I was attending a State school. In High School all of them [schools] had computers. I took these lessons for one or two years but I'm not sure.</p> <p>I was learning about the parts of the computer and the uses of computers. The first year was theoretical, we did something in the computers, but I can't remember what it was. I tried to learn on my own Word, Excel, etc. with my brother. I think during the second and third year of High School I learned how to use Word.</p> <p>Every year we would make a review of the previous year, so we didn't learn a lot of things. I also had a printer at home. I think they were bought at the same time.</p>
9		Danae	44-51		<p>We bought another computer and I brought the old computer with me to Thessaloniki. I brought the computer with me by train during the second month I was in Thessaloniki after I went home. I was staying in private accommodation. I had my own house with one bedroom and living room. I also had an Internet connection in Thessaloniki using the same account we had in Athens. Later I had a connection with the university. They gave us a password and I think you could connect through a server of the university. They gave us a password and a telephone number. They did this for whoever wanted to apply for it, but not everyone did it.</p>

9	fn	Adara	7-16	40fn	When I was fifteen I was in the third year of Junior High School. We had a lesson on new technologies. I remember being really embarrassed because I couldn't even move the mouse and all things in the screen were very complicated. These lessons were not very frequent because there were not many computers. It was mostly theoretical and in the lab we did very simple things. The next time I was in front of a computer was three years later in the third year of High School when we had a regular lesson to learn how to use a computer. I was eighteen. We learned simply things, but then I never used a computer because there was no need to do that. All the assignments for school were handwritten. My brother encouraged me to play games, but I was quite old to do that.
10		Zhi	432-438		Today I was in the library. This morning I had lectures and then I went to the library to prepare for an exam next week. I was reviewing the course materials. It is one exam but it contains five parts. After the interview I'm going back to the library to continue my reading. If I stay in the dormitory I can't concentrate on my reading. I will be checking my email and talking with my classmates and friends so in the library I think it's easier for me to concentrate in my studies. I sit on a desk in the library but not with a computer.
11		Hua	209-216		<p>- <i>Why don't you stay in your dormitory?</i></p> <p>I think in the classroom it's much quieter. In the classroom there are only chairs, and a desk, and a blackboard, and light, and no other things, and all the students there are just studying, and they can't surf the Internet or watch TV.</p> <p>- <i>Nobody brings laptops to these classrooms?</i></p> <p>Some of them do, but most of the students bring their laptops if they have to do some work but not to surf the Internet or see some movies. If they have to do so, they will go back to their dormitories.</p>
12		Aeneas	307-316		I went there to see what the library is like. I hate being in the library. I went there to find a book, but I can't be there after 10 minutes. Everybody goes there to read but I can't concentrate there. I went inside found a terminal to search for a book, went to find the book and check it, but I couldn't stay there. My friend from Pakistan goes everyday there, but I can't. I haven't learned to study in the library. When I study I want to do stuff like turn on the TV, walk or something, but I can't be three hours like that "studying," I can't study like that, I have a schedule, I study two hours but I also do other stuff. Everybody is in the library so I think is easier to get interrupted there than in your house. Maybe if there was a room with your own desk I could study 10 minutes, but I can't.
13		Sook	58-68		- <i>What does your sister do?</i>

				<p>She's 19 years old. She's a High School student. My brother is a Middle School student. My sister also goes to an academy, but it's a beauty academy, she wants to be a hairdresser. My brother goes to middle school and to a middle school academy. Sometimes I don't see my sister at night. She goes to a study room after beauty academy. She comes back home at 2 am. She has a mobile phone but she's not using it now because most Korean High School students should study hard these days because they have to take an entrance examination to university in November so she has to study hard now, so she can't use her cellphone now. High School students get many text messages from friends so when she uses her cellphone she goes on texting and texting.</p>
14		Zhi	580-596	<p><i>Who can go abroad to study?</i></p> <p>I don't think everybody has the ability to study here. For me, I came here to change my course; also some people would come to learn some advance technology here. Some others would come because they failed the entrance examination and cannot be enrolled in China and their parents would send them here. I have a friend who came here and has been studying for 5-6 years but hasn't finished. Nowadays most parents in China, if they have the money, they want to send their children abroad. They think they will have better possibilities afterwards in China. I think it counts. Many people come to the UK or America; it's easier to come here. For example, some of my friends in China didn't do well in their studies and if they stay in China they can't go to university, but they can go to Glasgow and since Glasgow university ranks very high in China, even higher than the best universities in China.</p> <p>I think Glasgow is better than my previous university but I don't know if it's better than the best university in China. I think it's easier to enrol in a university here but difficult to get the certificate and in China is the opposite. I studied very hard in my Middle School and High School, but in university I just enjoyed myself and didn't work so hard.</p>
15		Riko	17-23	<p>Our teachers forbade us to use mobile phones so we would hide them. We would use them in the club, the trumpet club or in the toilet. When I got my mobile phone I would take it to school and use it in the toilet and when my teachers did not see me or after school. Mobile phones were not allowed in my junior High School whether it was during classes or in between classes. Later during High School it was ok, but in other High School it was not allowed.</p>
15	fn	Nilaya	82-88	<p>Also because I went to college then; in the previous schools it was not allowed at all. They would confiscate it. They would conduct surprise searches. I'm not sure why. There were lots of restrictions. We were not allowed to bring a walkman or magazines or tabloids. This was a missionary school with lots of restrictions. My parents also thought it was not necessary since I would be in the school and take the school transport.</p>
15	fn	Soo & Sun	159-166	<p>Soo – During classes we had to turn off our cellphones, but between classes we could use them. We already knew we had to turn our cellphones off and teachers would also mention it. However, there were always mobiles ringing. Some teachers would not say anything, but some teachers didn't like that situation and would confiscate them and return them after two months. Some people would buy a new cellphone and they couldn't wait.</p>

				Sun – Well sometimes teachers would confiscate some phones and return them until vacations.
16		Nuwa	68-73	<p>- <i>When did you start writing a blog in Sina?</i></p> <p>When I was a freshman in Nankai University. I started writing because I wanted to record my everyday life. I still write it. Last time I wrote was about one month ago on 4 September that was my birthday. If everything is ok I will write once per week. However, now I'm busy because I have to find a job because I will graduate next year and now I'm a job hunter.</p>
16	fn	Jun	135-146	<p>Most of our classmates use the Internet to fill online applications. Yesterday I was also checking some emails I received and not much else besides communicating with my boyfriend and brothers because online job applications take about 3-4 hrs to complete.</p> <p>- <i>In Nankai University you can download movies, do you download movies?</i></p> <p>Yes, last year I downloaded a lot, but maybe since last month I haven't downloaded because now is not an essential thing to do, now it's completing online applications. The last movie I downloaded was a foreign movie from the US, maybe one month ago. I still have the movie in my laptop. I think the movie is very funny. When I'm very tired I like to see the movie again and can make me very happy and help me relax. I only keep movies I like in my computer; others I delete them from my computer.</p>
17		Chen	140-149	<p>- <i>Have you ever bought movies on the street?</i></p> <p>When I was an undergraduate student I bought some, maybe less than 20 DVDs. I haven't bought any DVD for a long time because I don't have time to watch them. I have been very busy since I became a graduate student. This year I'm looking for a job, I will graduate in June next year, so I have to find a job.</p> <p><i>Are you applying for some jobs now?</i></p> <p>Yes, I apply online. I go to the company's website specially designed for graduate students and look for a job there.</p> <p>- <i>When was the last time you were filling one of these applications?</i></p> <p>Yesterday, for Google.</p>
17		Chen	192-200	<p>- <i>Tell me about your day</i></p> <p>Most of my classes finished last semester. This semester I only have three classes. The first was this morning, the second is tomorrow morning, and the last one is Friday morning. I have to prepare for my job hunting modifying my resume and preparing for some open questions and training in some interview skills.</p> <p>- <i>Do you do this by yourself?</i></p>

					I usually do this by myself and talk about it with my friends. Sometimes we would surf the Internet searching for information about a company and its business. For the skills we train by ourselves.
18		Panna	31-39		Most of my time on the Internet around that time was divided between searching for schoolwork and using MSN. One of my friends, her sister left to study in America and she told her how to use it and she was the one who came home one day and she told me and how to add her and then we could talk, like live talk, and I got really excited. It used to be really funny because I would always forget to sign out and then whenever my dad used to go online he used to find all my windows open. I was pretty new to this stuff and didn't know my way around. I did add more friends. If there was someone who didn't have MSN you could email them and tell them to install it, I guess that's how it happened initially.
18		Panna	53-57		My dad opened my first email account for me with Hotmail because he thought it would be useful for me to know how things work. I was 13 years old. He used to keep getting forwards and he told me about these interesting stories and anecdotes and he thought I could read them myself, he used to keep sending me stuff. This was the same email account I was using with MSN. I also left that email account.
19		Christos	50-60	110	Notice the conflation of all the possible causes of computer slowness: One time my computer broke and I had to format it. During the process I needed the help of a friend who was an expert and helped me a little. My computer was working with the virus and I made a backup of songs, photos, and all of this; later I formatted and put back the programs because I had the CDs. My computer broke because of a virus, I was using an antivirus but the antivirus was old and I hadn't updated it; I didn't have a firewall, only an antivirus. I had an antivirus that you would pay for it, but I had a copy from a friend, a pirate version. This happened four years ago. From this I learned to update frequently my antivirus and firewall, to update Windows frequently and to clean the hard disk from strange items or programs. Now I only have the necessary programs. Now I only have Office, MSN, Limewire, Google Earth, DVD player, printers, sound, and two or three other programs.
20		Ping	32-40		In the very beginning we didn't have Internet, perhaps two years later we got Internet. Without the Internet you cannot get information from websites. My brother had the idea of getting Internet because he said he needed to upgrade games, and there are many games you can download from the Internet. By the time I was fourteen or fifteen I had Internet at home. I would use the Internet only on weekends. My parents were, "Don't chat too much on the Internet, you have to study!" I used to chat at night, maybe for two to three hours on weekends, when my parents went to sleep. My brother was also chatting, but most of the time he played games.

21		Nilaya	23-30		I had a computer at home when I was in eight grade, I was thirteen years old. It was a laptop. This computer was available for everyone to use whenever my dad was at home. It was always in the living room and I had certain restrictions. I could not chat or use ICQ. The chats were creating a lot of problems, you know, some girls would meet some guys and they would be involved in serious accidents. I heard about these things in newspapers and TV series. My dad told me he was giving me Internet access but I should use it constructively to learn and talk to my friends, but that I should not talk to anyone who is unknown because it could be very dangerous.
22		Panna	776-782		Watching movies in my computer happens very rarely. We don't get our hands on DVDs quite often and I'm more of a person who would like to go out and watch a movie; I don't really like the small screen. I do waste my time on the Internet. I think I'm totally, totally, totally addicted to Facebook; I just poke people at random or superpoke them. It is sort of entertainment but I wouldn't put it on the same level as watching movies or going out with friends, that's real entertainment.
23		Jun	229-241		<i>Have you ever bought things online?</i> Yes, I like to buy things online, like clothes including this pair of jeans. I buy from Taobao. It was very cheap, less than 60 yuan and offline I would have to pay more than 80 yuan, at least. I bought them more than one year ago. I also buy books and I like buying books in Amazon, but what I like to buy the most online are clothes. I also bought t-shirts, and one coat, and this scarf. The highest price I have ever paid was 160 yuan for a piece of clothing. I pay with my online credit. I put money into this account charging it online through a bank card where I have money and I can get the money through the Internet and transfer it to the other account. The last time I was buying something was four days ago; I bought a t-shirt and offline it's very expensive and I don't have that amount of money; it would cost me 200-300 yuan and I just bought it for 78 yuan. Maybe I will receive it this afternoon. It will come straight to my dormitory.
24		Padma	274-280		I can check my accounts online. I transfer whatever I need from the savings account to the daily account. I use it once in a while whenever I need some money. I hope is secure. I'm a little finicky about these things because you are not handling it by yourself but the computer, so anyone can break your password. I trust in God, I hope. But they do have some other security questions so I'm hoping they can't get through everything. In India I wasn't using a debit card, it was always cash. Here I use a debit card to pay for my groceries and I haven't used it for anything else.
25		Osman	506-513		I have seen the radio stations on iTunes but in India I could never get the signal, but here it's fantastic. Here I listen to Atlantic Song Factory and is the whole day playing and then at night I listen to a German radio station called Radio Veronica that plays 70s and 80s indie song in the night and a few German songs and they are really nice. They also have radio stations from different universities in the US, and there's another thing called "People Talk" and so you can listen to news, like Fox. It's fantastic the service. I have some form of upgraded service and I'm just keeping quiet and using it. All my friends are jealous.

25	fn	Ming	820-825	58	I was searching Amazon because I want to buy some books. I would like to buy one for biology and one for databases. I was also searching for Harry Potter the English version. I have the first four in Chinese. My friend has a credit card and we can buy together. We came together here. She has bought before using Amazon. China 5 also has one. She has received five books from her friend in China who received what she bought in Amazon China.
26		Wen	5-11		The first time I had contact with a computer was in Junior High School. I was about fifteen or sixteen years old. My parents thought we needed a computer and we bought a computer for the whole family. I have an older sister (four years older) and a younger brother (four years younger). We didn't use it very frequently; just as entertainment. At that time using a computer was popular in China. Computers were not very expensive and people can afford the price. Chinese parents think using computers is very good for their children. They encourage their children to use them.
26	fn	Soo	116-128	101	Soo – When I was a Middle School student, maybe 13-14 years old. I got one because it was getting popular. Before we used a mobile phone we had a pager, but after that everybody had a mobile phone. I was 11 years old when I acquired a pager. My parents bought me one. They got me one to contact other people. There I could receive messages from everyone. At that time you could use a public phone, call a number, indicate the pager number and they would send a message, but it was not a text message. My parents gave me a pager because sometimes it was difficult to contact me, that's why they bought it for me, so whenever I received a message I had to contact them. Sometimes I called them, but sometimes I sent a message. My brother did not have a pager, only me. Later I got a mobile phone. First, I asked my parents for one, but I didn't get it. I wanted one because I made lots of friends in Middle School, it was 1998-99. Other classmates also had mobile phones. My parents eventually gave me a mobile phone.
27		Daichi	8-26		<p><i>- Tell me about your first experience with a computer</i></p> <p>The first experience was when I was 9-10 years old and I was using a word processor. My family didn't have one but I was using one at my grandma's house and I just learned the basic things, how to write a word. After that I used my own PC when I was 13-14 years old when I was in Junior High School because my father bought one for my family. First I did some games and typing words. I think when I was 14 years old I came to use the Internet. At that time maybe it was the early stages of Internet in Japan.</p> <p><i>- Why did your grandmother have a word processor?</i></p> <p>She used it for her work. My aunt, who was living with my grandma, was working for some company for advertisement and my grandma was helping her and making some documents with the word processor.</p> <p><i>- When you were 14 years old you got your own computer</i></p>

					Not just for me, but for our family. My father used a computer in his office and my mother was not so much interested in computers, so mainly I used it. My dad was in a company producing some kind of digital device and some trading jobs overseas. I think he bought the computer maybe for his job but he didn't use it much, just checking mail and that. I used it mainly for my own purpose. This computer was in the living room; it had a printer. That was around 1998. I also had access to the Internet.
27	fn	Sun	81-83		Sun – I got a computer long time ago when I was an elementary school student. My father worked doing some work with computers, that's why there was a computer at home. When my dad went out I could use the computer. He allowed me to use.
28		Christos	11-28		<p><i>Early Contact with Internet</i></p> <p>I got a computer at home when I was 18 years old and I finished school and gained admission to university. In between these years I would have contact with computers in an Internet café. I used to go every 3-4 days. I would go mainly to communicate with friends, to send and receive emails, or to search the Internet about interesting matters to me, football, music, etc. I had friends who were in other countries and cities. I met them during holidays or in exchange programs in my school. I went in an exchange program to Italy. I was there for five days, I was 16-17 years old.</p> <p><i>Peer-to-Peer Networks</i></p> <p>I got my computer at home for my essays, to search information, games and music. At that age (my parents) would think it would be good for me to have a computer. My sister also used it and very rarely my parents. With my computer at home I would search information, download music or games, write essays for university. When I got my computer at home I also got Internet at the same time. I was downloading songs using Kazaa, now I'm using Limewire. I stopped using Kazaa because it stopped having a great variety of songs, I found Limewire more updated. Friends told me about Kazaa and also about Limewire. I installed Kazaa when I bought my computer. I downloaded many songs from the Internet, perhaps one thousand. I like Brit pop, my favourite group is Cold Play. I downloaded the majority of their music.</p>
29		Hyun-Shik	48-53	127	<p><i>- Before you got your laptop, did you have a computer for yourself in Ajou University?</i></p> <p>Yes, I had a desktop computer in my dormitory. It was common to have a desktop, specially for Korean students is kind of another necessity. Everybody brought a computer or they bought it around the Suwon area. My roommates had computers. You will see every student using a computer in their dorm. It looks like a PC room.</p>

30		Bo	26-31		<p>I had to go to the Net bar and in the school they also have computer rooms and specially cheaper for Nankai University students, so I've been there, but somehow the speed of the Internet is too slow, or there isn't a camera or earphones so is not that convenient, so in the first semester I didn't have a computer so I also would go to the library and the speed is better but they also don't have a camera, so it's not convenient for me to chat with my friends, but I would use it and not go to the Net Bar.</p> <p>I am a poor student. Someone went to the US seeking for funding to support people majoring in sociology and psychology and since I ranked third in my class he chose me to sponsor me. He chose me here in Nankai University. Every semester I get some money. I have used that money to pay my tuition. For the other expenses I work and I have a scholarship from Nankai University. The scholarship is given the year after. Now I don't have to work because I have the sponsorship and the scholarship.</p>
31		Hei	94-105		<p>One time used too much Internet on her mobile and paid 100,000 won</p> <p>Was using the Internet in her mobile to download games and to connect to Cyworld.</p> <p>(25:00) Was also downloading ring tones. She was doing this one year ago.</p> <p>Was accessing Cyworld when she was bored, like on the bus, and then would use the Internet.</p> <p>Her parents pay her mobile phone bills</p> <p>She receives money for expenses</p> <p>Mom is a housewife. Dad works for a company</p> <p>Parents asked her not to do that again (a huge bill)</p> <p>She tried to lower the bill by writing messages in her computer.</p> <p>Stopped using Cyworld, video games, ring tones in her mobile</p> <p>After coming back from Finland she never logs on the Internet. Came back in June.</p>
31	fn	Soo	227-232	119	<p>- <i>You said that you spend on your mobile phone between 80-100,000 won every month. Do you pay by yourself?</i></p> <p>Soo – Yes, if I have money, and if not I tell my mother. The highest bill I ever paid was 200,000 won. That happens if I have a girlfriend and she wants to talk a lot using cellphone; it has happened. Sometimes if I want to use an online game on my cellphone we have to pay a lot, or for international calls, or for sending pictures.</p>

32		Panna	123-126		I got my first mobile phone when I was around 18 years old. I got it because my college was a little farther away from home and since I was doing a course which required me to, at times, stay in college after hours, so my parents thought it would be good if I have a cell phone.
33		Zhi	79-85		<i>When did you get your first mobile phone?</i> I got my first mobile phone during my first year of university because I went to a different city and my parents wanted to contact me. There were phones in my accommodation, but I think mobile phones were more convenient to my parents to find me. I had pay as you go. I bought a mobile phone and a SIM card in different places; some places only sell the SIM cards, others the mobile set. I would spend per month only 50 RMB, which is low.
34		Aeneas	76-80		My current mobile set is my fifth. One time I got my phone stolen but my mom gave me her phone. I changed the first phone because the technology changed and didn't want to have the old one; it was a Panasonic. The second phone was a Nokia. I changed the second because the third had colours. From the third to the fourth because it was better technology. The fifth because it has a camera.
34	fn	Riko	9-17	39	- <i>When did you start using mobile phones?</i> In Junior High School I was 14-15 years old, around 2000. I started using it because it was available and my friends have one and I needed to email my friends, so I asked my parents to get a mobile phone. I studied a lot so my parents gave me one as a reward. Some of my friends had a mobile phone. I did not have a pocket bell, nor a picchi. I was using DoCoMo, but I used my mom's handset for three months and after that my parents got me one from AU; I used that company for 5 years and now I'm using DoCoMo and a WILLCOM mobile phone. When I used my mom's mobile phone I would use it for several hours to send emails at home after school. I would go to school from 8 am to 6 pm because of clubs; I was playing the trumpet.
35		Eurydice	85-89		I have had three handsets. The first handset my mother took it. The second handset I just don't use it; I have it. My third handset is the one I use now. I'm not very interested in changing mobile phones; it's just a regular mobile phone. I got my last phone two and half years ago. Even though I changed companies I kept the same phone and just changed SIM cards.
36		Padma	90-95		I got my first mobile phone when I started my undergrad. I was 18 years old. I got it because my parents were getting irritated that I was coming home late and that I was not getting in touch with them, I was not calling them and they didn't know where I was. So they gave me the phone and said, "Please, get in touch with us!" I was in college and college is more variable timing and they wouldn't know until what time I was in the college, so they gave me this phone so I might be reachable at all times.
37		Padma	1206-1216		<i>What did you do this day?</i>

					That day I realised I haven't done any shopping so I was shopping the whole morning and then I had to come back home and change and dress up. My friends and I went out for dinner and then we went to one of my friends' place and we had like a party there. Lots of things have changed for me, in a sense; I was not given that kind of freedom to move out especially during the night. If I go out at night my parents are calling me every ½ hr to ask where I am and this time nobody called! I think they forgot I was back home. On that occasion during dinner I was waiting for my phone to ring and all my friends' phones were ringing, but not mine. At 11:30 pm I decided to call them, but they were relaxed about me and planning to call me until midnight. That night I stayed over with my friends.
38		Eurydice	77-80		I got my first mobile phone in my first year in university. I didn't want to have a landline phone so my parents bought me a mobile phone. I didn't want my parents to call me home. My other friends had mobile phones too and it was very popular to send sms.
39		Riko	9-17	34fn	<p>- <i>When did you start using mobile phones?</i></p> <p>In Junior High School I was 14-15 years old, around 2000. I started using it because it was available and my friends have one and I needed to email my friends, so I asked my parents to get a mobile phone. I studied a lot so my parents gave me one as a reward. Some of my friends had a mobile phone. I did not have a pocket bell, nor a picchi. I was using DoCoMo, but I used my mom's handset for three months and after that my parents got me one from AU; I used that company for 5 years and now I'm using DoCoMo and a WILLCOM mobile phone. When I used my mom's mobile phone I would use it for several hours to send emails at home after school. I would go to school from 8 am to 6 pm because of clubs; I was playing the trumpet.</p>
39	fn	Soo	78-80		Soo – Yes, I asked my parents for a computer to play games. They said no, but then I told if I got good grades I could get a computer, so I got a computer. I was 14 years old.
40		Bo	39-53		<p>- <i>Just the people you know, just with your close friends, not even all the friends?</i></p> <p>Yeah. Maybe my parents too</p> <p>- <i>Does it mean your parents also have a computer at home?</i></p> <p>No, my uncle has a computer. He sells cellphones and that's also how I got my first cellphone; he gave it to me, so I didn't buy it.</p> <p>- <i>When you want to chat with your parents, your parents go to your uncle's?</i></p> <p>Yes, sure</p> <p>- <i>They use his computer and your uncle also has a camera and you can see them</i></p> <p>Yes, sure</p>

				<p>- Does it mean your parents have an account? Which software do you use to chat with your parents?</p> <p>We just use QQ. My uncle has a QQ account</p> <p>- How frequently do you chat with your parents in this way?</p> <p>Usually it is with cellphones, but when they want to see me. Till now maybe four times</p>
40	fn	Adara	4-18	<p>My first contact with a computer was because when my brother was ten and I was thirteen he asked me to be a game partner. We had an Amiga computer. My cousin had it and he gave it to my brother with many programs. I didn't know anything about computers, I only knew how to press a button to play games. When I was fifteen I was in the third year of Junior High School. We had a lesson on new technologies. I remember being really embarrassed because I couldn't even move the mouse and all things in the screen were very complicated. These lessons were not very frequent because there were not many computers. It was mostly theoretical and in the lab we did very simple things. The next time I was in front of a computer was three years later in the third year of High School when we had a regular lesson to learn how to use a computer. I was eighteen. We learned simply things, but then I never used a computer because there was no need to do that. All the assignments for school were handwritten. My brother encouraged me to play games, but I was quite old to do that. My brother bought another computer and we brought the Amiga computer to our village house.</p>
40	fn	Adara	44-62	<p>My brother was a computer technician, he went to a technical school and he needed to do that. My brother was downloading things from the Internet. I knew about the Internet from the second year of High School, I was 13 or 14. I am very fond of the radio and used to listen to the radio a lot. Radio programs would advertise Internet providers but to chat with friends, not to search for information. My brother used to buy magazines of the Internet and I saw Web addresses. I saw photos of websites and I realized it was to search information. I asked my dad to explain what it was. He told me that computers were connected to a network and you could visit those places, but I never used it. My brother started using the Internet some years later when he was a teenager (16) and he knew how to download things and browsing.</p> <p>I was 21 when I used the Internet. My brother was using Internet cards to access the Internet. As a family we decided to buy products related to the Internet when I was 22 when I started my ECDL course. I would download songs from the Internet using Kazaa from my favourite singers like Sheryl Crow and Alanis Morrisette. I learned how to download through my brother. I always asked his permission to use his computer. When I started my ECDL course I was also searching information on how to do a masters course in the UK. Basically, that's the reason why I bought the laptop to find information on my own. I was 22 or 23. I also wanted to search information about seminars on my major.</p>

40	fn	Adara	64-76		<p>I created an email account with Yahoo! My brother already had one. My best friend in Cyprus encouraged me to get an email account because it was very expensive to call, but I didn't want to lose her and I wanted to communicate with her. After she told me I open my account like three months afterwards after my computer classes had already finished. My brother and my friend had a Yahoo! account and so I thought that was the only one. I did it completely by myself. I started using the account, but I asked my brother for some advice on how to use it. He told me what to do when I wanted to send a new message or when I wanted to add my friends' addresses, very simple things. I still don't use Yahoo! mail effectively, but I think I use the things I need. I was using this account to make contact with my friend. In the beginning, however, I was hesitant to use it because I didn't know how to touch type. I learned after finishing the ECDL course, but it took me quite some time. I decided to get in touch with universities when I had decided which major I would go to.</p>
40	fn	Adara	140-144		<p>I got my second mobile phone when I was 23 and a half. It was given to me by my brother because he was working with a company that fixes mobile phones. That company had a large stock of the types of mobile I have now, so they gave the staff some. My first mobile was a Nokia 3310. The second one is a Sony Ericsson. This mobile was available in 2002 but I got it just one year ago.</p>
41		Ping	808-867	45, 48	<p><i>Talk to me more about your family, what does your dad do, what does your mom do?</i></p> <p>My dad works in the government in housing management. He's been there for about 7 years and before he moved to this department he was in another department also in the government. He's been working for the government for more than 10 years. My mom is recently running a recycling factory; she's been doing this for three years. Before that my mom did nothing. She worked when she was younger in a textile factory. She stopped working after she married my dad. Later she worked in a factory manufacturing hand-bags for 2-3 years and later stopped working and then became a full housewife at home until three years ago.</p> <p>My dad works from 9 to 5 pm. Later he goes back home. He likes sleeping. My dad's favourite sport is jogging, but he always jogs in the morning before going to work. He's office is 20 min driving.</p> <p>My mom's work doesn't have a fixed time. If there are many customers she will have to work until 11 pm, otherwise she would leave earlier. She starts working at 9-10 am. Her work is not far from home. She can walk there. She likes playing cards with her friends and going shopping. She doesn't have an specific time to play cards.</p> <p><i>Communication</i></p> <p><i>Since last Thursday how many times did you have contact with them?</i></p>

Just one time last Sunday. I called them using my mobile. We were talking for 35 min. I talked with my dad; I always talk to my dad because when I'm in the phone with my mom we talk little and don't have much to say. I talk more with my dad. About every little thing I will talk with my dad, even when I buy a hat or a coat. I am much closer to my dad; I don't know why. There's a saying that daughters are closer to their parents and mothers to their sons. Most of my Chinese friends are much closer to their mothers, but in my case it's the opposite. My mom will always talk about my everyday life like if I ate today and if I had vegetables. My father will be interested on my studies and my social life and communicating with people. Maybe also because my mom is a quiet person and she is not talkative. Last Sunday my dad picked up the phone and then he kept talking and by the time I had to say goodbye I forgot to say hi to my mom. I called them at 2 am here and there it was 10 am. My clock in my computer is set to Chinese time. I also have friends in Australia, but not from my same university; we met during training for the IELTS.

I usually talk with my parents once per week, but every day during the first week I came over here through the computer. I used Skype to call them because my dad's typing is very slow. There's also a computer at home and there's where I was calling them. In his office my dad also has a computer. During the weekends they would use the computer at home, but during weekdays he will use the computer in his office. I have called him over Skype to his office. I also chat with his colleagues in my dad's computer. I know all of his colleagues. Before I came here I always went to his office; that was during the last term of my university because I didn't have any lessons, so I just went home and because I didn't have anything to do I went to his office and became good friends with his colleagues. I don't talk like this with my mom because she's not good with computers.

I still use the computer to talk my parents. Before using Skype I always call them. Now that my computer is getting slower and slower whenever I use Skype the connection is not good and every half a min it freezes, so I prefer using mobile phone. I only pay 6p per minute with Mobile World; I only use this SIM card for international calls to my family. I have another SIM card with Orange and there it's pay as you go too. I have another SIM card with T Mobile that I was using the first week I was here. The first one was given by my friend because everything was unfamiliar to me and after that I bought the Orange SIM. I changed because they said the T Mobile network is not as good as Orange; another friend told me that and advised me to buy Orange. I think Orange is better than T Mobile because I always get free calls and free texts. I acquired the World Mobile SIM card because China 2 told me it was cheaper to make international calls for only 6p. I acquired it three weeks ago, I think.

I didn't call them for three weeks during the exam. Besides phone calls I also send them emails because my father checks the email account; it's a family mailbox. My brother can check and my father too, but my mom doesn't know how to do it. Yesterday I sent them some photos of the Christmas dinner in my flat.

41	fn	Aeneas	152-160		I have a landline in my room so they call me, messages, and maybe with my mother over Messenger. I think is cheaper to call my landline, but they are paying. They call me almost everyday. They don't call me on my mobile and I don't call them with my mobile. I sent a message to my mom to wake me up at 9 o'clock or something. She would call me to wake me up and won't hang up unless I answer. Then she would call me two more times. I chat with my mom when I'm online and I'm in the mood to talk with my mom. My mom work on IBM and she knows about computers and she's in her office from 8 am to 7 pm. She's responsible for all the machines coming from the US and that have to go somewhere else. I use Messenger with my mom to chat.
42		Akane	139-145		<p>- <i>Tell me about living back at home.</i></p> <p>My brothers were working outside so they were living by themselves. I lived only with my father and mother for two years. I had my own bedroom. My computer was in my own bedroom, but my father's computer was in the living room. I could use his computer but when I used it for a long time my father was not happy because he also wanted to use it. I don't know what he was doing with the computer, because he doesn't have many skills and he didn't exchange emails, so he was pretending to be using it. Maybe he was just exploring the Internet.</p>
42	fn	Hui	774-783		<p><i>What does your dad do?</i></p> <p>My dad is an engineer and he has worked in this job for 30 years; he works in a department controlled by the government. He will be retiring within 10 years. Now he's 50 years old. His job is close to home, but he drives a car to work; by car it takes him 5 min. He works from 9 am to 5 pm with 1 ½ hrs rest. After work he sometimes goes for dinner and sometimes he comes straight home and talks with my grandfather and plays some games online like Chinese chess. My grandfather lives at home; my grandmother died several years ago. He plays online against other people; he also plays checkers. I think he's been playing online for 7 years from the first time we got online at home. He also likes watching TV, but his favourite thing is checkers. I think he has a special certificate.</p>
43		Hyun-Shik	39-46	133	<p>- <i>Were you using the Internet at that time?</i></p> <p>Yes, from 1998. We have been using it, but my parents, they don't use it. After I went abroad my chatted in Skype. I taught them how to do it. It was quite tough; I have to teach them from the beginning to operate the system. I taught them how to power on, how to log on on MSN. I tick the automatic sign in option. I told them how to see my id and double click so we could talk. They were using their own computer because I bought it for them before I left for Finland; it was my gift for them. I got a laptop since 2005 after I finished my military service. I'm still using that laptop; it's an HP.</p>
44		Hui	797-816		<i>Since last Friday how many times have you had communication with them?</i>

					<p>I have communication with them nearly everyday. I call them using my mobile phone and Skype. With my mobile phone I called them twice at night during the last week. I usually call home, I spoke with my mother, then with my grandfather, and then my father. With Skype I called them once or twice. Since Skype doesn't work very well I would use my mobile if I want to have a conversation over 20 min. My parents are not good at using the computer. They would receive help from my cousin or friends or me if I were at home. They have been using Skype for two months; my cousin installed it for them.</p> <p>They also use MSN to leave me messages because now I work so sometimes those offline messages are more effective. The MSN account is under my mom's name but I'm not sure who is using it when I call them; they will have to tell me. In the past week nearly every day they left a message just to say hi, or to inform me about the cold weather at home and advise me to wear warm clothes.</p> <p>I don't send them emails because my dad doesn't know how to send emails. I taught my mom how to do it but I'm not sure she can do it, although she has sent me one email.</p> <p>We have video-chats but last week we couldn't because there's something wrong with their camera; the images freeze. I don't know why. They have uninstalled it and installed it again. My cousin doesn't know what happened with it.</p>
45		Ping	840-843	41, 48	<p>I usually talk with my parents once per week, but every day during the first week I came over here through the computer. I used Skype to call them because my dad's typing is very slow. There's also a computer at home and there's where I was calling them. In his office my dad also has a computer. During the weekends they would use the computer at home, but during weekdays he will use the computer in his office. I have called him over Skype to his office. I also chat with his colleagues in my dad's computer. I know all of his colleagues. Before I came here I always went to his office; that was during the last term of my university because I didn't have any lessons, so I just went home and because I didn't have anything to do I went to his office and became good friends with his colleagues. I don't talk like this with my mom because she's not good with computers.</p> <p>I still use the computer to talk my parents. Before using Skype I always call them. Now that my computer is getting slower and slower whenever I use Skype the connection is not good and every half a min it freezes, so I prefer using mobile phone.</p>
45	fn	Ming	185-195		<i>How do you keep in touch with your family?</i>

				<p>I mainly keep in touch by email, MSN, QQ; sometimes I call them. Mainly I talk with my mother, my father is always busy in his work. My mom is a housewife. Before I came here I taught her how to use a computer. She can also ask my father, he's an electrical engineering. He's more familiar with computers. I applied for an MSN account for my mom. Sometimes we use Skype, I think the voice quality over Skype is better than over MSN. Most of the time I video chat with my mom. She has a camera, headphones and a microphone. I video chat twice a week. I don't chat with her because she's not good at typing. Almost every time we talk not chat. I use QQ mainly with cousins and nephews. I write emails to my mother, uncle, cousin. I write once every two weeks.</p>
46		Akane	177-196	<p>- <i>When you were in Edinburgh, how did you keep in touch with your family in Japan?</i></p> <p>Before I went there one of my friends told me about Skype that it was free and easy to talk and I could also see my parents. I gave my parents instructions, but they didn't understand until December or so so we didn't have much chance to use the computer to exchange email. My father also has an account but he doesn't know how to type so it takes time for him to go one by one. To contact them I had to get a card and call them for one hour in my parents' house. Sometimes I would run out of credit; it was so strange because when I used the account it told me I had some credit but next time it would tell me I didn't have any credit.</p> <p><i>Mobile Phone</i></p> <p>After that my father sent me a mobile phone from Japan for Christmas, a DoCoMo one with international calls which I could use all over the world. I have that phone right now. It also had the same phone number before I came here but it's not for domestic use, but for international use. With this phone I would call my parents from Edinburgh but it was expensive, maybe 3 pounds per minute; it was very expensive. Sometimes my parents would call me, but I'm not sure how much they were paying. In Japan, for domestic calls you don't have to pay money to receive calls but when I used it in the UK I had to pay for receiving and for calling. I was in touch with my parents once per week. They would call me Sundays or weekends. They would call me for fifteen minutes.</p>
47		Yin	145-148	<p>- <i>What about now, how frequently do you call me?</i></p> <p>Twice a week. I usually call them on Thursday and Sunday night. Sometimes I call my mom's mobile and sometimes I call home. I don't call my dad because he's very busy and his mobile phone charges him when I call him.</p>
47	fn	Yen	130-136	<p>- <i>How else do you keep in touch with your family?</i></p> <p>By telephone. Sometimes I call them and sometimes they call me. Sometimes we send messages. I send one every day. I haven't sent one today. I sent one any time of the day. They call me. The last time they called me was yesterday evening. My mom called me. Both my parents have mobile phones. When I call I usually call my mom to her mobile phone. The last time I called her was yesterday afternoon. When I send text messages it's just to one of them.</p>

47	fn	Nuwa	113-117		When I came to Nankai University I started calling them once per week. I always call them in different days but every week. I call my mom more frequently. I would call my dad when I miss him. Sometimes I contact my sister. Last time I called her was three years ago; she lives in my hometown. I call her to her mobile phone; I always call her.
47	fn	Danae	787-790		Mainly I give this miscall to my dad; he has a mobile and my mom too, but her mobile is always in the bag, she forgets to take it out. This is why I call my dad; I have tried with my mom but I couldn't get her. My mom doesn't receive calls from anyone else beyond me and my brother.
48		Ping	840-843	41, 45	I usually talk with my parents once per week, but every day during the first week I came over here through the computer. I used Skype to call them because my dad's typing is very slow. There's also a computer at home and there's where I was calling them. In his office my dad also has a computer.
48	fn	Zhi	225-232		<i>How do you keep in touch with your family?</i> I always use Skype. With MSN I can't talk to them, just chat. I don't use headphones and microphone because they are already in the computer. My mom and dad use my previous laptop, but I have to call their telephone using Skype; it's very cheap. My boyfriend adds money for me to my Skype account. Everytime he adds 10 EUR and you can use this for a long time. I call my family once a week on Saturday. I usually call around the same time at night; they will be at home every night. My family has a business and they manufacture a part for a tool. They have had this business for four years.
48	fn	Ming	948-956	75	<i>How do you keep in touch with them, say, for the past week?</i> I use Skype. I contact my parents once a week every weekend unless there's something urgent to talk about, but whenever I call my mom is just to make sure she's ok because my father is away. I might call on a Saturday or Sunday. Last weekend I called on Sunday at about 8 am in the morning. This is the usual time I call because in university accommodation the Internet sometimes freezes so in the morning people are sleeping and you get a better connection. I talked to my mom for three hours. This is the regular length of time we call because we just do it once a week. I was using Skype to call the computer at home.
49		Ping	969-975		I came back on 4 January travelling by plane from Bristol to Glasgow International. After I came back from my trip I called my friends to complain about my lack of studying; everybody was complaining about it! I sent my dad an email telling them I was so busy preparing for exams that I wouldn't have time to call them during the weekend. Sometimes I called my friends to complain about not having studied enough and to relieve the pressure; sometimes I have to do that when I feel depressed. A friend called me for the same reason and since the call is free we can talk for hours.
50		Fai	87-91		- <i>When did you start writing your blog?</i>

					Three years ago when I was an undergraduate student. At first lots of my friends started a blog so I thought it was fun so I applied for a blog. Later I found out it was very interesting and it could help me organise my thoughts and it can help me reflect on my life.
51		Osman	147-161	2	We could create communities in Orkut. We had a gaming community, an instead of calling them or sms them we could just put the information in this community and all the guys who were members of the community would check and see what's happening. In this way we arranged game competitions. They would all come to our place, so we had teams coming; a team was made of five people for Counter-Strike, so we would advertise the dates, the price and the rules and regulations. We used to have regular tournaments. Ten teams used to come. There would be an entrance fee because all the money put together would be the prize money for the winner. The first time we organized it it took three or four days; we didn't know how to organize it, for the second time we learned so we would finish in one day, a Sunday. We learned about the timings. Towards the end we used it. In the game group we had a lot of people, not just from my city, people coming from other cities just to play and go back. More than one hundred. We even had girls coming to play Counter-Strike; there was one girl who sometimes was better than all the boys. She's working now, but she used to play better than all of them.
52		Christos	30-45		I installed games in my computer like Revolution, FIFA Manager, War Craft. The online version of War Craft I played at Internet Cafes, Counterstrike and Medal of Honor as well. I don't play at home. Now I never play, but in my teens every two days for many hours from 12 am until 5 am. These Internet cafes are open all the night, 24 hrs. Because I was going frequently I was paying €1.5 for one hour only from 12 am to (8:30 am). The other hours you would pay €2.50. As a frequent user I had a member card with lower prices. I always went to the same café because it was close to home and I knew the other guys there and I was used to play with them and we would go to the same café. Firstly, I went with a 4-5 friends, but then we met other guys. Sometimes we would play LAN games in groups of four and sometimes 32 people. The Internet café was three floors. You could choose to play with people from that Internet café or from other Internet café which belong to the same chain of Internet cafés. My team would originally be my group of friends, but when we were 32 people it would be by chance. When we found a team already in the Internet café my group of friends would play against them. At home I only played personal games like Pro FIFA and FIFA Management.
53		Zhi	220-222		To surf the Internet I use Maxthon which is similar to Internet Explorer. My boyfriend told me it was more convenient to use this one.
53	fn	Chin	256-262	58fn	He also downloads movies from the Internet. Last week was last time he downloaded a file. A friend of his paid money to download from a website and they share the account. He thinks website is legal (http://www.endisk.com/). <i>(49:10)[- When was the last time you downloaded a movie from the Internet?</i>

					Last week, I think. One of my friends pays money to a company and we share the account. This is legal. The site is iDisk, a Korean company.]
53	fn	Mei	96-98		- <i>When did you start using MSN?</i> Last year because I heard that MSN has less rubbish or spam mail than QQ. I think that is true.
54		Chihiro	100-103		I also had some security in my computer and after I removed it it was a little bit faster. I installed it because a friend recommended it in case I get a hacker or some virus. I was using Norton and then I uninstalled it. I installed it and removed it by myself.
54	fn	Panna	1571-1579	57fn	I do use an antivirus, but I'm not sure is working ok because I get this really weird messages every morning from AVG like they found a virus but they are not able to do something about it or something and I don't know what to do. A friend of mine told me about another antivirus so I downloaded it and I do a full scan at least once a week and it does find a lots of stuff and fixes them, but it finds stuff every week and it fixes it every week. I have been using this program for a month. My friend told me about it because he was using my laptop and it was really slow so he told me to clean up the disk and everything and he told me that I needed a good antivirus because my Norton had expired a long time back and I got AVG, but I'm not sure is working.
55		Jun	190-194		- <i>You used to use MSN, but then your account was stolen, when did this happen?</i> This happened about half a year ago. One day I wanted to log into my account but I told me my password was wrong and I thought it was stolen. I tried many times but it always said the password was wrong. My roommate told me that at the time many people's accounts were stolen and maybe I was one of them.
55	fn	Aeneas	413-432		I was in Skype and I meet people. One day someone call me on Skype with the name Spiros with my picture in his profile and all my details. All my contacts where his. He told he was a hacker and I blocked him and he appeared again, and I didn't know what to do. He had all my pictures. What if he pretended to be me to other of my friends? He wanted to talk and I press the button to talk and I heard my voice so I thought something was wrong and later he sent a message and I was talking to myself. There were two Spiros! He said he knew everything about me and that he was a hacker. "Fuck you!" I told him. I deleted him and he appeared again. Afterwards I haven't used Skype for a while. I deleted all my contacts I met here. I have only my friends. There's a girl I met and we would talk, but she was freak. She would come with other names and talk to me to see if I would talk to others. She used three different names and three different girls I met were the same girl. She was from Switzerland. She logged as a girl from Sweden and another as a girl from France. I would talk with them and it was the same girl! Afterwards she told me everything. I think she was the same person impersonating me. I think this is easy to do if you take a photo and write down all my same details.

					I met this girl through Skype. All these girls called me. I have the Skype me and this girl called me the first time and we were talking, afterwards she took another name, and two weeks later she calls me with yet another name.
56		Danae	537-541		I have another application to have a pet and I was taking a look at it with my cousins and since one of them doesn't know what is all of this we were talking about all of this on Facebook. She doesn't know about Facebook but she has an account. She didn't know a lot of applications. I don't think it was difficult for me. I never asked for help. Someone told me open this invitation and go there if you like or just delete it.
56	fn	Yon	140-151		<p>- <i>Why did you join Cyworld in the first place?</i></p> <p>That was the first kind of cultural shock. When I went back to Korea right after graduation everyone was talking about making friends through Cyworld, and I was like, 'What is Cyworld?' Everyone was totally surprised and shocked because they thought that because the US is more like an advanced country they will have better, but I never heard of it, so I came here and there were all kinds of different Internet expressions. For me it was kind of hard to understand everything at that time. It took me like three months to learn everything. So I go to know that and my friend told me how to set up an account so I started using that from the end of 2004, but I never used it a lot at that time, I started using it at the end of 2005. Making an account wasn't that difficult but for the homepage I didn't know how to design or get the different themes, titles and everything, so he helped me.</p>
57		Yin	76-87		<p>- <i>Have you ever had any other problem with your laptop before?</i></p> <p>Yes, virus. When that happens I would find a classmate or friends who are good at computers and they will help me to clean it and find some antivirus software and update it. I knew I had a virus because my computer is stuck (catalyst? catatonic?) and it moves very slowly. This has happened two times before. Both times I asked my friends to fix it for me. They didn't charge me. They did fix it fast and it was really fixed. They said it was because I did not update the antivirus software frequently and I did not choose a better one. This is an easier one but I don't know how to manage it. The first time they updated the original antivirus; the second time they changed it to another. I think the antivirus I'm using now is better because until now the computer still works very smoothly. The last time they fixed my computer was before national holidays.</p>
57	fn	Hua	237-251	146	<p>- <i>When did you get your own computer? Is it a laptop?</i></p> <p>Yes, I bought it in the second year of my university, one year ago. It's Acer.</p> <p>- <i>Is it working fine?</i></p> <p>Yes, very well. If it has some problems I will turn to my friend; he can repair it for me. This laptop was infected with virus so I cannot delete the virus through the software, so he did it for me. He's my classmate.</p> <p>- <i>Do you use an antivirus?</i></p>

					<p>Yes. I had one before my computer got infected and I still have the same one.</p> <p><i>- Do you have any idea why your computer got infected?</i></p> <p>Maybe I just saw some website and downloaded some thing and was infected, or maybe I used my USB drive and there was a virus and I inserted it in my computer and it got infected, but I just don't know the exact reason. If I know the exact reason I won't be infected.</p> <p><i>- How long did your friend take to repair your computer?</i></p> <p>After three days he gave me back my laptop.</p>
57	fn	Panna	1571-1579	54fn	<p>I do use an antivirus, but I'm not sure is working ok because I get this really weird messages every morning from AVG like they found a virus but they are not able to do something about it or something and I don't know what to do. A friend of mine told me about another antivirus so I downloaded it and I do a full scan at least once a week and it does find a lots of stuff and fixes them, but it finds stuff every week and it fixes it every week. I have been using this program for a month. My friend told me about it because he was using my laptop and it was really slow so he told me to clean up the disk and everything and he told me that I needed a good antivirus because my Norton had expired a long time back and I got AVG, but I'm not sure is working.</p>
58		Ming	820-825	25fn	<p>I was searching Amazon because I want to buy some books. I would like to buy one for biology and one for databases. I was also searching for Harry Potter the English version. I have the first four in Chinese. My friend has a credit card and we can buy together. We came together here. She has bought before using Amazon. China 5 also has one. She has received five books from her friend in China who received what she bought in Amazon China.</p>
58	fn	Adara	117-123		<p>When I was 16-18 all my classmates had mobile phones and they were very proud of it, but I was completely indifferent. If I really need it I would borrow it from my classmates. I thought that having a mobile phone was a waste of time and money because all my pocket money would be allocated to buying credit. I was the last adopter of a mobile phone. Even today, I don't think my mobile phone is part of my life. My computer is part of my life because I work with the computer, but my mobile no.</p>
58	fn	Chin	256-262	53fn	<p>He also downloads movies from the Internet. Last week was last time he downloaded a file.</p> <p>A friend of his paid money to download from a website and they share the account. He thinks website is legal (http://www.endisk.com/).</p> <p><i>(49:10)[- When was the last time you downloaded a movie from the Internet?</i></p> <p>Last week, I think. One of my friends pays money to a company and we share the account. This is legal. The site is iDisk, a Korean company.]</p>

59		Hyun-Shik	153-160		<p>- <i>Did you have a mobile phone in the UK?</i></p> <p>Yes, a prepaid one. I was using T-Mobile. I wanted a contract but I needed to have it for 12 months and I thought I wouldn't be there for more than 12 months, so I couldn't get a contract, that's why I bought a prepaid one. In the UK I couldn't use the mobile phone like I do in Korea. For one month I used the same mobile phone from Finland and after one of my Korean friends returned to Korea because he finished his holidays, he gave me his mobile. It was a Motorola. The first one was Nokia. I just changed SIM cards.</p>
59	fn	Yin	89-98	100	<p>- <i>Do you download movies?</i></p> <p>Yes. We have a website and it's a local website and it's free for us to download movies. Since during national holidays I broke my computer I borrowed a computer from my roommate and I downloaded a lot of movies. My roommate went back home and left me her computer. I downloaded around 50 movies during national holidays including American series like Gossip Girl and Desperate Housewives. I have seen all the episodes of Desperate Housewives and Gossip Girl only the second season. In my laptop I have five movies. After I download and watch a movie if I think it's a classic I will keep it otherwise I will delete it. The five movies I have now I haven't seen them.</p>
60		Jun	148-177		<p>- <i>You said that you write a blog in your QQ Space, when was the last time you wrote there?</i></p> <p>Not for a long time. I don't remember, maybe more than two or three months.</p> <p>- <i>Why don't you write more?</i></p> <p>I like communicating with people through QQ or the mobile phone; they are more direct.</p> <p>- <i>Was there a time when you were writing every day in QQ Space?</i></p> <p>Yeah, in my undergrad I used to do it frequently. I was writing frequently because people around me all used it frequently so I used it frequently. I was able to read what my friends were writing and my friends were reading what I was writing. Sometimes they made comments on my articles. I think around 2-3 months ago I wrote my last article, but I think very few people read it. I think people are very busy right now so if I have something I will phone them and ask them.</p> <p>- <i>Do you think if more people were reading your QQ Space you would be writing more?</i></p> <p>Yeah.</p> <p>- <i>In a sense you are writing for other people to read</i></p> <p>Yeah.</p> <p>- <i>Not necessarily because you want to write</i></p>

				<p>Yeah.</p> <p>- <i>Apparently here your classmates are not very much into writing in QQ Space</i></p> <p>Yeah, and we have a QQ team and people don't need to see other QQ Space. I have a special group with my friends over here but that is just for chatting.</p> <p>- <i>You also said that you like writing things on the school's network</i></p> <p>Yes, on the BBS. I write many things. Some time ago I was thinking about continue studying or start working and I wrote an article about what I should do. Many people commented on that and I can have lots of information I need. The last time I wrote there was this morning. I went there to write an article about the types of clothes we should wear for a job interview, and what is the average price, and where can I get a relatively cheap one. I think in the afternoon I will have several replies.</p>
60	fn	Mei	171-182	<p>- <i>When did you join Xiaonei?</i></p> <p>During senior year in Tianjin University. I joined because a friend asked me to join. Sometimes I use it but not frequently. The last time I used it was 2-3 days ago. In the beginning I was using it more frequently. I think I no longer use it that frequently because I think it's not real life. In Xiaonei it's just one part of your friends, not the whole and these people do not renew their information so I don't use it. Their information is outdated. In Xiaonei I have more friends from Nankai University than from Tianjin University. It's more people I have met here. When I joined there were few people using it, but now there's lot of people using it. Sometimes I would check my friends' information. The last time I wrote something about myself was about one month ago. I wrote about catching a cold. I wrote to let other people know I was sick and very sad. Some people replied and comforted me.</p>

61		Shiori	6-40		<p>I was 18 years old. I was using J- Bank now Softbank. I used a pocket bell before. I was in High School; I was 16 years old in the second year of High School, that was for two years. Later I changed to mobile phone when I was 18 years old. It was very convenient because I could talk and email. I had a pocket bell because there was no mobile phone and everyone had it. With the pocket bell I could send messages, only numbers. Combinations of numbers were messages and it was difficult to learn them. I learned the combinations because my friends used them and they taught me. They would write in a piece of paper the meaning and I would carry this piece of paper. I used it for two years. Eventually, I rented a mobile phone with DoCoMo. I used money I saved to pay for it. My parents would give me some money every month. This money was given to me for shopping, books and going to the movies and for the pocket bell. They stopped giving me money after I graduated from university. I graduated from university when I was 22 years old. Now I am 29 years old. I was using the pocket bell in 1996. I changed to mobile phone because it was more convenient and everyone changed; my friends had mobile phones. The mobile phone was expensive for me, but it was convenient, so everyone used it and people stopped using the pocket bell and if there's no one using pocket bell I couldn't contact people. After I stopped using the pocket bell some people were still using it. My parents signed for the contract for the mobile because under 20 years old you need to parents to come with you. I went to Tokyo and they were worried about me and hey knew if I had a mobile phone they would be able to contact me, so that's how I got a mobile. I went to Tokyo to attend university and there is where I got a mobile phone. I was attending a music university in Tokyo. I attended it for four years. I bought the mobile phone in Tokyo. My parents came to Tokyo and my mother signed the contract and I got the mobile with J-Bank. J-Bank was the cheapest option, very cheap; maybe I was paying 3000 yen per month. With this I could send skymail to my friends. I had a limit of 15-30 words per message, very short. Since I was used to the pocket bell I could use the same code to send skymail. I think I was doing this for one year until I could send longer messages. There was no limit on the number of messages I could send in one day but I always had to pay per words in a message, so there was a limit in the number of words per message and they would charge per words. I could also make calls and I would call my boyfriend and my friends and my parents. Calls were very expensive but I had free calls for two months, so in one year the first two months are free calls. I had the middle plan. Now calls are very cheap but ten years ago was very expensive.</p>
62		Yen	91-98		<p>- <i>When did you start using MSN Spaces?</i></p> <p>Actually, I just wrote one diary entry one month ago. I prefer Xiaonei; it's very popular among Chinese students. I started using Xiaonei four months ago. I did it because I found out most of my friends use it. I knew about Xiaonei but not very well. I'm not sure why I didn't join before, maybe the courses were too heavy. Since I started this year I have been more relaxed because I passed the GRE and the TOEFL and I don't take many classes, so I can do things on my own schedule so I can spend much more time online.</p>

63		Nalin	219-224	158	<p>I joined Facebook around five days ago. I have 50 friends. I joined because most of the people over here use Facebook than Orkut. My flatmates they are not from India. There are other friends of mine and most of them use Facebook. My cousin in London he uses Facebook to keep in touch with all his friends, so I thought than instead of sticking to Orkut I would join Facebook and I wouldn't loose anything and get more friends, and it's an easier way to keep in touch with everyone.</p>
64		Cho	137-156		<p>Doesn't know why she has an account with MSN. She thinks she has it since she was 10 years old.</p> <p>Thinks there are cycles. Sometimes MSN is popular and sometimes other messengers are popular, so perhaps MSN was popular when she was 10 years old.</p> <p>(24:30) [There are like cycles. First MSN is popular and sometimes other messengers are popular, so when I was ten years old MSN was popular, but after I went to the US MSN is most popular among foreign people</p> <p>(25:00) and I added them as friends but using MSN in English is too hard so when they asked me to sign I do it but I don't really sign every day. I sign on on NateOn every day.]</p> <p>MSN was popular among foreigners in the US so she added them as friends.</p> <p>But using MSN in English is hard so she signed because friends asked but doesn't really use it. Re-started using MSN on the US</p> <p>Signs in on NateOn every day</p> <p>Has around 16 friends on Facebook whom she met in San Francisco at the school and on the street and some were her roommates.</p> <p>Has 2-3 US friends who were teachers. The other people are from other parts of the world.</p> <p>NateOn has been using for a long time ago</p> <p>Uses it everyday and automatically logs in when she turns on computer.</p>
65		Chen	219-231	88fn	<p><i>- Are there a number of things that you do frequently on the Internet?</i></p> <p>The first thing I do is to log into QQ and my friends can see me and if we have some things to talk to each other we would do that. The second thing is to surf the campus BBS. There will be news reports about everything that happens on campus, and the clubs that you attend to will have their boards in the BBS, so you can now all the latest news about the things you are interested in.</p> <p><i>- Do you follow any of the clubs?</i></p>

					I follow the P&G club in Tianjin and Nankai university, and also the Voice of Nankai; it's like CCTV in China where you can find some news happening in Nankai university today and abroad; badminton, of course; some classboards, for example, I am a student of the Institute of International Economics Research and we have our own board on the BBS, and we also have the College of Economics board, so you can go there. I do this everyday in the evening.
66		Nuwa	63-66		- <i>When did you start using QQ?</i> I've been using it for five years. Whenever I use my computer I use QQ. I have many friends in my QQ list; more than 130 contacts. I keep in touch with about 10 of them. Some of them are in other universities and some others are working now.
66	fn	Hua	72-73		- <i>With how many friends do you remain in touch through QQ typing?</i> I have about 50 friends, but I contact about 5 of them more frequently.
66	fn	Yin	219-222	141	- <i>When would you give your QQ id to someone?</i> I haven't added a new friend in QQ for a long time. Friends on QQ are very old friends and most of the time I use QQ to chat with classmates from junior High School and High School.
67		Danae	803-809		Are you using pay as you go so as not to talk so much? Yes. With everybody in Glasgow I can send a text message or a mail so I don't need much to call. In Greece I would call more because I had a contract and I'm bored writing text messages and when I'm driving I can't write a text message so I would just call. Here most of the time I'm at home, but in Athens I'm always somewhere outside. My friends wouldn't be at home either. Calls from landlines to cell phones are too expensive so is better to call from your mobile.
68		Yin	185-188		- <i>When was the last time you gave your mobile phone number to a person?</i> When I took my computer to repair and I left my number in the shop so they could call me. They did call me to tell me they did not have the part and asked me to pick up my computer.
69		Cho	183-186		(33:11) [Its easier to get others' NateOn ids but people are not willing to give their Cyworld id if they are not friends. NateOn is more for acquaintances. Sometimes I see some names and I don't even know who they are; they could be strangers or they use their friends' or parents' names.]
69	fn	Yong	186-195	5	- <i>Tell me the last time you gave your mobile phone number to someone?</i>

					<p>I think it was last week when I met some stranger who recognised me but I didn't. He was a younger sister and brother from the first or second year. They wanted to ask me some questions about studying abroad. I met them in the bank of the lake when I was reading a book. I think they met me during some activity because I was introduced to everyone. They asked me for my mobile phone because I don't want to share with lots of people my mobile phone because if many people know your number they will call you with questions and they will disturb you. I think that happens to me every day; I receive phone calls from people asking me stuff, this has happens for a long time, so I don't want to share with more people my number.</p>
70		Hui	716-737	130	<p><i>With you current boyfriend how many times did you have contact with him for the past week?</i></p> <p>Every day using QQ or calling. I always call him because it's cheaper to call from here. I call him whenever I want to call him; sometimes in the morning or at night. I won't call when he's sleeping. I also chat with him through QQ almost every day. We chat for different lengths of time depending if it's night or day in China, or if I have a class or him.</p> <p>I have pay as you go with Mobile World and that's the cheapest one to call China directly. I knew about it because the first time I entered The Carphonewarehouse there was a man there and he advised me on this card. I have topped up my mobile 4-5 times since I came here; every time I put £10. Sometimes I write emails to my boyfriend. Sometimes I would write emails if I'm not satisfied with him or I want to argue with him because we never argue directly, just by email. He does reply to my emails. Sometimes we discuss when chatting and sometimes afterwards. We don't argue over mobile; maybe once or twice.</p> <p>I don't argue with people directly, not just my boyfriend. I prefer arguing while chatting because I can not feel his emotions but through mobile phone I can. If we argue over the mobile and I feel he's not happy, or doesn't agree with me, then maybe I wouldn't tell him the rest, but on QQ I can totally tell him all I want to tell him.</p> <p>I don't video chat with him because the connection is not good in the accommodation so we always chat without a camera. Since I came here I have tried video-chatting with him less than 20 times.</p>
71		Panna	228-239	78fn	<p><i>How do you keep in touch with your friends here?</i></p> <p>With my friends in this city is online again because for us using the cell phone all the time is a little expensive, so I either give miscalls or text messages to make them come online, but most of my friends are living in the same area, the same residence, so we use or rooms extensions to call each other.</p> <p>When I meet someone we exchange room extensions as well as cell phone numbers and email ids. Mostly is not the room extension on the first go, it's usually the cell phone number, and once you come to know where the person is staying then the room extension comes along.</p>

					Not everyone uses MSN, most of them are on GTalk, so I guess I have added around 4-5 in my contact list, and a few of them are on Facebook, I guess most of them are on Facebook.
72		Panna	309-315		About the Internet I was really bum that I can't use Skype, I can't use my webcam unless I pay £10 a month and I'm not really keen on doing that 'cause I got in touch with MasterPoint and I gave them my credit card details and everything, but they took a really long time to activate it and it was activated three days back when I call them and told them not to do it anymore. I was just frustrated. I almost paid as soon as I come here, so I was really annoyed and I don't want it anymore, so I'm just ok with just chatting for now.
73		Eurydice	187-195		To chat I use Messenger. I tried using Skype but it didn't work, maybe the period when I tried using it there were lots of people using and we couldn't speak with each other. Many people told me they can't use Messenger, but I can, I don't know why. I don't have the Premium Service but I paid for video calls, but I can't download movies and music. I have to pay more. I paid £95 per academic year. I received a leaflet sent by the accommodation office when I was in Greece with the service provided by MasterPoint. I didn't go for the Premium Service because I didn't think it was so important for me to download songs, and I didn't want to make my parents pay more.
74		Christos	172-178		I hate the Internet in university accommodation. The problem is that you have to pay to enter those sites you want, and you can't download, or communicate with Skype or MSN with voice. Skype doesn't have very good connection. For all of this you have to pay £35 and then every month £15, and I have paid £3500 for a small room and I have to pay more for the Internet! I uses to download lots of movies and songs, and watch TV. I used to watch the channels of Greek TV on my computer. These are the main problems downloading, communicating and watching TV.
75		Ming	949-956	48fn	<i>How do you keep in touch with them, say, for the past week?</i> I use Skype. I contact my parents once a week every weekend unless there's something urgent to talk about, but whenever I call my mom is just to make sure she's ok because my father is away. I might call on a Saturday or Sunday. Last weekend I called on Sunday at about 8 am in the morning. This is the usual time I call because in university accommodation the Internet sometimes freezes so in the morning people are sleeping and you get a better connection. I talked to my mom for three hours. This is the regular length of time we call because we just do it once a week. I was using Skype to call the computer at home.
76		Padma	195-234	1fn, 78	<i>How do you keep in touch with your family?</i> I'm in touch with mom and dad; my brother is in the US right now. I'm in touch with him mostly in Yahoo! and with my parents I call them up and I chat with them sometimes. My brother is six hours behind in the US and he's coming back today; I got a voice mail and he said he is in the airport. He made a stop in Heathrow; he couldn't come to Glasgow because his visa expired.

				<p>I call my parents through my mobile phone. I got an access number so it's a free call. The phone company gave me a number that the system recognises as a Vodafone number or something. The O2 company here gave me that number. It's not an official thing. They said they don't take responsibility if it stops working. Sometimes it might not work and I might get charged.</p> <p>I've been using it just for two weeks. I talk with my parents everyday in the evening after my classes. When I call them is night time for them; they are six hours ahead of us, when I call them is 10-11 pm India time so they are free. During weekdays I chat with them generally; my dad gets online and my mom is there but my dad chats basically and on weekends I speak with them for half an hour or something. I chat with them using Yahoo! Messenger. When I chat with them we just chat, no voice.</p> <p><i>How do you keep in touch with your friends?</i></p> <p>With them I generally chat using Yahoo! Messenger and Orkut sometimes. There are one or two with whom I'm in touch frequently, but it's been quite a long time since I've spoken to anyone. They are in India. In Orkut they are more like general messages. It's more to tell someone that I'm free at so and so time and to come on Yahoo! Messenger at this time.</p> <p>I don't use Orkut everyday. I used to, but not of late; not lately because I have much course work to do, and then I went to Leeds also on the weekend. I think my use of Orkut has declined since I arrived to Glasgow, because I have more things to do. I have to cook, clean, do my laundry, that's lots of work all of a sudden, and study. At home it was done, so I had lots of free time.</p> <p>Yahoo! Messenger I use it everyday to chat with my parents but with my friends it depends, if they are online then I do, otherwise I don't. I would appear offline if I'm working or searching for something related to coursework. I would do it manually when I want it, by default is online.</p> <p><i>How do you keep in touch with your friends here?</i></p> <p>With the people staying in my own accommodation we have the room extensions; I use it pretty frequently because it's free. With some people I exchange my mobile number and with some people I exchange my extension number; whatever comes to me first. I have added some 5-6 people to my Yahoo! Messenger, not everyone, just some pretty good friends. They are classmates and one is not my classmate but she's from India. I don't chat with my flatmates, we talk when we are in the kitchen. I have two flatmates from Greece, one from Poland, and one from India, they are all girls.</p>
77		Panna	316-320	<p>I can't download music, which is something that really gets to me so I just go down to the 74 bar which is close and it has WiFi, a couple of us go down there maybe once a week or once in two weeks or something and download all the stuff that we want, or I make my friends send me stuff if they are online on MSN or through emails as attachments.</p>

77	fn	Christos	738-748		Almost everyday I bring it with me when I have to go to the library or when I go to get a coffee in Beanscene in Ashton Lane because they have Wi-Fi. You can get one hour free for a minimum purchase and my girlfriend and I order separately, and I use one hour and she orders later and she takes another hour so I have two hours free. I always go there with her. This place has a great environment. I went there one month ago; by chance we found it and we like it; it's like Starbucks, but more friendly and familiar. We go there almost everyday in the mornings between 11 and 3 pm. I go there because the Internet is faster and I can download videos that are forbidden in our accommodation; videos that I receive from my friends through MSN or YouTube, music from Limewire. I can study in a more relaxed way.
78		Padma	228-231	1fn, 76	With the people staying in my own accommodation we have the room extensions; I use it pretty frequently because it's free. With some people I exchange my mobile number and with some people I exchange my extension number; whatever comes to me first.
78	fn	Panna	233-236	71	When I meet someone we exchange room extensions as well as cell phone numbers and email ids. Mostly is not the room extension on the first go, it's usually the cell phone number, and once you come to know where the person is staying then the room extension comes along.
79		Padma	903-906		It kind of gets you after a while if you keep doing that all the time, working. I'm a person who back home used to watch a lot of TV, so for me, right now I need to do something. I'm not using IPTV because you need to get a TV license for that. My flat got two notices and the second one was in bold letters like someone was using it!
80		Riko	139-144	83	- <i>Where are you allowed to use this phone?</i> At home, at lunch time, as long as I'm not in public places like train or bus. There are advertisements telling you to turn off your mobile phone, but I don't do it because I still use email. One time someone came and told me not to use my mobile phone. That happened here in Sapporo on the subway; it was someone from the subway staff. That time I was listening to music so I just turned the volume down but I didn't turn it off.
81		Shiori	104-111		- <i>Tell me in which places you cannot use your mobile phone in Japan?</i> Well, for instance in the train or in hospitals or when working, and in the subway, especially in Sapporo. You can use the mobile on Tokyo but not in Sapporo. I know this through the newspaper. There was an article in the newspaper. You cannot use it to talk but mail is ok. Some people are noisy when they call on their phones; they might disturb other people. Advertisements don't say that you have to turn off your mobile phone; only in the priority seat you shouldn't sit. When I receive a phone call on the subway I don't pick it up, I just cancel the call always and send a text message.
82		Shiori	122-125		Asked if she has seen anybody receiving a call on the train and said she has, but not dared to tell the person to stop using the mobile.

					Says she has only looked reprovingly to the person. Says other people have done the same.
83		Riko	142-144	80	One time someone came and told me not to use my mobile phone. That happened here in Sapporo on the subway; it was someone from the subway staff. That time I was listening to music so I just turned the volume down but I didn't turn it off.
84		Shiori	119-121		One year ago while riding the train in Hokkaido she was sending someone an email and a kid sitting next to her asked her why was she using the mobile on the train. She felt ashamed and stopped typing her message.
85		Hyun-Shik	61-71		<p><i>- Tell me about your own experience during your military service.</i></p> <p>Let me start from the beginning. Every communication device is absolutely prohibited because technically you could reveal confidential information from the military, so it's prohibited. Mobile phones are allowed for officers. I think things have changed, but we didn't have computers at that time. While I was in the military I was not allowed to use computers. They have computers connected to the Intranet. I was in radio communications so I had no chance to use computers. I had vacations seven times during the military service. During vacations I would surf the Internet. In total, every soldier has 45-50 days holidays split in 4-5 days. Depending on the type of holidays I would go home or stay around the military base. In those times I would also go to a PC room. I would also go home or travel.</p>
86		Hyun-Shik	133-137		<p><i>- When you were in the military, how did you communicate with your parents?</i></p> <p>I wrote letters a lot like the old traditional way. I wrote every weekend or at least once every week. They wrote back. I had around 100 letters. I also phoned my parents from a public phone. There were two public phone booths for one unit, about 200 people. I could call but not during your working hours, before the 9 am list.</p>
87		Hyun-Ki	50-58		<p>He was close with his roommate and watched movies together in his roommate's TV</p> <p>(15:00) Roommate also had a big monitor, and LCD monitor</p> <p>Soldiers had many electronic stuff</p> <p>Roommate had a Playstation, Xbox 360, etc. "Americans really love videogames!"</p> <p>Time in the military was not holidays "I never want to come back there"</p> <p>Had to work 12 hrs at a stretch or at night the whole night</p> <p>Could also go out and have free time even from the very beginning</p> <p>Could to this on his day off every week, but since he was MP he didn't have weekends off, so his days off were on weekdays</p>

88		Yin	134-138		<p><i>- Do you check the BBS of the university?</i></p> <p>Yes, I check that every day. I check it because the university is quite big and there are lots of information every day and lectures and notices and if you don't check it every day you will miss it. I check it in the evening before I go to bed. There I found about your study.</p>
88	fn	Chen	219-231	65	<p><i>- Are there a number of things that you do frequently on the Internet?</i></p> <p>The first thing I do is to log into QQ and my friends can see me and if we have some things to talk to each other we would do that. The second thing is to surf the campus BBS. There will be news reports about everything that happens on campus, and the clubs that you attend to will have their boards in the BBS, so you can now all the latest news about the things you are interested in.</p> <p><i>- Do you follow any of the clubs?</i></p> <p>I follow the P&G club in Tianjin and Nankai university, and also the Voice of Nankai; it's like CCTV in China where you can find some news happening in Nankai university today and abroad; badminton, of course; some classboards, for example, I am a student of the Institute of International Economics Research and we have our own board on the BBS, and we also have the College of Economics board, so you can go there. I do this everyday in the evening.</p>
89		Yin	189-196		<p><i>- Do you remember the last time you gave your number for personal reasons?</i></p> <p>Because I want to take a business course exam and they have an English test and I wanted to find a partner to help me practice I left my message on the BBS including my number and someone called me. We became partners and we meet every Sunday morning to practice; they are a boy and a girl. We meet by the lake in Nankai University next to the old library in open air. We call each other if someone can't make it for another reason but that doesn't happen very frequently. We first met in the third Sunday in September.</p>
90		Hua	36-38		<p><i>- Do you like reading news about China?</i></p> <p>Of course, I live in China and I love my country, so I'm quite familiar with this place. I also check the BBS of my school. This is how I found out about this study.</p>
91		Yen	141-153		<p><i>- I found out it's very easy to have your mobile or bicycle stolen.</i></p> <p>It's very easy to have your bicycle stolen. I have had 2-3 bicycles stolen just here on campus. I locked my bicycle but they stole it anyways. It's very interesting because I forgot to lock my bicycle but it was still there when I went to pick it up. It was unlock for 4-5 hrs.</p> <p><i>- Someone told me bicycles are stolen when they are left alone.</i></p>

				<p>No, actually my bicycle was always near others and it was still stolen. My two bicycles were stolen at night.</p> <p>- <i>What do you do when your bicycle is stolen? How do you buy another bicycle?</i></p> <p>I buy bicycles on the BBS because some students who have finished their studies will sell their bicycles. The last time my bicycle was stolen was last summer. I bought another one half month later. I paid 50 yuan; it was a good price. I bought it from a masters student.</p>
92		Hua	43-51	<p>- <i>Did you check this BBS today?</i></p> <p>Today I haven't. I check it yesterday.</p> <p>- <i>Tell me something interesting you found there.</i></p> <p>Everyday there's the top 10 topics. There was a student in my school and he posted some photos of his girlfriend on the BBS and asked other to judge if she's beautiful, and different students had different opinions; somebody said she's quite beautiful and gorgeous, but others think she's just so so.</p> <p>- <i>Did you add your comment?</i></p> <p>No, I just laughed.</p>
93		Nuwa	48-56	<p>- <i>When was the last time you were downloading a movie?</i></p> <p>Last night. I was downloading it from the BBS website of the university. I was using BitComet. I was downloading a foreign movie; most of them are Hollywood movies. Every week I download 6-7 movies. I can download movies at 2 MB per second, very fast. After I downloaded the movie I watched it. After I watch movies I delete them because my hard disk doesn't have enough space for them. Usually I delete those movies, but sometimes I keep some movies, for example, if a movie is excellent I will keep it. I did that with "First Blood" (Rambo) and "Son of Ranbow." I downloaded "Son of Rambow" last summer holidays.</p>
94		Hua	194-199	<p>- <i>Do you have Internet access?</i></p> <p>Yes, we all have. I pay 20 yuan.</p> <p>- <i>Can you access all the things you need?</i></p> <p>That's limited I think, sometimes, maybe because it's so cheap or something else, the speed is not so good, so I have to wait a long time, especially some websites in English, not in China. It's not fast to open those websites, so I won't see them much.</p>
94		Hua	221-235	<p>- <i>Are you able to download movies or TV series from the Internet?</i></p>

					<p>Most of the time it's not allowed, you have to pay for this, but in the BBS there are some movies I can download.</p> <p>- <i>When was the last time you downloaded one of these movies?</i></p> <p>Well, just in the holidays I downloaded "Underworld" and I have seen the two parts. It's wonderful!</p> <p>- <i>How many movies did you download during the holiday's period?</i></p> <p>Well, about five. Maybe only one Chinese. I have seen them all.</p> <p>- <i>Once you watch a film, what do you do with the film?</i></p> <p>I delete the movie because the space of my hard disk is limited. Also this is required by the BBS, but mostly you can keep it if nobody knows, but you know, I have nothing to do with this film, maybe if I don't liked the film I just delete it, but some of them I like much I will keep them for longer.</p> <p>- <i>Is it fast to download a movie from the BBS?</i></p> <p>Not so fast because it doesn't cost any money. Underworld took about half an hour.</p>
94	fn	Chen	121-128	109	<p>- <i>Tell me about the Internet service. Do you get a good speed?</i></p> <p>I think the speed is ok. It depends, some students think it's a little slow. I guess their computers are outdated so they think it's a little slow, but I think the speed is ok.</p> <p>- <i>Are you able to do everything you need to do with that type of speed?</i></p> <p>Yeah, access information, chat with people, play online games.</p> <p>- <i>Can you download stuff?</i></p> <p>Yes, most of the time I download from our Internet for free. If you want to download from the other Internet it will cost you some money.</p>
94	fn	Bo	91-129		<p>- <i>Do you have Internet service in your dormitory?</i></p> <p>Yes, I do.</p> <p>- <i>Is it always available?</i></p> <p>Sometimes our school will make some mistakes and we won't be able to use the Internet sometimes</p> <p>- <i>I also live here and I noticed I have problems to connect to the Internet every night from about 8 pm, what about your case?</i></p>

It's available 24 hrs. There might be some problems, but it works

- Is it fast?

Not really. Everyone in my room connects through the same router and if we are all connected it will be slower. Generally it is ok. I don't have reference point so for me it's alright so I don't care about it much.

- The four girls in your dormitory can connect to the Internet at the same time?

There's a girl from Tianjin so she doesn't live in the dormitory quite often so it's only three people using the Internet at the same time.

- How much do you pay for the Internet monthly?

20 yuan per month. It's a service from the university, so that is the lowest price for a basic service depending on the websites you access.

- What about your roommates, do they use the same or different?

They use the same as me. Other girls might use other websites not from our school.

- With this Internet service you have, are you able to download things from the Internet?

Generally we don't use it because it will cost a lot of money and our website is quite colourful and has lots of useful tools to download, movies, software... so we don't use other websites... Maybe if there's some money left.

- When was the last time you were downloading something from the Internet?

It was at the end of last month

- Did you do it from your dormitory or from somewhere else?

I did it from my dormitory. It was a foreign movie, The Ring. I haven't seen it, it's still there.

- How long did it take to download?

About one hour

- Is there any other way you can get movies for yourself, for instance, buying them outside or exchanging them with your friends?

I download from movie.nankai which is the website of the school and girls in my room might borrow DVDs, but I don't do it because my computer is slow and it can't recognise the DVD which is not an original disc. In this website I can choose from different movies. I was downloading them a few days ago, on October 3rd. It was holidays.

95		Wen	50-60	<p><i>When did you start chatting?</i></p> <p>When I was in High School the Internet became very popular in China. Everyone would have a computer at home and in their offices. Everyone would be talking about chatting and QQ. I started using QQ in High School. It was very popular in my environment among my friends to communicate with each other, so I applied, downloaded and installed the software. However, I would seldom use QQ. At that time our work schedule was very tight. My best friend, my classmates, all were very keen on their studies, so we seldom used it. It was common to have a computer, but students would seldom use it. I think now it's more popular and younger students use it more frequently than us. After we had finished our university entrance exam we had more time to use the Internet.</p>
96		Hua	164-176	<p><i>- You got your first mobile phone when you were 18 years old?</i></p> <p>Yes, before I came to Nankai University, I was in the third year of my High School. My father gave me this phone because he knew I would use this phone when I graduated, so he knew I would use it sooner or later. At that time when I was in third year in my High School I would take the National Examination so I had to contact my parents more frequently, so my father bought it for me. At that time I was living at home.</p> <p><i>- How come you needed to contact them more? Because you were spending more time in High School?</i></p> <p>Yes, at that time I was under pressure for the examination so everyday I came back from school at about 9 pm.</p> <p><i>- How far was your school from home?</i></p> <p>10 min by bicycle, so my parents cared about me.</p>
97		Akane	107-110	<p><i>- What happened after your two years in the US?</i></p> <p>I came back to a Japanese High School again. At that time the school had a LAN cable and the government, the Educational board, changed policies and allocated Internet access within schools and I got a LAN cable and I used free Internet at work, so that's why I didn't use an Internet account at home. I think I would leave my computer at school; I wouldn't bring it back because I did not have Internet at home anyways. At that time I was sharing my desk. There was not problem with my laptop because when I left everybody would leave and the door was locked, and we knew each other. At that time most of the teachers would have a computer and would bring it to school. It was common. That was in 2002-03.</p>

98		Hui	111-120	<p>When I was preparing to come to Glasgow the most important things I brought were money and computer. I got my computer in January 2004 and is the same computer I use now. Before coming to Glasgow I installed Office 2007. I also have a webcam. I bought in April 2007. I have a digital camera; I got it last year. I don't have a voice recorder. I have two external hard disks. One is an old one and the other I bought it before coming to Glasgow. The old one is 60 GB. I got it last year, maybe. My father bought it and gave it to me because the hard disk in my old laptop was small. The second one is 120 GB. I downloaded less than 20 movies into my external hard disk. I downloaded them at home. I used FlashGet (?). My boyfriend installed it for me and taught me how to use it.</p>
98	fn	Ming	165-175	<p>I have had my external hard disk for six months. I had another one before, it was smaller, maybe 10 GB. The new one is 80 GB. I gave the old one to my cousin. I got the first one because the capacity of my computer at home was small.</p> <p>I had to store many movies, music and dissertation. I would get these movies from websites that supply free download movies. At home I would get Internet without any limits so I downloaded a lot of movies. I would take them to university. I didn't apply for Internet in my accommodation, so I would only bring my laptop and my hard disk.</p> <p>I think in university not many would have external hard disks because they don't have so much to store. A few of my classmates had one, most of them were boys, they want to play games and store them in their hard disk. Sometimes I would exchange movies in my hard disk.</p>
98	fn	Danae	135-143	<p>I used Limewire before, but it's not good to download songs, it's illegal. For songs we used Limewire, for movies we used Torrentspy. In Greece I downloaded songs of what I heard in the radio. I would copy songs from my friends' CDs or memory sticks. I was downloading series. I was following Grey's Anatomy; I saw all of it. Some of them had Greek subtitles, but some of them didn't. I think I was using VLC. I would watch the episodes alone, but another cousin downloaded the episodes by herself. I downloaded the three seasons. We had the first season one year ago and later during one summer, maybe in one month, I downloaded the other two. One season I download it together, the other season episode by episode. The quality was good.</p>
98	fn	Eurydice	35-39	<p>I was also using it to download music and movies. I knew this from a friend. I downloaded many songs. I used eMule, Torrent, sometimes Limewire last year. I downloaded the Lost series, two seasons using Bittorrent. Nobody told me about Lost, I rented the first season from a video store and after that I downloaded the second and the third one back in Greece.</p>
98	fn	Nalin	166-172	<p>I did not installed a software to download movies or songs from the Internet because my cousin told me is not legal to download movies or songs from the Internet, so I have never tried (downloading movies from the Internet). I use Windows Media player to listen to songs and to watch movies I use DivX player. I have seen Friends, I got it from my friends here, my flatmates they have friends in DVD. They have all the 10 seasons. He's from France. There's a girl from Malaysia, another from California, and a girl from Chile.</p>

99		Aeneas	143-149		I have the MasterPoint Premium Service. I paid £35.00 for installation and £15.00 every month. It gives me full access to everything and more speed. I don't know how much speed because it doesn't say. I have had it for one day. I downloaded ten movies already. I use Limewire, but I most use uTorrent is better. One of the movies I downloaded was "Perfect Stranger" with Halle Berry and Bruce Willis and is good resolution. I didn't stop my computer, now is downloading also. I took off the battery from my laptop because my friend told me its life would decrease.
99		Aeneas	180-193	161	I still have problems with Windows Vista. I downloaded AutoCAD 2005 and installed it and it didn't work. I downloaded the Service Pack 2 for Windows and still didn't work, so I downloaded AutoCAD 2007 and didn't work, I downloaded the service packs and now it works, but every five minutes I must close because it ran out of something, and every five minutes is the same. I paid 100 EUR for 1 GB extra memory and it's annoying. On Christmas I will remove Vista and load XP. I also downloaded cracks for AutoCAD 2005 and 2007 from IsoHUNT, this website is to download torrents. I typed AutoCAD and they include the cracks. I have also downloaded Illustrator, Office 2000 and 2002, also Visual Basic to produce some geographic databases, and some games as well like Tomb Raider and finished the game. I have downloaded those applications because I need them in school and it's my priority. I want to download a converter from PDF to Word. I got a trial but I need a full version. I need it because with PDFs you can't do a lot of things, it's just nice to read.
100		Yin	89-98	59fn	<p>- <i>Do you download movies?</i></p> <p>Yes. We have a website and it's a local website and it's free for us to download movies. Since during national holidays I broke my computer I borrowed a computer from my roommate and I downloaded a lot of movies. My roommate went back home and left me her computer. I downloaded around 50 movies during national holidays including American series like Gossip Girl and Desperate Housewives. I have seen all the episodes of Desperate Housewives and Gossip Girl only the second season. In my laptop I have five movies. After I download and watch a movie if I think it's a classic I will keep it otherwise I will delete it. The five movies I have now I haven't seen them.</p>
101		Soo	115-128	26fn	<p>- <i>When did you acquire your first mobile phone?</i></p> <p>Soo – When I was a Middle School student, maybe 13-14 years old. I got one because it was getting popular. Before we used a mobile phone we had a pager, but after that everybody had a mobile phone. I was 11 years old when I acquired a pager. My parents bought me one. They got me one to contact other people. There I could receive messages from everyone. At that time you could use a public phone, call a number, indicate the pager number and they would send a message, but it was not a text message. My parents gave me a pager because sometimes it was difficult to contact me, that's why they bought it for me, so whenever I received a message I had to contact them. Sometimes I called them, but sometimes I sent a message. My brother did not have a pager, only me. Later I got a mobile phone. First, I asked my parents for one, but I didn't get it. I wanted one because I made lots of friends in Middle School, it was 1998-99. Other classmates also had mobile phones. My parents eventually gave me a mobile phone.</p>

102		Panos	80-84		To be honest, I got a mobile phone because I was envious... I saw a picture of someone who was really handsome with a mobile phone so I said to myself, 'If you want to be handsome, get a mobile phone.' No one else my age had a mobile phone, so I did it. It was strange to have a mobile phone in those days.
103		Adara	44-53	40fn	My brother was a computer technician, he went to a technical school and he needed to do that. My brother was downloading things from the Internet. I knew about the Internet from the second year of High School, I was 13 or 14. I am very fond of the radio and used to listen to the radio a lot. Radio programs would advertise Internet providers but to chat with friends, not to search for information. My brother used to buy magazines of the Internet and I saw Web addresses. I saw photos of websites and I realized it was to search information. I asked my dad to explain what it was. He told me that computers were connected to a network and you could visit those places, but I never used it. My brother started using the Internet some years later when he was a teenager (16) and he knew how to download things and browsing.
104		Osman	683-689		In the next image there's a newspaper I was reading the Hindu.com which is printed in about nine places but this is South India. This is one of India's oldest papers, it started in 1885. I check this website everyday at 12 o'clock over here. I get through all the news in my state and city. I also go to the cartoon bit where they have one new everyday. Then I go to opinions with the Editorial and Op-Ed page and I make a point of reading the Editorial so I spend half an hour to read this different news. The Hindu has a collaboration with The Guardian but only in the paper version.
105		Aeneas	450-458		First of all I check contra.gr it's a sports website with information. Here you can see the main topics and what is on Greek TV. There's a section with images of the first page of sports newspapers in Greece. Here in the UK they don't have newspapers dedicated to sports. We even have three newspapers dedicated to one team. We are very fanatic of football and basketball and there is a rivalry between Olympiakos and Panathinaikos. If I were in Greece I would buy some of these newspapers but before or after a game I would read this type of newspaper to be even more fanatic. My team is Panathinaikos and Greece 3 is Olympiakos. I would pay 1 EUR for each newspaper.
106		Hyun-Ki	123-148		Would pay to website to download stuff. None of those services are free... although there are some free services Apparently websites are brokers for pirates Sometimes they are caught by the police for this type of job. He knows because website posts a notice about it Websites are in Korea because text and address is in Korea They got caught by Korean police Some sites come back online, but some they completely disappear. You have to choose carefully It happens but not that often. Some websites would pay money back

					<p>In a case he paid 10,000 won to some site and the site got caught by the police, and they came back like 6 months later and he still had his credit and he got some sort of compensation for the disruption</p> <p>(40:00) Last time he downloaded a movie from this site was 3 days ago, "Wanted" and saw it already. Movie is good quality.</p> <p>Site sometimes has CAM quality but eventually a good quality copy</p> <p>He paid 3-400 won for the movie, like a Coke can!. He has a credit of 10,000 won in the site</p> <p>It downloaded in 5 min. Connects through LAN cable. 2 files around 700 MB</p> <p>Larger sizes are sometimes available</p> <p>Would keep the file, but if he needs space would delete the file</p> <p>Doesn't share the file with friends because it's cheap and everybody can do it</p> <p>He thinks that if sharing with random people he can get caught by the police for piracy and would have to pay a fine</p> <p>Does not share movie on USB because it takes longer than to simply download it over the Internet.</p>
107		Shiori	71-77	116	<p>J-Bank was not convenient for me; there were many people using DoCoMo so I changed to DoCoMo. I did it so I could use emoticons; there were many emoticons in DoCoMo. Using J-Bank I could not send emoticons to a phone in another network. That's the reason why I changed; most of my friends were using DoCoMo. In DoCoMo I would have to pay about the same. I stayed with DoCoMo for 2-3 years and then I changed to AU. AU, the handset, was very artistic and fashionable; there were more emoticons than in DoCoMo; it was cute!</p>
107	fn	Chihiro	151-156	114	<p>- <i>When did you change for a second mobile phone?</i></p> <p>I think after graduation. I changed because the battery was not working fine. I used to use DoCoMo first for three years. Then I changed for AU because at that time AU was getting cheaper and the emoticons were better than DoCoMo. I knew it because I compared three companies; I did it with my friends' mobiles and I also went to the shops and check on the Internet. At that time lots of friends of mine had AU.</p>
108		Chin	136-153		<p>(25:50)[- <i>Here in Korea there are three mobile service providers. How many of these companies have you used?</i></p> <p>I used my first provider for two years, but I have also used the others. Then I went to Japan and came back and used KTF and now I'm using SK, so I have used all the companies.</p> <p>- <i>Why do you change companies, for any particular reason?</i></p>

					<p>If I change from one company to another they will give me a discount or some other option like a cheaper mobile or something else.</p> <p>- <i>Did you change because of the things they will give you?</i></p> <p>Yes. Sometimes they can give me a free mobile for changing companies and that's why I would change.</p> <p>- <i>What happened to your mobile phone number? Does it have to change every time?</i></p> <p>Yes, because if I change companies I should change the number, so I changed numbers every time I changed companies. I would send a message to my friends to let them know my new number.]</p> <p>After military service would collect numbers by asking their phone numbers.</p> <p>He would notify some people, but not all of them, of the change. Only close friends. He did that after coming back from Japan to Korea.</p>
108	fn	Shiori	90-93		<p>- <i>Did you have to change your number every time you changed networks?</i></p> <p>The portability service began recently, maybe 2-3 years ago, so when I changed mobile phones I changed number and email address, but two years ago I changed from AU to DoCoMo and kept my number because I used the mobile phone for work.</p>
108	fn	Shiori	98-103		<p>- <i>When you had to change numbers, how did you notify your friends?</i></p> <p>I sent them emails telling them about my phone change. I did this every time I changed companies. I would send an email from my new mobile phone. I would have to write to 100 people. I had to do this every time I changed companies. I would do this in groups of 10 people. Nowadays DoCoMo has a service to send your new address to all your contacts by connecting to a machine.</p>
109		Chen	121-128	94fn	<p>- <i>Tell me about the Internet service. Do you get a good speed?</i></p> <p>I think the speed is ok. It depends, some students think it's a little slow. I guess their computers are outdated so they think it's a little slow, but I think the speed is ok.</p> <p>- <i>Are you able to do everything you need to do with that type of speed?</i></p> <p>Yeah, access information, chat with people, play online games.</p> <p>- <i>Can you download stuff?</i></p> <p>Yes, most of the time I download from our Internet for free. If you want to download from the other Internet it will cost you some money.</p>

110		Christos	50-60	19	One time my computer broke and I had to format it. During the process I needed the help of a friend who was an expert and helped me a little. My computer was working with the virus and I made a backup of songs, photos, and all of this; later I formatted and put back the programs because I had the CDs. My computer broke because of a virus, I was using an antivirus but the antivirus was old and I hadn't updated it; I didn't have a firewall, only an antivirus. I had an antivirus that you would pay for it, but I had a copy from a friend, a pirate version. This happened four years ago. From this I learned to update frequently my antivirus and firewall, to update Windows frequently and to clean the hard disk from strange items or programs. Now I only have the necessary programs. Now I only have Office, MSN, Limewire, Google Earth, DVD player, printers, sound, and two or three other programs.
111		Hyun-Shik	196-201		Maybe I would keep it for longer if the battery lasts more. I have changed the battery once. A battery can be charged 2000 times so if I charge the battery every day now I have charged it like 1000 times, so I can use it for one year. I charge this mobile every day because I know it's good to charge the battery before it runs out completely. I do it as a habit. After I come back home I plug it in the charger. I did not carry this mobile when I left for Finland, 'cause I knew the system was different.
112		Hyun-Shik	139-151		<p>- <i>You were using the Internet in Finland. Were you doing something different?</i></p> <p>I was also using the Internet through the building network and wireless. I said Finnish technology was developed, but for me it was too slow compared to Korea. It was very obvious even if you were trying to open web pages, it takes about 5 seconds. You know in Korea after you click it's there. For me it was impossible to check movie clips because it was too slow. I tried accessing Korean sites and I think that's why it took such a long time. I remember that when I tried accessing Finish or local web pages it was fast enough, but for Korean websites it took one minute, I think.</p> <p>- <i>Then you went to the UK, how does it compare, was it the same as Finland?</i></p> <p>It's quite hard to compare because there were different companies, I think. In the UK the Internet was included in the bill, so I didn't know which company was that, but it was quite fast. I guess at the time I got used to European speed! Maybe I stopped accessing Korean websites.</p>
113		Zhi	38-47		I would often download music and movies. I like all kinds of music. I was using BT to download them. I was 18 years old when I started university. I used another program to download music and movies called (Shunley). I used BT first because it was used by my friends, but then another friend told me that with (Shunley) it would be faster. Sometimes I would still use BT. To find the songs and download them I would use Baidu, but for movies (Shunley) and BT. The speed of the download would depend on how many students were connected, in university many students were connected to the same network and it would be slow, but if you download during the night it would be faster, but it would take one or two hours to download an entire movie. At home it was even faster.
114		Chihiro	151-161	107fn	- <i>When did you change for a second mobile phone?</i>

					<p>I think after graduation. I changed because the battery was not working fine. I used to use DoCoMo first for three years. Then I changed for AU because at that time AU was getting cheaper and the emoticons were better than DoCoMo. I knew it because I compared three companies; I did it with my friends' mobiles and I also went to the shops and check on the Internet. At that time lots of friends of mine had AU. Recently I changed to Softbank because it provides a system to call for free other Softbank users from 1 AM to 9 PM and email it's free. The system it's a special plan, so it's not for everyone. Some of my friends changed to Softbank but I talk a lot so I found it was better to change, then other friends changed. Actually, before I changed other Japanese friends had it.</p>
115		Miho	122-129		<p>In the Bay Area I got a contract with a different company, Sprint. I chose that because everybody told me it had a better connection in that area and everybody was using it so we could talk for free any time of the day, that's why I changed. All the time I was in the Bay Area I was using Sprint. After I graduated from school I decided that life in society is not for me so I moved back to the mountains in the north of San Francisco. I was there for one year and then I came back here. While I was there I changed again to AT&T because I did not have reception; so I have had three different companies.</p>
116		Shiori	70-89	107	<p><i>- Did you change phone provider?</i></p> <p>J-Bank was not convenient for me; there were many people using DoCoMo so I changed to DoCoMo. I did it so I could use emoticons; there were many emoticons in DoCoMo. Using J-Bank I could not send emoticons to a phone in another network. That's the reason why I changed; most of my friends were using DoCoMo.</p> <p>In DoCoMo I would have to pay about the same. I stayed with DoCoMo for 2-3 years and then I changed to AU. AU, the handset, was very artistic and fashionable; there were more emoticons than in DoCoMo; it was cute! My boyfriend also had AU so among AU users calls were very cheap.</p> <p>Later I changed again to Vodafone, formerly J-Bank. This time I changed because it was cheaper. I changed mobile companies often because I could get a new handset cheaply. During the two years I was using J-Bank I changed handsets 2-3 times. When I was with DoCoMo I also changed handsets because I would often drop them and break them; also rain would fall on the handset. I was careless with my phones.</p> <p>Every time I changed handsets I would have to pay 2,000 yen, but not very expensive; I never paid over 10,000 yen. Just recently new handsets are very expensive. In the past it was very cheap. In the past I could even get a free mobile phone, but now it's expensive.</p> <p><i>- Tell me about your current mobile phone.</i></p> <p>I bought it two years ago with DoCoMo. My family always uses DoCoMo and there's a family discount. When I call my family it's cheaper and the handset was half-price.</p>
117		Yon	101-108		<p><i>- Did you notice the difference between the US and Korea?</i></p>

					I want to say a little bit, but not a lot though because I heard a lot from my parents so it was not like a shock to me, but when I came here, the cell phones, the shapes and designs, how varied they are, were totally different from the US; they used it only for calling or messaging and that was about it, the shape or design doesn't really matter, but here it was totally different; different colours and designs and shapes. Over here you have cameras and mp3 and different functions and I thought that was kind of cool.
118		Yen	118-122		I have always had the same number. I bought my third phone one month ago. I paid 288 yuan. I bought this one because my second phone had multiple features and it was not cheap but the features were not really helpful like the mp3 and the camera and Bluetooth; I don't think they are very useful for me so I got a cheap one. My previous phone was a Sony. I just need to make calls and send messages.
118	fn	Hei	126-137		<p>Thinks she might have 30 min free calls and about 100 free messages</p> <p>She calls more than 30 min per month, but doesn't know how much.</p> <p>Thinks she sends around 2,000 messages per month</p> <p>Has had last mobile handset for 2 years. Changed to this one because previous one broke.</p> <p>(35:00) Really wants to change for a new mobile but it's expensive. At least would have to invest 300,000 won for a good mobile phone.</p> <p>Current handset can't get TV, so she would like to have that service. Camera is not good, so would like to have a good camera in mobile too.</p> <p>Mobile phone is Motorola and "Motorola usually doesn't have many functions compared to Samsung or LG, and so I want more functions"</p> <p>Would like the haptic phone. Heard it costs 700,000 won</p>
119		Soo	227-234	31fn	<p>- <i>You said that you spend on your mobile phone between 80-100,000 won every month. Do you pay by yourself?</i></p> <p>Soo – Yes, if I have money, and if not I tell my mother. The highest bill I ever paid was 200,000 won. That happens if I have a girlfriend and she wants to talk a lot using cellphone; it has happened. Sometimes if I want to use an online game on my cellphone we have to pay a lot, or for international calls, or for sending pictures.</p> <p>Sun – The highest bill I ever paid was 70,000 won. Usually I pay 40,000 won. I prefer using text messages and it's cheaper than calling.</p>
120		Chin	229-235		<p>(44:25)[- <i>Have you used the video call feature in your mobile phone?</i></p> <p>In the street if I stare at my mobile people will think I'm crazy so I don't use it.</p>

				<p>- Have you used it at least one time?</p> <p>I did, although in my room. Maybe if I had a girlfriend, which I don't have now, (45:00) I think I could use it to talk face to face in my room but not in the street.]</p> <p>Video calls are more expensive than voice calls, but he's not fully sure.</p> <p>He used the video call when he bought it. He tried it with a friend. Image was so so.</p>
121		Riko	87-96	<p>Now I'm not using my mobile much to send emails; I call more. I call more because it's easier. I started calling more this year because I have free calls with WILLCOM. I got a second mobile phone because I can talk for free with many of my friends. I pay 3,000 yen per month on this phone; with the other phone I pay 3,500 yen. I still have the other mobile phone because that is for my job and my landlord and the other is just for my friends. I always carry both mobile phones with me. I got the WILLCOM phone two months ago. I knew about the deal with this phone for several years, but I did not have the change to get it because my friends did not have it, and I did not have the money to buy it. When I finally got this mobile phone four other friends also got it already.</p>
122		Hei	75-85	<p>In Finland it was easier to acquire a mobile than in Korea because in Korea has to present many documents.</p> <p>(20:00) In Finland only has to pay for the handset and get SIM card. In Korea needs to register with a service provider.</p> <p>In Finland handset was cheaper, although she bought a simple one for 35 EUR</p> <p>In Korea could buy a simple one too, but "in Korea we are very sensitive about design and which functions it has."</p> <p>In Finland had a different mind and only wanted a phone</p> <p>In her mobile phone was spending around 20 EUR per month, less than in Korea</p> <p>In Finland would use mobile for calls and text messages and sometimes to play games, as alarm clock, as watch. As basic phone did not have TV</p>
123		Yon	61-65	<p>- Then you went to the US, did you also get a mobile phone over there?</p> <p>No during the two years I was over there. School didn't allow us to have a mobile phone at school, after school it was totally fine. I didn't need it and it was not allowed at school, and I guess it was expensive but I never figured that out because I was never interested. It was a private school.</p>
124		Cho	251-257	<p>(47:25) [Actually, I use a plan for teenagers. I have used it for over ten years because they allow me to still use it. It offers 550 free text messages and 60 free minutes. I prefer using text messages.</p>

				<p>- <i>Who is still allowing you to use this service, the company?</i></p> <p>SK Telecomm. They check my age; actually all the companies offering the same option will call the customers to tell them they are no longer teenagers and that they have to change plans.]</p>
125		Chihiro	133-143	<p>- <i>When did you acquire your first mobile phone?</i></p> <p>I got my first mobile phone in January 2000, I was here in Sapporo. I did it because many people had it and I was not at home so much and I found I needed a mobile phone to keep in touch with friends and in emergencies. To acquire a mobile phone in Japan you go to a shop and chose what kind of mobile I want, then ask the shop staff and fill the form and they take some time and if it's ok to get the contract, and if it's everything ok you get the mobile phone. You have to show an identity card, passport or insurance card or a driver's license. The first time I showed a student card, but at that time I didn't show a credit card. I had to present my parents' agreement because I was under 20 years old. The parents' agreement is a form my parents sign. At that time my mother came and she signed it.</p>
126		Zhi	475-501	<p>(See photographs here: D:\PhD Studies\A Model of Appropriation of ICT\WAYD\20071104 - China 2)</p> <p><i>What do we see here?</i></p> <p>This is my textbook and these are the slides for the course material. They gave me this textbook. I write and highlight the textbook. I printed the slides from model and I put it in this red folder. My phone and watch are there. The toilet paper is also close by. My laptop is an IBM. On my desk there's also food. I have chocolate powder, biscuits, kiwi which I like, oranges, and a toaster I bought for bread. I have this food here because it's more convenient and I don't have to walk out. The bread for my toaster is also in my room; it's more convenient. I'm lazy. I don't have a kettle, I plan to buy one but I haven't. I like tea, China 1 has one, she likes tea very much any kind. She brought some Chinese tea and also bought a lot here. She also likes inviting friends to her flat to drink tea and chatting. I invite some to have toast.</p> <p>My curtains are closed because it was late; I think I took this picture at 8:30 pm. I keep my curtains always close at night. Sometimes in the day time I also close them because the sunshine is too bright and I can't read properly. My clothes are hanging besides the door if I put them in the desk is not convenient because of the books. I have nothing on the pinboard. I never put anything there.</p> <p>When I received the message I was cooking and eating my supper and when I came back I saw your message. I was having dinner in the kitchen. I will have dinner in the kitchen if someone is also there and I would talk with that person. If I'm alone I would prefer to have dinner in my room. I would have dinner and listen to music and surf the Internet. If it's at noon and it's lunch I would chat with my friends. I don't watch movies because it's quite a long time and if I can't finish I can't concentrate on my studies. If I watch it I should finish it.</p>

					My flatmates are from China, England, Thailand and Nigeria, all of them are girls. I get along well with them; they are just flatmates.
126	fn	Ping	410-429		<p>You can also see a bag with toiletries from BodyShop with cleanser and toner. My bedroom is in a mess! It's always like this! There's also potpourri that you can smell if you feel tired. There's also a CD from the textbook on "Corporate Strategy." The book was given by the university. My laptop is also in the picture. A post it note is a reminder to myself in English: "Study Hard!" On the pinboard are the English names of food because sometimes I don't know them. There are also my classmates' internal numbers on a post it; there are more than 20, I think, not only Chinese. I have that many because I have a lot of friends. There's also a pile of books from the library to do research for the assignment on some theories. I borrowed these books for the assignment and they are still in my room. There's also a blue binder with material and a small bag for my phone to protect it. I have a calendar I don't use.</p> <p>I have cheese biscuits and hot dogs. They are there and not in the kitchen because I often have my meals in my room so it's very convenient to have them there. I eat those hot dogs as they are; I don't like cooking. I'm a lazy girl! There's also a bottle of grape juice and wine in the upper shelf. I like drinking wine! I don't drink so much to avoid getting drunk. I drink at night after meal I will try a little and before I sleep I will try a little. After drinking wine you can sleep well.</p> <p>I don't go to the gym because I don't have time. I try to keep slim doing some Yoga in my room. I only do it three times a week. I didn't take any classes about it, but I watched a website with some introduction and I follow it</p>
127		Hyun-Shik	48-53	29	<p>- <i>Before you got your laptop, did you have a computer for yourself in Ajou University?</i></p> <p>Yes, I had a desktop computer in my dormitory. It was common to have a desktop, specially for Korean students is kind of another necessity. Everybody brought a computer or they bought it around the Suwon area. My roommates had computers. You will see every student using a computer in their dorm. It looks like a PC room.</p>
128		Yon	115-121		<p>- <i>You were living on campus at that time.</i></p> <p>At that time I was living in university housing for just one semester. I decided to live here because the transportation system was so hard, but when I got in here all the heaters and the A/C so I didn't like it a lot. It's too dry when the heaters are on and when A/C is on it's too dry and cold, and we where four people and it was all crazy and the girls are like talking and the lights are on until three AM so I couldn't sleep so it was very inconvenient.</p>

129		Padma	1223-1221		<p>No I was not. I was specifically not using the laptop because I got so fed up with staring at it for three months because you get so dependent on the laptop here. On the morning when I wake up I switch it on and everything is on the laptop. A lot of people here were complaining because I didn't get in touch with anyone. I had lots of offline messages and when I went online once in a while I would just reply, "I'm fine" and that's it. I think I did not use my laptop for the first 4-5 days in India. I think the second day I messaged everyone to say I was safe and sound. I checked my email account after 4-5 days but I did not reply anyone, not even my boyfriend. He's complaining about it! But I like to take my space and time apart.</p>
130		Hui	716-737	70	<p><i>With you current boyfriend how many times did you have contact with him for the past week?</i></p> <p>Every day using QQ or calling. I always call him because it's cheaper to call from here. I call him whenever I want to call him; sometimes in the morning or at night. I won't call when he's sleeping. I also chat with him through QQ almost every day. We chat for different lengths of time depending if it's night or day in China, or if I have a class or him.</p> <p>I have pay as you go with Mobile World and that's the cheapest one to call China directly. I knew about it because the first time I entered The Carphonewarehouse there was a man there and he advised me on this card. I have topped up my mobile 4-5 times since I came here; every time I put £10. Sometimes I write emails to my boyfriend. Sometimes I would write emails if I'm not satisfied with him or I want to argue with him because we never argue directly, just by email. He does reply to my emails. Sometimes we discuss when chatting and sometimes afterwards. We don't argue over mobile; maybe once or twice.</p> <p>I don't argue with people directly, not just my boyfriend. I prefer arguing while chatting because I can not feel his emotions but through mobile phone I can. If we argue over the mobile and I feel he's not happy, or doesn't agree with me, then maybe I wouldn't tell him the rest, but on QQ I can totally tell him all I want to tell him.</p> <p>I don't video chat with him because the connection is not good in the accommodation so we always chat without a camera. Since I came here I have tried video-chatting with him less than 20 times.</p>
131		Fai	99-105		<p><i>- Why do you write a blog?</i></p> <p>On the one hand it's a good way to share your happiness or your thoughts with your friends, and you can also know what's happening to your friends through their blog. On the other hand, sometimes I write for myself. I have several good friends, they read my blog; they will always write comments for me. Four friends at least follow my blog. Three of them have blogs and I also read their blogs. Some of them write more frequently than me, some not.</p>

132		Nilaya	929-934		<p>It was my boyfriend's birthday yesterday. I sent him 23 emails because he turned 23. I just kept saying "Happy Birthday!" in different colours and different fonts. I sent them in the afternoon here in between classes, but I wished him at 12 am India time. I sent him a card. I got him a watch and a sweater which I will send when my parents come here. I bought them in Marks & Spencer. I'm still not sure when they will come because I want my mom to come here and then we will go back to London.</p>
133		Hyun-Shik	39-46	43	<p>- <i>Were you using the Internet at that time?</i></p> <p>Yes, from 1998. We have been using it, but my parents, they don't use it. After I went abroad my chatted in Skype. I taught them how to do it. It was quite tough; I have to teach them from the beginning to operate the system. I taught them how to power on, how to log on on MSN. I tick the automatic sign in option. I told them how to see my id and double click so we could talk. They were using their own computer because I bought it for them before I left for Finland; it was my gift for them. I got a laptop since 2005 after I finished my military service. I'm still using that laptop; it's an HP.</p>
133		Hyun-Shik	121-127		<p>- <i>How frequently were you in touch with your parents?</i></p> <p>At least twice per week; every three days to let them know I was ok. We would chat using the webcam through Skype. When they didn't know how to control or activate the program I would call them and remotely control their computer from Finland. NateOn has that function. I just saw the function and I tried; it was like an insight! My parents at home have Skype and NateOn. I got accounts for them. I would call them after midnight for me.</p>
134		Yen	155-161	6	<p>- <i>When will you give your phone to a new person you meet?</i></p> <p>Maybe if we continue meeting each other I will give my phone number. Sometimes I have to give some person my telephone number because, you know, like the people who sell the kits for experiments. If they have the product we want they will call me and we will order it. On a personal basis, in the tae kwon do club when you meet a new person, and if you think they are good enough, then I will give my telephone number. They will usually ask for my number, I would offer my phone not very often.</p>
134	fn	Mei	137-147		<p>- <i>Let's suppose we meet for the first time, would you give me your mobile phone?</i></p> <p>I think it depends on the situation. If we meet very well maybe I will leave my cell phone with you.</p> <p>- <i>Let's suppose we meet, when would you give me your email account? What I'm trying to ask is when would you give someone your mobile phone or your email address or your QQ account?</i></p>

					I think the QQ account or email account is ok, maybe if you ask for it I would give it to you. If I give my email account to you it would not disturb my life. If I want to reply I would do it and if I do not want to I would ignore it. However, the telephone number, as a girl I would be a little bit cautious. If we know each other I will give you my number.
135		Bo	130-134		<p>- <i>Do you have a time to use the Internet? For instance, I do it at night, what about you?</i></p> <p>Me too. In the morning I might have to do something else. My courses are during the day. This semester I don't have many classes. My first class yesterday was at 8 am. My last class yesterday ended at 8 pm.</p>
136		Chen	210-215		<p>- <i>Does it mean that you only access the Internet at night?</i></p> <p>Maybe sometimes I would stay in my dorm in the afternoon, but in the morning I'm usually in the library. If I really need the Internet when I'm in the library I will go downstairs in the second floor and there's an Internet reading room. I haven't been there recently. When I was an undergraduate student I found you could easily find a sit in the room.</p>
136		Hui	197-205		My lectures in the evening begin and 5 pm and end at 6:30 pm; it's an English language course in the Language Centre. After lectures I would stay in the Language Centre working on the course. After I finish I go back to my room and have dinner and use the computer. I usually have dinner by myself; some of our friends will come to our flat because we are three Chinese girls. We cook together but for ourselves. If we don't have English course we would cook at 6:30 pm, if we have at 7 pm. We are all attending the English course but not on the same day. I have dinner in the kitchen. After dinner I would chat on the computer, watch movies and listen to music but just with the computer, no books!
137		Zhi	848-862	142	<p><i>For the past week, how many times did you have communication with them?</i></p> <p>I called them about once a week. The last time I called them was on Saturday. I frequently meet my father on the Internet. I call them using my mobile phone with Mobile World; it's very cheap, just 6p per minute. When I came here I heard about it from some classmates, but to call here is expensive, about (16p). I usually call them at 1-2 pm; they were about to sleep. Sometimes I call them for 10 min and sometimes for more than ½ hr. This time I called them for ½ hr and I ran out of money. After calling I received a message telling me my credit was low. I talk to both of them, but last time my father was not at home so I just talked to my mom. I talk more with my mom; she always tells me lots of things, how to cook and how to keep warm to not get sick. Moms are always worried about that. This month I found out that a phone card is quite cheap but just for December; every Saturday calls are free and every Sunday it doesn't matter how many calls you make, it's just 15p. You can get this one from the Post Office. We found it together and we bought it together. The card is just £5. You can also make calls on weekdays and then is just 2p, also very cheap.</p>

137	fn	Osman	1085-1097		<p>In general, to communicate with her I use Skype, email and GMail chat. She's also on Facebook. I would never call her over the phone, I would always use Skype and not waste money. I have also been video-chatting. The phone card is also the first time I'm buying it. For two weeks I didn't hear her voice because I went to Dundee. I called her on Christmas and she called me in New Year. Today she came online and she told me she was coming back home. Before holidays we were using Skype to video-chat. There's something in my connection that allows me to have good communication. I haven't had any problem to communicate since I came here. In the case of my family it's the same, but I can't see them because there's something wrong with their camera. The last time I talked with my family we were talking for one hour or more because everybody including family and neighbours would come and talk because they all wanted to wish so I had to tell everyone individually what is happening here.</p>
138		Padma	711-720		<p>I am really busy and everyone is complaining that I haven't been in touch on Orkut. I haven't even checked it in a very long time. One reason is because my computer was not working but even before that I was finding difficult to make time because I had a lot of work to do all of a sudden. When I was free I would rather just sleep rather than sitting and telling people I'm fine. Orkut is more for the people I don't really know much and with whom I would say hi, hello, how are you. With these people I often scrap when I'm bored, small talk, but even the same through MSN. Not all of them are on my MSN. On Messenger I have more close friends. I also have contacts with whom I haven't spoken in a long time but on my Messenger there are not many contacts, 15 of them, I think, not many I added a few more now, but that's it.</p>
139		Padma	1017-1051		<p><i>How do you keep in touch with him?</i></p> <p>Over the phone and now Messenger. We don't have a time to call each other; it could be any time of the day or night. It's very irritating because he can't sleep, apparently, so he calls like at 3 am when I'm sleep and I get so irritated. He just calls!</p> <p>He's doing a Master's in Management in International Business. He changed fields because he was never interested in bio-tech but he just joined and then he realised he wasn't interested but he just wanted to finish it.</p> <p>Since last Friday I talked to him almost every day. Sometimes we chat because when I'm at home I'm studying and I'm online. The length of time we talk also varies and it's never a fixed time. We don't really chat much. We just call each other up; it's easier.</p> <p>He emails me. Actually, I sent him a hate email because I was really angry and I told him he never listened to anything I said so now he could read it. But there was a time when he came to Leeds before me and during that period I just sent him emails because at that point he didn't have a phone yet and that was for two weeks and there was no other way of contacting him.</p> <p>Sometimes we also communicate through Orkut but not much.</p>

					<p><i>Do you think you have lost anything since arriving to this country?</i></p> <p>Maybe I should not say this, but I'm kind of happy now because I need a lot of space in my relationship so I'm kind of claustrophobic if someone is there all the time. It irritates me to see someone the whole day and then you come home and speak with the person on the phone, and in this way I kind of have my space and do the things I want. I like to spend time, but not all the time because I like to talk to other people, my friends and all that, and there were some times when he wanted to talk and I had things to do, and he would ask what was more important than him, and you can't answer that. I'm not a very good girlfriend.j</p> <p><i>Do you think you need more communication?</i></p> <p>I think this is enough. We both have O2 plans and we both have 600 free minutes and we have finished them; last month that happened, he finished his and I finished mine. We finished 20 hrs of free talk in a month. However, we continued and got a long bill because of that. I have tried video-chatting with him around two months ago just when I arrived, but it was not working and forget about it. We did video-chat when I was still in India and he was still here. His connection is very good, he can do everything. He also lives in university accommodation. He pays a little bit more than us but their rooms and everything is much better.</p>
140		Adara	788-791		I use Facebook only to upload pictures and so my friends have the chance to see my photos because sending them over email is quite time consuming and there's a limit on the size of the attachment so I decide to just upload them to Facebook. I have 16 albums. I like posting pictures.
141		Yin	220-227	66fn	I haven't added a new friend in QQ for a long time. Friends on QQ are very old friends and most of the time I use QQ to chat with classmates from junior High School and High School. I don't use MSN, I think QQ is enough, but maybe I will apply for an account when I begin working because my sister told me that in her job they use it frequently to communicate. I keep in touch with my friends in QQ. I use it once a week. I usually open it but it's just there. I like hiding on QQ and if someone says they want to talk to me I will. In QQ I have some contacts from my friends in Nankai University, but my friends here they just call me.
142		Zhi	848-854	137	<p><i>For the past week, how many times did you have communication with them?</i></p> <p>I called them about once a week. The last time I called them was on Saturday. I frequently meet my father on the Internet. I call them using my mobile phone with Mobile World; it's very cheap, just 6p per minute. When I came here I heard about it from some classmates, but to call here is expensive, about (16p). I usually call them at 1-2 pm; they were about to sleep. Sometimes I call them for 10 min and sometimes for more than ½ hr. This time I called them for ½ hr and I ran out of money.</p>
143		Zhi	972-989		<i>When you wanted to relax during these Holidays, what did you do?</i>

					<p>I think my only entertainment was listening to music, chatting with my friends and calling my parents. I also watched movies and TV series that I brought from China in my hard disk. I prefer series because movies are too short and I find that some of the movies I can't figure out what is the meaning. TV series I can watch for a long time just to pass the time. I like movies that present daily lives; I don't like movies about war or fighting.</p> <p>During these holidays I was watching a Chinese and a Korean series. These series I got them from my friends here, maybe they brought them from China. During these holidays I watched two seasons; each season has 30 episodes. I can watch one season in two days. Two seasons is not too much for me. I always watch a whole season during the night in China. My friends would understand me. This time when I got up and after checking my email I would start watching until night when I get sleepy. The next day would be the same; whenever I have time I would watch it.</p> <p>During these holidays I also visited my friend in her flat and I also went to the supermarket, so I didn't just sit there for the whole day. I watched a season and began another one before I went to London during the two days I was resting. After I came back I finished the second season before I started studying.</p>
144		Adara	286-293	160	<p><i>How do you keep in touch with your family?</i></p> <p>I installed Skype on my computer a month ago because my brother told me I should do it. I didn't know about Skype; another Greek friend in Glasgow told me about it too and she told me it was very convenient because she saves a lot of money and because during the preessional course I had already spent £60 in phone cards and it was quite a considerable amount and since I was talking with my parents just for 2-3 minutes; MasterPoint is quite expensive and I also made some phone calls here in Glasgow to the banks, the doctor, the hospital.</p>
145		Zhi	751-756		<p>I keep in touch with my boyfriend almost everyday and we meet each other on MSN. We don't agree on meeting there, but he knows when I'm there and if he has time he will be there. For the past week we talked almost every day because he was busy and I was busy as well. We don't talk just chat because maybe his friends are there. We chat over MSN. I seldom send him pictures over MSN because he's always in the lab and it's inconvenient.</p>
146		Hua	237-251	57fn	<p><i>- When did you get your own computer? Is it a laptop?</i></p> <p>Yes, I bought it in the second year of my university, one year ago. It's Acer.</p> <p><i>- Is it working fine?</i></p> <p>Yes, very well. If it has some problems I will turn to my friend; he can repair it for me. This laptop was infected with virus so I cannot delete the virus through the software, so he did it for me. He's my classmate.</p> <p><i>- Do you use an antivirus?</i></p> <p>Yes. I had one before my computer got infected and I still have the same one.</p>

					<p>- <i>Do you have any idea why your computer got infected?</i></p> <p>Maybe I just saw some website and downloaded some thing and was infected, or maybe I used my USB drive and there was a virus and I inserted it in my computer and it got infected, but I just don't know the exact reason. If I know the exact reason I won't be infected.</p> <p>- <i>How long did your friend take to repair your computer?</i></p> <p>After three days he gave me back my laptop.</p>
147		Aeneas	27-31		I was fifteen when I requested an Internet connection. We were using the same computer. The computer was in my bedroom. I wanted the Internet because we were learning about it and surfing in classes in school and I liked it. In school we were asked to search information about our assignments and also to translate information from Greek to English.
148		Ping	57-58		I started using MSN because it was more international, more global. QQ is only known in China.
148		Ping	150-151		I started using MSN Space because it had more features than QQ Space: MSN was faster and foreigners can see your website; the QQ Space is limited to China.
149		Jun	195-198		<p>- <i>Why were you using MSN before?</i></p> <p>Because I think we can communicate directly and is very quick and I know in many companies people communicate with others with MSN rather than QQ, so at that time I thought I should have an MSN account,</p>
150		Zhi	212-215		I bought my laptop just before coming here. I changed my laptop because the old one sometimes didn't work and it was manufactured in China. That laptop is at home, and sometimes my father will use it. My new laptop is IBM, I bought it in Shanghai. In this laptop I installed MSN and QQ.
150	fn	Ping	129-132		<p><i>When did you get your laptop?</i></p> <p>I went to Hong Kong to buy electronic products. I bought my laptop one month ago, before I came here. This is my first laptop. My laptop is Compaq. The price in Hong Kong is almost the same as in China, but the quality is more reliable.</p>
150	fn	Aeneas	129-130	161	I paid 1,400 EUR for my Toshiba Satellite laptop. I bought a laptop because I would be an MSc student with many assignments, essays, etc.

150	fn	Christos	71-76		I bought a computer to come to the University of Glasgow. I bought it in July 2007. I paid €900.00. The first thing I put in this computer was Office and MSN, later the programs I use more frequently like Limewire. I had Norton but only for fifteen days so I uninstall it and installed AntiVir for the first time. I installed only one game (Mayhem). In the beginning I had Windows Vista and since this is a new program I had some problems but when I did 10-15 updates it worked fast.
150	fn	Nalin	149-153		I bought my laptop myself. I had a friend from India working in that shop and my cousin knew that friend as well so he came with me, so we selected the best deal because at that time there was a discount going on in PC World so I got an Acer £600 worth laptop for £400. It has Vista Home Edition with 1 GB RAM. It's a Pentium core two duo processor with a battery back up of 2 hours.
150	fn	Padma	126-132	8fn	When I was planning to come here I bought a laptop in India. I paid around £400.00. I got it so I can use Yahoo! and GTalk. Other than that I had to do lots of research for my course and laptops are handy. I spoke to one of the former students who advised me on getting one because she said it would be required, so rather than coming here and then buying one I just got it from back home. It's a Lenovo. I explained to my parents that I needed it for so and so reasons, and if they wanted me to be in touch with them.
150	fn	Nilaya	189-196		I don't have a laptop; it's coming. My dad already purchased it and he's coming next week. He got a Dell Inspiron pink colour. He got it from Malaysia from Penang because he has people working there. He got it very cheap. The person coming from Malaysia got it with him. He travels business class so he doesn't have lots of luggage restrictions. My dad decided to give me this computer. I did not ask because there were lots of expenses with my coming here and settling down, so I didn't want to pressure him too much. He told me I would get one not immediately, but within a month.
151		Osman	99-102	2	I got my first mobile phone when I was 17 years old. Mobiles just started in India at that time 99-2000, but now is like everybody has one, even the sweeper, who is in utter poverty carries a mobile because it's very cost effective, incoming calls are free in India. To make a call is peanuts.
151		Osman	109-112	2	I was the first in my family to have it in India. Now everybody has one. When I got it it was costly, hardly people had it. That was in 1999-2000. in 2002 it pick up. My dad gave me a handset. My cousin took my first mobile, my second my dog chewed it, the third was lost by a friend, and the fourth was the last one.
152		Hua	106-111		I got my first mobile phone in High School. It was during the second year. I got it because in High School I lived in school accommodation and went back home once a week, so every time when I wanted to go home I had to call my father to pick me up, so the phone was very useful. I was attending High School one hour by bicycle away from home. Several times I did ride my bicycle because my father didn't have time to bring me to school.

152		Hua	120-123		I have had six handsets; this one is the sixth. The fifth phone was stolen during my teaching practice in a middle school in a village. The fourth phone stopped working. The third one I gave it to my mom; she didn't have a mobile. I gave her the mobile because it just had a few features.
153		Nilaya	778-790		<p><i>Why did you change the number of your mobile phone?</i></p> <p>I had a problem with Orange and suddenly one day I had £2 credit and the rest just vanished so I decided to change it; I just stopped using it. Later I got a new pay as you go with Vodafone. Vodafone is giving me good international rates only 10p per minute and even in local calls after 7 pm is 10p per minute. Orange was very expensive, even for short calls I had to pay £1. Even with calling cards it was inconvenient. I got Orange because I didn't know. I got it the first day I landed and I needed a connection. I found about Vodafone because I went to the city centre last Monday and I asked about it. They told me the rate to India was the best option. I wanted a contract actually but then I decided for pay as you go. I paid £5 for the SIM card and £10 to top up. With Orange I paid £10 and then £10 for a calling card; at that time there was a deal with O2 with unlimited calls to India so I used to do that, but now they stopped that.</p>
154		Ming	156-163		Only one participant doing computing intensive stuff!: I have had my laptop for two years. I bought it because at that time I had too many assignments and final dissertation; I went to Beijing to finish my dissertation project. There are Internet cafes, but you can't print your dissertation there or do some private things so I brought a laptop. I got a HP. I think is still working fine and if I change I might buy the same brand. I have an antivirus, I think it's working properly. Sometimes I scan my computer and it finds some viruses and fixes them. I scan my computer once every two weeks. You can change the setting and have it scan, but I do it myself.
155		Eurydice	485-520		<p>I went to Facebook and I was trying to upload some photos because my mother wants to see them and suddenly it stopped working. I have had this account for a month. I wasn't interested on Facebook but a friend insisted on doing it and for 2-3 weeks I just had my account and nothing more and last week I decided to upload some photos and edit my profile.</p> <p>I was a bit confused when I first opened the first page because there were so many things there and the friend who insisted on creating this account kept sending me things and I didn't even know what Facebook is. I was confused by so many things and information about other people who did something and friends who sent me something else.</p> <p>At that period I didn't have time because I had to submit some essays and university stuff. I have 12 friends; I added some of them when I created my account and then they found me and I just accepted them and some of them last week when I tried finding out more things about Facebook; my mom tried creating a Facebook account to see my profile and my photos. I think I added six people and the other people found me. Not all of them are Greek. For instance one of them is from Italy and I met her in the laundry room and afterwards we went for a drink; she told me she has a Facebook account and I added her.</p>

				<p><i>Communication</i></p> <p>My mom just joined to see my photos and because another cousin also has a Facebook account and she really likes her nephew so she wanted to see my account and his account. It was really funny yesterday because I was trying to explain her what to do through Messenger and she was able to create an account. We had a video conversation. She joined a few days ago because my brother helped her to create an account and yesterday she couldn't use it so I was trying to.</p> <p>The friend who invited me to join Facebook lives in Germany. I met her many years ago, since Middle School. All this time we have kept in touch mainly through email. I didn't call her frequently and now we are in touch through MSN and Facebook. My boyfriend is here but he has not picture. I joined first. I invited him. He's not very interested on Facebook; he just joined to see my photos because sometimes I sent him photos and he has problems downloading them.</p> <p>He just graduated and is a civil engineer and he has to go to the army. He will start in February. I have four albums I created three on 1 December and the last one yesterday. I'm posting my pictures there because all of my friends that I speak to on MSN or that I send emails to are on Facebook, so instead of uploading or attaching photos everyday and sending them they can just see them here.</p>
155		Eurydice	884-891	<p>Sometimes yes because I wanted to send mails to my friends here and to see what's happening on Facebook. I did it to send some messages or some cards for Christmas. I mainly used it for my friends I met here so they were in their home towns. I send cards for Christmas and for New Year's Eve to some of my friends on Facebook. I have only one Greek friend who lives in Athens, so it's far from my town and we couldn't meet. I called her with my mobile two times. During this time I did not add any new friends. During this time I uploaded some pictures for New Year's Eve in Greece.</p>
156		Osman	183-194	<p>I brought everything medicines, because they are costlier here, so I brought for everything fever, cough, cold; I brought cooking utensils; stationary, toiletry. I brought a laptop. I bought it before coming. I put all my songs, all my articles which I have collected and photos. It was a new one with Windows Vista; it's an HP Entertainment Notebook, so it had everything in it. The Antivirus was provided. I'm really happy with my laptop. I don't have a digital camera. I have never used an mp3 player. I brought my radio; it's sort of like a habit that I developed listening to radio and then I heard that they have lots of FM channels over here. The radio uses 6 batteries and they would hardly last 6 days if you use it continuously, so I downloaded the BBC widget online and they have fantastic comedy shows in the night like "Another Case of Milton Jones" and "Men from the Ministry." I didn't bring a USB drive because the capacity is 2 GB RAM and 160 Hard Disk.</p>

156		Osman	260-273		<p>Sometimes you do get interrupted. But they are not interruptions is just that you are more interested in checking what's happening on Facebook or if someone sent you something, or if someone sent you a mail. I made the interruptions. Last night after meeting my friends after dinner I came back to my room. The sources of my interruptions were Facebook, GMail, then at 11 or 12 the BBC has these comedy shows so I listen to them. I was listening 2 shows for 30 minutes each from 2-3 am. I usually sleep at 3 am. My attention was fully into these shows because you have to listen to the conversation, if you don't listen to it you don't know what is happening. I get these shows through the Internet on the BBC website. I found these shows because earlier I used to listen the radio and I happened to listen to it and then I checked at what time the shows were on the air. I wrote the schedule down on my diary and I check my diary every day. "Men from the Ministry" is on Saturday and "Another case of Milton Jones" is on Tuesday. I can't listen to it live but after the show has been transmitted.</p>
157		Hui	603-620		<p><i>Why do you like posting information in Wulong?</i></p> <p>I'm one of the older members of that website and I have a lot of friends there and I like sharing my trips with my friends. I know some of this people and we have met face to face; with some people I just talk over the Internet and we have never met. I check Wulong nearly everyday. If I have something interesting to say that I want to share then I will start a topic. Since last Friday I started five different topics. I write a medium-size paragraph. In the past week I think I replied to other posts 3-4 times, but only those topics I'm interested. I always see the topics listed in the main page and when I click it will open on the left part. I always check the list of topics that appears on the first page on the right side.</p> <p><i>Is there any other website where you also post information?</i></p> <p>I also post in Kucco. I started posting there since July or August. I found it because I typed "Glasgow" in Google. During the last week I haven't posted anything, but last Friday I started a topic asking if I can take a dictionary to an exam. Someone replied that you can bring an English to Chinese dictionary and someone else said you can't, but they are in different departments, so they told me to check the rules of my department. I brought an English to English dictionary and Chinese; they say English to English is forbidden, but English to Chinese is allowed.</p>
158		Nalin	219-224	63	<p>I joined Facebook around five days ago. I have 50 friends [now]. I joined because most of the people over here use Facebook than Orkut. My flatmates they are not from India. There are other friends of mine and most of them use Facebook. My cousin in London he uses Facebook to keep in touch with all his friends, so I thought than instead of sticking to Orkut I would join Facebook and I wouldn't loose anything and get more friends, and it's an easier way to keep in touch with everyone [in the UK].</p>

159		Hui	20-24		When I used the computer I would chat online in chatrooms with my classmates and use QQ. When I was 17-18 years I used ICQ but I just met Chinese people. I used ICQ because I was hoping to meet foreign people. My friends were doing it and they met foreign people from Australia, Canada and some other countries, but I was not lucky, I just met more Chinese people.
160		Adara	286-305	144	<p><i>How do you keep in touch with your family?</i></p> <p>I installed Skype on my computer a month ago because my brother told me I should do it. I didn't know about Skype; another Greek friend in Glasgow told me about it too and she told me it was very convenient because she saves a lot of money and because during the preessional course I had already spent £60 in phone cards and it was quite a considerable amount and since I was talking with my parents just for 2-3 minutes; MasterPoint is quite expensive and I also made some phone calls here in Glasgow to the banks, the doctor, the hospital. Greece 2 installed Skype and MSN for me. After installing it he told me what to do whenever I wanted to call somebody from the contact list, and I tried to discover on my own. I use it everyday to talk to my family and it's free of charge. I don't use Skype to call someone's phone or mobile, only Skype users.</p> <p>Whenever my father is free he gives me a miscall and then I turn my computer if it's off and then we talk to each other. Usually my father and my younger brother are available, my mother doesn't know how to turn it on and she's not familiar with computers at all. The only thing she knows well is how to type. Whenever we talk in Skype, after talking to my father or brother I would talk to my mom. We are not chatting, but talking. I bought a webcam here in Glasgow two months ago because my brother told me. He told me to buy a webcam and a microphone. I don't have any problems with this camera.</p>
161		Aeneas	129-142	150fn	I paid 1,400 EUR for my Toshiba Satellite laptop. I bought a laptop because I would be an MSc student with many assignments, essays, etc. I copied to this laptop my music, some pictures, some programs like Winzip, MSN, Office, antivirus, etc. I bought a digital camera because I always wanted to have a digital camera. I bought a Sony with 12 Megapixels. It was very expensive. I am not satisfied with my laptop because I put Vista. Yesterday I wanted to throw it from my window. I downloaded some movies, I have Skype open and I listen to the radio, and suddenly everything stopped. No ctrl + delete, no escape, no nothing. I wanted to close it and no! My laptop has an integrated camera and sometimes you want to talk over Skype and it tells you the camera is locked by other application, what application! I close every application and nothing. I put 1 GB of memory so now I have 2 GB of memory. I installed Illustrator and when I want to open a document it tells me, "There's not enough memory to open the illustration." I installed Illustrator on my friend's computer, an Acer, and there it works. Everyday I go to my friend's to use it.

161		Aeneas	180-185	99	I still have problems with Windows Vista. I downloaded AutoCAD 2005 and installed it and it didn't work. I downloaded the Service Pack 2 for Windows and still didn't work, so I downloaded AutoCAD 2007 and didn't work, I downloaded the service packs and now it works, but every five minutes I must close because it ran out of something, and every five minutes is the same. I paid 100 EUR for 1 GB extra memory and it's annoying. On Christmas I will remove Vista and load XP
161		Aeneas	765-769		<i>You were complaining a lot about your Windows Vista, did you change it?</i> No. I didn't. Everybody told me to change but I didn't care. For Illustrator I use my girlfriend's computer. That's the only things I installed in her laptop. With AutoCAD we already finished, and GIS I put it in my computer but it stucks but when one instance freezes I open another one and so on. My girlfriend uses XP.