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UNDERSTANDING MOBILE PHONE USERS AND USAGE

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Understanding mobile phone users and usage

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INTRODUCTION

The Vodafone Surrey Scholar project was funded by Vodafone Group Research and Development (R&D) at the Digital World Research Centre (DWRC), University of Surrey. Starting in September 2001, it ran for three years. This project is grounded in previous research carried out at the Digital World Research Centre that revealed the importance of social factors in understanding mobile phone uses and users; in particular a DTI-LINK project called STEMPEC (The Socio-Technical Shaping of Multimedia Personal Communications) supported by Vodafone and others.

The aim of the Surrey Scholar Project was to investigate how social factors affect the current and future shape of mobile devices, services and networks and how mobile phones contribute to social change. The core of the research work included diverse comparisons: contrasting behaviours, practices and attitudes in different moments in time, in different places and related to different devices.

Three different ways of addressing the question have been chosen: first, a historical comparison of the launch and adoption of landline and mobile phones; second, a longitudinal ethnographic study about mobile phone uses and users, carried out in London, Paris and Madrid; and finally, a conceptual and empirical study on the design implications of the affective aspects of mobile phone use, drawing on affective computing.

The three blocks of work are interconnected and the results and findings of each helped to inform and prepare the next steps. The historical and affective studies revealed the importance of the affective implications of mobile phone communication, and were used to design the fieldwork of the European comparison of mobile phone use.

The three studies do not cover all aspects of the implications of social factors in mobile phone communications. Other topics could have been addressed and other methods of enquiry could have been used. But it was necessary to be selective with respect to both topics and methodologies.

The findings of the project open new questions and offer material and hypotheses for further research. The main lessons of the research can be summarised into three main issues:

1. **The patterns of adoption of fixed and mobile phones present many similarities. In particular, both devices were launched without a clear understanding of how they were going to be used.**

   When fixed and mobile phones were launched, it was expected that they would be employed for work-related communications and within organisations, and for domestic management. In both cases the focus on "business" uses overlooked the potential uses for sociability. People ignored by the industry – women and those living in rural areas in the early days of landline phone, and teenagers and youngsters in the case of the development of text – discovered and developed different uses for the devices. The research reveals the conflict between people's views and the industry's regarding the ownership of the device and its "right" or "proper" use. This conflict between users and operators could be an issue for the future, with the increasing number of content and service providers, and with the growing possibilities for people to create and distribute their own content.

   This research illustrates how often new technologies – landline phones, mobile phones or camera phones – are launched with the wrong ideas, or no idea at all, about how people are going to use them. The history of both fixed-line and mobile phones shows the importance of being aware of the diversity of users and uses and of current social practices and potential needs. Perhaps the most important lesson is that the adoption of a device is not the result of a process of imitation of early adopters by the masses, but of different groups sharing some uses and also finding different ways of employing the device.

2. **Mobile phones have a unique and intimate place in people's lives. They are affective and personal devices, which mediate human relationships.**

   Mobiles have become affective technologies; that is, objects which mediate the expression, display, experience and communication of feelings and emotions. People enjoy an affective relationship with their phones and feel attached to them, experiencing in many cases a feeling of dependence and even addiction. They say that they feel "strange", "lost", "uncomfortable", "unhappy", "cut off", "insecure" and "isolated" without their mobile. Some of them "hate" to live without their mobile, and acknowledge that other people are dependent on their mobiles too, from customers and work colleagues to child carers and elderly people, who expect to be able to reach them.

This particular attachment to the mobile is partly due to the intrinsic affective character of human communication, and also because mobile phones are close to the body. They are an extension of the human body while at the same time they extend and augment its abilities. The research found that physical contact with the device is important nowadays, when mobile phones are not only always at hand but almost always in the hand. People carry the mobile in their hands, fiddle with it and touch it, when it is not being used. Most of the different ways of carrying the phone entails contact with the body. In words of some of the participants in the research the mobile is “part of me”, it is “embodied in me”.

Emotional attachment is also demonstrated in the personalisation of handheld devices and services. Personalisation of the phone is one of the main purposes of the pictures taken by camera phones. Camera phones help to keep a personal record of events and friends, thanks to the pictures stored that are also shared with other people. This is an example of how personal does not always mean private. Mobile phones contribute to create a personal space in public places, without people forgetting that they are in a public place. Through the appearance of the device, ringtones and the content of conversations, people are receiving and giving away personal information which does not appear to concern them. The duty of being available to family and friends seems to be stronger than the possibility of being embarrassed, as mobile phones are facilitating a new kind of social obligation, at least with those closest, that of being always reachable.

Mobile phones are not only an extension of the owner’s presence, but they also allow the virtual presence of those linked to us by the phone, those whose numbers are in the phone book and who know our number. Mobiles become an important element in the building and maintaining of relationships. They are not only a medium of communication but can also play other roles in that task, as when a technical feature of the device, the capacity to store a large amount of phone numbers, allows delaying the moment of acknowledging that contact with someone has really been lost. People use the device to mark when a relationship is finally over, when someone ceases to be virtually present in their lives, by deleting their details from the phone’s memory .

3. **Mobile phones are involved in social dynamics of change. They are engaged in conflict and tensions with rules of etiquette and public behaviour, such as the management of emotions and the rules of face-to-face interaction**. **The**

adoption and widespread use of mobile phones reveal how social behaviours can change in a short space of time.

Mobile phones' presence in everyday life plays a part in the personal development of the users' social skills and emotional behaviour, as when their use entails the renegotiation of the social norms about the display of emotions in public or when a function like text is chosen in order to avoid embarrassment or to improve self-control when dealing with delicate matters. Mobiles are also creating new social obligations. The emotional attachment to mobile phones and their impact on affective behaviour are contributing to a different shaping of people's subjectivity.

Mobile phone uses in public are shaped by the etiquette and common behaviours expected in such places. At the same time the specific requirements of mobile phone communication and the widespread and banality of its use are changing the urban landscape and the relationships between its inhabitants. Thanks to mobiles, feelings of joy, sadness and anger are more often visible in public places, and therefore mobile phone use is influencing the mood of these places. Urban features and street furniture find a new use – supporting mobile users. People give away more personal information, therefore changing the perception of strangers. For instance, in Paris, the general disapproval of such behaviour found in 2002 had disappeared by 2004. Another example of change observed between 2002 and 2004 is how more people in London are using the streets not only as a transient space but also as a place to stay and talk.

The negotiation of the coexistence of mobile phone exchanges and face-to-face interaction and the inclusion or exclusion of third parties show cultural differences and they are also changing over time. What is considered to be disruptive and annoying changes as well. The boundaries between private and public are renegotiated.

The negotiation and contextual evaluation of the rules and the eventual ban in regard to mobile phone use is becoming widespread. Instead of systematically following a ban or an unwritten rule of public behaviour, as for instance not to use the phone when being with others, people decide whether to use the phone or answer a call according to the particular situation: who is the caller, who is near them and what are they doing. They establish priorities, related to the phone and the face-to-face situation, For example, a French woman, whose son was having some

discipline problems at school reported: “If it says ‘school’, I jump to answer, even if I am in a work meeting”.

Three reports constitute the main results of the project:

1. The Social Shaping of Fixed and Mobile Networks: A Historical Comparison

This paper presents the history of the social adoption of the fixed-line telephone first, then of the mobile phone, highlighting the differences and similarities of the histories of the evolving uses of both fixed and mobile telephony.

The comparison covers a range of different issues:

- the phone as a broadcasting service;.
- the early adopters
- the appropriate uses according to the industry, as the considerations of the industry about the right users and uses affect the development of the market.
- the role of the phone in household and work management ,
- and the social skills created by the use of the phone.

Phones, fixed and mobile, have a double and reverse face, on one side they are a kind of “electronic toy”, in addition to its functionality the phone and its use presents a “fun” element; but they also have a darker side in people’s minds, revealed by health and social fears associated with the use of the devices. Finally, this report studies how phones are related to the sustaining of community links and social networks.

The interest of the comparison is to give an insight into what happens when new services and new devices enter a marketplace. The evolution of fixed line phones, people’s practices, and the attitudes, beliefs and behaviours of the industry provide worthwhile information regarding the evolution of mobile phones and the launch of new services.

The findings of this report and the issues explored helped to design the questions discussed in the interviews of the cross-national study and to frame the observation of mobile phone uses in public. Emotions appear in several topics discussed: fears, dependency, sociability, social bonds, personalisation, enjoyment, display of personal

feelings in public settings. The importance of emotions and the lack of studies about the role of affects in mobile phone communication led to the third research block of the project.

2. A Comparative Study of Mobile Phone Use in London, Madrid and Paris.

This research investigates how people use the mobile phone, what phones mean to them and how they evaluate their and other people's use in three different capitals: London, Paris and Madrid. It also analyses the evolution of practices and meanings in the three cities between 2002 and 2004 and the particularities introduced by new functions, as the uses of multimedia handsets are investigated in the fieldwork carried out in 2004. The emotional attachment to the device and its role in affective communications are also examined.

The fieldwork was undertaken in spring 2002 and spring 2004 using ethnographic methods. People using mobiles were observed and videoed on public transport, in cafes, bars and pubs, streets, squares and parks. In addition, 30 interviews were carried out in 2002 and another 30, with multimedia phone owners, in 2004: 10 individuals in each city, women and men, aged 20 and over.

The issues explored are the uses of mobiles in public, outdoors and indoors, with special attention to how people negotiate the simultaneity between mobile phone use and face-to-face interactions, the use of the phone in places where it is banned, and the disclosure of personal information in public settings. The role of mobile phones in affective communication and the different emotions involved in mobile phone use and ownership are discussed as well, through mobiles' ability to elicit, display and manage affects and feelings in mundane and also in extraordinary situations and exchanges. The research also takes into consideration the camera functions, describing how, when and why pictures are taken, kept and sent as MMS.

3. Emotions and Digital Devices. Affective Computing and Mobile Phones.

This study investigates the concept of emotion, its social implications and the theory and applications of affective computing and emotional usability in order to understand and define the role of emotions in the use of mobile phones. This includes both the affective interactions related to the device itself and to communication through mobile phones. Emotions are a key element in human intelligence and communication, as much in social as in human-computer interaction. They contribute to create and sustain social bonds. They are produced by social factors, shared with other individuals and groups and change in parallel with social and technological changes.

The awareness of the emotional attachment elicited by mobiles and their role in affective communication allows us to imagine what an affective mobile phone could be: that is, a mobile phone that could play a more active role in the recognition and expression of affects.

This study adds new insights into mobile phone use which where developed in the fieldwork, including affective issues based on the acquired accuracy about what emotions are and what they entail. The affective aspects are related to the interaction of the user with the object, the attachment and feelings of dependency, and also to the different types of interaction and communication mediated by the device. Some of these issues include assessing the emotional bandwidth of the communication mediated by the phone in its different modes (voice, text and image), and also looking at the way mobile phone use influences the expression, response and eliciting of emotion. This report also considers design' issues and suggests ways in which mobile phone experiences could be improved by changes in design.

Conclusion

The findings of the Vodafone Surrey Scholar Project reveal that mobile phones are changing people's subjectivities, that is, the way people relate to others and to themselves, through their role mediating emotions, intimate relationships and social obligations. The research also shows that the understanding of the technology coupled with an understanding of social behaviours and practices will provide a more accurate view of the potential uses of the device. A better knowledge of social practices can provide a better fitting of the technology and its possibilities within the existing codes of etiquette and public behaviour

1 THE SOCIAL SHAPING OF FIXED AND MOBILE NETWORKS: A HISTORICAL COMPARISON

1.1 Preface

The Ancient Greeks dreamt of a device that would enable people to talk over long distances without the need for an interlocutor. They called such a device a 'telephone'.

The idea of direct communication over electric wire was then introduced with the arrival of Morse's Telegraph in 1838.

However, even when Bell finally invented the Electric Speaking Telephone in 1876, it still took some time to find a common use for the device. Even though its invention had been anticipated for a long time, it arrived without a clear and agreed purpose and was received simply as a curiosity.

This monologue presents the history of society's adoption of the fixed-line telephone, and the corresponding adoption of the mobile telephone. It highlights the differences and similarities of these histories, and poses some interesting questions for today's mobile industry.

1.2 Introduction

This document presents a comparison between the social role of the landline telephone from the 1880s till World War II and the mobile telephone nowadays. Two papers analyse the social map of telephone uses in both the early days of the landline telephones and the mobile phone today.

First, we show the similarities and differences concerning the launch and uses of both devices. In both cases the issue of the telephone as a broadcasting service arises. Another topic is who were the early adopters and which were the appropriate uses according to the industry. The considerations of the industry about the right users and uses affect the development of the market. Also presented is the impact of the telephone on the household and work management. In addition to its functionality the telephone and its use presents a "fun" side – it is an "electronic toy". The comparison also exposes the social skills created by the use of the telephone, the health and social fears associated with the use of the devices, and how telephones are related to the sustaining of community links and social networks.

The interest of the comparison is to give an insight into what happens when new services and new devices enter a marketplace. The evolution of fixed line telephones, the practices of the users, and the attitudes, beliefs and behaviours of the industry can provide valuable information concerning the evolution of mobile telephones and the launch of new services.

1.3 A Comparison of the Fate of Fixed Line Networks and the Similarities to and Implications for Mobile Networks

1.3.1 BROADCAST SERVICES

Since the 1880s, the telephone has been a carrier of point-to-point messages between individuals and a medium of multiple address for public occasions. The telephone companies have broadcast news, concerts or weather reports as a supplementary service offered to their subscribers in order to make the device more attractive. In a few cases private companies were created, such as the Telefon Hirmondó in Budapest, which, like ancestors of the radio, broadcast a whole range of news, lectures, theatre and music to their subscribers. The diffusion of news was also improvised in party lines, collective lines shared by several homes. The consideration of the telephone as a broadcasting medium coexisted with its use as a conversational instrument since the 1880s, but progressively disappeared before the invention of the radio and therefore without competing with this new medium. The audiences attracted by most of the commercial efforts to broadcast through the telephone were very small. They were mostly from the upper classes, and the content of the programmes transmitted reflected their tastes and interests.

Nowadays, the multimedia possibilities of WAP and 3G mobile phones resume this use of the telephone as a broadcasting tool.

1880–1920	2000
• Concerts	• MP3
• Theatre	
• News	• Radio
• Sport	
• Church Services	• Access to Websites
• Political Speeches	
• Weather Reports	• Sports
• Teleconferences	
• Improvised broadcasting in Party Lines.	• Chatlines

Questions: A better understanding of the failure of broadcast services via fixed line would help in making broadcast services in 3G succeed. So, why didn't the broadcasting activity of the telephone succeed?

1.3.2 EARLY ADOPTERS AND APPROPRIATE USE

In the marketing materials of the early landline telephone the emphasis on the practical purposes and the saving of time lasted for half a century. However, the public had already found other uses for the device, mainly as an instrument of conversation and sociability. The industry considered these uses inappropriate; social conversation was "chit-chat" and "idle gossip". An important lesson from the history of the landline telephone is the power of users to impose their own purposes and competences, and how neglected and marginal users find successful uses, unknown or dismissed before by the experts. Women and sociability, teenagers and SMS are two different examples.

In the case of fixed phones, the passage from the early adopters to a mass market was slower than for mobile telephones. This delay was not due to a lack of public interest rather, the industry did not consider the telephone as a mass product. Even if the passage to a mass market was faster for mobile phones, in both cases the industry was surprised by the market's uptake.

1880–1920	2000
• Business and professionals were the first targeted market. Their use of the device for work matters was in accordance with the industry views. • Farmers' wives and women use the phone mainly for social conversation and not just for household management. The commercial potential of this use was ignored by the industry for decades. • Targeting early adopters handicapped the spread of the telephone.	• Business and Professionals were the first targeted market. Their use of the device for work matters was in accordance with the industry views. • Mostly Teenagers, but not only them, use SMS in a way that the industry had not foreseen • Targeting early adopters, could it be a handicap to the development of new services?

Questions: Early adopters have similar culture, interests and knowledge to the engineers and the industry men which makes it easier to target them. There is a common belief about the diffusion of new uses and habits from the elite to the mass. But in many cases the perception of a product like an elite one, a "yuppie thing", or a mere business or work related device, it is a handicap to its mass adoption. Would it make more business sense to target the mass market first, and therefore to gather information about other social groups who are not "like us"?

1.3.3 WHERE ARE YOU?: HOUSEHOLD AND WORK MANAGEMENT

As the industry and the early advertising campaigns highlighted it, the telephone introduced changes in the management of work activities. It helped the decentralisation of the office layout, and therefore facilitated the development of corporations and large organisations.

Nowadays the effects of the mobile phone use in work activities are mainly reflected in the case of mobile workers. Telephones also play a role in the management of household activities and personal relationships.

1880–1920	2000
Work • Changes in corporate space: monitoring factories from the office. • A contribution to the organised bureaucracy: o cut the costs, in time, money and effort, of acquiring information and co-ordinating schedules o control of the organisation resources, including the personnel ones. **Home** • Calls between home and work: husband and wife • Management of the household: shopping, invitations.	**Work** • Inversion of the relations between the caller and the receiver: Reciprocal monitoring between office and mobile workers. • Mobile calls to the office killing the laptop and the PDA, when workers call their colleagues and secretaries in the office asking for information and documents instead of carrying them. **Home** • Calls between home and work • Parents and teenagers: monitoring and resistance

Questions: What is the contribution of telephones to productivity? Is there an increment in the amount of leisure and social activities thanks to the use of mobile telephones? How can 3G phones affect work and home management? Who manages the relationship between the boss and the mobile workers, the parent and the teenagers? Is it the caller or the receiver?

1.3.4 ELECTRONIC TOY

In the beginning, the telephone was considered a kind of “electrical toy”, presented by Alexander Graham Bell as a new marvel of science. His demonstrations were intended to be demonstrations of utility face-to-face, in order to convince the audience that the device worked and then try to persuade them to pay for it. In 1877 an event of the Sunday School of Old John St. M.E. Church included recitations, singing and an

exhibition of “Pr. Bell’s Speaking and Singing Telephone”. When an audience of bishops and priests in Quebec City in 1877 heard a voice singing “Thou are so near and yet so far,” they stood up and sang back into the telephone. These stunts created considerable publicity as newspapers relayed them around the world.

Mobile phones also hold the playful aspect of the early days of the fixed telephone. Their meaning is not only utilitarian and useful, but also emotional and entertaining. They facilitate creative expression, especially in the case of SMS. Mobile phones are a kind of toy object and tool for play, with games, animations, pictures, smileys or rings.

1880–1920	**2000**
• Fairs and shows where the telephone is presented as a form of entertainment. • Newspapers relayed what happened in the shows giving publicity to the new device	• High Street: Retail as a place to play? • Media publicity about the fun aspects of new devices

Questions: The emphasis on the playfulness of new technologies helps to make them familiar, and this in turn helps the public to learn how to use them. But it also has its disadvantages. A device labelled as a toy misses other opportunities, nor does every group treat playful technologies in the same way. There may be many different ways of presenting a technology to different groups of users. What are those ways?

1.3.5 HEALTH FEARS

"As civilisation advances new kinds of diseases are produced by novel agencies which are brought to bear on man's body and mind" reported the *British Medical Journal* in 1889. The fear of health risks derived from telephone use also arose in the early days of its development. Even "strong-minded and able-bodied men" were considered to be susceptible because of the "almost constant strain of the auditory apparatus" in people who uses the telephone very often. The symptoms were nervous excitability, buzzing in the ear, giddiness and neuralgic pains. A certain amount of "moral panic" often follows the introduction of many new technologies. Some of the risks considered are the same in both landline and mobile phones; others are different, following the more feared diseases of each period.

1880–1920	**2000**
• Aural overpressure	• Stress, work overpressure
• Nervous excitability	• Nervous excitability
• Insanity	• Insanity
• Addiction	• Addiction
• Contagion of infectious diseases	• Cancer

Questions: The truth is often irrelevant concerning of fears of this kind. So how do these fears develop and why?

1.3.6 SOCIAL FEARS

The association between sensational crime and new communication devices is not a new phenomenon. "It's a well-known fact that no other section of the population avail themselves more readily and speedily of the latest triumph of science than the criminal class" explained Inspector Bonfield to a *Chicago Herald* reporter in 1888. Fears related to the use of the telephone concern not only health, but also social behaviour and social relationships. In the early days of the landline telephone some communities banned the device because the effects of use were perceived as harmful for the social

relationships, a source of conflicts. In America, members of some religious groups, such the Amish and the Mennonites, argued over whether the telephone was a theologically acceptable device or an intolerable worldly seduction. The Amish ended up banning the telephone due to the conflicts and disputes originated by eavesdropping in the party lines. The reason was that "if that is the way they are going to be used we would better not have them".

1880–1920	**2000**
• Decline of traditional forms of interaction like visiting	• Decline of traditional forms of interaction like face-to-face conversations
• Loss of interest in taking part in social activities	• Loss of interest in taking part in social activities
• Inconsiderate behaviour	• Inconsiderate behaviour
• Obscene calls/anonymity	• Obscene calls/caller ID
• Crime: easier to commit fraud.	• Crime: stealing and aggressions.
• Blur distinctions between: ○ discrete groups: social classes, gender. ○ domains and categories ○ Public into Private: home open to calls from outside, strangers, work matters, etc.	• Blur distinctions between: ○ discrete groups, ○ domains and categories: work and home ○ Public into Private: private conversations in public places.

Questions: The idea that mobile telephones make people more secure is counterbalanced by the health and social fears associated with telephones which make their owners more vulnerable. Those fears are not the same for everybody. Different groups do not have the same fears. Fears associated with the use of the telephone are sometimes actual and sometimes imaginary. Which should be addressed? And how?

1.3.7 SOCIAL SKILLS

New social skills in professional and private life are originated by the use of the telephone. The introduction of a technological device in everyday life activities requires an adaptation of social rules of interaction. For instance, the use of landline telephones simplified the formalities that ruled face-to-face conversation, e.g. opening sentences, polite forms of address. The telephone also facilitates new ways of organising time and space.

1880–1920	2000

• Managing interruptions
  ○ Social etiquette:
  ○ rules of how to speak properly on the telephone
  ○ adequate times to call
• Urban concentration
• Expansion of a dimension of social life:
  ○ frequent checking-in
  ○ rapid updates,
  ○ easy scheduling of appointments
  ○ quick exchanges of casual confidences
  ○ long distance calls
	• Managing interruptions, attention and availability
	• Social etiquette: rules of how to speak properly on the telephone in public places
	• Rural sprawl
	• Micromobility: the way in which an artefact can be mobilised and manipulated for various purposes around a relatively circumscribed, or "at hand" domain, for example, inside the office
	• Micromanagement of time:
	  ○ phone call is an advanced arrangement, anticipates future meetings and prepares concrete proposals.
	  ○ increasing flexibility in the use of time: postponing and rearrangement of schedules, meetings and appointments. The exactitude in the measurement of time is no longer necessary to co-ordinate activities. Punctuality ceases to be the virtue it used to be.

Questions: When is a call an interruption? What is currently acceptable mobile phone user's behaviour? If mobile interruptions are a problem, do we have a better solution than simply to switch off the phone? Producing services that support emerging practices increases chances of uptake, therefore these emerging practices need to be better understood.

1.3.8 COMMUNITY-SOCIAL NETWORKS

Telephones are a tool for collaborative interaction in the local environment, serving to strengthen and renew the membership in a community. They help to strengthen and maintain the relationships of the people who deal with them.

1880–1920	2000
• Expansion of the local and extra-local activities • Increasing of local ties • Keep in contact with friends and family • Reducing of loneliness and anxiety • Women: in the early days, women where the main group to use the phone to sustain community links.	• Increasing of the number of contacts with a small number of people • Keep in contact with friends and family • Reducing of loneliness and anxiety • Teenagers: their use of mobile phone is mainly related to friendship and sociability.

Questions: Is the price of the communication calculated in function of the distance, the reason for the mainly local use of land-line telephones? What are the social consequences of the increasing number of contacts with a few people due to mobile phone use? Are the amount of activities carried out (leisure, associations, etc) related to the use of mobile phones? Given the importance of mobile devices for social life, what are the emotional affordances of mobile telephones?

1.4 The Social Role of the Telephone: A Literature Review

1.4.1 Introduction

This review discusses some works about the social role of the telephone system and its evolving uses, as well as the methodological approach to studying them. Considering the differences of social contexts and technical devices, the knowledge of early practices, conflicts, fears and hopes about telephones will help us to design research projects about the uses and social roles of mobile telephones.

Most of the authors cited in this paper agree that there are few scholarly studies about this topic. In the early days the media showed the same lack of interest. The period of controversies, polemics and astonishment after the invention of the telephone in 1876 was shorter than that devoted to other technologies. This silence and absence of public debate reflects the quick adoption of the telephone as a taken for granted element of middle-class everyday life in the countries where it was first introduced. When the sociological studies about technical inventions arose in the 30s at the University of Chicago under the influence of William F. Ogburn, the telephone was already an old communication technology, lacking the excitement of radio and cinema.

Before presenting the uses and social consequences of the introduction of landline telephones, some theoretical and methodological considerations will be briefly discussed.

1.4.1.1 A non-deterministic approach

The term "social role" is preferred to that of "social impact". The latter is a misleading metaphor, which indicates that technology (the telephone in this case) is exterior to the society and has an effect upon it. It is as if the technological change came as a part of an autonomous scientific development, and the applications and uses of a device followed an internal technological logic. Such perspective implies the existence of a causal link between technology and social actions. However, technological devices and their systems of uses are part of the material culture of a society. The telephone and other prosaic objects of our culture are at the same time the instruments with which and the conditions within which we enact some of the most profound conduct of our lives: dealing with others, family, friends and strangers, and with ourselves. This doesn't mean that there is a causal link in the opposite way, from society to technology. The approaches which consider technology as a symptom or an expression of a culture

imply that modern technology forms a whole, consistent and coherent system, whose effects are the same for all devices and for all people.

The study of the role of technology from the user's viewpoint (Fischer, 1992) emphasises the human agency and intentionality among end users. The emphasis on the user, the social aims and the social contexts denies any kind of determinism. The users have purposes, manipulate, understand and tell about ends and means. Those purposes are culturally conditioned. The social, cultural and technical conditions limit people's choices. Some of those constraints are the income, costs, information, skills, formal and informal rules and the distribution system of the technology. From this perspective the consequences of technology are the ends that users pursue. This is not a simple issue. Not only different groups have different purposes, but the same people have multiple and contradictory goals. Moreover, individual choices could have unintended consequences, and there can be unintended collective consequences of others' use. Technological devices are tools and structures that constrain the individual. The effects of the telephone follow opposite directions, once considered purposive behaviour, a more complex logic than mere causality is needed. De Sola Pool regards the telephone as a "facilitating" device. It allows, not determines, myriad uses for myriad people, and since societies are neither unified nor consistent, the telephone often contributes simultaneously to opposite developments (De Sola Pool, 1977: 302), as the concentration and the dispersion in urban settlements, or being used to commit crimes and to improve police surveillance.

"At either level of analysis, individual or structural, the centre of the process is the purposeful user employing, rejecting, or modifying technologies to his or her ends, but doing so within circumstances that may in some instances be so constraining as to leave little choice at all." (Fischer, 1992: 19)

1.4.1.2 Social meaning of technology

Technological change is characterised by its indeterminacy. It results from the struggles and negotiations among interested parties: inventors, producers, different users, and governments. Technological devices such as the telephone are "fodder for social experimentation" (Marvin, 1988: 3). Therefore, the history of the social role of the telephone is less the technical evolution of the telephone system than a series of arenas for negotiating issues crucial to the conduct of social life: who is outside and inside, who may speak and who may not, who has the authority and may be believed. The focus is shifted from the instrument to the drama in which objects and existing groups, such as classes, families, professional and ethnic communities negotiate

power, authority, representation and knowledge with the resources available. New devices introduce new platforms on which old groups, with their competing logics of experience, confront one another. Old habits of exchanging between groups are projected on new technologies that alter, or appear to alter, social distances. The new devices force the revision of old practices and therefore the group's habits are reformed. In the case of the telephone, expectations about its effects on the boundaries between intimacy and strangeness and on the nature of social bounds express the fears and hopes regarding other groups.

"New practices do not so much flow directly from technologies that inspire them as they are improvised out of old practices that no longer work in new settings.... New kinds of encounters collided with old ways of determining trust and reliability, and with old notions about the world and one's place in it: about the relation of men and women, rich and poor, black and white, European and non-European, experts[1] and publics." (Marvin, 1988: 5).

The telephone, like other technological objects, is not a fixed natural object. It hasn't natural edges. Its use is a constructed complex of habits, beliefs and procedures embedded in elaborate cultural codes of communication. The uses are the result of how people projected their respective social worlds onto technologies and what are their justifications and fears. Marvin (1988: 234) proposes a framework of structuring the social meaning of electricity, which is also useful for the understanding of the social meaning of the telephone. This framework includes three elements. First, the **body,** regardless of the preferred literate habits of scientific thought. The body is the centre of human experience and the most familiar of the communication modes. It constitutes the touchstone to gauge, explore and interpret the unfamiliar, the critical juncture between nature and culture. Second, the immediate community, family, professional groups, gender, race and class. This involves the ways of estimating trustworthiness, the strategies of deception and face saving and the alteration of real or perceived social distances. Third, the unfamiliar community, that is, the organisation of the world outside the groups to which one belongs.

The **imagination** in all its forms, from fantasies and dreams to the art forms like literary works, helps us to understand the social meanings of technologies and what "consciousness" is in a particular age, which thoughts are possible and which thoughts cannot be entertained yet or any more. Dreams and fantasies created, exchanged and

[1] The word 'expert' used by Marvin refers to the industry men and the engineers.

reworked in public are systematic. They have their own tradition. There are never pure individual fantasies. Their point of departure is the perceived reality and the conditions in which people live and understand the world.

1.4.1.3 Telephone and modernity

Most of the studies about the technologies of industrial societies are concerned with their role in the building of the modernity features; that is, in the weakening of local ties and community links, the extension of individualism and impersonal relations, the growth of urban areas and the decline of rural life. Often the link between technology and modernity is studied as a form of social determinism. As technologies like the telephone are invented and used in modern societies, the effects of their uses should reinforce the feats of the modernisation process. However, this affirmation needs to be empirically proved. Regarding the above, it will be discussed:

- how did people adopt and adapt the expansion of personal communication due to the telephone in relation to the dynamics of modern societies.

- whether the telephone has expanded or diminished personal relations. Is the decline of community bounds linked to the spread of the use of the telephone?.

- which are the subjective implications of this device and what has been its role in the division between privacy and the public sphere. The telephone is the first electric medium to enter the home and unsettle customary ways of dividing private and public spaces, family and community.

- what the progressive widespread use of the telephone means for others and for the society.

According to Fischer (1992: 28), we can only understand what role the telephone played in modernisation by understanding its uses, knowing who adopted the telephone, when, where, how and why, for what purposes, for what uses, and by the constraints generated by the common use of the device.

1.4.2 Plurality of uses

The idea and the word "telephone" existed fairly widely before its creation in 1876. Since the ancient Greeks, people in different periods have dreamed of talking tubes or other forms of talking at distance, without the presence of an interlocutor. The idea of

conveying the human voice at any distance over metallic wires was reinforced since the invention and spread of the telegraph. But once the telephone was invented it took people a while to find a utility for the device. It was a curiosity, an invention long desired but without a universally agreed purpose (Young, 1991: VIII, 1-2). The difficulties of the inventors to find a buyer for the patent reflect this situation (Aronson, 1977: 15).

1.4.2.1 The Pleasure telephone

In the beginning, the telephone was considered a kind of "electrical toy", presented by Alexander Graham Bell in shows as a new marvel of science. These shows were intended to be demonstrations of utility face-to-face, in order to convince the audience that the device worked and then to try to persuade them to pay for it. Those demonstrations involved the broadcasting of music, theatre, and information. At the end of the 19th century the telephone was a carrier of point-to-point messages to individuals, and a medium of multiple address for public occasions: concerts, theatre, sports, church services and political campaigns. This use as a means of entertainment and broadcasting of news was one of the main uses of the device till the end of the 19th century. The broadcasting of news was both professional and improvised. Telephone companies transmitted weather reports and even informed their subscribers of the entry of the United States into the war against Spain in Cuba in 1898. Also, people who shared the same line, called party lines, exchanged and asked for news, or maybe more often just eavesdropped in order to be up to date with the current issues (Marvin, 1988: 222). The use of telephone as an entertainment form also involved teleconferences for clubs and associations (*Ibid.*: 212-213)

This consideration of the telephone as a broadcasting medium coexisted with its use as a conversational instrument in the 19th century, and progressively disappeared afterwards. It is remembered even when this use is just an anecdote of the past. This use is mentioned in books like *The Story of Broadcasting* by A. R. Burrows (1924). The broadcasting of news, music, drama, religious services, or lessons was done in some cases in a more systematic way, not just in occasional shows and demonstrations, but as kind of proto-radio. That was the case on the Telephon Hirmondó in Hungary, which existed from 1893 till World War I. The subscribers received a full schedule of political, economic and sport news, as well as plays, lectures and concerts (Marvin, 1988: 223-231; Briggs, 1977: 40-65). In the USA a similar example was the Telephone Herald of Newark (Marvin, 1988:228-230)

1.4.2.2 A business tool

The telephone descended from a "parent" technology, the telegraph. Its makers, businessmen and marketing policies were at the beginning the same ones as the telegraph. This inheritance shaped its early history. The first use as a conversational device was a substitute for private telegraph lines. In this case the telephone was used just between two points, usually the home and the business place. We go from the one-way process of the broadcasting use to a restricted one-to-one dialogue. It started as an expensive device favoured by the upper classes, as is often the case with new technologies, and then grew popular with farmers in the United States, and urban middle classes. For the first decades of the telephone's existence it was a businessmen's monopoly. It substituted for the telegraph inside the commercial and professional communities. Used according to practical requirements, it's a contribution to the organised bureaucracy. It creates productive traffic (Cherry, 1977: 114), increases productivity, by cutting the costs of acquiring information and co-ordinating schedules, and facilitates the control of the organisation resources, including the personnel ones.

Telephone is a key element in the building of corporate empires. Apart from easing the violation of laws and the realisation of exchanges without leaving traces (Aronson, 1977: 32), it permits the physical separation of the offices from the factories, allowing the managers to keep the control of the production. Therefore, the telephone plays a role in the urban concentration of financial and business activities. It is also a central element in the work organisation and communication inside the skyscrapers, the symbols of corporate capitalism that arose at the beginning of the 20th century.

1.4.2.3 The telephone shouldn't be for the masses

In the marketing discourses the emphasis in the practical purposes and in the saving of time lasts for half a century, even if the public had already found other uses for the device, mainly as an instrument of conversation and sociability. Fischer demonstrates how the industry men of the early days had a misperception of telephone users (Fischer, 1992: 60, 62, 78, 85). From the beginning, the marketing campaigns were aimed to educate the public. They had to suggest purposes, instruct people on how to use the telephone, provide new etiquette rules and nurture goodwill to the industry. Nevertheless the late introduction of sociability as a marketing point didn't mean that it didn't exist before. The experts, the industry men, considered these uses inappropriate. Fischer (1992: 81) explains this fact in relation to the inheritance from the telegraph. Those former telegraph men considered its use for social conversation an abuse or a

trivialization of the service. It was considered “chit-chat” and “idle gossip”. Inside and outside the industry many people considered idle conversations an inappropriate invasion of the household. There were also worries about inappropriate contacts between men and women of different classes and about the lost of privacy.

The dismissing of women as incompetent users was also extended to black people, immigrants and farmers. These considerations, expressed for example in technical journals and the electrical press, as Marvin (1988: 17-32) shows, are part of the invention of the expert and the stigmatisation of the unempowered. They didn’t derive from the use of the device, but from the existing relationships and perceptions of the different social groups. They distinguish the outsiders and the insiders of the technological world. The example of this distorted perception of the uses of a technological device, by those who produce it, shows that the promoters of a technology do not necessarily know or decide its final uses. The consumers develop new uses and ultimately decide which will predominate. These vendors and marketers are constrained not only by technical and economic attributes but also by an interpretation of its uses that is shaped by their histories. The industry men are as deeply involved in the realm of cultural production as in the technical one.

“Technologists are not solely members of professional groups; they are social actors with a variety of loyalties that may not always be perfectly congruent with professional goals. Even their professional roles cannot be fully understood without attention to their efforts and aspirations as members of families, citizens of countries, and possessors of gender and race” (Marvin, 1988:232).

The pioneer telephone men were “a self-conscious class of technical experts seeking public acknowledgement, legitimation and reward in the pursuit of their task”. The effort to invent themselves as an elite, to command high social status and power was focused on technological literacy, on special symbolic skills as experts. They had to distinguish themselves from mechanics and tinkerers, and from the enthusiastic but electrically illiterate public, by elevating the theoretical over the practical, the textual over the manual, science over craft (Marvin, 1988: 61). One of the consequences of this fact, surprisingly today, is that the industry men didn’t consider the telephone a product for a mass distribution during at least the first 50 years of its existence. Fischer explains the conservative view of telephone use manifested by the industry in the early days in reason of the inheritance of the telegraph. The arrival of new managers without those links facilitates the change in the marketing strategies. A learning period of both experts and the publics was necessary in order to develop new uses. Marvin asserts that the early uses and marketing strategies of technological innovations are essentially

conservative because their capacity to create social disequilibrium is intuitively recognised.

Those fears were manifested in the belief that the telephone could be a source of bodily distress and unbalance. The body is the first frame to make sense of new experiences. Early users of the phone were worried about "aural over-pressure", nervous excitability, euphoria, neuralgic pains and even insanity due to the constant ringing, as a result of an excessive use of the device (Marvin, 1988: 132). In those days people also feared the contagion of infectious diseases, either by the wires carrying virus, germs and bacteria or by using the same device as ill people. For example, in 1885 rumours spread in Montreal about the epidemic of smallpox being carried by people's breath through the phone (Young, 1991: 34)

The will to distinguish themselves from the other groups and to maintain social distances and privileges was an obstacle to the commercial goal of extending the use of the telephone, which success precisely resides in the number of subscribers, in the possibility to communicate with others. Being an element of social distinction in the early days, explains the opposition, not only by the experts but also by the first subscribers, against a mass diffusion of the phone and the expansion of public phones (Marvin, 1988: 102).

The marketing campaigns and the geographical offer of services weren't the only effects of the industry men's conceptions about the phone. The companies regulated its accessibility and its uses. They dictated who could use it and what issues were appropriate to talk about. Even in the case of emergencies there was no general agreement about whether popular channels of communication such as the telephone could be relied upon for reporting emergencies (Marvin, 1988: 103). In the 19th century the Bell Telephone Company removed the phones of those who allowed nonsubscribers or “deadheads” to use their phones. Marvin (1988: 104) quoted some cases of customers who sued the company for that. The ownership of the device, and the last word on who decided who could call, were matters of conflict in the early days. Etiquette on the phone was also a concern for the industry men. Phone conversations revealed in the early days a relaxation in the common courtesy of speech, which was a class-based reference. The recommended good manners were those of middle-class intimacy: quiet voices, clearly enunciated words, dignified presentation. The importance and the anxieties about how to speak properly on the phone and what community of speakers was addressed in the reach of its wires can be seen in the example of the Ohio telephone company, quoted by Marvin (1988: 89), which removed the telephones from subscribers who used improper or vulgar language.

The telephone offers the possibility of mixing heterogeneous social worlds. That is at the same time a useful opportunity and a dreadful threat of intrusion. The phone embedded the social risk of permitting outsiders to cross boundaries of race, gender and class without penalty. In this way it altered the customary orders of secrecy and publicity, as well as the customary proprieties of address and interaction. Well-insulated communities of pre-telephone days could not remain forever untouched by these developments, nor were telephone companies able to ensure that emerging telephone communities would remain within the limits of social decorum and work-related use (Marvin, 1988:107). For instance, the anonymity of the telephone facilitated courtship beyond parental control, promoted infidelity but also helped to track down the adulterous. It fed the sexual fantasies (in the early days many of those concerned the mainly female operators). The most disturbing assault in social distance exploited telephone anonymity, abusive and obscene calls having existed since the early times (Marvin, 1988: 88; Katz, 1999: 231-278).

Marvin also highlights that the most admired feats of the telephone, the wonderful ability to extend messages effortlessly and instantaneously across time and space, reproduced without lost of content, wasn't linked to a genuine sense of cultural encounter and exchange. Those who controlled the new technology, as most of the Western white middle and upper classes at that time, dismissed different cultures as being deficient by civilised standards, and even unable to communicate meaningfully, in a clear example of "cognitive imperialism".

"Any device that enlarges one's environment and make the rest of the world one's neighbours is an efficient mechanical missionary of civilisations and helps to save the world from insularity where barbarism hides" (Amos Dolbear, telephone inventor quoted by Marvin, 1988: 192).

If we look at the American case, as it is described in the Fischer's book, the fact that income determined whether the urban American subscribed to telephone as strongly at the beginning as 40 years later is highly surprising. The stagnation of the diffusion of the telephone down the class system contrasts with that of the automobile. Even if we consider that phones are a less exciting purchase, we should also consider that it was much less cost-effective. We cannot understand this stagnation without the scepticism of the industry about farmers, working class, ethnic minorities and migrants. The attitude of the industry was not only reflected in the marketing strategies, but also in the quality of the service provided and in the accessibility to the phone. Rural areas or the Southern states were long forgotten in the building of new wire systems and exchanges. However, even if telephone was targeted for the urban North originally,

telephones diffused most rapidly in the Midwest and West. Farmers were more likely to subscribe than city-dwellers, at least in the first two decades of the century. The reason for the American farmers' interest in the new device was their isolation. However, many subsequently gave up their telephones. The explanation provided by Fischer is that other technologies, such as the automobile, better fulfilled their needs to break their isolation, due to the poor telephone service they were offered. Although the industry was not effective in creating needs and shaping use, it did set the structure within which consumers could exercise choice. As one of the Bell Canada managers quoted by Fischer said in 1902: "Of the 60,000 people in the city not more than 1200 have or require telephones.… Telephone service is not universal in its character and should not be supported by tax money". This claim reveals Bell leaders' sincere conviction throughout the era from the telephone's invention to 1940 that the telephone was not for the masses, (Fischer, 1992: 107-108, 120). The Bell monopoly just accentuates this fact.

The American Government also provided a structure that limited consumer choice. It guaranteed local monopolies and did not subsidise lower-incomes users, as it did for the automobile. It left such potential telephone users with higher costs than comparable users in European countries. However, the role of the state slowed the introduction of the telephone in such countries as France or Great Britain. In the French case, the telephone early became a public monopoly. It was looked upon as only interesting for public administrative uses, for the army, and only secondarily for industries and businesses in a political context of strong centralisation, where communication was viewed as a "monologue of the state with its citizens" (Attali and Stourdze, 1977: 97-111). In Great Britain, the telephone was viewed as a threat to the telegraph system in which the government had largely invested. The conviction also existed that the telephone wasn't a mass media instrument, but useful only for cities, industry and businesses (Perry, 1977: 76). These opposite considerations prove that technological logic doesn't determine social meaning. Social and political contexts largely influence the reception of new devices.

At the same time Americans pushed those limits by determining whether, when and how they would use the technologies, given that the devices were practically available. Farmers adopted the phone for reasons of practical and social utility, but later abandoned it, perhaps in part because other devices, such as the car, could serve the same end of relieving their isolation and facilitating social contacts. Urban working class people didn't rush to subscribe. Besides having limited income, they had fewer job-related needs. They could also use public phones or borrow neighbours' phones.

The shift of the phone in America from an option to a requirement happened around World War II. At that time the telephone became an expected item in middle-class homes. Businesses catering to the middle class presumed that customers had telephones, formal manners made room for it, and organisations built their activities around calling. The automobile became a middle-class necessity perhaps a decade before the telephone. Even lacking the symbolic power of the automobile, it also became a structural if not an emblematic necessity. The telephone evolved from miraculous in the nineteenth century, to mundane in the mid-twentieth century, to mandatory by the end of the twentieth century (Fischer, 1992:191, 192).

1.4.2.4 Telephone sociability

The use of telephone for sociability purposes did not fit the view of the experts because they dismissed those who use it mostly, women. However, regardless of these views, conversation and sociability were the main uses of the telephone in the early days. Research quoted by Fischer (1992: 230), carried out in Seattle in 1909, reveals that half of the calls had some social content, and 30% were idle gossip, at a time when only about one-third of Seattle households had telephones. Rural people, especially farmers' wives, depended heavily on the telephone for sociability until they had cars. Women often called for social purposes, and frequently even for simply "visiting", as far as back as the 1910s. Conversation is an important social process, serving to maintain networks and build communities. This was ignored by industry leaders, journalists and other male critics. Time-budgets filled out by suburban New Yorkers before World War II revealed that women spent four times as much time on the telephone as did men. In other parts of the USA, the higher the proportion of adult women in the household, the higher the chances were that it had a telephone.

The industry view in the 1920s was that women, acting as "chief executive officers" of the household, should telephone to order goods and services. Women's social calls were considered a problem, and they initially tried to suppress them. But women cultivated their own purposes, "delinquent activities", primarily social visiting (Martin,1988). Farm women used the phone to sustain social activities and help create community bounds in rural areas; in urban areas, middle and upper class women used the phone for organisational activities, young urban women used it for courting. In the late 1920s and 30s a change occurred, and telephone advertising increasingly depicted women using the telephone for sustaining social contacts and conversation. Fischer proposes a few explanations for this gender difference. The isolation of women from adult contact during the day, the fact that married women's duties include the role of

social manager (appointments, events, keeping informed about relatives and friends), and that North American women are more comfortable on the telephone because they are generally more sociable than men. So the telephone fits the typical female style of personal interaction more closely than it does for men. From the first decades of the 20th century women used the telephone to pursue what they wanted, conversation (Fischer, 1992: 232-235), and were responsible for the development of a culture of the telephone as they instigated its use for purposes of sociability (Martin, 1991: 171).

"We cannot neglect to account for the pleasure, solace, and companionship that many women derive from the telephone. Because they are generally less mobile and less independent financially and more likely to be isolated from other adults than men, many women have found the telephone to be a lifeline to mothers, sisters and friends… We should not dismiss the telephone then, as another source of women's oppression, but recognise the complicated role it has had in the shifting place of ideology and gendered experience (Rakow, 1991: 81)

Another important role women held in the early days of the telephone was to work as telephone operators before automation (see Martin, 1991). The switchboard created a respectable career for many thousands of young women. The absence of special training, the qualities required of dexterity, patience, forbearance, as well as the cheapness of the female workforce, favoured this fact (Maddox, 1977: 263, 266). The operators, known as "Hello girls", were outsiders to the expert world brought inside on a model of domestic servitude under the potential social control of the bourgeois household. For example, they often acted as alarm clock or tasks reminders. Nevertheless this model didn't fit the reality. They served more than one household and were not subject to taboos or claims of loyalty binding those inside a household (Marin, 1988: 84-85).

The nature of telephone sociability is a weaker form of the statement that the telephone replaces face-to-face meetings, so people began calling neighbours and friends instead of dropping by. People increased their total conversations, and the use of phone to arrange dates, trips and meetings suggests that calling assisted even if it did not generate many inter-person encounters (Fischer, 1992: 236-237). Worries about eavesdropping were present since the beginning of the spread of the telephone, but so was the interest in doing it. Many of the first telephone lines used in America were collective, called party lines. A few households shared the same telephone line. Each household had a particular ringing tone. Therefore they could know when it was a call for one, but also when it was for another. Thus, eavesdropping was as easy as it was tempting. The conflicts and quarrels arising from this practice were the reason why the

Amish banned the device (Fischer, 1992: 241). Maintaining personal relations by telephone became common in the middle class and farms of the 1910s and early 1920s. By this time Americans used the phone largely for sociability. This was more true for women than for men, for the younger more than for the older, for the gregarious more than for the shy. The communications modes displaced by the use of the telephone were curtailing telegrams and hand-delivered notes. It probably cut down the casual drop-in visits and helped to arrange other meetings (Fischer, 1992: 253).

1.4.2.5 Localism

Localism is understood here as the extent to which the locality bounds, delimits, or sets apart residents' lives, including their work, personal relations, political involvement and identity. The study of Fischer (1992: 194, 220-221) reveals few changes in localism. There is a net trend in the direction of greater attention to the outside world, rather than indication of a *displacement* of local interest. These changes suggest a simultaneous *augmentation* of local and extralocal activities. People weren't uprooted by the new technologies, locating their activities and interests somewhat more often outside the towns, but mostly they expanded their local activities. Perhaps the characterisation of a move towards privatism rather than extralocalism best describes the bulk of the changes. The telephone cannot be substantially credited or blamed for undermining localism in the early 20th century. As Willey and Rice argued in a monograph published in 1933, people used the telephone to increase local ties much more than extralocal ones. Phone calling strengthened localities against homogenising cultural forces, such as movies and radio. It also enabled Americans to participate in activities more frequently and more easily outside their localities. As Fischer affirms, people called relatives long-distance, made more trips to tourist spots, followed their sport teams to more games. Although the balance of change was in the direction of the wider world it was not a weighty shift, not as substantial as the increase in total social activity. Keeping in touch with the loved and the familiar allows one to conjugate security and geographical mobility (Cherry, 1977: 123).

Before World War II the subscribers to residential telephones in the USA did it mainly due to job related reasons. They were doctors, businessmen, farm owners and specific white-collar workers. There were social reasons for rural and suburban residents in a relatively isolated situation. Young people, and especially women, quickly developed a taste for the new device. Emergencies were also a main reason to subscribe. The reasons were a mix of need and taste. Tastes changed over time, as did the subjective perception of the phone. Theatre and literary authors used it as a symbol of wonder

and sophistication, like in the so-called "white telephones movies" before World War II, and afterwards as a symbol of threat, violence and powerlessness (Fischer, 1992: 242). Telephones were also the more mundane symbol of interpersonal and intimate communication, with its joys, sorrows and frustrations, as in the example of the Jean Cocteau's 1930 play *The Human Voice*. In this monologue, converted into an opera in 1958 by the French composer Francois Poulenc, a woman, jilted by her lover who is about to marry another woman, is alone in her bedroom. She engages in a farewell phone conversation, often interrupted by disconnection and other voices on the line. The play is not only the psychological description of a character but also a criticism of the dreadful French phone service of that period. The woman's mood changes while she tries to obtain an explanation of her lover's betrayal, from anguish, loneliness and madness, to forced calm when she pretends to be brave and to exasperation towards the phone operator. At the end she winds the telephone cord around her neck in a desperate gesture, falling on the bed, her head hanging, the phone receiver lying like a stone. The phone is the mediator in this drama, the technological symbol of the communication and also of the sentimental helplessness. This play has been filmed by Roberto Rosellini featuring Anna Magnani, *Amore*, 1948; an American television adaptation was made in 1967 by Ted Kotcheff with Ingrid Bergman. Pedro Almodovar's film *The Law of Desire* also includes an extract of this play.

The telephone was perceived by its first users as a way of reducing loneliness and anxiety, a purveyor of increased feeling of psychological and even physical security. These characteristics were studied in a particular situation, the sudden deprivation of the telephone. In February 1975 a fire in a switching centre in New York left a 300-block area of Manhattan (around 100.000 customers) without phone service for 33 days. The research carried out afterwards about this period studied the hypothesis of the telephone as a reducer of loneliness and anxiety, a maintainer of the groups' cohesion, or as an intruder in the private sphere. The results showed that there is no satisfactory alternative to the telephone and its essential role to urban life-style. These unfortunate New Yorkers felt isolated, uneasy and less in control of their lives. There weren't clear compensatory behaviours. The jump on TV and radio consuming or on visiting friends was modest. The receiving calls were missed more than the outgoing. The telephone is an instrument of urban adaptation. It allows an imminent connectedness and an immediate interaction that shapes the symbolic proximity, which counteracts social mobility (Wurtzel and Turner, 1977: 246-261). Telephones did not cancel out distances or the organisation of space, but modified the use and effect or both. Telephones are operators of concentration and dispersion. In the example of the skyscrapers they facilitated the office concentration in urban areas. In the other hand,

by providing a sense of proximity beyond physical presence they helped mobility and dispersion. Patterns of settlement are determined by other factors. The telephone helped in the development of larger metropolitan systems with a more diversified and complex structure (Gottmann, 1977: 306, 309-311).

The telephone soon became a technology of sociability, reinforcing the local relations. It represented the expansion of a dimension of social life: the realm of frequent checking-in, rapid updates, easy scheduling of appointments and quick exchanges of casual confidences, as well as the sphere of long-distance conversations. The case of the early years of telephone use in the USA didn't reveal any clear sequence of dramatic social changes. There are no psychological changes that mirrored the characteristics of telephone. Americans used the telephone to enhance the way of life they were already committed to. Its history is different from other technologies, such as the automobile. This history is also a proof of the user's autonomy from the pressure of vendors and from any supposed technological imperative. Such autonomy is never total. It's limited by structures beyond their control, as the incomes, the prizes, where companies marketed their services or the role of government (Fischer, 1992: 268, 269).

1.4.3 Conclusion

The telephone network constitutes the most ubiquitous technology and "the largest and most complex machine in the world" (Cherry, 1977: 122). It embeds a plurality of uses, among others those quoted by Katz (1999: 353): a way of extending sexual interests, projecting interpersonal power, maintaining, destroying and penetrating status differentials, practising surreptitious surveillance, shocking, imposing one's agenda on other people, repairing or breaking off a relationship or seeking and making confessions and expiation.

The history of the introduction of landline telephones shows that the affordability and the availability of the phone made the subscriptions first in the more affluent households, and quite late in the working class ones. The prejudices, narrow-mindedness and will to keep the phone as an elitist product of the early industry men facilitated the slow spread of the telephone. In relation to the dynamic on the modernity, the early use of the phone for emergency calls, commercial activities and sociability/conversations widened and deepened existing social patterns rather than altering them. Telephony enhanced the participation of all kinds, local and extra local, expediting the expansion of all social activity. Instead of a growing impersonality of the exchanges and communications, the phone favoured and increased privacy: the

participation and valuation of private social worlds as opposed to the larger, public community. Most people regarded telephoning as a way of accelerating social life, breaking isolation and increasing social contacts. A minority complained about gossip, unwanted calls, wives and children talking too much, or found it disturbing and anxious.

This review raises some interesting issues, which could be useful in the perspective of a study on mobile communication devices. One is the conflict between the users' views and the industry men regarding the ownership of the device and the right uses. This conflict between users and producers could be important in the case of 3G mobile phones and the increasing number of partners. another important teaching from the history of landline telephone is the power of users to impose their purposes, even in a constraining context, and how neglected and marginal users find successful uses, unknown or dismissed before by the experts. Women and sociability, teenagers and SMS are two different examples of this fact.

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1.5 A Social Map of Mobile Telephony: A Literature Review

1.5.1 Introduction

The mobile phone seems to have inherited from the land line telephone a lack of interest by social scientists. Few studies are concerned with this technology. As with the old phones, mobile phones' quick acceptance and "naturalisation" are the reasons given to explain this oblivion. Radio and cinema yesterday, and the Internet today, are more spectacular and exciting subjects for scholars. Mobile phones are also elusive to conceptualise. Although being an example of new media, they have the transparency and naturality of the fixed phones. As conveyors of talk their mediation is forgotten. They are not a form of representation, but simply a medium (Cooper, 2001: 20). According to this fact, it is necessary to find elusive and disposable concepts to grasp mobile telephones, able to understand a technology which connects local (conversations) and global (network, satellites, transmission points), which is a point of contact between different domains (public and privacy, work and home). A theoretical mobility is required to study this assemblage of people and technology forming a network that enables actions at distance (Cooper, 2001: 29).

Despite the strong link with land line telephones, mobile phones are a new type of technology--mobile, small, and potentially constantly connected. Their use shows new communication patterns embodied in short messages and calls. For mobile phone calls and SMS the threshold for making contact is lower (Kopomaa, 2000: 63, 112). Instead of competing with other technologies of communication, they allow different communication patterns (Harper, 2001: 222): short messages and short calls, the possibility of transmitting a mood or a particular experience in real time or, in work situations, brief conversations primarily serving the function of making sure both parties agree with some brief discussion of status or progress. Mobile telephones are multifunctional and complex: "The computer has disappeared inside the mobile phone" (Brown, 2001: 5). Their different functions--send and receiving calls and messages, phone book and calendar, clock, games, calculator, online data, caller identification, personal voice mail--are some of the reasons for their success. This also implies that there are multimodal devices, including voice, text and images. Mobile phones consist of hardware (handset, battery and charger), software (menus and display-based controls), "netware" (network, type of service) and "bizware" (marketing communication, details of the service agreement, calling plans, sales policies and customer service) (Palen and Salzman, 2001: 136). This complexity explains the

difficulties in conceptualising this technological device, and also the difficulties faced by new users in understanding it.

One of the specific aspects of mobile phones that will be developed in this review is that it is an "indiscrete technology" (Cooper, 2001: 24). It is not that mobile phones facilitate forms of social indiscretion, but they do have the capacity to blur distinctions between ostensibly discrete domains and categories, such as public and private, remote and distant, work and leisure. These categories were already problematic before the appearance of mobile phones, but these provide a way of linking and one route to rethinking them. The study of the use of mobile phones in different social situations exposes the taken-for-granted nature of society (Ling, 2001).

Instead of thinking of the telephone as a technological addition to communication, Cooper (2001: 28) proposes to consider it as something presupposed by communication, a signifier of communication more generally, a representation not of the technological rationality but of the sociability in itself. Its role in novels, plays and visual arts is an example. Phone conversations and the telephone as an object symbolise the characteristics, limits and ambiguities of human communication. Phones are a kind of “quasi-object”, a term that French philosopher Michel Serres applied to assemblages of technology and normative social practice, neither constitutive of, nor reducible to, the ways in which it is used (Cooper, 2001: 28).

1.5.2 History of a non-development

According to Barry Brown, the history of the development of mobile telephony is almost the history of a non-development (Brown, 2001: 7-10). The first commercial systems were up and running in the 1940s. It took 30 years to acquire a mass market. It was delayed by decisions to favour other technologies. The first prototypes were fairly crude technologies. Car based radios would broadcast and receive transmissions from a single fixed based station, where the radio channel would be connected to a land phone line. This system suffered from a chronic lack of capacity. The frequencies used by a call could not be reused. They were blocked by one call for as far as the radio transmissions were received. There was a separate channel for each call. The lack of frequency, not the lack of interest by the public, prevented the early mobile phones systems from becoming mass-market devices. In 1976 there were 44,000 people with mobile phones in the USA, and 20,000 individuals on a waiting list of 5-10 years. Nevertheless, the solution to the capacity problem had already been created in 1947, splitting the coverage area into individual cells, and the technological challenges arising

from this procedure were solved by the late 1960s. However, mobile telephony was delayed throughout the 1970s. Regulatory and business decisions made by the governments and by the telephone companies explain this delay. Authorities hesitated to allocate spectrum for the telephonic system over the frequency required for new TV channels. Companies interested in the development of mobile telephony were involved in legal disputes with AT&T. Therefore, the first mass market for a commercial cellular phones system in the USA started in 1983, 37 years after the first carphone service.

This development wasn't much quicker in other countries without those regulatory constraints, such as the Scandinavian countries, where the mobile phones were launched in 1981. Scientific researchers and engineers were also reluctant and not really interested in this technology, in contrast with the interest in the development of videophones in the 1960s and 1970s, despite the response of market trials. The scientific preferences for one type of technology and the disdain for others, the strange attraction despite commercial failures, is called by Brown a form of *pathology* in the mind of technological developers (Brown, 2001: 9)

1.5.2.1 The Finnish Example

Unlike wired phones, the US is not the leading country in the development of this new technology. Even today the penetration rate of mobile phones is less in USA than in Europe or Japan. The mobile phone system in the Scandinavian countries is the second commercial public mobile telephony system in the world, behind the Japanese system, inaugurated in 1977. A combination of political and cultural factors explain the spread of mobile phones in Finland (Roos, 1993: 3-4, Kopomaa 2000: 28-30):

- An efficient state infrastructure with a traditional telephone network that was already highly developed.

- The existence of long distances and the difficulties in building a fixed telephone network which covers all the territory. Large numbers of Finns spend their holidays in cottages in the countryside or in boats.

- The early creation of the Nordic Mobile Telephone (NMT), a comprehensive, integrated and technically efficient system for the Nordic countries, through joint agreements among the state telecommunications companies. All telephones in the system were always accessible independently of their location.

- A dynamic private electronic industry.

- The price structure. Although the handset was relatively expensive in comparison with other countries, its use was relatively cheap compared to traditional telephones, and cheaper than in other European countries.

In Finland, like in the US in the 1970s, the demand exceeded the supply. This was "always quite unexpected" says Roos: unexpected for the industry, which marketed first the companies, especially small private entrepreneurs. In the 1980s and early 1990s, European and American mobile phone companies followed the same strategy as the fixed telephone companies in their early days: high prices, exclusive use and avoidance of mass market. In the Scandinavian countries, however, the marketing strategies targeted both the business market and the mass market. The distinctive, yuppie use was a nuisance to avoid as much as possible, because it gave the product a bad image. This use was perceived as a way of showing off. Advertising campaigns stressed the dis-identification between the device and this use in order that people who didn't want to be identified as yuppies weren't ashamed of using and purchasing a mobile phone (Roos, 1993: 10, 12).

Kopomaa (2000: 33) defines three stages of the spread of mobile phones and the roots of “mobile phone society” that could be applied to other countries:

1- Class market (1975-1990): mobile phones are expensive and rare, their users are mainly travelling sales representatives and their image is a "yuppie thing".

2- Mass market (1990-1995): mobile phones become a personal commodity for the general public, new technologies and low prices increase their popularity.

3- Diversified mass markets (1995-): mobile phones are manufactured for different groups and lifestyles, and the distinction associated to the use is subtler. Mere ownership is not enough. Therefore the personality and the personalisation of the device are stressed.

Kopomaa (2000: 36) defines the mobile phone as a personal device with allows users to enhance their mobility and their accessibility. We are going to look closer at these three aspects: mobility, accessibility and the phone as a personal device.

1.5.3 Mobility

Mobile phones are an example of what the French anthropologist Bruno Latour calls "immutable mobile". This concept denotes a technology, an inscription or representation (such as a map, for example), in which the portability of unchangeable,

though combinable, information from one setting to another makes possible action at distance (Cooper, 2001: 19). Mobile phones are "nomadic objects", like laptops, PDAs and personal stereos. The independence from a particular location is one of the main features of the mobile phone, leading us to the (not always true) statement that it can be used anywhere and at any time. This kind of phone frees the users from a fixed location and allows them to be simultaneously locally reachable. The mobile phone becomes in itself a kind of place where its owner can be found.

“The mobility of mobile phones differs from (the) traditional mobility. In fact, it’s not mobility as such but the combination of mobility and permanence, the call is mobile, while the person who is being called is “always there”(Roos, 1993: 2).

Different kinds of mobility are related to mobile phones; mobility of the user, the device itself, and the services that can be accessed from different locations. There are also different degrees of mobility. Churchill and Wakeford (2001: 174) understand mobility in the case of mobile workers as a continuum from tight mobility to loose mobility. This mobility is the experience of needing real time synchrony while on the move, maintained throughout ongoing negotiations in established relationships where location information is easily shared or predicted. This is highly collaborative. Loose mobility concerns the requirement of accessing documents or information on the move, asynchronously and without requiring input at such detailed level. It is also highly co-operative, but not collaborative at a detailed level. The fact that it was a mobile device was one of the main attractions when the product was launched and marketed to mobile workers. But since the mid 1990s surveys done in Europe, as the one quoted in Fortunati (2001), have shown that there wasn’t a correlation between the mobility of the users and the use of the mobile phone. This is contrary to the opinion that mobile phones are instruments which enhance mobility (Kopomaa, 2000: 12). The force of attraction of the device was beyond the constraints of mobile work or those of residential mobility. When the device enters the domestic and leisure spheres it changes its identity and loses its connotation of being a mobile technology (Fortunati, 2001:98). Some of those convivial uses reveal another kind of mobility, called micro-mobility by Weilenmann and Larsson, the way in which an artefact can be mobilised and manipulated for various purposes around a relatively circumscribed, or "at hand" domain (Weilenmann and Larsson, 2001: 104). Mobile phones are also a tool for local interaction, rather than merely a device for communication with others who are distant. This kind of use can be observed in the way teenagers employ SMS (Weilenmann and Larsson, 2001; Kopomaa, 2000; Taylor and Harper).

1.5.4 Accessibility

The possibility of maintaining a continuous connectivity coexists with the worry about the continuity of accessibility, concerning unwanted demands, the annoyance of being interrupted and the fear of being controlled. Cooper (2001: 27) quotes both attitudes about the possibility of perpetual contact: from the utopian considerations about an ideal community achieved by unrestricted communication, to the dystopian view of alienated people, treated as resources and instruments, victims of oppression by the mobile imperatives and submission to the machine. Being these mobile imperatives, the ownership, social pressure to have one, the use, the pressure to utilise it and the availability, the pressure to have it switch off. Empirical research reveals that both utopian and dystopian views don't fit real uses. On the one hand, any kind of real community or human relationship could withstand the nightmarish perspective of an unrestricted communication. On the other, mobile phone users, from mobile workers to teenagers, know how to limit their accessibility, not fighting the technology but using its capacities (switch off, divert calls, voice mail, call screening, etc.).

The question of accessibility is therefore directly linked to the mobile phone as a tool of surveillance or monitoring. Green (2001: 33) proposes to understand the information gathering activities beyond the concept of surveillance. Those activities are taken for granted as resources in the everyday relationships of trust, not only between the state and the citizens, or between individuals and others corporate bodies, but among individuals in the course of intimate and interpersonal relations. In our society the notion that individuals should be available and accountable to others, visibly and transparently at any time and place, becomes normal. The question "where are you?" asked in mobile phone conversations is a form of establishing mutual contexts for communication, and enables shared circumstances between people communicating at a distance and a relation of mutual accountability and trust. Accountability is a feature common to co-present social relationships and to those established via mobile phones. Different technical systems allow people to communicate and to be monitored (internet, e-mail) as well as information to be gathered by commercial institutions. Mobile phones are an example of this convergence of communication and information in the same device. A better understanding of the notion of "surveillance" should also take into account that, as a practice rather than a concept, it is contextually dependent, and highly reliant on changing notions of the relative intimacy or abstraction of the relationship concerned (Green, 2001: 36-37). In the case of mobile workers, this monitoring activity is not only a way of controlling the individuals in the move; it also allows workers to keep informed of what happens in the office. Mobile phones are a form of remote background monitoring activity, which help with the catch-up period

when returning to the office. Calls made to colleagues in the office are also a way of avoiding oblivion, of not being "out of sight, out of mind" (O'Hara, Perry, Sellen and Brown, 2001: 184).

In the example of the relationship between teenagers and their parents, the monitoring and regulation by adults is supported and resisted by teenagers themselves in moves toward independence and control of their own affairs. Mobile phones provide a site of negotiation for monitoring, regulation and mutual accountability. Teenagers are aware of the importance of mobile phones with regard to safety and emergency situations. But they also avoid parents' monitoring by not answering the phone or not telling the truth (Ling, 2001; Green, 2001: 38-39). By saying where they are and what they are doing individuals can simultaneously monitor their own and each other's work practices. Social normalisation of monitoring practices at the level of everyday life in public and domestic settings means that individuals can use their mobile phones to assist their own surveillance by institutions, as well as resisting it. At the same time they also engage in routine monitoring of themselves and each other through that same technology, and assume that others are self-regulating and accountable for their use of the devices in both co-present and tele-present contexts (Green 2001: 43-44).

Laurier (2001: 46-61) describes other ways of avoiding the undesirable consequences of the permanent accessibility provided by mobile phones in the case of mobile workers using call screening and voice mail. Mobile workers face a combination of two realities: the need to harmonise among multiple flows of activity and the interplay of planned and improvised action (Sherry, 2001: 112). They suffer the tension of the "anytime, anywhere" possibilities of communication of the ubiquitous mobile phone. The potential disruptions of the constant availability make necessary a way of controlling the access. Doing things that are free of time and space can be highly disruptive when the present time and space require our attention. Mobile technologies of connectivity like the mobile phones produce tensions in bringing together what is present and what is not. The voice mail service is a form of call storage which is translated in return calls. In the case of the mobile worker studied by Laurier, the recorded calls are transformed into "Post-it" notes, emotional clues for the day ahead and requests to be noted and ignored. This service offers the possibility of responsiveness, without being drawn into the particular "pressure" of phone conversations in "real time". It allows one's time-space to be extended, orients one toward distant and non-immediate requests and responses. Call screening is a finely crafted skill among mobile workers. It becomes even a mark of business credibility. "Everyone is busy call screening everyone else. If they don't, then Sylvia (*the mobile work studied by Laurier)* wonders what's wrong with their business!"(Laurier, 2001: 54).

“Remarks about technologies such as cars, mobile phones and WAP somehow causing work to be faster, more mobile and more connected-up tend to misrepresent the technologies and their users, glossing over how their spatio-temporal arrangement in use is just as much about slowing down, holding things in place and disconnecting (Laurier, 2001: 59).

The use of mobile phones by mobile workers contrasts strongly with the advertising images (Churchill and Wakeford, 2001). Advertising shows the "proper" use and helps to set expectations of use. The activities associated with the device are presented as unambiguously positive. According to these authors, advertising is part of the "domestication" of the product in the lives of business users. It outlines the unlimited access to others and to the information and the specific kind of temporality linked to the rhetoric of availability: urgency and vigilance about connectedness. Time is considered to be the ultimate limiting factor, and not the technological features: The image of the future in which there is an imperative to connect, and an imperative for mobile vigilance. The time perspective of this mobile use is characterised by the immediate synchronicity between those in communication. The access to information and to others is seen as unproblematic and always desirable. The devices will reduce the time taken to achieve our goals, reduce our time connect with others and increase our productivity (Churchill and Wakeford, 2001:163-164).

Nevertheless, the results of empirical research about the use of cell phones in the UK reveal the dependence of mobile connections on stable infrastructures (social, environmental and technical) and the seamless move between mobile and "static" modes of working. The capacity to act is linked not only to the technological features, but also to social conventions of communication which prevent straightforward collaborative acts, The time organisation of mobile workers includes mutually negotiated rhythms of contact, availability and accessibility. Services like voice mail transform the mobile phone into an asynchronous communication tool. Moreover, technical features such as the connectivity to the network become the key sticking point only when the network fails, revealing how little people know about the infrastructure of mobile telephony. The real uses of mobile phones manifest the problematic access to the information and to the others. Problems arise from technical difficulties, from personal preferences, and from an inability to connect with others due to scheduling difficulties, sometimes caused by the devices themselves (Churchill and Wakeford, 2001: 173). The notion of "anywhere" implies an Euclidean geometric definition of space; that is, an equivalence of all places. But all places are not the same. Some of them prevent the use of mobile phone due to technical reasons. Furthermore, social rules of behaviour make telephone use inappropriate in places like classrooms, concert

halls, theatres and churches. However, mobile phones are used in other places in which their use might seem impossible or difficult, such as noisy bars, clubs or rock concerts. In these situations the telephone helps to transmit an atmosphere rather than maintaining a conversation.

Something similar occurs with the notion of "anytime". This refers to a linear conception of time, which is the translation to time of the geometrical conception of space. This is a time where all moments are equivalents and measurable, where one can be synchronous to any others regardless to the place, the hour and the activity. The use of mobile phones is an example of how the discipline based on the time organisation and on the strict planning of different activities is replaced by continuous accessibility. The phone call is an advance arrangement, anticipates future meetings and prepares concrete proposals. The systematic use of time is replaced by systematic accessibility. Mobile phones facilitate an increased temporal efficiency by flexibility in the use of time. They allow the postponing and rearrangement of schedules, meetings and appointments. Nothing has to be agreed in precise terms any more. Exactitude in the measurement of time is no longer necessary to co-ordinate activities. Punctuality ceases to be the virtue it used to be. The future is no longer experienced as a sequence of discrete consecutive moments, but as a set of vaguely agreed-upon moments which can be renegotiated as the situation changes (Kopomaa, 2000: 48, 50, 55, 56). The conception and experience of a rhythmic time open to last minute changes and to continuous arrangements between different activities, at work or at leisure situations, is not originated by the mobile phone. But the device facilitates their diffusion.

The mobile phone makes the clock and the calendar unnecessary. It is a calendar and a clock. It becomes a navigation tool determining the co-ordinates of everyday living. These co-ordinates are colleagues, customers, friends, acquaintances and their schedules or the lack of them. (Kopomaa, 2000: 123). The mobile phone replaces the clock and the calendar as the timekeeper of the linear time concept. However, it is also the tool for a rhythmic, more spontaneous and "last minute" time organisation.

1.5.5 Personal but not Individual

Mobile phones are also literally replacing watches and becoming the most common personal device. Unlike fixed phones, they are considered as a personal possession (Grant and Kiesler, 2001: 126). They are portable, wearable and become an extension of the body, like a watch. Their meaning is not only utilitarian and useful, but also

emotional and entertaining. Mobile phones recover the playful aspect of the early days of fixed telephone, when it was called "Bell's toy". Mobile phones facilitate creative expression, especially in the case of SMS. They are a kind of toy object and tool for play, with games, animations, pictures, smileys or rings. According to Kopomaa (2000: 70-71), the spread of technologies goes from novelty to invisibility, but in contradiction to this stage of "sobering up", the playful attitude toward mobile phones is likely to survive into the future. Portable phones inspire users to play with them, and that is precisely the quality which attracts people to the device. The symbolism of miniature objects emphasises this personal and playful character. Miniature objects are assimilated into toys and to the nostalgia of childhood, and also to intimacy, mobility, secrecy and control. Mobile phones enhance the owner's feeling of increased personal security and safety, and the ability to respond to sudden outside changes (Kopomaa, 2000: 36-37).

The use of mobile phones is associated with personal lifestyles. They has a value and act as a symbolic marker. Mobile phones receive a range of meanings linked to identity, sexuality and desire. Cooper, Green and Moore (2000) analyse the role of mobile phone associated with gay lifestyles, as they appear in fictions like "Queer as Folk" and in practices and discourses of young urban gay men. In the interviews quoted in the article, those men consider the mobile phone as a means to maintaining real-time contact with significant others, a decisive element of the gay lifestyle. The interest of such statements doesn't lie in whether they are true or not. On one hand, there is not just one gay lifestyle; on the other, the convivial use of mobile phones to strength friendship bounds and to maintain personal networks is not exclusive to gay men. But the fact that a common use is considered a particular and distinctive one, linked to a specific group and lifestyle, demonstrates the importance of mobile phones as personal devices taking part in one's own personality.

Advertising campaigns addressed to mobile work emphasise its individual use in both senses: as the enhancement of the personal skills and control over the environment facilitated by the alliance with this device, and as the only (or at least the main) device and format to carry and communicate information. According to the advertising rhetoric, one can not only replicate activities in the office and other spaces, but can surpass such activities with and through the device. Such images obscure other technologies and other formats in which our information is created and kept, such as paper. Workers are represented as individualist in their use of the technology. They are independent, and work alone. The technological devices are not part of a collaborative network of devices and collaborations (Churchill and Wakeford, 2001: 163). Nevertheless, as we mentioned above quoting this research, the use of mobile phones depends on stable

social infrastructures. Mobile workers often find themselves in a situation of waiting. This waiting--for events to happen, for flights and trains, for information and business deals or for other people to do things--is a common experience which demonstrates an interconnected network of working relationships, collaborators and the interconnectedness of devices (Churchill and Wakeford, 2001: 172). Mobile phones are used in conjunction with other devices and with documents (O'Hara and al., 2001: 187). The same need for flexibility, in order to adapt to the unpredictable circumstances and contexts that makes mobile phone attractive, asks for its coupled use with paper documents.

Teenagers' use of mobile phones reveals that they are more than a personal device (Taylor and Harper). They are a tool for collaborative interaction in the local environment. The sharing of mobile phones, as their more individual uses, helps to invigorate and sustain social networks. Weilenmann and Larsson, in their research with Swedish teenagers, identify different forms of sharing, from the "minimal forms of sharing" like showing, writing or deciphering SMS, to the "hands-on ways of sharing", as when several people take part in a conversation sharing the phone in a kind of multi-party talk. The borrowing and lending of telephones is a mark of trust and friendship, and makes the mobile phone a collaborative resource. These Swedish teenagers also share mobile phones with unknown people with the purpose of making contact, as when storing your phone number in other's mobile phones.

All these empirical examples show that the personal character of mobile phones doesn't imply that their use is individual, and even less individualistic. They are a tool for networking, for nurturing and maintaining social cohesion of groups, for creating "nomadic communities". However, the individualistic argument proves difficult to avoid in the minds of social scientists. It seems that it occurs with the link between mobile phones and individualism the same as with fixed phones and the process of modernisation. If one believes that we live in individualistic societies, the success of mobile phones can only mean that they are "perfectly suited to the ideology of an individualistic society", as Kopomaa asserts, forgetting all the examples he provides in the same book invalidating such a statement.

1.5.6 Re-animating dead times and transitional settings

In the introduction to this review we outlined the indiscreet character of mobile phones, whose use blurs the boundaries between social spaces, like private and public. Moreover, this technology gives new life and new meaning to the transitional spaces

and times of our everyday life. The separation between work and personal life is a 20th century concept. The one between public sphere and privacy is also a modern concept, especially characteristic of Anglo-Saxon and Protestant societies. According to Grant and Kiesler (2001: 121), wireless technologies bring us back to earlier times when the boundary between work and personal life was less distinct. A specific feature of mobile phones is to facilitate more communication in transitional work settings, like hallways and lobbies, and in "dead" times. They are also employed to make communication in mixed-use settings, like cars or restaurants. The authors reveal the resulting paradox: in the previous era increased mobility led to an increasing separation of work and personal place and life, but wireless technologies may be changing that.

Mobile phone communications make two different spaces become parallel: the physical space where one is talking, and the virtual space of the conversation. While using the mobile phone we are having simultaneously remote and co-present interaction. The coexistence of and potential friction between public and private are now material and observable phenomena. At the same time these uses reveal the limits of this separation. The use of mobile phones is sometimes considered an intrusion of the private world into the public sphere, and also as a resource for achieving privacy, like in the case of the teenagers at home, or when one member of the household wants to have a secret conversation. The former, being the case of private calls made in public places, requires a specific behaviour, non-verbal action and interaction, in order to manage the potential embarrassment. The avoidance of eye contact and certain bodily movements display the "unwritten rules" of the use of mobile phones in public places (Murtagh, 2001: 85).

Some authors affirm that mobile phones, though increasing the amount of public communication, reinforce the boundary between acquaintances and strangers, because they prevent people from talking to strangers in public spaces, reducing these small exchanges that support social communication. Such a statement has to be contrasted with empirical observation. Patterns of social interaction among strangers are different in different cultures. Londoners didn't wait for mobile phones to stop talking to strangers in trains or at bus stops. In the other hand, in southern countries, where one can talk to a stranger without being considered potentially mad or dangerous, and where the rules of civil inattention[2] in public places never really ruled, this communication pattern seems to prevail despite the success of mobile phones.

[2] This expression created by the American sociologist Erwin Goffman refers to behaviours in public place like avoiding a state of mutual gaze.

Kopomaa (2001: 17) considers that the use of mobile phones extends the intimate social sphere at the expense of the public, because we can have private communication in public spaces, which means a privatisation of the urban space. The author seems to forget that private conversations have always taken place in public, and both public and private activities and exchanges can take place either in public or in private spaces. Friends and relatives chatting in a train not only discuss weather or politics, lovers kiss in the park benches. Home can also be the place for work or for having an anti-globalisation meeting. Subjective experiences of the urban space don't mean its privatisation. The idea of the mobile phone as an example of the privatisation of public space is a quite common belief. Kopomaa shares the idea of the American sociologist Richard Sennet that dealing with private and intimate matters in a public milieu is a sign of an uncivilised society. This is not only a very arguable, but also an outrageously Anglo-Saxon, self-centred statement.

The use of mobile phones in urban places creates new urban practices and new meanings for urban space. As a tool of arranging affairs and managing social relationships, they intensify the use of public space. These changes force us to reconsider the definition of correct behaviour in public places, and of what is annoying. The spread of mobile phone use diminishes the annoyance of the phone ringing and the phone conversation, as long as certain rules are respected, like answering quickly and not talking too loudly. We disagree again with Kopomaa, who claims that in public urban spaces individuals have the "right" to create their own space, a private territory, and the corresponding frame of mind. The interruption of the immersion in private thoughts is viewed as the violation of a basic right associated with the use and enjoyment of the urban space (Kopomaa, 2001: 44). Urban public spaces have a soundscape made of different sounds and noises, among them the mobile phone rings. In a space out of our control, we certainly tend to create our own space. But the use and enjoyment of those spaces are not correlated with any supposed right not to be interrupted. The experience of strolling in urban spaces shows the opposite indeed. Different images and information constantly interrupt us. Moreover, the subjective daydreaming and reflections of strollers and commuters shouldn't be systematically considered private thoughts.

The use of mobile phones is perhaps better understood if we leave the separation between public and private and consider it as a new space resulting from this connection between two different spaces. For instance, in the case of teenagers, the use of mobile phone at homes, as in the bedroom at night for the ritual of goodnight messages, is not only a way of escaping the monitoring of parents or of achieving privacy at home. It is, in their own words, a way of bringing college home, (STEMPEC

Research Team, "The use of mobile phones by school children"), of communicating the two main worlds of their everyday life. It is also a way of giving a new meaning to this night-time when one is alone in the bedroom before falling asleep. The computer, the hi-fi and the Walkman also contributed to transforming the home space, creating a personal, but not individual, territory.

The mobile phone is a kind of virtual place. It belongs to the family of "Third Places" (Ray Oldenburg, 1989 quoted by Kopomaa, 2001: 110). Those are meeting places where to spend time and relax, let down the façade and be yourself, like bars, pubs, cafes, clubs, shopping centres. The main activity in such places is chatting and playfulness. Their features are youthful humour, comradeship, freedom from social bonds and obligations, therapeutic power and desire for change and relation between sexes, flirting and courting.

One of the main features of mobile phone use is the ability to escape boredom, to transform "non-places" and dead times into convivial and meaningful ones. The concept of non-place belongs to the French anthropologist Marc Augé. It refers to supermarkets, airports, hotels, railway and tube stations, motorways or shopping malls. These are transitory places which are everywhere and nowhere, and which acquire their identity from being on the way to other places. These spaces are shaped in relation to certain ends--transport, transit, commerce or leisure. Augé asserts that they are not meaningful, like the "real" places. Real places have a history and a social context, and embody normal social interactions, while in non-places people act fundamentally alone, without any particular reference to a common history or similar experience. We agree with Augé when he outlines the growing importance of those places in our contemporary societies, in terms of their spread and of the number of people and time spent in them. But this same fact questions their social meaninglessness. People inhabit those places, re-inscribe their identities, stereotypes and relationships in them. The use of mobile phone is a way of achieving this.

1.5.7 Conclusion

Mobile phones are the most successful communication devices ever. The commercial launch of the device took a long time from the creation of the first prototypes. The pattern of diffusion followed that of the land line phones, from business and upper classes to a mass market centred on sociability uses. But this was achieved in a much shorter period of time. The reasons for purchasing the device were also the same: work efficiency, security in emergency cases and sociability. Many of the studies quoted in

this review concern mobile workers or teenagers, the former in order to analyse the use of mobile phones in a work environment, the latter to consider the creative uses and the importance given to mobiles phones in their everyday life. Teenagers, youngsters and young adults have adopted the new device faster and more openly. According to the Eurobarometer survey of 10,000 Europeans between the ages of 15 and 24 carried out in April and May 2001, mobile phones top the list of new technologies used by young people at least once a week (80%), with very little variation between countries. This is far ahead of computers, the internet and e-mail.

The launch and spread of wireless phones have aroused some fears, as happened with the land line telephones. A certain amount of "moral panic" about its effects ensues the adoption of many new technologies. Some of those fears are similar in both cases: threats to the health, danger of addiction, the decline of traditional interactions, the loss of interest in taking part in social activities or inconsiderate behaviour. Others are new, such as the privatisation of public space, the intrusion of work into the private sphere, or the increased possibilities for control.

We have briefly exposed the three most quoted distinctive features of mobile phones: mobility, accessibility and personal device. The study of the real uses of mobile phones reveals some limitations and enlargements of these three aspects. The experiences of time and space associated with the use of mobile phones have also been highlighted in this review. Some of these authors wonder about the parallel and opposite meanings derived from the mobile telephone uses: utilitarian use/leisure, autonomy/dependency, freedom/control, richness of interaction/introversion, private/public (Kopomaa, 2000: 122). Its ambiguity and versatility is the result of the mutual shaping between technology and social uses and meaning. The paradoxical aspects of its uses coincide with the ambiguity and limits of human communication.

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2 A COMPARATIVE STUDY OF MOBILE PHONE USES IN LONDON, MADRID AND PARIS.

2.1 Introduction

This document presents the results of a longitudinal study based on fieldwork carried out in order to compare mobile phone use in London, Madrid and Paris in 2002 and 2004. The research entails observing how people use the mobile in public urban spaces and also interviewing mobile phone users, camera phone owners in 2004, in the three cities. The study focuses on how people use the phone, what phones mean to them and how they evaluate their and other people's use. Therefore, one of its aims is to compare the findings in order to evaluate the evolution of behaviours and meanings. Beyond the comparison, the 2004 research involves issues absent in the previous study, such as the role of emotions in mobile phone communication and the questions raised by technological change, like the use of multimedia handsets.

This research builds on previous studies undertaken in the Digital World Research Centre (DWRC). DWRC's Socio-Technical Shaping of Multimedia Personal Communication (STEMPEC) project aimed to investigate how social factors influence the shape and the patterns of usage of mobile phones, which researched, among others aspects, the etiquette and use of mobiles in public places in England (Cooper and al., forthcoming; Murtagh, 2001), the Vodafone Surrey Scholar project (Lasen, 2002, 2003a, 2003b) and "The Social Shaping of 3G", for the UMTS Forum which studied the behavioural patterns that may be constraints or enablers for the introduction of 3G devices (Vincent, 2003; Vincent and Harper, 2003).

This study also takes into consideration a growing literature on the role and influence of mobile phone use related to etiquette, the distinction between private and public, behaviours in social spaces and cross cultural comparisons (Basset et al., 1997; Ling, 1997, 1999, 2004; Kopomaa, 2000; Townsend, 2001; Brown, Green and Harper (eds), 2001; Katz and Aakhus (eds.), 2002; Katz, (ed.) 2002; Katz et al., 2003; Jauréguiberry, 2003; Kasesniemi, 2003; Mante, 2002; Plant, 2002; Rivière and Liccope, 2003; Weilenmann, 2003). It also draws on a growing interest in mobile phones and affective communication, building on research suggesting that mobile phone use mediates imagination and the expression, display, experience and communication of feelings and emotions (Ellwood-Clayton, 2003; Fracchiolla, 2001; Lasen, 2003b, 2004; Lobet-Maris. and Henin, 2002; Vincent, 2003, 2004; Rivière, 2002; Harper, 2003). This research also builds on many of the empirical studies concerned with what teenagers do with mobile

phones (Kasesniemi, 2003; Kasesniemi and Rautianen, 2002; Weilenmann and Larsson, 2001; Weilenmann, 2003; Taylor and Harper, 2002, 2003; Lobet-Maris, 2003; Ling, 2004, 2003; Ling and Yttri, 2002; Skog, 2002; Oksman and Rautiainen, 2003; Green 2003; Johnsen 2003). This study focuses on adult users, though it does not mean that adults' uses and behaviours are entirely different from teenagers' uses. This research reveals common practices related to affective communication through mobiles, the collective use of the phone, and their use in public places.

2.2 Summary

2.2.1 Camera phones

- Taking and showing pictures increase the ability of the device to be shared, modifying the strictly individual belonging of traditional mobile phones.
- Young men interested in technology are more likely to own a camera phone than the rest of mobile phone users.
- Camera phone owners can be differentiated in two categories: those who wished to have a camera phone and those who got one because the operator gave them the opportunity of a cheap upgrade. This difference does not necessarily result in a different use of the multimedia options.
- Camera phones produce specific kind of pictures and uses of a camera, because users always carry them and because taking and deleting pictures is easy and costless.
- All the camera phone owners interviewed take pictures but only a small minority send MMS.
- The main reasons not to send MMS are not knowing how to do it and not knowing enough people who could receive them.
- Only a small minority of the participants in the research download the pictures to a computer. Most of the people interviewed use the pictures to personalise their phones and phone books and to show them to other people. They delete the pictures as they replace them for new ones.

2.2.2 Mobiles in public places

- Mobile phone conversations become an important source of information about strangers in urban settings. This is one of the ways in which mobile phones are changing the urban landscape and the relationships between its inhabitants.

- The disclosure of personal information in mobile phone conversations creates new occasions to observe, calling the attention of city-dwellers to the usually invisible others. This raises the question of whether mobile phone use in public places increases the trust in strangers or at least rends them, and the public places, less threatening and more welcoming.

2.2.3 Dependency and connectedness

- The majority of the people interviewed acknowledge that they are more or less dependent on their mobiles.
- Not being able to make a phone call when one wishes has become unbearable. It makes people feel miserable and miss even more their lost or stolen phone.
- Mobile phones and their promise of permanent accessibility allow people to believe that they will not miss any opportunity, that they could handle or take advantage of the unexpected thanks to their mobile.
- The ability of being able almost always to communicate one's location and to know other people's is becoming taken for granted, making people feel uncomfortable when they cannot do it.
- Deleting a number from the phone book has the signification of banning someone from one's life, a physical act meaning oblivion. A technical feature of the device, the capacity to store very many phone numbers, allows people to delay the moment of acknowledging that some contact has really been lost, and people delegate to the device the decision about when a relationship is finally over.

2.2.4 Political uses

- The events in Madrid around the terrorist attacks and the general elections in March 2004 highlight the fact that mobile phone uses are not always mundane.
- When mobiles phones are employed to organise political actions and mobilisations (smart mobs), the notion of virtual presence acquires a different meaning. The others virtually present thanks to the mobiles are not only friends and acquaintances but also all those who share similar ideas, views and angers, and are ready to be mobilised in collective actions.

2002	2004
The use of mobile telephones in public places has become banal and generally accepted in the three cities, London, Paris and Madrid. Mobile phone sounds, both ring tones and conversations, are a part of the soundscape of public transport. They are also present, though less used, in restaurants.	All kinds of users in the three cities, women and men of all ages and ethnic backgrounds use mobile phones in the streets in any weather condition, to write and send SMS and to have short and long conversations.
Mobiles are always at hand, carried in bags, pockets, belts, and for some Spanish men, in the hand.	From always at hand to always in the hand. People carry the phones in their hands, fiddle with them and touch them, when they are not being used. Most of the different ways of carrying the phone entails a contact with the body.
Older phone users observed in public places are less present than other age groups. In Paris, no woman over 50 was observed using a mobile on the street. In Madrid mobile phone users are noisier than in the other two cities. Noise is one of the main annoyances of mobile phone use in public places according to the interviewees.	A growing number of older users have been observed using their phones in streets and other public places. A substantial number of them were carrying multimedia handsets. This reveals a substantial speed of social change.
	Loud users are still the more annoying aspect of mobile phone use in public places. Phone users in Madrid public transport are generally less loud than

	two years ago. In Paris the volume of the voice is the same for face-to-face and phone conversations, unless people are talking of private matters, in which case they speak low. Surprisingly, considering how quiet buses and carriages use to be, London users can be the loudest of the three cities. Maybe because, in general, people seldom shows any external sign of being bothered. With the exception of teenagers, some London adults, and some elderly users, melodies and polyphonic ring tones do not seem to be very popular and often are considered disruptive. Most interviewees have typical phone rings, the one that imitates the sound of an old landline phone being especially popular.
Mobiles phones are used to micromanage and to make waiting time and commuting time useful.	Public transport is chosen by many people to “micromanage” work tasks, meeting arrangements, and also matters related to domestic and family organisation, when they are on their way home, and on the way to work and to working meetings.
In Madrid and Paris users are more willing to talk in the middle of the pavement than in London, where streets are mainly transient places.	Londoners have phone conversations while standing in the street too. People using mobile phone find new uses for urban furniture and

	construction elements, which become improvised chairs, tables and places to lean when one is talking, texting, playing, checking something in the phone screen or taking notes from a phone conversation.
Temporary phones zones, a sort of improvised open-air wireless phone booth, where several people, unaware of each other, stop in the same place to make a call.	Phone users seem to attract other phone users, forming temporary phone zones in different places of the city. In London it often happens near tube stations exits, despite the general opinion, and the police ads placed in the same areas, advising of the presence of phone thieves. The same behaviour of phoning together is observed in airports in the three cities, and in the space between carriages in French trains.
There can be a conflict between phone use etiquette and common etiquette in public places: users who are focused on their conversation do not behave as pedestrians are expected to.	People using their phones in urban spaces do not withdraw into the conversation, forgetting where they are. They share their attention between the phone exchange and the surroundings.
Mobile phones are also used in public places where they are banned, like cinemas, concert halls, classrooms and even planes. Phones going off in some of these places do not cause surprise and are in the main tolerated. Madrid users tend to keep the phone switched on all the time, even in places where its use is banned.	Phones are used and left switched on in places where their use is banned. Users negotiate the use according to the situation, interpreting the rules and adapting their behaviour instead of just following the interdiction. Most of the interviewees in the three cities keep their phones always switched on.

People, mostly in Paris and London, switch their phones off when they do not want to be bothered and when they are in places where mobile use is unacceptable or banned.	People in the three cities tend to leave their phones always on, choosing the silent mode when they do not want to bother other people or when they are in places where the use is banned. Some people just leave the phone in a place where they can not hear it when they do not want to be bothered.
In London and Paris users tend to separate the phone conversation from face-to-face interaction, whereas in Madrid users tend to integrate them, allowing third parties to take part in the conversation and making collective use of the mobile.	Phone use and face-to-face interaction are not always kept separated, without entailing the sharing of the conversation and the collective use of the device. Those collective uses are still more frequent in Madrid than in London and Paris
Most of the people using their mobile phones observed in London and Paris were on their own.	Most of the people using their mobile phones observed in London and Paris were on their own.
Examples of multitasking while using the phone are found in observation and interviews in the three cities.	As the dexterity of using mobile phones increases with the use and familiarity with the device, the examples of multitasking proliferates: texting and dialling while walking, phoning and smoking while walking, or while drinking and taking notes; phoning, walking and pushing a pram, or a bike or a trolley; phoning and rolling; phoning and kissing; maintaining two conversations simultaneously, one at the phone, the other face-to-face; phoning and ordering in a bar or restaurant, talking

	and eating, using the mobile and a personal stereo.
Londoners and Parisians are more likely to treat a phone call as an interruption, for instance when being with other people, than users in Madrid. These seem to give priority to the call and always try to answer, as letting a call go unanswered is considered rude and impolite. This is not the rule for Parisians and Londoners who screen the calls received.	The different consideration of calls as interruption persists. Madrid users keep avoiding the use of voice mail, which is considering impolite and annoying and also do less call screening than users in Paris and London. However the widespread use of the mobile, across different social groups, times, places and situations, entails a growing flexibility in evaluating when its use is suitable or not, according to the situation, instead of following general rules of etiquette valid for all occasion.
The younger the users the less they are bothered about being overheard. French users are more worried by the blurring between private and public caused by mobile phone use than English and Spanish users.	Only four interviewees over 40 avoid private conversations in public places.
When both, mobile and landline phones, are available, most people tend to use the landline, unless they are calling a mobile.	Mobiles are used even when a fixed line is available, because it is easier, because laziness, and also because people have acquired the habit of moving around and changing the place when they are at the phone.

2.3 Fieldwork and Methods

In 2002, the fieldwork was undertaken during one week in Madrid, (25th March–1st April), another in Paris (15th April–21st April), and, finally, in London in the remaining days of April. In 2004 the fieldwork was carried out during ten days in Madrid, (15th March–19th March, and 1stApril–7th April), another ten days in Paris (20th March–30th March 2004), and, finally, in London the observation took place between 19th and the 30th April, whereas the interviews were not finished until June, due to difficulties encountered finding camera phone users willing to be interviewed. The fieldwork in the three cities consisted on observation of mobile phone use in public places and thirty semi-structured in-depth interviews, ten in each city, with phone users aged 20 and over.

Ethnographic approaches regard the social world as dynamic, changeable, always in the process of evolving, of being constructed through a web of social relationships. The emphasis is on the importance of understanding lived experience and of reflecting on the meanings associated with everyday life. It is a method for understanding what activities mean to the people who do them. Ethnography aims for in-depth rather than wide coverage. Therefore it was eminently suited to this project. In doing ethnography the researcher is the main instrument of data collection, therefore subjectivity cannot be avoided. It is necessary, then, to take a self-conscious approach to research. As the main objective is to obtain descriptions people give of their cultural world, the researcher has to provide them with the opportunity to describe their experiences in their own terms. In this study, identifying what mobile phone behaviour is acceptable, unacceptable, intrusive or banal within a specific social context is dependant upon people's common-sense knowledge of the peculiar features of the mobile phone itself and their knowledge of the settings where this usage takes place.

2.3.1 Observation

Observation of people's behaviour in public places was at the same time **participant and covert**. Covert because those observed did not know what I was doing and participant because like them I was using urban public places: walking on the streets, strolling in parks, sitting in squares, taking buses, tubes and trains, eating and drinking in cafes and restaurants. Observing other people in public places is also a common practice of city dwellers although the purpose, intention, level of consciousness and systematic of such observations are not the same as the ethnographer's observation. Therefore by being in public places, behaving apparently like everyone else, and

looking at other people, more or less openly, the observation was partially participant too.

The instances observed were recorded in notes describing phone users and their behaviours, paying special attention to the display of emotions, while talking, texting, and in some occasions when taking pictures: their gestures, body language, the direction of their gaze, and also the display of the handset and where it is carried. People's behaviours in relation to those in their surroundings and the reactions towards the phone user (attention, disinterest, censure) were also taken in account, as was the handling of the simultaneous use of the phone and face-to-face interaction. In the cases where it was possible these observations were related to the content of the communication.

Using observation as a method, the research does not introduce artificial changes, and data have a greater authenticity and validity than those obtained in a survey for instance, the pitfall being that the observer only gains a restricted and partial understanding of actions observed. Partial because one never observes all the actions and behaviours, in this case all the existent mobile phone uses, and also because all ways of seeing are partial, incomplete and rarely disinterested. However, this problem is also encountered by surveys, interviewing a few hundred or even thousands of individuals does not ensure coverage of the totality of existing uses within a population of millions.

Observing mobile phone use presents some difficulties, depending on the mode of communication and also where the observation is taking place. It is easier to know when someone is talking. But for non-vocal uses, if the observer is not really close, it is unclear what the users are really doing: texting, playing, going through their phone book, reading old messages? When observing indoors inside a train carriage or in a restaurant, the ethnographer has got the time to watch the position and movements of the user's thumbs and the keys that are being pressed in order to know whether she is typing a message or playing a game. That becomes more difficult when users are moving and the observer only gets a fleeting glimpse of their behaviour. Therefore it is not possible to get the same amount of information from each instance observed. Variations depend on the action (talking, texting, reading SMS, playing, using the calculator, taking a picture), the place, the distance between the observer and the user, and what the user is doing while using the phone (walking, standing still, sitting, interacting with other present, taking notes). When a particular phone use is not evident, observing the duration of the action, the position of the thumbs, the keys

pressed, the gaze and the simultaneous actions undertaken can give us clues to interpret people's behaviours.

People were videoed using their phones outdoors. The **recording of images** is a particular good research method for our topic. According to Douglas Harper, an important visual sociologist, this method is particularly suited to the studies of interaction, the presentation of emotions and the studies of material culture (Harper, 1988). The visibility of the camera could make the observation less covert, revealing the presence of the observer. This time the filming was also restricted to open spaces where the camera presence is less intrusive. The widespread use of video recorders, even more in these cities used to a continuous presence of tourists, made easier the task and reduced the risk of an unfriendly reaction if people realise that they are being filmed. The problem of filming is the need to divide one's attention between observing and using the device, with its technical requirements. This problem was overcome by not recording all the instances observed, by dividing the observation time between the traditional recording through notes and the videoing, carried out in fewer occasions and once a certain amount of observations had been accomplished. The instances filmed allow a repeated and deeper observation of body language, gestures, emotional display and can also be used as examples and visual evidences for publications and presentations. In order to be more than illustrations, that is, to become elements integral to sociological investigation and understanding, the images should contain and express ideas that are sociological in their origin and use, and thus may not be as transparent to an immediate reading as other photographs, they need to be read in context, as they can be counter intuitive and refute common notions (Becker, 1995).

2.3.2 Interviews

Information about mobile phone use was also obtained through **semi-structured in-depth interviews**. The aim of the interviews was to get a better understanding of the behaviours observed, helping to discern meanings and motivations. Interviews tell how people understand and account for their day-to-day situations. They also allow us to evaluate the coherence, or lack of it, between what people say and what they do, having in mind that in this case people observed and people interviewed were not the same. The purpose was not to collate typical responses to pre-defined questions from a random sample, or to generalise about the views of a population, but rather to record in detail the opinions and ideas of a small number of individuals. Thirty interviews were carried out in 2002 and another thirty in 2004, ten in each city, with five men and five women. They were adults aged twenty and over.

The questions referred to mobile phone use in public places and etiquette, when and where they use the phone, whom they call or text and for what reasons, when they switch it off, when and why they use the landline telephone instead of the mobile and whether they carry out other activities while using the mobile, whether and when mobile phone calls are regarded as interruptions and how they react to these and manage them; how to deal with phone calls at the same time as face-to-face interactions, social fears (crime, annoyance, bullying and harassment) and health fears and security. Questions were also asked about SMS, on which occasions they send them, to whom, why an SMS instead of a call, whether they keep them or not. The interviews also examine other non-vocal functions like games, the management of the phone book, the choice of handset and ring tones and the personalisation of the device. Changes in their behaviour and their perception of the mobile and mobile phone users since they had one were also discussed. Since in 2004 the interviewees were owners of camera phones, they were asked about the reasons of having such a device, the kind of pictures they take and the MMS they send, if that is the case, or the reasons for not doing it. I also asked them to show me the pictures and the permission to video some of them. A supplementary group of questions that was not addressed in 2002 refers to the affective tone of the communications exchanged, the attachment and feeling of dependence to the device and the public display of emotions thanks to mobile phone use.

2.3.3 Analysis

As it was said above, even if the ethnographer's apparent behaviour when observing is similar to the urban *flâneur* or the eavesdropper commuter, her observation as a research method is completely different, because analytic operations are carried out in participant observation. This analysis is sequential, part of it is being made while gathering the data and further data gatherings takes its direction from provisional analyses (Becker, 1958). The purpose is to describe certain behaviours systematically, to look for concepts and problems helping to understand the practices observed which may serve as indicators of other aspects harder to watch. At this stage data collected are used to speculate about possibilities. Part of the analysis is checking the frequency and distribution of the practices and behaviours observed and described, discovering if those practices and behaviours are widespread and typical. The validity of the findings is also increased if many kinds of evidence are found. For instance, if a particular non written rule of what is considered suitable behaviour when phoning in public is not only described by the interviewees but also if situation are observed where such rule seems to operate.

The analysis of data provides a description that tries to makes sense of what is observed, accounting for the web of relationships between who undertakes the action, people and their devices in our case, what is undertaken, how it is done, when and where. People are characterised by those aspects visible to the observer such as age, gender, ethnicity, language and physical appearance. In ethnography, this is commonly called “thick description”, a term coined by the philosopher Gilbert Ryle and introduced into social science by Clifford Geertz (1973), to refer to ethnographic descriptions based on intensive investigations of informants’ actions and their interpretations of their own actions, placed in a specific social context. The description provided in this study also follows Howard Becker suggestion that a better goal than “thickness” is “breadth”: trying to find out something about every topic the research touches, even tangentially, accounting for the incidental information provided by interviews and observation (Becker, 1996). As qualitative research, our study focuses on questions to be answered, rather than procedures to be followed, combining information of all kinds in assessing the reasonableness of a conclusion of idea (ibid.). The questions our descriptions are concerned with is the accuracy of the data, that is, being based on closed observation or only on remote indicators, the precision of data, close to the topics discussed and accounting for matters not anticipated by the research design; and whether the analysis is broad, covering a wide range of aspects related to mobile phone uses and users.

To help to provide such a description a paragraph about the different ways of using urban public spaces in the three cities is included below. The cultural skills necessary to produce this kind of description are also provided by the personal background and experiences of the researcher, in my case the knowledge about these three cities, where I live and visit regularly, as I have been living in London for five years, spent a decade in Paris and was brought up in Madrid. This background qualifies me to undertake this kind of research, because as Murtagh points out, in order to capture information on patterns of non-vocal communication, and it could be added also related to the display of emotions, patterns that are engaged in everyday by people unreflectively, the researcher has to understand the shared knowledge of those very same patterns of non-vocal communication. That is one has to appear mundane, routine and ordinary whilst engaged in the observation task (Murtagh, 2001b).

The various research methods, interviews and observation, produce different sets of data: the transcripts of the interviews, the field notes of the observation and the images videoed. The analysis of the data aims to produce a description of events observed, of those narrated in the interviews and also of the comparisons, generalisation, organisation, evaluation, categorisation realised by the actors. Their point of view, the

meaning they attribute to their practices and behaviours, to the relationship they enjoy with their phones, having in mind that these meanings are not necessarily stable or consistent. Therefore the analysis reflects in its description the confusion and inability to be decisive by not giving things a more stable meaning than the people involved do (Becker, 1996).

This description also highlights the differences and similarities between the three cities and between the findings of 2002 and 2004. The point is not to prove, beyond doubt, the existence of particular relationships so much as to describe a system of relationships, to show how things hang together in a web of mutual influence, support or interdependence (Becker, 1996) tracing the interleaved threads of technological, social, political and economic developments. Therefore the everyday narratives found in the interviews were not spliced in isolated categories but analysed contextually and compared with the results of the observations. The analyses try to produce an analytical generalisation, which combine the complexity and non finality of empirical data with systematic analyse that order data in a story-like way, accounting for the polyphony of the fieldwork. In order to reach greater accuracy in the description an account of evidence which does not fit the previous findings is seek, by searching for negative cases, which run counter the relationships described.

Finally, the research tries to answer the criteria offered by Becker (1996) in order to evaluate qualitative work: “work that is based on careful, close-up observation of a wide variety of matters that bear on the question under investigation is better than work which relies in interference and more remote kinds of observation”.

2.4 Observation in public places

This research is grounded in a strong tradition in the social sciences, from Georg Simmel (1858–1918) and Walter Benjamin (1892–1940) to Erwing Goffman (1922–1982), where the study of everyday life, the observation of people’s behaviour in urban public places and the attention to apparently insignificant aspects of social life are the means of knowing and understanding social practices. The types of analyses and notions formulated by these authors help us to understand the findings of this research.

Walter Benjamin’s studies on the *flâneur*, his city portraits and the unfinished project about Paris arcades are examples of his microscopic gaze, his “attempt to capture the portrait of history in the most insignificant representations of reality, its scraps, as it were” (Benjamin quoted in Arendt, 1973: 17). The *flâneur*, this idle stroller free to daydream, observes, ponders and cruises. He, or she, is both the product of the

modern urban complex and an innovative attempt at the appropriation and representation of the city. The concept has poetic origins in the work of Charles Baudelaire. He used it to encapsulate the new metropolitan character type: the man in the urban crowd, the man whose outlook is shaped by the mobile gallery of metropolitan existence. “Solitude appeared to me as the only fit state of a man”, affirms Benjamin. This is the solitude in the great metropolis. The *flâneur*’s activity involves the observation of people and social types and contexts. It is a way of reading the city, its populations, and its spatial configurations around the issues of the fragmentation of experience. It is a metaphor for the urban ethnographer. Being in a relationship with people, receptive, patient, going to new, strange and even threatening places, it is also repetitious and mundane (Jenks and Neves, 2000). Therefore this notion of Benjamin’s is employed here in order to understand one way of behaving in urban public space as well as a metaphor to describe how the fieldwork was undertaken.

Georg Simmel has been characterised as a “sociological flâneur” who “assembles a whole array of fleeting glimpses of diverse aspects of social life” (Frisby, 1981). He was one of the first to study the fragments of social interactions, to pay attention to the subtle, ephemeral and impalpable aspects of social relations, the apparently insignificant details. He was also one of the first to argue that our involvement in social interaction is dependent on the sensory effect that we have on one another. For him, the eyes are the most important sensory channels. Through gaze one receives information from others while revealing information to them. This aspect is stressed in urban life, where, according to Simmel, human relationships are characterised by the priority given to eye activity over hearing. This is due mainly to public transport, which creates a particular and new situation where people have to look at each other for minutes or hours without talking. Simmel also finds a significant aspect of metropolitan life in the fact that seeing without hearing is much more worrying than hearing without seeing (Simmel, 1989). His essays on the stranger and on the influence of city life on mind and feelings (Simmel, 1971a) are also enlightening for our research topic. According to Simmel “spatial relations not only are determining conditions of relationship among men, but are also symbolic of those relationships” (Simmel, 1971b).

Erwing Goffman’s research analyses face-to-face interaction, revealing the importance of apparently insignificant aspects of everyday conduct. Our research is directly concerned with his studies of behaviour in public places and of rules of interaction, as well as those of etiquette. The notion of a rule in this context has a particular meaning. Rules are not independent of the action. They are created and modified in the practices, in the setting of social actions. They encapsulate the practical knowledge of how to behave. Rules of social interaction are a way of exhibiting social order. They do

not determine how people act, as rules are a subject of disagreement, of interpretation, of exception, of decisions not to follow them. Rules guide our actions but do not determine what we do. However, individuals must follow the appropriate rules if they want to be taken as appropriately 'doing' particular types of action.

Goffman also highlights how the flow of information exchanged in interaction is mainly non-verbal. Communication is conveyed by 'body idiom', the most significant component of behaviour in public. This is an all-inclusive term for "dress, bearing, movements and positions, sound level, physical gestures such as waving and saluting, facial decorations and broad emotional expression" (Goffman, 1963: 33). Goffman also presents a dramaturgic perspective of social life. In this approach to social analysis the theatre is the basis of an analogy with everyday social life. Social activities are described as performances and the physical habitat of human conduct is divided into front stage and backstage. The former is where the performance is put on and the latter is where the audience does not have access and the performer can relax and be involved in actions without worrying about the impression he is giving to others. This is a process Goffman calls "impression management". He argues that actors aim to present themselves always in a favourable light and in ways appropriate to the particular roles they are playing, and to the particular social setting they find themselves in. The landline telephone at home is backstage, whilst mobile phone use in public places is in the front area. By turning a conventionally defined backstage into a front stage, one shows that one has nothing to hide (Hannerz, 1980: 207).

2.5 Description of public spaces and public behaviour

Places chosen for observation were buses and trains, bars, cafés and shopping areas in city centres such as Oxford Street in London, the Puerta del Sol and Preciados in Madrid and the Rue de Rivoli area and Les Halles in Paris. Before describing the findings of the research it is useful to portray some features of people's behaviour in urban spaces in the three cities in order to better understand the context of mobile phone use and etiquette.

In the commercial areas observed, crowds come and go, in and out of the shops and stores. The way of moving differs in the three cities. People in central London and Madrid, where streets are narrow in most of the city centre, walk quite fast when going from one place to another, slowing the pace occasionally to look at a shop window. In contrast, Paris is more a place to stroll. Urbanism and architecture make the city a place of contemplation, a show in itself. Paris is the home of the "flâneur who goes

botanising on the asphalt" for whom "the joy of watching is triumphant". "The flâneur sees the street" as an "intérieur" (Benjamin, 1971: 54). Paris, as Benjamin put it, has remained, like Middle Age cities, an interior, but without the narrowness of medieval streets, a generously built and planned open-air intérieur with the arch of the sky like a majestic ceiling above it. Arcades are a symbol of Paris, at the same time inside and outside. In Paris a stranger can inhabit the city by strolling through it without aim or purpose. (Arendt, 1973: 26).

In Madrid people inhabit the city by remaining in its streets, whilst in London crowds use the streets only to walk, like the bed where the river flows. In Madrid these are not only spaces of transit: people also stay on the streets, inhabiting outdoors urban spaces, talking together. This is typical public behaviour in Mediterranean countries, and not so common in Paris. There, it is not easy to spot people chatting on the street, unless we are in areas where North African communities live. In London and Paris the outdoor spaces where people remain, besides parks and squares, are these "meeting areas", like Picadilly Circus or the Fontaine Saint–Michel. One characteristic way in which Parisians use the streets is sitting at the café terraces. Though these also exist in certain streets of Madrid and London, they are slightly different: not only are they less numerous, but also the disposition of tables and chairs is different. In Paris the crowd of pedestrians, strollers and flâneurs is a kind of show. The audience sits in the terraces or indoors, behind the characteristic big windows of Parisian cafés. The chairs are placed in ranges behind the tables, looking outside, like in a theatre where the streets are the stage, whilst in Madrid the chairs surround the table. Those who sit there face each other. They are supposed to be there mainly to drink and chat and not to see and be seen.

Civil inattention is not the rule of public behaviour in Madrid and Paris. This concept of Goffman's refers to the ways in which an individual shows that he or she is aware that others are present without making those others the object of particular attention. For example by a mutual 'eye catching' exchange with which one person admits seeing another, swiftly followed by the withdrawing of the attention "so as to express that he does not constitute a target of special curiosity or design" (Goffman, 1963: 84). This is a refinement of Simmel's notion of ritual space, the adjustment that people tend to make when they approach or pass by others. But, as one can observe, in Paris and Madrid people in public settings do not always display a disengagement from each other's activities and behaviour is not always manifested in the avoidance of mutual gaze. Civil inattention was, in Goffman's observations, a sign of respect owed to and expected from strangers. But its absence in non Anglo-Saxon cultures is not a sign of lack of deference or respect to those present. In Paris pedestrians look at each other

openly, without avoiding eye contact. City dwellers who pass in front of a café are aware of being observed. Parisians are conscious of the other's gaze. The theatrical aspect of the way they behave in urban public spaces is not only a metaphor. In Madrid people look at each other, often from head to toe, but they avoid eye contact, unless they are flirting. The peculiar aspect of the *flâneur*'s way of strolling is the gaze, the joy of looking. He observes, watches, perceives, classifies, daydreams. This is a way of resisting the '*blasé*' attitude typical of big cities, described by Simmel, which implies indifference towards the distinction between things and "incapacity to react to new stimulations with the required amount of energy" (Simmel, 1971b).

In Madrid and Paris one can often read in other people's faces whether they like or dislike you, or if your behaviour is bothering them. As Simmel points out, indifference is not as great as it seems, our minds respond with some definite feeling to almost every impression emanating from another person. Londoners better hide these feelings. The reserve of city dwellers, argues Simmel, is not only indifference but also antipathy and a slight aversion among strangers. Antipathy is a way of saving city dwellers from the indifference and from the unbearable immersion into a chaos of multiple suggestions. Antipathy is a way of antagonism, which brings the distancing and deflection necessary to carry on urban life in a metropolis. "What appears here directly as dissociation is in reality one of the elementary forms of socialisation" (ibid.).

In Paris and Madrid the physical distance people keep in public places, such as onpublic transport, is closer than in London. They push each other, not being bothered by physical contact among strangers. In both cities, it is not unusual to exchange some comments with strangers on public transport, on terraces or even in the streets. This behaviour would be considered intrusive in London, where civil inattention rules, pedestrians avoid eye contact and you could hardly read in their faces what is going through their minds. However, the French and Spaniards find the presence of CCTV cameras on the streets intrusive, although it is unproblematic and generally accepted in London.

This brief description of behaviours in public places outlines the following aspects. In London, streets are mainly transient spaces, the bed for a fast flow of pedestrians. Civil inattention prevails in the interaction of strangers. Distance, reserve and the absence of physical contact are also typical features of this interaction. In Paris, streets and urban spaces are also a spectacle, a show. Streets are not only the way from one place to another, but also a space for strolling, of contemplation, a space to observe as well as to be observed. The typical Parisian terraces are a clear example of this theatrical aspect of behaviour in public spaces. Therefore civil inattention is not the rule of

interactions among strangers. Pedestrians do not avoid eye contact and do not always show reserve and indifference. Physical distance is closer than in London and physical contact is not always avoided. These last features also characterise public behaviour in Madrid. Even if eye contact is generally avoided, people show less reserve and indifference to each other. Here, the flânerie is not a typical way of inhabiting urban spaces. But streets are more than a transient place. People stop, stand, meet others and chat in the middle of the street. Public spaces are often like an extension of the home, as it is manifested by city dwellers taking their tables and chairs to the streets for collective meals in borough festivals or by elderly people going to the corner shop wearing dressing gowns and slippers.

2.5.1 Differences in family relationships and obligations

In order to understand differences in mobile phone uses in these three cities, it is useful to take into account differences in relations with family members in the UK, France and Spain, as communication with family and friends is the main reason to own and use a mobile phone.

Family obligations and contacts in France and the UK are mainly related to the nuclear family, the couple and their children, whereas in Spain, as in the other South European countries, they also concern the extended family. Families are expected to support one another across a broad range of relationships and someone in need is expected to look first to their family for support. Adults still keep close and regular contacts with their parents and siblings and when they are married they also have contacts with their in-laws. Most of the Spanish interviewees affirm that they have routine calls, on a daily or weekly basis, with their mothers, also with fathers, brothers and sisters, and also in some cases with their mothers-in-law. Contacts with grandparents, uncles and aunts, and cousins are also frequent, especially when they live in the same area. Spending time with the members of the family is one of the main leisure activities of Spanish adults. Family obligations are not only related to leisure, family networks are still a very important source of support, for child and elderly people care, economic help or job searching for instance. For instance, in Spain only less that 10% of elderly people needing care receive this care from non family members (Meil, 2003). The sense of family privacy is also different in these countries according to the different meaning of family obligations. In Spain there is a strong sense of family privacy, but not necessarily privacy between the spouses or members of the couple, or between parents and children, rather it is privacy within the extended family as a whole (Millar and Warman, 1996).

There are also differences in the legal way of understanding family obligations that reflect people's perception of such obligations. For instance, in the UK legal obligation to provide financial support extend only downwards, from parent to children, whereas in France and Spain they extend also upwards, from children to parents, although in France such laws are rarely, if ever, enforced (Millar and Warman, 1996). Spanish young adults not only leave their parents home and acquire economic independence at an older age than French and British, but the reciprocal obligations between parents and children after that are more and stronger, and therefore there are more occasions to be in contact that are also reflected in mobile phone use patterns.

2.6 Ownership and use of camera phones

The search for camera phones owners for the interviews reveals that ICT (information and communication technology) workers, twenty-something people and men are more likely to have one of these handsets. If they are a status symbol, the meaning is slightly different from the way mobile phones were such a symbol in the 80s. If you are young and technologically savvy you ought to have one.

With only two exceptions, all the interviewees got their phones through operator's offers to contract subscribers. According to how the decision of purchasing a multimedia handset was taken, the interviewees can be classified in two categories: those who wanted to have a camera phone and those who found the opportunity to have one. Some of the interviewees were aware of the existence of camera phones and decided to upgrade their handsets, whereas most of the informants decided to upgrade their handsets when the operator proposed it to them, as they had accumulated enough points to get a new handset free or very cheap. Other users received the handset from a member of their family who had upgraded their handset or from their employers.

In the first category, we find most of the men, of the twenty-something adults, and ICT workers; in the second, most of the women and those in their fifties and sixties. **The differences in the way the decision of upgrading the handset was taken do not entail a different use of the camera options.** Those in the second category do not necessarily use the camera less than the others.

A particular case of how the decision of upgrading the phone is taken is couples, when one of the partners decided to upgrade the handset after the other has done it. That allows them to have someone to whom to send pictures. In the case of one couple interviewed in Paris, the woman got her handset mostly in order to send pictures of her and her children to her husband during the school holidays when the husband has to

remain in the city. By this example it can be deduced that at the moment MMS are mostly considered to be a form of intimate and private communication, between close friends and loved ones.

2.7 Picture taking

Camera phones are used on the same occasions as other cameras; to take pictures of children, friends and family, of events to remember, on holidays. But they also have specific uses, because, unlike normal cameras, camera phones are always carried by the users and because phone pictures can be easily deleted and replaced. So it is easy and costless to play about. The way many people deal with the pictures taken by the phone reveals that, even when their subject is similar to traditional pictures (children, holidays) and the ways of sharing them are similar too, they did not receive the same value and meaning. They are **not destined to remain, helping to build personal and family memories, but to be seen, shared, deleted and replaced, as the mobile phone itself.**

Pictures taken can be classified as follows:

- **Self-portraits**. This is a usual way of using the phone camera, pointing the lens towards the holder, when they are alone or with other people. These pictures are sometimes sent as MMS. Several of the young adult participants keep in their phones self-portraits of friends, showing them drunk or making funny faces. Sometimes the self-portraits are taken by friends, family members or children of the phone owner, who keep them in the device. **Taking pictures increases the ability of the device to be shared, modifying the strictly individual belonging of traditional mobile phones.**
- Portraits of **friends and family**, are kept for the owners' use or to show them to other people, as the pictures kept in a wallet. Only two interviewees, both British, keep the pictures for their own record without showing them to others. Though they did not object to my request of seeing and videoing those, unlike they did with their SMS. **Personal record does not mean exclusively private**. All the interviewees who have **children** take and keep pictures of them. Children are a powerful driver to take, show and send traditional or digital pictures, and the same occurs with picture phones. In the case of a French couple interviewed, sending pictures of their children when one of the parents is absent was one of the main motives for acquiring a camera phone. Observation also found in several occasions women on public transport watching pictures and videos of

children kept in their phones. Showing the pictures from the handset allows a collaborative use of the device. One can easily share the pictures and MMS kept, whereas one hardly would do the same with the SMS kept in the phone. All of the participants let me see and video pictures but none of them was willing to let me read the SMS they keep in their phones. A third of the participants in the research also use the pictures to **personalise their phone books and to see the caller's image**. Jerome, a Parisian IT worker, gives a particular use to his friends' portraits. He is more interested in the camera than in the phone, that is, in taking pictures than in talking or texting. He downloads the pictures of his friends and acquaintances to his computer. He then adds colours and shapes in an artistic way and offers these pictures as gifts to those portrayed, printing the pictures or sending them by email, but not as an MMS gift, for reasons of cost, image quality and because most of his friends do not have a camera phone.

- **Events**: celebrations, parties, nights out, birthdays. In some cases these pictures are sent to those who could not be there, as a "wish you were here" MMS, and, sometimes are also sent as a souvenir of the occasion to those pictured.
- **Holidays, monuments and exhibition visits**. Examples found in the observation are Italian tourists taking pictures of the Centre Pompidou building in Paris, or Londoners and tourists using their mobiles to take a picture of the temporary installation the Weather Project by Olafur Elliason at the Tate Modern, portraying a gigantic sunset in the mist. Some of the interviewees send MMS on these occasions, like a holiday postcard. Recent observation in summer events around London, like open air concerts and festivals found a growing number of people taking pictures with their phones.
- **Road accidents**, in case witnesses are needed.
- **Out of the ordinary situations**, examples go from funny and silly things to the moving and serious, from celebrities spotted somewhere, or a dog carried in a cycle basket wearing a helmet spotted in Gothenburg, to Madrid commuters, the week after the attack, taking pictures of the wrecked trains and of the candles and messages in Atocha station. The terrorist attacks and the elections, as different examples of extraordinary events, were the occasion for picture taking using the mobiles in Madrid. Commuters passing by Atocha station or near the place where the carriages were searched by the police took pictures of the trains and of the candles, flowers and messages. After the election results were known, the night of the 14th March, news reports showed how people in the crowd gathered at the socialist party headquarters were greeting the winning candidate and taking pictures with mobile phones and digital cameras.

- **Places and objects** of particular interest for the users or for someone they know: the car one owns or the car one would like to own, an Italian restaurant in the way to work that looks nice, to show to her husband; a pair of shoes in a shop window. These kind of pictures can also be for practical purposes, as shown by Ana from Madrid, who took a picture of the walls of her kitchen before going to buy new curtains which would match the colour.
- **Playing with the phone** in a way they would not do with a usual camera: taking snapshots without seeing what is being taken, like taking the phone out of the car window and shooting, taking pictures of strangers in the bus. This add a thrill, an emotional intensity, to the boring routines of daily commuting,
- **Pictures taken to be an MMS**, as the snap of a blue sky over an Ibiza beach to send, on a winter working day, to a friend living in Madrid. These are MMS where the meaning is not in the picture itself but in the context known and shared by the sender and the receiver.
- Pictures taken as **part of a face-to-face interaction**, sometimes picture taking is a way of having fun with friends or relatives, though not everybody is happy to be photographed. A Parisian teenager girl strongly objected when one of her friends wanted to take a picture of her on the bus and prevented him to doing it by covering the handset with her hand when he persisted. Picture taking can even be a way of making up after a row. A couple in a London train had a brief row after a phone call made by the woman. She was visibly upset, put the headphones of her personal stereo on and looked through the window, cutting any way of communication with the man. Then, he placed the phone in front of her face and took a picture that he showed to her. They both laughed (this instance was observed and described to me by Alex Taylor).

2.7.1 Picture sending

All the interviewees but one took pictures with their phones, but not all of them have sent MMS. Only nine of the thirty participants in the research send MMS. Three other have done it once just to try but did not seem very interested in doing it again. In some cases it took months for to start sending MMS, either because they did not know who could receive them or because they could not be bothered to learn how to do it. One can suppose that at least those who have tried will send more MMS in the future, as soon as more people they know send MMS to them and are able to receive them. For those who send MMS, the frequency ranges from once at week, once a month for birthdays and special occasions, to a few once in a while, that is, from holidays to holidays.

The **reasons for not sending pictures** revealed by the participants in the research are:

- **Ignorance of how to do it**. A couple of women interviewed have never tried to send an MMS. Anne got her phone recently and had not yet activated that function. She is a French user, and once she has upgraded her phone, she needs to phone the operator to activate that function. Moreover none of her friends or loved ones owns a multimedia phone. Quiteria, a Spanish woman aged 61, is waiting for her son to teach her how to do it. She has never bothered to use the instructions book as her son has always taught her how to use the phone. Most of those who say that they do not know how to send a MMS have tried unsuccessfully once and have never tried again. They do not really know the reason why they did not succeed: lack of interoperability, wrong step, etc.
- **Absence of receivers**. With the exception of some of the twenty-something users, most of the interviewees do not know many people with camera phones. Some of them do not know anyone, and in most cases it goes from one to three persons. Therefore, the decision to have a camera phone was driven by the wish to take pictures or to have a phone with all the latest functions – "I do like my gadgets" – rather than the intention of sending MMS.
- **Price**. Some of those who know how to send MMS and have friends who could receive them, do not send MMS more often because it is still too expensive. But most of the interviewees, who have never sent one, do not have a clear idea of the cost. The absence of a clear idea about the cost increases the feeling that it could be too expensive.
- **Lack of interest**. The thirty-something Spanish couple Ana and Jose Luis cannot see the point of MMS. It is considered to be something anecdotal and not useful at all. Both of them agree that phones are for phoning and that there are better ways of taking, sending and sharing pictures. Other participants in the research affirmed that they were more excited about the possibility of taking pictures and sending MMS when they purchased the device, once the novelty disappears, they realize that they simply did not use the phone as a camera.
- **Poor quality of the images**, just a few of the interviewees complain about the quality of the images and say that this is the reason for not sending pictures. Most of the participants are aware that the quality is not the same as in digital cameras but they do not seem to be bothered by that. These are different devices with different uses. Nevertheless, for those who see the potential of camera phones for their work, as Arnaud a cinema production assistant, Andres an architect and Valerie an ICT manager working in a firm of experts who

evaluate the damages for insurance claims, the image quality needs to be better before they could use them as work tools. However, in other cases found this is not an obstacle to the use of camera phones as working tools: a cartoonist who takes pictures of situations who could make a funny drawing and a glass artist who keep record of her art college work. But in both cases the pictures are not intended to be MMS.

2.7.2 Picture keeping

Only six men and one woman, ICT workers or very interested in technology and computers, download the pictures to the computer and keep them there. Other interviewees also use computers, have got email addresses and sometimes download ringtones or games, but they have not been bothered or interested in downloading the other way round from the phone to the computer. This can be related to the particular meaning of the camera phone pictures for them, different to traditional pictures, **capturing fleeting moments and destined to a fleeting existence too**. Most of the interviewees keep the pictures in the handset and use them to personalise the screen and, less often, the phone book too. They delete and replace the pictures from time to time. None of the interviewees do moblogging, even those who have personal web pages. Moblogging has been interpreted as a way of keeping and building personal memories and histories (Cooley, 2004). Keeping and deleting the pictures of the handset seems to be a way of **documenting and extending the present**. The picture on the screen is changed every few weeks, following what happens in the users' life. For example, the image on the screen changes from a granddaughter's picture to an image of Rome taken in the Easter holidays, which will be replaced after a family birthday party. Arnaud's phone screen shows the poster of the last movie on which he worked. Because of the limited image storing capacity of the phones, older pictures are deleted once they have been shown to everyone in order to make room for recent ones.

2.8 Mobile Phone Use in Public Places

Mobile phone uses such as voice calls, texting, taking pictures, playing games and using the calculator were observed and videoed in public places such as streets, squares, parks, trains, buses and tube, cafes and restaurants, museums, art galleries, shops and libraries. The widespread mobile phone use in the streets, cafés, shops, buses and trains in the three cities seems to be similar. In any public place where there are a number of people, there is always someone using a mobile phone. The

differences lie in the details. The main characteristics of mobile phone use outdoors are presented first. Then the results concerning mobiles and public transport are introduced before discussing mobile phone use in indoors public spaces. Special attention is given to those places where the use of mobile phones is banned. Finally, how users handle the disclosure of personal information to third parties is analysed.

2.8.1 Outdoors: streets and open spaces

Everybody phones in the street in the three cities. Men and women, youngsters and older people, builders, policemen and men in suits are observed with the characteristic head position of the phone user, slightly turned down to one shoulder, and the distinctive walk of mobile phone users in public places. They stand and then walk slowly in circles or pace a short distance back and forth, as a kind of compromise between walking and standing still that help them to focus on the conversation.

All of the persons interviewed in 2002 admitted to using mobile phones outdoors, but some of them only to answer calls. The discomfort of using the phone on the street is not so strong as to let a call go unanswered. In 2004, most of the interviewees affirm that they use their phones everywhere, including the streets when they are perceived as safe. Only two of them dislike it. Phone use is avoided by many of them, mainly women, in streets at night or in areas where it is considered to be a big risk of being mugged. However there is a **conflict between the perceptions of the device as a valuable object wanted by thieves and the safety it can provide in such situations like being alone in the street at night.** Therefore, as two years ago, women still keep their phones in their hands, in some cases with an emergency number ready to be dialled, and use them or feign to use them when they are in areas considered dangerous.

Making and answering calls in the streets also allows shy or self-conscious users to make calls and have discussions in public, as they are less easily overheard than on public transport or in indoor spaces. A mutual ignorance seems to prevail among people using their mobiles and the other pedestrians. This example of civil inattention allows users to talk freely outdoors. As Maria, a young student from Madrid says “I’m on the street, walking and talking normally as if I were at home”. For instance, I have observed some Parisian users making a call on the street before going into a café, instead of making the call once they are inside. It seems that background noises and the lack of comfort were less bothering than the possibility of being overheard indoors. Streets are a kind of silent movie front stage. One’s behaviour is visible to the others

but conversation is less audible, and therefore users do not have to worry about the impression that their conversation can make on strangers. While concentrating on the conversation, they avoid eye contact with other pedestrians. There are more exceptions to this rule in Madrid and Paris than in London. This demeanour fails to observe the first part of the civil inattention behaviour, as Goffman describes it. This is the swift glance exchanged among pedestrians before the withdrawal of the mutual attention. This glance is not only a way of orientating through pedestrian traffic, but also a sign of deference, the recognition of the other's presence. The lack of this gaze can be understood as ignoring others, and therefore a lack of respect for them. This could be one of the reasons why some people are bothered and even upset by mobile phone users in public places. There is a conflict between the etiquette of interaction in public places and the etiquette of a phone conversation, which requires concentrating on the conversation, avoiding any source of distraction.

The worry about being overheard was largely found in our interviews two years ago, but much less in 2004. **One of the main changes associated to mobile phone use found in the research is that people are more used to have and hear mobile phone conversations in public places and therefore lose concern about being overheard**. However, it is not meaningless if the two persons who dislike using their phones on the street are two Frenchmen, as Parisians were the most hostile to people using their phones in public places according to the 2002 research. Another interesting finding of the fieldwork is that some people, also men but from Madrid and London, use their phones mainly on the streets, when they are on the move, in order to make productive use of the time.

Observation shows a **growing number of older phone users in public settings, talking and also texting**. This is more striking in Paris where they were almost absent two years ago, when no older women were seen using the phone on the streets. They seem to have become more confident and used to mobile phones. They also seem to be attracted by the new handsets. Many of the older users spotted in Paris had Sony Ericsson multimedia handsets, as the two Spanish grandmothers interviewed. Also they seem to enjoy polyphonic ringtones. Like other age groups they have adapted and learnt to use the device in different situations. Maybe they were not early adopters but as observation and interviews reveal mobile phones are becoming more than an emergency and safety tool for older people. People in their fifties and sixties were only interviewed in Madrid. They are two women and a man of different background and occupation who use their phones largely to be in contact in a daily basis with friends and relatives, and also work colleagues. The communication with their adult children is an important part of their mobile phone usage. Interviewees in the three cities who tell

about their parents and grandparents' use of mobile provide another source of evidence of mobile phone use of older people.

People phone outdoors when the weather is good and, in Paris and London, they also make and answer calls when walking in the rain, sometimes managing to hold both, phone and umbrella, or under the temporary shelter of a doorway or an arcade. Short and also longer conversations can be overheard in the streets, where users walk and talk, covering different topics, as the Spanish middle-aged woman talking about her anger the day after the Spanish government lost the elections.

In London in 2002 it was unusual to see people having longer conversations standing the street. They would be an obstacle for the flow of pedestrians though they can keep talking for a while when walking. Benches in parks and squares seemed to be preferred for longer talks. Nevertheless in Paris and Madrid it was not rare to see women and men having phone conversations while standing on the street or leaning against a wall. Absorbed in their conversations, smiling and laughing, or even having a row, they seem not to be bothered by noise, traffic or people passing around. However, people interviewed say they try to avoid noise and move to less crowded streets if the conversation is going to take some time.

In 2004 people were observed having long conversations, of more than 10 minutes in several occasions, standing in the same place in the street or in a square. This was observed in the three cities, and it was a novelty in London. In 2002 pedestrians did not stand on the pavement of Oxford Street, close to the road or in the middle of the moving crowds.. Then, it seemed that mobile phone users in the streets of Paris and Madrid outnumbered those in London. The way people behave on the streets of these cities could explain this difference. It seems easier to have a phone conversation while standing or strolling on the street if you are already used to considering streets as more than simply transitional spaces.

When people have long conversations in the street, they often change their position, walking in circles, standing still, leaning against the wall, waving hands or smoking a cigarette. If the common way of using streets and public places as transient spaces forced London mobile phone users to move when calling, though keeping the focus on the conversation and on the pedestrian traffic at the same time is not that easy, as Helen, one of the Londoners interviewed in 2002 points out, it is difficult to focus on a conversation when you are in the street and have to be aware of the environment, of what is happening around you, at the same time that you are maintaining the conversation. Nowadays the habit and widespread use of mobile phones in urban

public places is transforming that common way, and neither phone users nor fellow pedestrians seem to be bothered or surprised by that.

Talking and smoking is a common occurrence in Paris and Madrid, where the cigarettes consumption seems to be greater than in London. Although observation in the London city found that many smokers use their forced exit of the office building to make a phone call whilst they smoke their cigarette. In this case the phone call not only helps to keep the lonely smoker company, but having a cigarette outdoors also allows to make personal calls without showing to colleagues that one is not working and without bothering about eavesdropping. As it will be discussed below, mobile phone use is more and more associated with communication with friend and families, therefore as it was outlined by a Londoner, using the mobile at work shows that one is not working. Other example of using the phone when having a break outside was found in Paris when young students in Palais Royal square stay together at lunchtime near the entrance of the school. Some eat a sandwich, some play football, some roll and smoke joints and some others call and text.

Phone users' gaze also moves around when they phone while standing on the street, but they **do not forget where they are and also fix their attention in what happen around,** as following with the eyes the passing girls for instance, or staring back to the observer, forcing her to withdraw, momentarily, her attention. People phoning and walking in London often keep looking at the floor and only from time to time raise their eyes. In Paris and Madrid, phone users' gaze wanders, looking around, at other people, at the shop window. Observation reveals many examples of how phone users are aware of what happens in their surroundings, in most of the occasions when someone stares at them they return the gaze in only a few seconds. A cafe employee in Paris talks besides the glass bordering the side of the terrace. He turns around, walks back and forwards, gives a swift glance to a young woman sitting at a table and also looks at and touches the glass. Once he ends the call he goes into the café and comes back with a piece of tape that he places onto the glass, as he has seen some damage when he was using his phone.

People phoning and texting in the streets find different uses for all the construction elements (walls, benches, pavements, fences, facades' ornaments, window ledges, etc.) where they can lean, or that can be used as improvised chairs and tables, making themselves at home, and facilitating the task of taking notes whilst having the phone at the ear. We have seen users alone having long conversations in the smaller streets off Rue de Rivoli in Paris. In one of these streets a young woman was phoning sitting on the stairs of the rear door of a church, making herself at home.

The widespread use of text and the new multimedia functions require paying attention to the phone screen. This entails **new body postures for phone users**, like putting the handset in front of one's eyes stretching the arm, or leaning the arm in any surface at the right level available in the surroundings while holding the phone. In Paris, where, weather permitting, bicycles and rollers are quite popular, users were observed having phone conversations whilst cycling and rolling. In London, cyclists were observed using their phones only in a couple of occasions, and one of them was not on the road but slowly turning in circles on the pavement. Cyclists in Paris often stop to initiate or answer the call, and sit on their bikes or keep walking while talking, pushing the cycle with the free hand. This is another example of **multitasking**, of using the phone while doing other things and also of how phone users in the three cities answer a call no matter what they are doing. For instance, it was observed in the three cities youngsters and young adults having phone calls and listening to personal stereos at the same time, the phone at the right ear and one headphone at the other.

Phone users on the street seem to attract other phone users, in what I have called temporary **open-air wireless phone booths**. In Paris and London some urban spaces constitute a kind of temporary phone zone. Different people stop there, make a call and resume walking afterwards. In front of big stores' doors (BHV in Paris, John Lewis in London), near underground entrances, like in Oxford Circus and Saint-Germain-des-Près, or on some street corners, one can see this kind of improvised open air wireless phone booth. In these places several persons are phoning, apparently unaware of others doing the same. It happens at the entrance of tube stations, even when big police ads advise not to use the phone because of the risk of phone theft. An example is The Oval tube station in South London, where several individuals can be spotted phoning in front of such image at day and at night. Also in Paris the entrance of the Forum des Halles constitutes a phoning zone, despite the general conviction that this is a place where one can be easily mugged. This could be explained because due to the lack of network coverage on the tube, people realised that they have messages or texts once they get out. Also if they needed to make a call it is only at that moment that they can. But in Paris there is coverage inside the tube and nevertheless people gather to make phone calls near the exit outside. Moreover, observation in such temporary wireless gatherings in London, as in Oxford Circus shows that not all the phone users there come out from the tube. Many were walking, stop there, make a call and leave. This particular place, the space between the tube exit and the road, is not used by pedestrians; a rare free space in this particularly crowded corner of London. Here a number of mobile phone users are always present no matter the day or the time of observation. This was as the same in 2002 as in 2004. This gathering shows those who

are not yet familiar with that corner, that this is a suitable place to make a call. Sometimes these gatherings of phone users are caused by the desire not to be disruptive and also to avoid eavesdropping. A Parisian interviewed, Arnaud, describes how in French trains the space between the carriages has become a veritable phone booth. London commuters move sometimes to these spaces to talk in order to avoid the noisy carriages of old trains. Arnaud is particularly bothered by the presence of the callers, as those are the places when he goes to smoke a cigarette. Once again another link appears between mobiles and cigarettes, and a certain conflict when they are forced to share the same space, being a nuisance for each other.

A current behaviour in the three cities that was unusual two years ago is texting while walking and dialling a number while walking. Users stretched out their arm and put the phone in front of their head slightly turned down. This seems to be more frequent in London where users try more often to keep moving while using their phones. This practice is more typical of youngsters and young adults. Women in the three cities were observed texting or calling with one of their hands and holding a child or a pram with the other while walking. **As people get more and more used to texting and calling, the dexterity and easiness also increase. The repeated use of the mobile develops the ability of the users to accomplish the gestures needed quickly and smoothly and also the capacity to share their attention between the call or the typing of the SMS, their surroundings and the other actions they are carrying out simultaneously. This is one of the ways in which mobiles affect our bodies, extending their abilities.**

The investigation about mobile phone use in public spaces reveals three major changes between 2002 and 2004: the acceptation and banality of private exchanges in public places, the growing presence of elderly users and Londoners feeling comfortable making phone calls while standing on the street.

2.8.2 Mobiles and public transport

Mobile phones are largely used on public transport in the three cities. In Paris there is also network coverage in the tube. Mobiles are used in the underground in Madrid and London to write texts that will be sent once outside. Women and men in London tube have also been observed playing games, especially with multimedia handsets. On the English commuter trains where the observations were undertaken you are more likely to hear phone conversations than face-to-face conversations. This is ordinary

behaviour in the carriage and other passengers follow the rules of civil inattention, without being bothered or showing interest in those conversations.

Public transport and stations are a particular type of public place. A train station or train platform is indoors and outdoors at the same time. Stations are transitional places where crowds come and go, but passengers also remain there for a while, standing still, more often than in the middle of the street. Mobile phones can make the waiting for the train or the bus profitable. Also, the usual delays of British trains produce a large number of phone calls in trains and stations. This is not only because passengers have to inform those waiting for them of the delay, but also because the phone conversation can initiate the discussion and the meeting with those waiting. Phoning as a way of making the wait profitable has been already acknowledged in Paris where public phones are located in bus stops and on train and tube platforms.

People in Madrid seem to be less loud than two years ago. The particular mood of the city during the time of the observation, just days after the attack on the commuter trains, could be the reason, but the same was observed weeks after. Some of the informants corroborate the impression that ring tones and voices were less loud now, as, according to them, people have understood that you do not need to shout in order to be heard by the receiver and have learnt to be less annoying.

Observation shows that in some occasions in Madrid those in company of the phone users ask them by gestures to talk less loudly. In Paris, mobile phones conversations are generally at the same volume level as face-to-face conversations. Surprisingly in London where face-to-face conversations are seldom in public transport, mobile phone conversations are often louder than in Madrid or Paris. The reactions to noisy users also differ. Parisians quickly show their annoyance, turning heads to look at them. In Madrid people seem to be more used to that, showing less signs of disagreement. The level of noise in public places, indoors and outdoors, is higher than in the other two cities and there is also a greater tolerance for loud conversations. Ring tones are also often louder in Madrid, with a certain preference for “walkyries” and “cavalries” melodies in 2002, which do not seem to bother others nearby.

In London people hardly ever complain or show their annoyance, either because they are not bothered, or because reserve prevails in public places. Therefore it is easier for loud users to ignore the nuisance they are causing, and even to realise that they are talking loud. According to the interviewees, loud users were in 2002 and still are the main annoyance of mobiles phones in public places. Some British and French find it particularly awful in trains and buses, and avoid using the phone in such places, not

only for shyness and fear of annoying other but also because it has become “a little bit naff”. Some people still show some slight annoyance when users or ring tones are loud, polyphonic ring tones seem to be more annoying. Annoyance is expressed sometimes in Madrid and Paris, less often in London, and in general less often than two years ago. But when a phone with a loud polyphonic ring tone goes off several times in a short lapse of time or is left ringing for a few seconds, more people in the surroundings start showing their annoyance, as it has been observed on Madrid and London public transport. When they are annoyed, Londoners and people from Madrid seldom complain or say anything; they just look at the person with an air of disapproval. French people make it openly understood that phone users are bothering them. They turn their heads towards the users and change position on public transport and in cafés. Sometimes they make comments directly to the person or to other people present, in order to seek approval for the complaint and also to be heard by the phone user. For example, when a passenger in a bus was asking the receiver, loudly and repeatedly, “can you hear me?” a young woman said, “I can assure you we hear you more than we want”. This attitude of Parisians helps to understand why the fear of bothering other people was the reason given in 2002 by French interviewees for not liking to use mobile phones in public places. However mobile telephones in public places were and are as common as in the two other cities.

In general, most of the passengers in the three cities show no sign of annoyance. Those who would be disturbed can choose to travel in the quiet carriage where mobile phones are banned, if available. Though mobiles phones are also present, and eventually go off, in those carriages: for sending SMS or silent on the table or in the hand. The mobile phone noises, conversations and ring tones, are already an element of the soundscape of a train journey.

Only a minority, five out of 30, of the interviewees are bothered by people’s ring tones. These were Londoners. It is maybe related to the finding that melodies and polyphonic tones are more often heard in London than in Madrid or Paris, where beep sounds or the classic ring tones as the Nokia one are the most heard. Observation and interviews reveals that **polyphonic ringtones do not seem to be very popular**, and melodies were not often heard in Madrid public spaces, with the exception of teenagers and some older users. Youngsters download, buy and exchange ring tones and they are even a topic of conversation, as it was observed in Madrid. Many of the camera phone owners interviewed have the same ring tone, the one that imitates the sound of an old landline phone. Other have different beep sounds, that sound “like a telephone”, a couple of twenty-something participants use strange or funny sounds, also a few participants in their twenties download or exchange with friends, and only less than a

third of the interviewees, mostly women, use melodies, in two cases those are melodies composed by the owners, as they are amateur computer musicians. The other have chosen pop songs that they like or music from TV series, which generally reveal a certain nostalgia for the time of the childhood and youth (Guns and Roses, Charlie's Angels, Wonder Woman, Knight Rider), and also a trend in nowadays popular culture from pop music to Hollywood movies.

Most of the conversations overheard on trains and platforms are brief exchanges to give or ask information about the whereabouts of the user, to arrange or confirm meetings, and also to give information about the trip: "I've missed that train", "I'll catch the 10.30". Those are also the content of SMS. A usual occurrence in the three cities is sending brief SMS just before the train departs. Texting seems to be one of the main activities of commuters in and around London when waiting on platforms. In the commuter trains observed in Madrid, teenagers and young adults text a lot, mainly when travelling alone, but also when they are in groups. As I have observed, female teenagers in the carriage text at the same time that they chat with their friends, making comments about the messages they send and receive. Texting instead of talking is another way of avoiding being overheard. It is also a more discreet use of the phone, with less risk of bothering other passengers, although some technical features in new phones turn texting into a noisy disturbance. Thus, in 2002 a young man coming back to London on a late afternoon train was texting during his journey. Every time he received a new SMS, instead of the usual beep, his phone alerted him with a loud and longer ringing melody. This caused some glances of disapproval from other passengers near him.

Mobile phones are used to '**micromanage' during the journey**. Some of the information related to work meetings outside the office, that used to be sent and confirmed days before the meeting, is now asked and received the same day, during the travel time. This was also confirmed by one of the participants, a London brand manager who frequently travels abroad. Once in the place, he uses the mobile to ask his secretary the address of his hotel and the time and place of his meetings.

The journey time is also employed to make other arrangements by phone, to manage different everyday life aspects, as a Spanish mother trying to reach a teacher at the nursery, or another Spanish woman giving advice to a relative about some administrative procedures. Mobiles are also used in such occasions for domestic management, as a thirty-something woman in a Parisian bus, trying to contact some member of her family who could go to the shop to buy couscous for dinner and set the video recorder. She left a message on an answering machine or voicemail service. She

makes more calls and ends up by reaching her daughter. She then informs her of the time she will be home. Mobile-based coordination for small groups, for work, leisure and household organisation, increasing temporal efficiency by flexibility in the use of time, is a widespread and well-known practice (Ling, 2004: chapter 4)

Sometimes users were also observed making small talk with friends and relatives as a way of making the trip less tedious. Interviewees also report using the phone in such moments, curiously sometimes the same people that claim to be bothered by others phoning in the train, employ this time to catch up with friends and relatives. People also make phone calls to those they are going to meet after the trip: work colleagues, customers, friend or relatives that initiate conversations that will be pursued face-to-face. For instance that same Spanish mother calls home after having called the nursery school and says to her partner that the teacher was already gone,; then she talks to her children, first to a crying toddler that she tries to calm, then she laughs as she chats with her daughter, who tells her what happened to the boy and asks her when she will be home. On the trains coming to and from London work related conversations are usually held, more often than those observed in the other two cities. This could be explained by the different jobs of the people observed. Many in London were white collar workers and "men in suits", whereas this was not the typical commuter in the trains watched in Madrid and Paris. In many cases, individuals use their phone during the entire journey, having long conversations dealing with work matters and not only with meeting arrangements. They also make several calls one after another, dealing with different matters with customers, colleagues and those who are at the office. Often they talk to people that they are going to meet later in the day, preparing their face-to-face conversation. In some cases, people also make long, intense personal conversations. The importance of the exchange can be measured by the anger showed when the conversation is abruptly interrupted or ended by a temporary lack of network coverage or when the batteries run out.

The variety of exchanges held with the mobile in such places confirm the findings from the interviews that a growing number of people use the mobile for any kind of subject and almost in anyplace of their everyday life, as more than a third of the interviewees affirm that they use the phone everywhere and for any kind of communication and topic. In words of Andres, a fifty-something architect in Madrid, they "trust the mobile".

The body language used by phone users to create their own space (Murtagh, 2001a: 85-86) can be observed in the three cities. This notion of "own space" does not mean "private space". This body language includes gestures and spatial orientation aimed to create their own room in public space, to accentuate and protect the personal space.

Goffman defines personal space as the space surrounding an individual, where the presence of others would be an intrusion leading the person concerned to show displeasure and sometimes to withdraw. “This space is not a sphere, but a contour, the spatial demands directly in front of the face are larger than at back (…) the concern about personal space takes the form of concern over straight-line distance” (Goffman, 1971: 53). Therefore personal space is enlarged by turning your back on other people, avoiding eye contact, looking through the window, at the table, fixing the gaze on some object and talking with a low voice. Phone users do not always avoid eye contact. They look at what happens around them and look at you if you look at them as they usually do when they are in such places. Although London users avoid eye contact and seem to withdraw from the surroundings, they are aware of what happens around. If someone stares at them, for instance the researcher, they return the gaze, forcing the curious observer to look elsewhere. The low volume rule is not always respected. Technical problems, noisy surroundings and other hearing difficulties often force users to raise their voices. Most of the older users talk quite loudly in the three cities.

The creation of own space by the phone user also depends on the matter of the conversation. In one observed instance in the waiting room on Platform 5 in Guildford station, a woman in her fifties had a brief conversation explaining that she would be late because of train delays. She was sitting facing other unhappy passengers, avoided eye contact and talked quite loud. Then she took some papers from her briefcase, which looked like slides of a presentation, and turned her back on us. She made another call and started to discuss the document, focusing her gaze on the papers. The conversation was a long disagreement about what that was written in the document, apparently with the author of the presentation. She felt the need to distance herself from the surroundings in order to focus on a longer and less banal conversation. As she kept talking louder and we could easily overhear this conversation, it is unclear whether she was also tempting to recreate some privacy. It is also true that users are not always aware of the volume of their voices. Examples of this kind allow us to formulate the hypothesis that the creation of an own space in public places when using the mobile is not always related to the pursuit of privacy, but it seeks to facilitate concentration on the conversation. In order to validate such a hypothesis more research needs to be done.

In 2004 no significant changes have been found in the way people focus in the conversation and make personal space, such as covering the mouth with a hand when talking, covering the left ear with the left hand in order to hear better, or looking through the window. The last is not a particular behaviour of phone users, as it is also done

when they are not at the phone. Gestures and hand waving follow the content of the conversation.

2.8.3 Indoors: shops, bars, cafes, restaurants

Shops and stores are common places to have a phone conversation in the three cities. During a midweek afternoon in Oxford Street people using mobile phones were observed in all the shops and stores visited, from John Lewis to M&S, from HMV to Niketown, and all the well-known high street clothes retailers in another example of multitasking. People share their attention between the conversation and the shopping or other activities, as watching TV in a store or strolling between the goods. They often get into the shops only to avoid the noise of the streets, choosing the place where one can have a long conversation without being disrupted.

People make also phone calls in cafes, bar and eateries, even addressing the waiter when they are at the phone, as it was observed in Paris, in another example of articulation between phone call and face-to-face interaction. The widespread use and acceptance of the mobile in such places reveals also a change compared with the findings in 2002. Then, French interviewees affirmed feeling uncomfortable using the mobile in restaurants and sometimes in cafés too. This was already found in the research carried out in France in 1998 quoted above. But then most of the interviewees affirmed to switching their phones off when dining out (Licoppe and Heurtin, 2002: 97), whilst in 2002 our French interviewees just try not to make calls and to be brief when answering them. Observations in Paris revealed that mobile phones are largely present and used in cafés. Furthermore some Londoners interviewed thought it rude to use mobiles in a restaurant, but not in a café. This can be related to the ubiquity of the mobile phone use. Mobile phone use breaks down the boundaries that mark the restaurant dining room as a distinctive and protective milieu. When people go out to dinner they seek the experience of being out, in a setting where they are removed from workaday concerns, where they are concentrating on food and on the immediate company (Rule, 2002: 253). Research carried out in the nineties stated how most of the respondents considered the use of mobile phones in restaurants as a violation of the normative expectations peculiar to that context (Ling, 1997). Ling observes that the ringing of a mobile phone and the consequent talk were not yet part of the routine disturbances that one might expect in a restaurant. However, according to our findings, it seems that mobile phone use is becoming a part of a restaurant routine.

In most cases people use the phone when they are alone at the table. A woman having breakfast in Paris with a work colleague makes a phone call when her companion leaves the table momentarily, using this time to make phone enquiries about a French course for her foreign babysitter. At the same time, in another example of multitasking, she calls the waiter and orders. When her colleague comes back, she is still at the phone giving her personal details, name and address. She quickly ends the phone conversation and resumes the face-to-face conversation. In London, during a working lunch in the city, one man gets up and moves away from the table in order to answer and make calls. This is common etiquette in London, as the absence of phones on display on the tables. Observation in Paris also reveals that people on their own can make calls at the same time they eat, a way of keeping company when having a meal and an exercise requiring certain dexterity.

In London and Paris phones are not usually displayed on the tables in cafes and restaurants, unless the phone owners are women alone. If they are waiting for someone, phones are removed and placed in pockets or bags when the person arrives. They have fulfilled their function of indicating to those around that the woman is not alone. Women on their own in Parisian cafes have been observed using their phones intermittently during the whole time they stayed in the café, more than thirty minutes. They were not making phone calls, but texting, playing games, using the calculator and simply holding it in their hands or leaving it on the table the rest of the time. Etiquette in London and Paris seems to require that phones be kept out of sight when sharing a meal with others. Otherwise it could suggest that the phone owners are not paying enough attention to those present, and that they are more interested in the absent presence of those who could phone them. This is explicitly affirmed by some of the Londoners and Parisian interviewed. As Fabrice, a Parisian thirty-something says, “it doesn’t need to be on display. That’s giving it too much importance (…) It’s annoying when people do that, it’s like if they were going to make a call at any moment, it upsets me”. Most English and French interviewees affirm not to do that unless they are expecting a call. Though Spaniards do not seem to share this view as the presence of mobile phones is commonly accepted, taken for granted and probably even unnoticed, and consistent with not being specially annoyed when those in their company use their mobiles. The presence of people at the other end of the phone, real or virtual, is readily accepted, shared and integrated to the co-present interaction.

Airport lounges are another example of mobile phoning areas. Most of those waiting for their flights, especially if they are alone, are using their phones. Often they are physically closer, as it has been observed in the examples of open-air wireless phone zones. They lean on empty desks, in the bar areas or move around talking and pushing

their trolleys, and even talk while walking backwards, as an employee of Orly airport. Another airport situation when many people can be observed texting and making calls at the same time and in the same place is when passengers, who have just arrived, are waiting for their luggage and picking them up from the luggage belt. In the first situation mobiles phones are used to keep company while waiting and also to make productive use of the waiting time; in the second, passengers start to make arrangements and announce their arrival to other people.

In the three cities mobile telephones seem to be a way of entertaining and keeping company when one is alone in a café, on a train, at the station or the airport. Not only making calls, exchanging texts, but also playing games, looking at pictures and icons stored in the phone, or reading old messages again, are ways of coping with the waiting time. Mobile phone use gives new meanings to dead times and transitional spaces allowing escape from boredom (Lasen, 2002: 39-40). Furthermore, in Madrid and Paris, mobile phone use helps to cope with the lack of civil inattention in public places. People feel observed. Public places are a kind of stage. Someone alone feels more the weight of the strangers' looks. After newspapers and books, mobile phones fulfil this company role, adding the information that the person is not alone. In my observations, most of the women sitting alone on Paris cafés were using their mobiles phones.

2.8.4 Negotiating the interdict: mobile phone uses in cinemas, libraries, classrooms and other places where its use is banned.

People in the three cities use phones to make calls, or at least have them switched on, in places such as classrooms, libraries, theatres, cinema and concert halls where their use is banned. Even in planes some Spanish users have been observed being reluctant to switch off their phones. On Iberia planes the first instruction of the safety video showed to the passengers is to switch off mobile phones. This comes after a steward has already asked people to switch off. Easyjet stewards at the landing in Madrid remind the passengers, several times, that mobile phones have to be kept switched off until they are in the terminal. In 2002, in a plane waiting to take off from Luton airport, a Spanish young woman started making calls, ignoring the steward who at the same time was asking the passengers to switch off their phones. Even when the steward addressed her personally, she kept talking on the phone. When she finally hung up, she was really bothered by the insistence of the steward. When the same plane landed in Madrid, a few Spanish passengers started making calls before leaving the aircraft. It seems that passengers do not wait to get to the luggage hall to

start making calls anymore. Even if they do not make calls inside the plane after the landing, they switch their phones on in order to see whether they have received any messages. When they leave the plane, they are ready to make a call, like smoking passengers who put a cigarette in their mouths ready to be lit. One of the Spanish passengers on the same flight left the plane with a cigar in his hand, waiting to be lit, and the phone to his ear.

The growing numbers of users in the three cities who **never switch off their phones** partially explain their use in those places. In 2002, only Madrid users affirmed that they keep their mobile always on, **always open** (*abierto*), showing a higher level of accessibility than people in the other two cities. It was a mixture of forgetfulness, partially due to the habit of never switching the phone off, and the tendency to not observe such rules, such as smoking and parking bans for instance. Carmen, a teacher in her early sixties, interviewed in Madrid in 2002, always had her mobile phone on; after six months, she did not even know how to switch it off. This created an embarrassing situation when her phone went off twice while she was at the cinema as she was not able to switch it off. But nobody in the audience complained about this repeated interruption. She was interviewed again in 2004. She has got a new multimedia handset and after months of using it she had not yet learnt how to switch it off. Only after another embarrassing moment, at a concert hall this time, did she learn how to switch it off because one of her daughters showed her how to do it.

In 2004, fieldwork shows a decrease in the number of users who switch off their phones and of the situations when that happens. In 2002, in Paris and London most of the interviewees switched their phones off, or “close it” as the French say, quite often at night, when they are in the cinema, in concerts, in classrooms, and when they do not want to talk to anyone, whereas nowadays most of the people interviewed would rather put the phone on silent in these situations, or out of reach when they do not want to be bothered. This is another example of the development of the obligation of availability facilitated by the mobile. One has to explain why the mobile is “closed”. In 2002 we found two Londoners, whose phone was off most of the time, Helen’s phone, for instance, was off unless she was expecting a call, but she always carried her phone, just in case. She often switched it off in order to protect her privacy and to be left alone with her thoughts. A special case was Dominic, who feared cancer and therefore rarely used his mobile phone, unless he needed to make a call or was expecting one. Such behaviours were not found in 2004, even for the more reluctant and less active mobile users.

Telephones ringing in cinemas are quite common and also users answering them, as it can be deduced from our interviews. For instance a Spanish youth, Max, answered the question of whether he is bothered by other people's mobile phone use, by saying that he is annoyed when a mobile rings in the cinema and the person answers and starts talking. Though cinemas seem to be the places where more of the interviewees, more than one third, put their phones off and where all the other say to put it on silent, almost all of them have already heard phones ringing when being at the movies. In Paris and Madrid, some people even answer the call. In some cinema in Paris and its suburbs, employees go up and down the aisles to prevent people using their phones. Other places where some of the interviewees switch off their phones are the GP surgery, at home at night, at the gym and at the hairdresser. But only three participants acknowledge that they switch it off in all places where mobile use is banned.

In 2002 it was found that in some schools of the University of Madrid students were allowed to have their phones on if they were silent, and they could leave the classroom to answer their calls. Elisa and Maria, IT and Tourism students, reported that many of their lecturers had their own mobiles on and when they rang during the lessons, they also answered. These young women felt that their mobile phone use was not restricted. They did it when they wanted and they answered the calls every time they received one. Observation in Madrid also revealed that during a lecture in a conference, the mobile phone of the scholar giving the talk rang while he was speaking. He stopped talking for a few minutes whilst he checked who was calling, then switched off the phone. Nobody in the audience seemed to be bothered or surprised by this interruption. Helen, a lecturer in a further education college in London, switches her phone off during the lessons, but not all her students do. Sometimes they even answer the calls, leaving the classroom. She is annoyed but does not complain because, she says, they are adults. Students of Central St Martin's Arts School in London interviewed know that they are not supposed to use their phones in the School, nevertheless they do. In London, answering a phone call during a university lecture does not seem to be usual yet, but receiving and sending SMS is not such a rare occurrence.

In Madrid the trend seems to be to always answer a call, even when one is with friends or does not want to talk to the caller or even if you have to leave the cinema or the classroom, at least in certain circumstances ("If it's a strange call, which can be an emergency, otherwise not", Elisa). Spanish interviewees think that it is rude to let a call go unanswered, even if it is perceived as an interruption or if they do not want to talk to the caller.

Answering a call in a place where the use of mobile phone is banned is not always easily accepted. Passengers in the plane where the Spanish young woman was phoning her mother showed their disapproval exchanging comments and looks of surprised disbelief. But the failure to switch the phone off in a place where its use is banned is becoming more and more acceptable; that is, people do not complain when phones go off, they seem to be used to it. At a concert in the Queen Elizabeth Hall in May 2002, I could hear phones ringing, "discretely", that is, just once or twice. At one moment a phone rang loudly and for several seconds, it was the ring tone called "the buffoon". The audience laughed and some people even clapped their hands, one of the musicians on stage followed the comic mood pretending he was going to leave the stage. It was a concert of electronic music, but one can expect that the reaction of the audience would have been different if a mobile went off in the middle of an opera or during a pianissimo extract of a classic concert, even if one car hardly attend a concert of whatever music genre nowadays without a mobile going off at least once.

Putting the phone on silent mode replaces switching it off: when one wishes to avoid being disruptive; when a phone going off would be unacceptable, like in a working meeting; or when mobile use is banned. Young English women interviewed also keep their phone always on, often on silent, because "when you have the phone on silent at least you know who phoned you". **The reluctance of the Spanish users to switch off their phones is directly related to their unwillingness to use the voicemail service.** Therefore if the phone is switched off, they do not have any trace of the calls received. Many Spaniards find very annoying when their call is forwarded to a voice mail. Only two of the interviewees in Madrid use it. The reasons given by the other interviewees are related to their interpretation of what the mobile is for. If they call someone on the mobile it is because they want to talk to that person: if they wanted to leave a message, if they could do with an asynchronous way of communication; they would have sent an SMS. If the receiver is not available, they notice it when the call is not answered, and thanks to the missed call message the person would know they have called, so what is the point of talking to a voicemail and spend money on the call. Sometimes there is also peer pressure not to use voicemail. After her friends keep expressing their irritation, Elena, disconnected it and never used it again. This view of voicemail is related to the growing expectation of accessibility created by the mobile and the expectation of being able to reach someone when one makes a call. However in Paris and London, where similar expectations exist, people do not see any problem in using the voicemail. Asynchronous voice communications are a normal part of mobile phone communication. The only person interviewed in London who does not use it, got rid of it in order to avoid the obligation of calling back, as she receives many

calls from friends and relatives living abroad. Maybe the reason of the peculiar reluctance to voice mail in Spain is the stronger sense of social obligation towards friends and family. Whatever the reason, disconnecting the voicemail has become widespread and expected; 'normal' for most people.

The majority of the participants who left their phones on silent mode, while being in work meetings, at the movies, in the library or in the church, check who is calling without waiting once they notice they have received a call. They are ready to answer or to call back if they think that it is required. They **evaluate the importance of the call by who is calling and also depending on the face-to-face interaction**. For instance, if they are at an informal work meeting they would leave the room to answer a call they were waiting for. The importance of the call can be inferred by the status of the caller, for instance the boss, or by being atypical, either someone who has not been in contact with us for a long time, or an unusual time to call for someone who calls regularly. Some callers are always priorities no matter the importance of the face-to-face situation. "If it says 'school', I jump to answer" says Valerie, mother of two sons, used to receive calls from the school as the younger one has difficulties with school discipline. These kind of "family emergencies", as another mother interviewed says, are always priorities for all the mothers interviewed, as being reachable by child carers and schools is one of the main reasons for having a phone and keeping it on most of the time.

People interpret the mobile use ban and adapt their behaviour in each situation. Commuters write and send SMS when travelling in mobile free carriages. Students at university libraries, like in Surrey University or in the LSE, keep their mobiles in silent and use them in the stairs and in the lifts or move to empty areas to answer and make calls. Students also leave the classroom in order to answer a call. They did not follow the ban literally but avoid using the phone in a way that can bother other people. However, some people have become less sensible to the possible nuisance they can cause, like those who in the three cities let their phones go off in concerts or at the theatre or answer calls in the cinema and in the church.

2.8.5 Giving away personal information in public places

Mobile phone conversations become an important **source of information about strangers in urban settings**. This is one of the ways in which mobile phones are changing the urban landscape and the relationships between its inhabitants. Most of the people interviewed in the three cities acknowledge without any guilt that they

overhear conversations, as they also do with face-to-face conversations. In 2002, such an admission was common among the English and Spanish. In 2004, parallel to the lack of concern manifested by French interviewees about private conversations in public places, they also reckon that they eavesdrop sometimes. Unfortunately, the participants in the research complain, with phone conversations you only hear one side. Young interviewees think that it is often funny to hear other people's conversations.

Firstly, phone users reveal information about their state of mind and mood by displaying emotions elicited by the phone conversation: joy, anger, sadness, surprise and deception are manifested through gestures, laughs, tears and body language, which were not usually shown in urban public settings (Scherer, 2001). The body language of phone users and other pedestrians differ. The latter's faces tend to show reserve, expressions do not change while they are moving regardless of what they are thinking or seeing, even if exceptions to that rule are not uncommon in Paris and Madrid. Nevertheless, phone users' expressions are related to the conversation. They smile, laugh and if they are having a row, look angry. The emotions displayed by the use of mobile phones are more often positive: laughs and smiling faces, affective conversations between lovers, between mothers and children, than negative, such as anger, despair, sadness or embarrassment. Nevertheless observation found women in tears while having a phone conversation, and even in one occasion in Paris, a young woman walking, crying, insulting the other person, and looking back at me. Emotional display lasts longer than the conversation. For example, the mother looks through the train window with a smile upon her face and sparkling eyes after having spoken to her children who she is going to meet; or the London young woman trying to hold back her tears after a row with her boyfriend. London users find since mobile phones are widely used in public settings, the display of emotions, the number of people laughing, smiling, or being upset, has increased significantly. Some interviewees in Madrid and Paris do not think that mobile phone use has introduced a difference, as these ways of displaying affective moods were already present in urban places and are expressed by people interacting face-to-face. The rest acknowledge that they more often see people laughing, telling jokes and talking about passionate matters. In Paris they remember hearing people talking about relationships and liaisons, and also people telling of their sadness and how they feel down and depressed.

This is another aspect of how mobile phone users **influence the mood of the place** where they are, adding mystery and diversion to normal patterns of perceiving and behaving. This aspect could be improved. For instance, users could send non-intrusive signals to nearby phones, such as vibrations, discreet sounds, or colours. Mobile

phones could be a kind of peripheral awareness device that creates opportunities for serendipitous communication. Mobile phone users are already using their phones to communicate the mood of a place by talk and also by sending pictures and texts from football stadiums, concert venues, clubs, holiday resorts, classrooms and offices, or public demonstrations. As one of the participants in the demonstration of 13th March in Madrid, which was organised through a massive exchange of SMS, described it "People lift up their phones so those in the other side can perceive the mood in Madrid". New applications such as 'Bluetooth' could improve this kind of communication and open it to those whose phone numbers are not in our phone book.

Nowadays, the priority given to sight over hearing as the most common way of grasping information about strangers in public is challenged, from public transport and stations to streets and indoor public places. From personalised ring tones to extracts of conversation, people are receiving and giving away personal information. The growing amount of personal and even sometimes intimate information that can be overheard in public places raises the question of its impact on the perception of strangers. Firstly, because we are grasping information about them through their conversations, and secondly, because phone users are aware that others can hear their conversation and therefore they worry, or not, about the impression that this information can make on them. The possibilities of communicating with strangers and familiar strangers through mobile devices are being explored by prototypes like *'LoveBomb'* (www.playresearch.com/) and Intel's 'Jabberwocky' (www.urban-atmospheres.net/Jabberwocky/). This is a mobile phone application to visualize the users' "familiar strangers", those people that we encounter regularly in our neighbourhood, bus stop, trains and tube stations, without interacting with them. This device is a digital tag worn by mobile phones that can be received by Bluetooth enabled mobile phones (Paulos and Goodman, 2004). Bluetooth affords other exchanges with strangers, as proximity based ad-hoc messaging, from Bluejacking (www.bluejacq.com; Butcher, 2003) to Toothing, this is a kind of digital cruising involving sending out random horny queries to nearby people over short-range Bluetooth-based messaging.

People are already using their mobiles to communicate with strangers, such as the young Filipinos who flirt through SMS, in a similar way as it is done the web. In other occasions mobiles facilitate face-to-face interaction with friendly strangers, like the clubbers studied by Karenza Moore (Miles and Moore, 2004), who use the device to prepare the night out, to make arrangements to meet other people, and to communicate with those absent from the club. Mobile phones become also part of the friendly atmosphere of dance clubs, as punters exchange numbers with strangers. This

kind of number exchange is an example of mobile use as a way of interacting with those present, as the intention is not to facilitate future contacts because these numbers are rarely used. A young Londoner interviewee had got such numbers in her phone book.

Some authors argue that the disclosure of personal information in public settings is a result of the obliviousness of people around when one uses a mobile. “Through shielding from the others "behind" the mobile phone, the caller in a way becomes invisible and inaccessible, and can therefore, for the most part unconsciously, invite others to his or her private sphere” (Persson, 2001). Gergen describes it as the introduction of an absent presence, (Gergen, 2002: 227) in the face-to-face context. When phone users are withdrawn into their conversations, those around them become effectively absent. Others have seen in it an example of phone users’ disconnection from their surroundings (Goldberger, 2003). However, attentive observation reveals that people on their mobile do not forget that they are on a bus, on the streets, or in a train carriage. Interviews also show that users are aware of the presence of strangers, which has to be taken into account when one chooses to use a code language, to move away, or to keep talking regardless other people’s eavesdropping.

The etiquette in indoor places is therefore aimed to minimise the annoyance of the conversation for others and to avoid being overheard. All the interviewees say that they talk more quietly in a low voice. According to Goffman’s terms, phoning in this case moves from background to front, on the stage of social interaction. Nevertheless transparency is not always welcomed and phone users have to manage the impression their conversation can give to the strangers present. Some users interviewed say they never talk about intimate matters and use a coded language. The last can be improvised in the case of friends discussing relationships for instance. But it can be a more formal one, as the case of executives talking of confidential matters with secret pre-agreed words, or drug dealers talking with their customers and their suppliers about the quantity of “sweeties” required. Adults interviewed also affirm that in general they talk in a distant, more formal way. The younger the interviewees the less they say that they are bothered by other people listening to their conversations or talking in public places; they do not talk in a different way when talking in public places. They would have the same kind of conversations if the person at the phone were with them in the café. Even if they would prefer to discuss intimate matters face-to-face, they do not have a problem doing it on the mobile in a public place if necessary. These are only strangers, and as Simmel observed in his essay on the stranger as a social type, they “often receive the most surprising revelations and confidences” because their formal position is the synthesis of nearness and remoteness, indifference and involvement.

The eavesdroppers share temporarily the same physical space with the phone users, but protected by anonymity people can talk freely about whatever they want. They do not forget that they are in a public place surrounded by strangers who can hear them, but they consider that this is not a reason to avoid talking about private matters on the phone. People talking about intimate matters on public transport just do not care about what people around think about them cheating boyfriends, gossiping or criticizing work colleagues. More than a third of the people interviewed do not like to talk about such matters in public. They avoid making calls to discuss private matters, but they answer the phone and accept the conversation with the callers if they want to discuss such topics. Only a few of the interviewees, generally those in their forties and fifties, ask the other person to delay the call. However, as long as they are not loud, the majority of the interviewees, twenty out of 30, do not mind discussing private issues in public.

Worries about the possibility of communicating personal information to strangers differ from one place to another and between groups, and also changes with the time. The younger the mobile phone users, the less they are bothered about being overheard. The 2002 research showed that French users were more worried by the blurring between private and public caused by mobile phone use than English and Spanish users. Parisians openly complain when phone users annoyed them. Their hostility contrasted with the attitudes found in Madrid and London. Therefore the fear of bothering other people was taken into consideration when having personal conversations in a public place. Things have apparently changed. The 2002 research found then that these opinions did not reflect what was happening in public, as the number of users in public places and the kind of exchanges were comparable to those in Madrid and London. It seems that today opinions have followed the reality of practices and behaviours. French people keep expressing irritation towards those who use their mobiles in restaurants, instead of focusing in the food and the face-to-face conversation, but are less worried by the kind of issues discussed in public. This attitude contrasts with the results of research undertaken in the mid-nineties. Basset et al. (1997:156) observed in their study of phone use in Britain that the blurring of boundaries between public and private spaces produced anxiety in some respondents. Embarrassment, inhibition and ostentation were the “structures of feeling" which typically accompanied mobile phone use, emotional states that showed a perception of breaking a social rule. This kind of “structure of feeling" was only found in Paris in 2002. For the Parisians interviewed the lack of discretion of people talking in public places was perceived as a disruption, and even as aggression. They feel like “hostages”, the unwanted witnesses of other people’s business. Conversation seems intrusive, even indecent, to those who are excluded. The French scholar Fracchiolla (2001: 8) explains

that this conversation, which ignores them, makes them absent and questions their identity in a certain way. Licoppe and Heurtin (2002: 98) propose another explanation on the basis of research undertaken in France in 1998; they suggest that this kind of conversation is a form of exhibitionism that turns the people around into voyeurs whether they want it or not. It seems that the habit of having and overhearing personal conversations in public has modified the feelings and attitudes towards them.

In the 2004 research only one person, surprisingly not French, is bothered by having to overhear private conversations. He perceives it as people getting you into their life and problems, and thus transmitting to you their worries. People talking about troubles and negative feelings particularly annoy Jose Luis, a thirty-something from Madrid, as he cannot help but be affected by that bad mood. The other interviewees mostly share the opinion that it is not such a big deal, not more annoying than two people having a conversation. The 2002 research already revealed that the disclosure of personal information to strangers is often not a problem at all. Many Spanish and English interviewees, but only one Parisian, acknowledged without any guilt that they overhear conversations, as they also do with face-to-face conversations. Unfortunately, they complain that with phone conversations you only hear one side. Young interviewees think that it is often funny to hear other people's conversations. When people perceive it as problematic, for a variety of reasons from shyness to illegal activities or fears of other peoples' reactions, they do not always avoid these exchanges but rather try to minimise the overhearing by choosing the right place, the right words and mode (text instead of conversation) of communication. **The obligation of accountability and trust towards those on the phone (Green, 2001), loved ones, work colleagues or customers, seems to be stronger than the possibility of being embarrassed by the revelations made to strangers nearby**. When those close to the phone user are not strangers, the disclosure of the content of the phone conversation is a way of opening the conversation to third parties, the example that the phone conversation is not always a one-to-one exchange.

The disclosure of personal information in mobile phone conversations increases the occasion of *flâneurie* in urban public spaces. That is, it creates new occasions to observe, calling the attention of city-dwellers to the usually invisible others. The interviewees are surprised, amused, indifferent or interested by the conversations they overheard. Even sometimes professionals are interested, such as Elena, a writer for TV sitcoms and stand up acts, who feels very lucky when she overhears a funny or interesting story that she can use in her work. When being bored, stuck on a bus, she also plays a kind of game, trying to guess, by the content and the tone of the conversation, which person is at the other end (mother, boyfriend, work colleague…).

Simmel also observed that seeing without hearing is much more worrying than hearing without seeing (Simmel, 1989). This worry and the consequent mistrust of strangers were for him a characteristic of urban life. Does mobile phone use in public places increase the trust in strangers or at least rend them, and the public places, less threatening and more welcoming? This question deserves to be addressed in forthcoming research.

Phone users in urban public places are not disconnected from their surroundings, forgetful of those around. They share their attention and connectivity between the place where they physically are and the space of the phone exchange. The decision of giving away personal information to strangers is due more to the obligation of accountability to those in the phone and to the lack of concern about the impression they can make on these strangers, increased by the habit of overhearing and keeping such personal conversations in public places, than to the obliviousness of those present in the urban settings.

2.9 Mobile Phone Uses and Face-to-face Interactions

Using a mobile phone in public entails dealing with two sets of interactions: the phone conversation itself and the face-to-face interaction: the surroundings, the place where they are, the people present and sometimes as it has been noted, the other activities they are carrying out simultaneously. There are different ways of dealing with both settings, keeping them separate or connected. The 2002 research revealed that in London when someone makes or answers a call, their companions show a polite lack of interest, looking away, avoiding eye contact with the phone user and pretending not to listen. The face-to-face interaction is interrupted and those present act as if they were not together anymore. Similar behaviour was observed in Paris, where people tried to avoid the use of a mobile phone when they were not alone. When they had to make or answer a call, they often moved away, leaving the café table or going out of the restaurant. They made physical the separation created by the mobile phone conversation. Moving away when making or receiving a call is also a way of leaving the front stage of social performance, using Goffman's terms, when one does not want to share some personal information with the others present. For instance, Guillaume, a young Frenchman, moves away when he is with his work colleagues and the conversation could reveal to them that he is gay or what he does in the evenings and in his private life.

In contrast, observation of public spaces in Madrid revealed another way of reconciling phone use and face-to-face interactions; as if the person at the other end of the phone was joining the conversation. Mobile phone use was sometimes a collaborative action, when texting together, opening the conversation to a third party present, or trying to sort out problems with the reception with the help of friends. An example found in Madrid in 2002 is a couple in their thirties on a café terrace keep up a phone conversation for 20 minutes, passing the phone from one to another and listening to what the other is saying. They make eye contact from time to time, acknowledging the other's presence. For groups of teenagers and young adults observed, the phone user seems to address the person on the phone as much as the friends there, who follow the conversation, make comments and laugh. The phone itself is an object of interaction as we have observed. This has already been observed for teenagers (Taylor and Harper, 2002; Weilenmann and Larsson, 2001), but in Madrid collaborative use of the mobile characterised all ages. For instance, women strolling and showing their phones to each other, a couple of young men who exchange some comments while walking and using their phones, children and parents looking at the phone screen, reading a message maybe.

The mobile phone users connect both interactions, and try to maintain the phone conversation while being available to those who are with them. In some cases observed, as a group of male teenagers in a commuter train, they even discussed whether they have to answer a call or not, after having seen who was calling. Thus, Spanish users tend to integrate the mobile phone conversations into their present face-to-face conversation. Therefore when they are with other people and make or receive a call they stay within the group, unless it is too noisy or it is a special conversation, e.g. with a boyfriend or girlfriend. Moving away, going backstage, depends on who is calling, if it is someone known to the group or not. If it is another friend, they stay. Spanish young interviewees seem to be more bothered by noise than by other people overhearing. If they move away from the group, it is mostly because of the difficulty of hearing than because they are worried by others listening to their conversation.

Articulations between phone uses and face-to-face conversation, without sharing the phone conversation or using the phone collectively were observed in the three cities. In London and Paris, the boundaries between the two are not as clearly established as two years ago. People initiate phone calls while they are still talking to those in their surroundings and look and listen to them, with the phone in their ear, till the receiver answers the call. Young men in Paris and Madrid have been observed kissing a woman while holding a phone at the ear and resuming the phone conversation after the kiss. Users also text while listening to others, and they do this sometimes when they

are alone. A woman in a Madrid train showed a clear example that phone users do not withdraw from their surroundings. She was writing a text and visibly overhearing the conversation kept by two other women. This time it was the mobile phone user who was eavesdropping. Very often in the three cities people typing SMS in public places were observed looking alternately at their phones and at their surroundings. Another way of keeping simultaneously two different interactions, face-to-face and phone, is interrupting briefly the phone call to make a comment to someone, comment which is not related to the phone conversation. Sometimes, this simultaneity also includes other tasks, like the young man in Madrid, who was holding the phone between his right ear and his shoulder while using an ATM and addressing his mother.

In 2002 most of the French interviewees and also the English adults said that they try to restrict their mobile phone use when they are with other people. Either they switched their phones off or tried to keep conversations short when answering a call, telling the caller that they are not alone and will call back later. A change observed nowadays is that in London and Paris, people use the mobile when they are not alone. Though still most of the people observed using their phones were alone. However, only three persons, two forty-something London men and one thirty-something Parisian man, affirm that they only make calls when they are alone, unless it is an emergency. As long as they avoid spending too much time at the phone when they are with other people, the rest of the interviewees answer calls and make them if required. Using the phone in such circumstances does not seem to be as bad manners as it was two years ago in Paris and London. Then, many users, especially in France, complained about the priority given to the phone call over the face-to-face conversation. When in their friends' company, in bars, parties or dinners, they considered the calls they received disruptive. They thought that cutting the conversation and talking to somebody else was bad manners and annoying, but they always answered the phone anyway. The conflict of etiquettes was clearly perceived but it did not prevent the use of the phone. The change of attitude observed in 2004 is another example of the widespread use of the mobile and the flexibility in evaluating when its use is suitable or not, according to the situation, instead of following general rules of etiquette valid for all occasion.

Another behaviour observed is people together, youngsters and young adults mainly, using their respective phones at the same time, for instance a French couple in Orly airport text for several minutes, while they were waiting for their luggage, facing each other and looking attentively at their phones. Another example described by one interviewee in London is being with friends in a pub and spending certain time downloading games, images, or ringtones while the others do the same or exchange them through Bluetooth or infrared. Such behaviours, which have been described in the

case of teenagers, are also characteristic of young, and not so young, adults. Twenty-something people in London and Paris, aware of certain similarities with teenagers' mobile uses, specially the use of SMS, are eager to outline the differences, and reveal how their peers can mock them. As Samia, a twenty-three years old Parisian put it, "if you send more SMS that you call, you are considered a 'textomaniac'. "Youths do it, they are the SMS generation".

In Paris on several occasions people were observed using the mobile while being with others and staying at the café table, instead of moving away, as it was observed two years ago. On one occasion, in a group of seven young adults sitting at a café terrace, two – a young woman and a man with a hand free kit – were having phone calls while face-to-face conversations were held by the others around. In Madrid, as was already the case two years ago, many of the users are not alone. Those present follow the phone conversation and, according to the content and the persons involved, make comments or react at the phone conversation. For instance, the teenage boy, smiling and gesticulating, when his friend is being asked by his mother for his whereabouts and why he does not come home to do the school homework instead of going to visit a friend. Adults in London and Paris have been observed sharing a mobile phone conversation. Although this happens less often than in Madrid, adults also share the device sometimes. Couples were observed in Paris, where the woman or the man have a phone conversation and when finished give the device to the other who then locks the keypad and puts the phone in his pocket on in her bag. Using the mobile without excluding third parties challenges the claim that mobile phone use implies "fewer possibilities for mediation and circulation of speech, owing to the generalisation of an exclusive form of two-way (dyadic) communication" (de Gournay, 2002: 195). Without undermining the importance of one-to-one exchanges, other mobile phone practices, such as the use of SMS for political mobilisation or the sharing of picture, MMS and SMS, explore further possibilities for mobile phone communication.

Dealing with these two different sets of interaction can create conflicts. In 2002 people interviewed affirmed that arguments arise sometimes when someone is using it all the time instead of talking to the friends who are present, mostly when one uses it too much and the mobile is ringing all the time. As Laurence, one Parisian young woman, points out it is like smoking or not, one has to reach an agreement when being with another. French students interviewed were annoyed by people using the mobile at college during the breaks instead of talking to the other classmates. They felt that the mobile phone is often a de-socialising device, which isolates individuals. Some French interviewees were also annoyed when friends use their mobiles in their presence. It is an obstacle to socialising. They felt that they are less interesting for friends if they use

their mobiles instead of talking to them. This behaviour was perceived as a lack of respect and sympathy. In 2004 such strong examples of annoyance related to people using the mobile in one's presence were not usually found. In general most of the interviewees are only bothered by friends using their phones when they do it for a long time or too often when they are together.

The simultaneity of the two interactions, co-presence and phone exchange, means that sometimes calls are perceived as **interruptions**. All the interviewees seem to consider mobile calls as interruptions on some occasions. But none of them have such strong views as some of the people interviewed two years ago who thought that any unexpected call was an interruption. Besides, **the irritation associated with being interrupted by a phone call seems to have been replaced by a slight annoyance**.

Sometimes the interrupting calls are considered to be normal, as when one is at the office and receives continuous phone calls. Those whose work does not require being reachable, as the Spanish TV writer and the Londoner cartoonist, switched off their phones when they want to focus on their task. Otherwise the situations when calls are perceived as interruptions are multiple: driving, work and family meetings, watching *East Enders*, restaurant and family meals (mostly for the French), or any kind of meal for Elena, who would not answer a call while her food is getting cold. There are also times when one does not want to be bothered and does not wish to talk to anyone, but only a minority of the interviewees, five out of thirty, gives this example. In other cases it is the time and the place, which make the call and interruption, like being called at night, or when one is in the street for those who do not like to call in public places. Although observation reveals a growing use of the mobile simultaneously with other activities, some of the interviewees do not feel comfortable doing it, and therefore calls received when they are shopping, paying for an item or using an ATM are perceived as interruptions. In some cases is the person who calls who is disruptive, when one does not want to talk to family members or to the boss.

However **receiving phone calls at work or working calls at home do not seem to be problematic** for the participants in the research. As one of them declares, "it is flattering to receive a call". Working calls outside office time are not a problem, as long as it does not happen very often. Those of the interviewees who work with clients (lawyers, brand manager, PR, financial adviser), do not give their mobile phone number to them, unless it is really necessary. In general, people tend to ignore working calls out the office hours, unless it is the boss or a call they expected. Receiving calls from friend and family at work is not such a problem, as long as they do not annoy working colleagues. Filtering calls with a mobile is easy, and one can also answer briefly and

ask to be called later or just let the call go unanswered. Those are also the ways the interviewees deal with any kind of disruptive call. Only two of them reject the call. That is considered to be rude, as the person at the other end notices it. The most common way of deal with such calls is just not answering them, as it was explained above, people seldom switched their phones off. Afterwards, they can explain why they did not answer or just lie and say that they did not hear it.

Another way of dealing with the accessibility provided by the mobile phone was to avoid the situation in which one has to take a decision, such as switch it off, reject the call, not answer or answer the call unwillingly, by **putting the phone out of reach, and more important out of hearing. "It's always on but it's not always with me"**. The phone is let in the bag during the weekend and the owner checks the missed calls from time to time. Some people in the three cities, mostly in their late thirties and forties, left their phones inside their bags or in another room, or on another floor, in order to avoid hearing if they go off. The advantage of this solution as opposed to switching the device off, is that they do not have to explain why they were not available. They just could not hear the phone. This behaviour is another example of the strength of the social obligations towards friends and family, and the weight of the social expectation of accessibility created by owning a mobile phone. It seems that the Spaniards, who experience these social obligations with more intensity, cannot get away so easily, instead of using such tactics they feel compelled to answer the calls, and just try to be brief if the situation is unsuitable. This obligation of replying, considered as an example of etiquette and good manners also apply to SMS, several young women interviewed claim to answer all the SMS they received. This is also perceived as a female behaviour by them and other young adults.

During some of the interviews the participants of the research received phone calls. Two young men of similar age, Rafa and Michael, were called by their girlfriends. In Madrid, Rafa was called twice during the time of the interview, he answered each time, explaining what he was doing. Unlike Rafa, Michael in London did not answer his phone. He explained that his girlfriend knew what he was doing, thus, by not answering the call she would know that the interview was not yet finished. Besides he considered it bad manners to use the phone when with someone.

2.10 Affective Communication through Mobile Phones

Mobile phones have become **affective technologies**. That is, objects which mediate the expression, display, experience and communication of feelings and emotions.

People enjoy an affective relationship with their phones and feel attached to them. This is partly due to the intrinsic affective character of human communication, and also because mobile phones are close to the body. They are an extension of the human body at the same time that they extend and augment its abilities. Mobile phones are not only an extension of the owner's presence, but they also allow the virtual presence of those linked to us by phone communication. Thus, they become an important element in the building and maintaining of groups and communities.

2.10.1 Personalisation

Emotional attachment is enacted in the personalisation of handheld devices and services. This concept defines how mobile services adapt to the context, such as user preferences, user location, network and terminal capabilities. It also redefines what a person entails: self + role + place + time + device + network. The personalisation of the device concerns ring tones, covers, pictures and video clips, and also the communications made and the information stored, all of which contribute to build a unique and personal device. The example of the old phone ring tone, chosen by many of the interviewees, reminds us that personalisation should not be necessarily interpreted as individualisation. The personalisation of the device highlights in most cases the conformity of the phone owners to the style of a certain group, community, or to the 'air du temps' or 'zeitgeist' of the place where they live. In the case of the old phone ring tones, these people, without specifically looking to conform to a certain pattern, shared the perception that this was an original, funny, practical and non-disruptive ring tone. As all the interviewees are adults, this sound is also part of their memories, linked to the soundscape of their childhood and youth.

The mobile phone is considered an expression of one's personality. The use of mobile phones is associated with personal lifestyles. They have a value and act as a symbolic marker. For instance, the search for camera phones owners for the interviews reveals that ICT workers, twenty-something people and men are more likely to have one of these handsets. If they are a status symbol, the meaning is slightly different from the way mobile phones were such a symbol in the late 80s. If you are young and technologically savvy you ought to have one,. even if you are not really interested in taking pictures with your phone., This is illustrated by the paradoxical example of one of the participants in Madrid, Ruben a 23 years old IT consultant, owning two phones, who in the same interview affirms that he purchased a camera phone because of the camera and that, after months of using it, has never taken a picture.

All the interviewees have personalised their phones in one way or another, usually by putting pictures on the screen and on the phone book, other times by changing the cover, and by downloading or composing ring tones. The only person who cannot be bothered to personalise his mobile, a Londoner in his late forties, has the handset personalised by his daughter, who change the screen image and the ring tones. As described above, pictures taken by the phone owners are used to personalise the device rather than being sent as MMS. Most people periodically change the screen image and also the ring tones, following their mood and what has been happening in their life. The attention to the appearance of the device is not only a teenager interest. **All the interviewees took into consideration the look of the device when choosing the handset and many of them affirm to pay attention at the aesthetics of their phone and of other people's.** According to different interviewees the phone has to look professional, original, discreet, not too square, not naff, pretty, or good. According to the interviews, there is also an attachment to certain shapes (folding handsets or shell shape) and fidelity to labels (Nokia, Ericsson), even to the extent of changing the operator just to get the desired handset.

2.10.2 Attachment and dependence

Research carried out at the Digital World Research Centre by Jane Vincent (2003) shows that people have a more emotional relationship with their mobile phone than they do with other forms of computational devices. Mobile usage is explained using emotional language categories including panic, need, desire and anxiety. In this research the participants were asked if they feel dependent on their mobile and which were the feelings they experienced when they were unable to use one. The great majority of the people interviewed **acknowledge that they are more or less dependent on their mobiles**. Mobiles are called indispensable and essential. "I hate to live without my mobile", "I couldn't live without it", "the mobile is embodied on me", "It's like my little pet", are some of the statements recorded. **They "freak out", experience the "paranoia of incommunication", feel, in their own words, strange, lost (even more for those who do not wear a watch), uncomfortable, unhappy, cut off, insecure and isolated when the mobile is lost, stolen or forgotten at home**.

Those who do not find the device indispensable but only convenient were a minority, six out of thirty, mostly men in their forties or late thirties. Admitting the attachment to the device is not especially annoying. A young London woman laughed about how "sad" that was, the other simply explained the reasons of this attachment. Though a young woman interviewed in Paris declares that she is pathologically dependent on her

mobile, most of the participants in the research find reasonable motives to account for their attachment. Simply because the organisation of everyday life when one is not at home has become more difficult without a mobile. It is “like the microwave”, “any object that is useful in your life makes you feel dependent”. It gives you “better quality of life” and then “it’s part of you”. These advantages given by the mobile are also paradoxical, as Lucy a young Londoner states, it makes you be “**lazy and proactive**” at the same time, in the way one manages working and leisure time and also in the way of keeping in contact with friends and loved ones. Laziness as you send a text when you are to tired or you cannot be bothered to call; and proactive as it is easier to organise unplanned activities and last minute meetings or outings. Laziness is a powerful motivation for different ways of using the mobile. It is a reason to send SMS instead of calling, a reason for keeping messages and pictures until the memory is full, a reason for not having yet properly learnt how to use several functions of the new phones (like sending MMS), a reason to phone the colleague in the office next door, a reason for “forgetting” the landline just because the number is in the mobile phone book or even because the mobile is at hand and one cannot be bothered to get up, or get out of bed, to reach the fixed phone.

In some cases the mobile is also indispensable to work and that alone explains the necessity and dependence, as it is the case of a Parisian self-employed mobile worker or a London IT worker employed by a trade company who is in direct contact via SMS with the machines he looks after,.

The attachment and the need created by the interaction with the device not only involve the mobile and its owner. The expectations of other people, family, friends, employers, colleagues, clients, who want or need to get hold of you, are also a powerful reason. As most of the participants say, people expect them to be reachable. This expectation translates into the practice of offering mobiles to those who are not so accessible or imposing them in the case of some employers. Certain participants have offered mobile phones to their parents or children, or have received a mobile for that reason, either from their employer or from their family. Not only the mobile owner can feel dependent on his or her mobile, but, as one British interviewee says, other people are dependent on the fact that I have got one. According to another participant, thanks to the mobile a habit has been created to call and be called by certain people. So if you lose or forget your phone, not only it will be difficult to manage practical everyday situations, but also people will worry when they cannot reach you and when you cannot phone them by other means because all your numbers are in the phone book of your mobile. This last aspect is quoted by many of our interviewees, as almost two thirds of them keep their phone numbers only in their mobile. Therefore if they do not have their mobile they feel

isolated, cut off and lost. These feelings and worries explain that some of the people interviewed in the three cities, women and men, come back home just to pick up their phone when they realise that they have let it there.

The value of the device is increased by the emotional attachment to the object and to the information (phone numbers, texts, pictures) that it contains. Almost two thirds of the participants keep some of the SMS that they receive. In some cases, the reason is practical as these texts contain information required, as phone number or addresses. But in most cases the value is mainly affective. SMS "where my son tells that he love me", poems and love messages, uplifting and beautifully written texts from friends. Some compare keeping SMS to keeping letters. In many cases the reason of storing the message is the sender and not really the content: messages from boyfriends, from loved ones rarely seen or family members. There is also a kind of **fetishism** associated with SMS some people claim. "I used to be very sentimental, but then for god sake it's just a txt message!" Even according to some of the young female interviewees, certain masochism, when one keeps and reads the messages once the relationships is over.

The feelings and reactions of people when phones are lost or stolen reveal the attachment the object. The anger, distress, sadness and frustration experienced after the loss go beyond the cost of the device and the mere inconvenience of lacking a mobile. Of course, the latter is not negligible as users discover the unreliability of public phones. Not being able to make a phone call when one wishes has become unbearable. It makes people feel miserable and miss their mobile even more.

Almost a third of the interviewees call or text their partner, wife or husband everyday, in some cases several times at day. Four other participants who are single remember that they had these **routine calls or SMS** when they were in couple. Some other people contact their best friends every day or every other day. In Madrid, some of the interviewees are in contact with their mothers through their mobiles in a daily basis. In these cases the absence of call or text could indicate that something is wrong. This also applies for other kind of situations, as for instance when people go on holidays abroad. Michael, a twenty-something Londoner who enjoys travelling to the Far East, texts his parents almost every day during his trips. His parents who also like travelling abroad do the same. He notes that now if a few days pass without a call or an SMS his parents will worry, whereas before, before the widespread use of mobiles, people would start worrying if they did receive a call from someone travelling far away.

Mobile phones and their promise of permanent accessibility let people believe that **they will not miss any opportunity, that they could cope with or take advantage of the**

unexpected thanks to their mobile. This also becomes a reason for the attachment to the device and explains why people tend to carry their mobiles with them all the time. As found in the interviews, when people forget their phones at home, they worry that precisely that day some important and urgent call has been missed. French sociologist Francis Jauréguiberry (2003) has also highlighted the complex relationship between mobile phones and anxiety. Mobile phones reduce the stress of a tight timing by allowing more flexibility, but at the same time induce a new kind of anxiety when users are not connected: "Have they missed something important?" "Has someone tried to contact them?"

One of the reasons to own a mobile phone, namely for people who care for others (children, elderly people), is to have peace of mind. In this case, having the mobile with them at any time can be more important than actually using it. According to another participant one becomes addicted to the mobile quite fast because one gets used to have the kind of immediate information about other people facilitated by the mobile. You start thinking "if someone calls I just will call back later" and then, he says, "almost without noticing it, you cannot stand waiting to know, you need to know who called you, why and where were they". As another Spanish participant observes, since everybody has a mobile you cannot be sure about where people are and mobiles become "a manual or voice GPRS", when you call or send a SMS mainly to know "where are you". Knowing the location of others, from loved ones and friends to colleagues and customers, is important and can create unplanned occasions for sorting out working matters, making productive use of empty time or just for having a chat and a drink. **The ability of being able almost always to communicate one's location and to know other people's is becoming taken for granted, making people feel uncomfortable when they cannot**. This is revealed by the example described by one of the participants in Madrid. He was waiting for his wife and his mother in the street when the area became suddenly crowded. He felt anxious and distressed as he did not have his mobile with him and could not know where both women were, not to tell them where he was. It is almost as if the fear of being lost, in the most mundane situations, had become unbearable.

One of the participants, the young Spanish writer, goes further and thinks that thanks to her mobile her social circle has been enlarged. For the younger participants in the research, the increase in the occasions of going out, attending parties and enjoying other unplanned leisure activities also means the ability of meeting new people and therefore increases their attachment to the device.

2.10.3 Eliciting and displaying affects

Mobile phones receive the affective meanings of the communications and exchanges that they mediate and also contribute to modifying the ways of expressing emotions. Mobile uses create as well opportunities for emotions to arise, for example when reading or writing an SMS. **Mobile phones afford the opportunity to communicate feelings and thoughts at the time they arise**. Mobiles' uses elicit emotions and it is one of the reasons of the attachment to the device. Such situations have been observed sometimes, for instance a young woman on a Parisian bus who suddenly stops reading her book, takes her phone from her pocket, sends and SMS, raises her eyes, smiles, put the phone back in her pocket and resumes reading. Interviews also reveal how SMS are used that way in love exchanges, especially when beginning a new relationship. As Elena, a divorced Spanish forty-something who is starting a new relationship, explains: "my messages are not at all telegraphic. (…) When I send a message I don't send a message of four words. My messages are carefully considered. If I have to send a message in the street, I stop and think (…) when you send an affectionate message to someone because you are thinking of him, you can not send a pre-fabricated message." Mari Peña, a Spanish woman in her late fifties says "I'm not interested in that (SMS), I haven't got someone to send them to. If I had an affair, maybe…". Also research undertaken in France shows that SMS is mainly used for affective and emotional communication by young people as well as by adults (Rivière, 2002)

Almost a third of the interviewees affirm to send SMS to communicate feelings to loved ones, not only to boyfriends, partners or wives, but also to friends and family. SMS are particularly used to say "I haven't forgotten you" to friends who have not been contacted for a long time or to say "I thought of you". **These kinds of messages can be communicated in a non-verbal way, as when a mutual understanding exists between the sender and the receiver calls would be made knowing that they would be missed, but in order to imply a such message**. It would be interesting to implement these possibilities of non-verbal communication though mobiles. The SMS in this case is the result of a link between the co-presence situation and the absent friend, "I saw that and I thought of you". A similar link occurs in the case of the "wish you were here" MMS, as this kind of messages is particularly suited for MMS. This asynchronous way of communication, which does not require an immediate answer or even an answer at all, helps to facilitate the sharing of experiences, essential for keeping and developing social bonds, when people do not share the same place and time when things happen. Both SMS and MMS are also sent to congratulate the receiver, for birthdays, at New Year's Eve, or for religious celebrations such as Christmas or

Ramadan. An Egyptian informant living in London told in the interview that at the occasion of Muslim festivals, people exchange messages with some calligraphy or an icon related to the celebration, such as a lamb or a lantern. Camera phone uses create new emotional experiences, as described above, such as the playful way of taking pictures with a camera phone which can add a thrill, an emotional intensity, to the boring routines of daily commuting.

Mobile phones' presence and expression in everyday life contribute to the personal development of the users' social skills, emotional behaviour and emotions management. Their use entails the renegotiation of social norms about the public display of emotions, as it was discussed above, or the management of potentially embarrassing situations. Through our upbringing, we learn how to express, but also to control and hide, negative, embarrassing or unsuitable feelings. Mobiles help to express emotions but also to control them. Mobile phones facilitate the possibility of choosing whether to display or not the emotions experienced, for instance by using "cooler" channels of communication like text, where senders avoid the possibility of being betrayed by their voices and can think twice about what they are going to say and answer. They allow people to do things that are difficult to do when face-to-face, such as emotionally charged situations like 'breaking up' a relationship. The choice of this kind of channel can also be an example of tact, when one does not wish to be disruptive. It happens in everyday life situations, but also when something extraordinary occurs. Some of the participants from Madrid received many SMS after the attack of 11th March from friends and acquaintances wishing to know if they were fine; in some cases they did receive more texts than calls of that nature.

The use of SMS to avoid embarrassing situations, like ending relationships, is also practised by adults. This kind of messages can be written and sent in public settings, as in the case of a Parisian thirty-something man dumping his boyfriends, whose text, typed in the bus, was overlooked by one of the informants. However, the use of SMS to put some distance and to avoid embarrassing exposure are considered cheap, tactless and cowardly when the receiver is a close person, friend or lover. This way of managing uncomfortable emotions entails social reprobation, made explicit by some of our interviewees. This way of using SMS to avoid confrontation goes beyond private one-to-one exchanges. The British injury claims firm Accident Group announced to more than 2,000 of its workers that they were going to be sacked by sending texts to their company mobile phones.

Observation reveals other ways of using mobile phones to avoid annoying situations. A male teenager explained to the receiver that to avoid driving home the friend he was

going to meet that evening, he was going to be called by a friend at certain hour. Then he would say that the call came from his home and that he had to leave. After hanging up he explains to his friends on the train who have heard the conversation, that the friend in question is a girl who never wants to go anywhere and that it is a pain to be forced to leave the bars or clubs to drive her home. In the interviews examples of this use of SMS can also be found. Participants send SMS when they do not wish to talk and want to avoid confrontation, not only with loved ones but also in other potentially awkward situations, as when rejecting an offer for a flat or communicating that one is not interested in renting the room visited the day before.

SMS are not only replacements of voice communications. They can also serve to **announce a phone call**. Several participants in the research use SMS to communicate the wish of calling later, in the evening, or the day after, in order to be sure that they are not going to be disruptive, and also to let the other part to be prepared for the conversation. Therefore**, a particular use of the mobile helps to limit one of the main aspects of the device, the accessibility of the receiver. In this case the callers give the receivers the opportunity of defining their accessibility, in an example of phone etiquette produced by people's practice**. This kind of SMS is sometimes used to check the suitability of other types of synchronous communication, such as instant messaging or web chat.

2.10.4 Always in touch

The way mobile phones are held and touched is one of the aspects that make this relationship different to other ICT devices**. The attachment to mobile phones is revealed by the transformation from being an object always at hand to being almost always in the hand and close to the body.**

Observation found many people in the three cities, women and men of all ages, having the phones in their hands when they are not using them. They hold it in one hand when walking or sitting in a train, or even when jogging in a park, as it has been observed in Paris. They fiddle with them, sometimes whilst they are having a face-to-face conversation, as the policewoman at the entrance of a polling station in Madrid. People also press it nonchalantly against a cheek or an ear while sitting on a train or waiting at a café table, or touch it with the thumb, as if ears and thumbs could not bear the separation from the device. In some instances observed, people kept the phone in their hands even when holding other objects, as two young women sitting at different tables in the same café in Paris who were writing, smoking, drinking a cup of coffee and

holding the phone, all at the same time. This touchy contact with the device, from always at hand to almost always in the hand, was not observed two years ago, with the exception of some Spanish men carrying their phones in their hand when moving through the city.

As more and more people leave their phones always on, using the silent mode to avoid annoying others, phones are carried in the hands or close to the body in order to know when they go off. There are different ways of carrying the phone and most of the times they are in contact with the body. Men in the three cities carry them in shirt pockets, in jacket inner pockets, in denim jackets' breast pockets and in trouser pockets. Motorcyclists in Paris carry the phone stuck between the ear and the helmet. A growing number of people also wear their phones as a necklace, hanging from a chain or a band, bouncing against their chest when they walk. Young men in London, mostly black, women and men in Paris, also mostly black, and black and white women and men of different ages in Madrid wear their phones that way at the time of the observation. However, this can change in a short space of time. In several occasions women, white and black, were observed this summer in London wearing their mobiles hanging from their necks. An interesting example of a middle-aged white man wearing the phone as a necklace in Madrid, was also an extreme case of how users always carry their phones. The fifty-something man was a penitent, one of the participants in the religious parades taking place in Spanish cities during the Holy Week. He was barefoot, dressed in a purple habit, wearing a punishment belt and the traditional hood covering his head and face. When he removed the hood while waiting for the start of the parade, his mobile phone was on view. It was not clear if the device was also part of the penitence.

The way of holding the phone when writing SMS also differs according to gender and dexterity. Some, mostly men and youngsters, hold the device with only one hand, using the thumb to dial. Others hold the phone with the left hand, with either extended or folded fingers, whilst writing with the right hand index. Thus, the preferences of men and women, and of youngsters and adults differ from one city to another, like the use of hand free kits for instance. This less tactile way of using the phone is only employed by a minority of people. It seem to be more popular in Paris, where men and women of different age use them, whereas in London and Madrid not only are they less present but are used almost exclusively by adult men. The same happens with Bluetooth earpieces. They are still rare in the three cities. Observation found only men in their 40s and 50s wearing them; mostly men in suits or passengers in the international halls of the airports frequented during the fieldwork. However, more recent observation in

London has found blue collar men worker using them, such as cab drivers and builders. They seem to be more popular in London than in the two other cities.

Emotions are displayed and expressed through verbal and non-verbal behaviour. The aesthetics of the mobile phone experience could be improved by extending the range of non-verbal and tactile communication, allowing mobile phones to be not only multimedia but also multi-sensuous devices, including not only hearing and sight of course, but also touch, as, according to observation, the physical contact with the device goes beyond the moments when people are using it. Touch could be a way of transferring and receiving emotional messages through the device. For instance, by pressing certain parts of the handset we could send non-verbal messages, like vibrations, or a sudden rise of temperature, to the receiver's handset. This multi-sensuality would not only make the phone more appealing, and uses and interactions richer, but it would also help those with impaired speech, sight and hearing.

2.10.5 Connectivity

Sharing emotions is crucial for the creation and maintaining of social bonds. A whole range of emotions are shared thanks to mobile phones according to the research findings, from the SMS sent when one's team wins to the MMS picturing friends enjoying a night out, from love messages and calls to having a row on the phone. All the interviewees affirm to use the mobile for affective communication, with the exception of the British aged 35 and more, who would not use the mobile for such matters, either because they would not be sure of whether it is a good moment for the receiver, or because they use the mobile in public places and do not feel comfortable or because, in the case of several men, no-one really calls them to talk about their problems and feelings.

Zygmunt Bauman's description of the situation of unbound contemporary individuals, forced to tie together whatever bonds they want to use as a link to engage with the rest of the world by their own efforts, gives a strong insight into the role of mobile phones in our societies as a help to accomplish this task of providing connections. Mobile phones also respond to the other human need outlined by Bauman, namely that these bonds should be loosely tied, so that they can be untied again as settings change. Mobile phones and their promise of perpetual contact and permanent accessibility provide the assurance of connections that needs to be ceaselessly renewed. But they also witness and account for this anguishing situation where contacts and relations cannot be taken for granted: "Why didn't I get any message today? Why didn't she call me back?" **While**

connections become a value per se and networking a social obligation, people are less and less sure about ending any kind of relationship, as you never know when that contact can be useful again. Mobile users in the three cities keep phone numbers of people they have not seen for a long time, such as old school mates, former colleagues or friends of friends, and also maintain a kind of relationship by sending them a text from time to time. These relationships could not be kept by other means. It would be difficult and embarrassing to have a conversation with them. However, the required brevity of text allows people to keep in contact, and be friendly, without forcing the two parties to fill the gap, to provide information about their lives since they have last saw each other.

Every mobile is a repository of a large number of other people's names and numbers. Teenagers have been observed competing on the basis of the number of names they have on their mobile. Without establishing a competition, adults also have large mobile phone books, most of the participants in the research tend to note in the phone book every number they are given, and in many cases this is the only place where they keep the phone numbers. The majority of the participants in the research, twenty out of 30, seldom delete any number from the phone book. Moreover, **deleting a number from the phone book has the signification of banning someone from one's life, a physical act meaning oblivion**. This was explicitly acknowledged by several women about deleting numbers of former boyfriends, as this seems to be the only cases when they have deleted a number. Mobile phones have the effect of making the owners think that there are third parties present even when they are not using it. The possibility of being in contact at any time with others makes them virtually present. Therefore **deleting someone's number suppresses his or her virtual presence in our life**. This is revealed by this quotation of an interview with a young woman carried out in London, but similar assertions were found in interviews in the three cities:

> *"I'm not very good at deleting numbers. I still got a couple of ex-boyfriends numbers on there, which isn't good. It's almost as if that person didn't exist anymore, which is really a weird way of thinking rather. Even some people, I had their numbers four years ago, we have completely lost touch, but I still want to keep their numbers on the phone because I don't want to admit that they just don't exist in my life anymore, which is quite pathetic. But it has got such a big memory that until it starts getting full up I don't feel that I need to get rid of it. Just in case I need to get in touch with that person (...) with personal phone numbers I feel quite attached to. I try to keep them as long as I can. When it gets to a point where I haven't spoken to that person in four years, I haven't thought about that person in four years, getting rid of it doesn't make any difference, I will get rid of it. But I still have to think about*

it: 'oh my God! It's weird'. I sound so sad (…) If I'm going to get rid of someone's phone number straight away is more out of spite: 'I don't want that number anymore'. If I thought about a little bit more I will probably keep it now, I just wouldn't look at it".

It is worthy to note in this example **how a technical feature of the device, the capacity to store very many phone numbers, allows people to delay the moment of acknowledging that some contact has really been lost, and how people delegate to the device the decision about when a relationship is finally over**: another way of not taking the decision of deleting number.

According to the majority of those interviewed, **the main reason to have a mobile phone is to be in contact with friends and family, "more chitchat than business", and the most important aspects of mobile phones are to be always reachable and to contain all the contact numbers of those we know**. Through mobile phone they are not only in contact with those who live near them. SMS represents a non expensive way to keep in contact with those abroad, but also international voice calls are made by some of the participants. The participants in the research are much more interested in using the mobile to be in contact with other people than to receive information or to get access to particular data. Only seven of them employ this kind of services. One of them, a Londoner IT expert, receives SMS from the computers he is in charge of in order to check they are working properly. The other interviewees use the phone to get information about lottery, train timetables, sport results, weather, traffic and other kind of news. These services are considered expensive and not really necessary. For those who have tried to access the Web or to use the GPRS, they also find that it is difficult, the batteries go down quickly and that the information is not always reliable. Applications of new mobile phones are also used to develop and maintain relationships: such as using the reminder function to register friends and relatives' birthdays, using the camera phone to have fun with friends and family, taking phone pictures of loved ones, for their own record or to show them to other people, like pictures kept in a wallet, sending MMS as a gift or as a "wish you were here message", keeping pictures to share a moment of common celebration, such as parties, nights out, and birthdays, and taking pictures of places and objects with a particular interest for someone they know.

2.10.6 Non mundane uses

In 2004, the observation in Madrid took place the week of 15th March, just after the terrorist attack, and then between 1st and 8th April. The mood in public places, especially trains, stations and public transport in general, was not the usual one. People showed grief, sadness and anxiety and this atmosphere certainly had an impact in the way people used their mobile phones at that period. By the beginning of April people's behaviours and the emotions displayed came, almost, back to normal.

Most mobile phones exchanges are mundane: meeting arrangements, information requests, small talk. They are part of the "wallpaper" of everyday life. But as everyday life is punctuated by unexpected events, mobile phones also mediate modes of emotionally charged human communication in extraordinary situations.

Terrorist attacks, accidents and catastrophes when victims phone their loved ones to say farewell give a tragic transcendence to mobile phones. The sound of mobile phones ringing heard by the rescue workers, becomes the symbol and in many cases the only physical remains of the lost lives. In the words of the Spanish writer Manuel Vázquez Montalbán in "Móviles" (*El Pais*, 17th November 2001), an article about the attack on Manhattan, mobile phones become part of the fragile barrier against death, together with love and art. The farewell call becomes "the only possibility of prevailing over the premonition of the inevitable death".

During the period when the fieldwork was carried out in Madrid, mobile phones were a news topic those days for different non-mundane uses. First, the images of the injured in the bombings calling and texting their relatives, then, the stories told by the rescue workers of phones ringing on the tracks and inside the wrecked carriages and how they did not dare to answer them and give the bad news. As in Manhattan, the phones ringing became a symbol of the missing people. Voice messages left by the victims, with the noise of the blast and the screams as background, were broadcasted on radio and television. In the aftermath came the discovery that mobile phones had been used as detonators and, as a consequence, the perception of the device as a potential danger. On the way back to London, passengers were asked at the check-in at Madrid airport whether they were carrying mobile phones in their luggage. Just two day after the attack and the day before the general elections, protest rallies to complain about the way the government was dealing with the information on the attacks were organised, first in Madrid, then in other cities such as Barcelona, Bilbao or Seville, through massive sending of SMS. It was the first time that such 'smart mobs' (Rheingold, 2003) happened in Spain. A lot of media fuss about the potential use of

mobile phones and email as ways of political and public communication followed. Supporters of the rightwing Popular Party organised meetings of support for their leaders the day after the elections, also through SMS. Moreover, an invitation to boycott the last Almodovar's film was also sent using SMS, after the film director spoke in a press conference about the rightwing government intention of cancelling the elections and declaring the state of emergency, a rumour spread after the elections. After the call to boycott the movie, Almodovar apologised publicly on TV for his claims, showing the potential commercial impact and thread of this kind of message swarming.

Emotions are not only private feelings they are also an important part of public life and collective action. A high level of affectivity also characterises political actions organised with the help of mobile phones, by extending the feelings and affects experienced when taking part in a crowd action, in protests, demonstrations, riots or sittings, to the collective communication with mobile phones. The statements of the participants in the demonstrations in Madrid illustrate these feelings: "No flags, no political parties, no organisers, no orders", "People lift up their phones so those in the other side can perceive the mood in Madrid", "… a feeling of euphoria when we see that we are so many, that we are countless", "we don't need political parties to organise demonstrations. We know that internet and mobile phones tell us what official media do not say and we already know that we have got a communication tool, from mouth to mouth to express ourselves". **In this case the others virtually present thanks to the mobiles are not only friends and acquaintances but also all those who share similar ideas, views and angers, and are ready to be mobilised in collective actions**.

2.11 Conclusion

This longitudinal study of mobile phones in London, Madrid and Paris reveals a fast pace of changes parallel to the spreading use, across age groups, different places, times and situations. These changes are revealed by the growing numbers of older users and the growing ubiquity of mobile phones. They are also shown through their use in places where they are banned, the tendency to keep the phone always switched on, the willingness to use the phone when with other people and the growing tolerance about being interrupted by a mobile call.

Mobile phone uses in Madrid continue to be ubiquitous. The expectation of being accessible to others fulfilled by the mobile increases the weight of social obligations. Different ways of dealing with such expectation are culturally influenced, depending on

the nature of obligations among friends and relatives. Therefore people in Madrid feel less free to reduce their accessibility, but are also less bothered by being always reachable and display a more integrated and less problematic articulation between phone use and face-to-face interactions. The reluctance to use voicemail services remains and has become normal practice of mobile use. The events of March 2004 in Madrid have revealed to the Spaniards other ways of using mobiles phones in extraordinary situations and their usefulness to organise collective actions.

In Paris, the inconsistency between practices observed and people's views found in 2002 in relation to private conversations held in public places has faded away. People are not bothered, as long as users are not loud and they are not using their phones in restaurants. The unwanted inclusion of third parties in the phone conversation, that is, strangers showing openly their disapproval has also stopped, with people becoming more used to the presence of mobile phones everywhere. The simultaneity of face-to-face interactions and phone conversations seems to be less problematic and people do not always try to keep both settings separated by moving away. Older people using their phones in public places are now a common part of the urban landscape.

The number of London users in streets has significantly increased and they do not always try to keep moving while using the phone. The presence of people standing in the middle of the streets or leaning on walls while using the phone is not a rare occurrence anymore. Users on public transport seem to be a little louder than in the other two cities, or at least their conversations are more clearly overhead as face-to-face conversations are less present. As in Paris new articulations of face-to-face interactions and phone uses appear, without keeping both settings physically separated and without pretending that the conversation is not heard by those in company of the caller.

Parallel to the widespread presence of the mobile, the research found an increased flexibility of the unwritten rules about mobiles use concerning the use of mobiles when being with other people, in meetings, in places where the use is banned, and also related to the articulation between face-to-face interaction and mobile conversation. People negotiate the interdiction and evaluate the suitability of its usage depending on different information, such as the face-to-face situation, the people with whom they are interacting, the tasks they are carrying out, the identity of the caller or the time of the call. This negotiation of the etiquette rules is possible because of the social expectation to be always reachable and the ubiquity of the device, so using the mobile when being with other people or in a meeting are not considered such bad manners anymore. New rules of etiquette are created by the practices as users find ways of managing the

accessibility, not only their own, but also giving to the receiver the opportunity to decide, by announcing the call with an SMS or by asking in the opening question if it is a suitable moment to call.

Mobile phone uses in public places also entail ways of negotiating and changing the usual behaviours of city dweller, finding new usages and meanings for urban spaces when having a phone conversation or texting have become a usual and accepted practice in streets and public transport in the three cities. Phoning in the street also involves finding and inventing new usages for urban furniture, and, namely in London, the transformation of streets from mere transient places. Mobile phone uses in public have also an impact in the mood of the place and in the perception of strangers, as people seem less and less bothered about giving away personal information in public. Other mobile phone uses, such the organisation of collective actions and politic mobilisation, open the virtual presence allowed by mobiles to strangers too, to those unknown by the phone owners, but who share interests and ideas with them, and can be potentially reachable through massive sending of SMS. Thinking in terms of new ways of negotiate and consider the divide between public and private, rather than a supposed privatisation of public places, is better suited to understand such changes in public behaviour and urban or political practices.

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3 EMOTIONS AND DIGITAL DEVICES. AFFECTIVE COMPUTING AND MOBILE PHONES.

3.1 Introduction

The Cambridge Dictionary of Philosophy reminds us that emotions, whose original sense refers to agitated motion, mental agitation or feelings of mental agitation, are those mental states called "passions" by earlier philosophers such as Descartes and Hume. An important feature of most emotions depicted by the older category of passions, is the idea that it entails 'ways of being acted upon' by other beings, objects, events and situations. Nowadays ICTs operate and mediate the ways the users are being acted upon. This paper presents a reflection on the emotional aspects of mobile phone communication and a proposal of what an affective mobile phone could be. Bearing in mind the differences between computers and mobile phones, an overview of affective computing and emotional usability, in order to capture the issue of human-computer emotional interaction, has helped to think about an affective mobile phone. This research about affects involved in phone communication will serve as a basis to include this topic in the design of forthcoming fieldwork looking at mobile telephone use.

Mobile phone users enjoy an emotional relationship with their phones and are emotionally attached to them. This is partly due to the intrinsic emotional character of human communication, and also because mobile phones have become technologies of intimacy, extension of the user's body, which are present in most of the settings of everyday life. They also influence people's affective communication and display of emotions. Therefore it makes sense to imagine what an affective mobile phone could be. An affective richer mobile phone experience would not only improve mobile phone communication but would also help to improve the performance of tasks in work and home environments, as positive affects are like a springboard allowing us to overcome difficulties and to think more clearly.

Interpersonal communication would be improved by the active role played by affective mobiles in the emotional attuning of co-participants in one-to-one or one-to-many forms of exchange, either in distant or local interaction. Mobile phones mediate exchanges between different instances: one-to-one, one-to-many, access to data, collaborative use of the phone, and face-to-face interaction with those present locally. Affective communication through the mobile phone could have different kinds of recipients:

people we know, strangers, and also a third category of familiar strangers, with whom we share some kind of interest.

Affective mobile phones could reduce the frustrations of communication. However, they would not eliminate the frustration and paradoxes of social bonds and human communication. These belong to the nature of human exchanges and to the kind of social relationships involved in present societies, and cannot be solved by new and more sophisticated digital devices.

Affective mobiles could also add difficulties to interpersonal communication, as affects can also be negative. If affective mobile phones augment any kind of emotional expression, it could also facilitate the expression of negative passions, such as anger, hate, anguish and anxieties. Phones could be used to harm other people, adding new possibilities of aggression, which would reduce the adoption and acceptance of the device.

Another key finding from research into the social impact of the mobile phone has been to show that they are enabling people to express their emotions more effectively and indeed more freely than before. This is not merely because they can communicate any time and place but because of how the ability to do so has affected what is acceptable behaviour. Codes of conduct for appropriate behaviours in public and private spaces, for example, have been altering and in many instances blurring; what were viewed as essentially private matters in the past are now things dealt with in public spaces. Part of this change in the rules social conduct relates to other sources of change, such as the so-called 'September 11th' effect, which has resulted in it now being acceptable to make sure that members of your family can contact you at any time, irrespective of the business meeting or the conference you are attending.

Such development would undo the tendency towards increasing affect control that the sociologist Norbert Elias (1982) has considered as the hallmark of the building of Western societies. In his terms the “civilising process”, which is based upon the restraint placed on emotional expression. It may be that the freedom that mobiles provide will threaten these restraints, and thus may even undermine some of the foundations of civilised society.

Of course, this may be no bad thing. It may indeed be the case that mobile phones can produce a rebalancing of the codes of personal behaviour, allowing more expression of emotion than before but without breaking entirely the restraints that ensure civility. But they may not. Whichever effect mobile phones do have is indeed a question of profound importance.

Nowadays the general views on emotions are changing, from science and philosophy to everyday common sense. One of the implications of the changes allowed by mobile phone use is that Vodafone, as the world's largest provider of mobile services is, perhaps, changing society in ways that it never thought possible. On the one hand, Vodafone may be undermining the moral codes that underscore society, but on the other it may be allowing people to properly express themselves. The use of the word 'passion' in advertising and internal communication in Vodafone — as in "passion for our customers" — is an example of this positive attitude to emotions, being far from the rationalist view of passions as dangerous ways of blinding the mind and disturbing clear judgement, which would have an altogether different meaning than that intended.

In summary, the widespread use of the mobile phone is in conflict with certain ways of understanding what human society should be and how human self should develop and be expressed. This paper begins the discussion of the impact of this on society.

3.2 Emotions and mobile phones

Emotional aspects of mobile phone use have been described by studies on teenagers' mobile phone use (Taylor and Harper, 2002; Kasesneimi and Rautiainen, 2002; Skog, 2002, *Revista de Estudios de Juventud* n.57, Ling and Yttri, 2002). Recently, findings of the UMTS report #26 (Vincent and Harper, 2003) highlights the emotional aspect of mobile phone communication and its specificity. They state that users have a more emotional relationship with their mobile phone than they do with other forms of computational device. Most people use emotional language categories to explain their mobile usage: these categories include panic, need, desire, anxiety, etc. This results in certain kinds of behaviour not found with other technology, because users have come to depend upon mobile phones, which become crucial to their emotional lives. Mobile phones allow the users to achieve emotional goals with their mobiles as well as undertake emotional behaviour. The key implication this report derives from the emotional relationship and attachment to mobile phones is that UMTS services and products that satisfy emotional needs will consist of person-to-person connectivity applications. The social value of these services will be much higher than the value given to person-to-information services.

The emotional relationship with the phone is expressed in several ways:

- **Need for social connectivity**, which creates the vehicle for the emotional content. As a person-to-person communication tool, mobile phones share the emotional aspects characteristic of human communication, the "**emotional attunement**" necessary for its achievement. That is the achievement of joint attention and feeling in interaction, necessary to the interpretative understanding upon which interpersonal communication depends. The understanding of what another person says presumes not only generalised social knowledge of language and experiences, but also the constant gauging of the others' and one's own inner feelings, through observation and imaginative inference (Scheff, 1990). Conversation, though banal in appearance, is an accomplishment brought off only through the cooperative and sensitive performance of the participants. The emotional result of playing one's part well is one of deep satisfaction (Kemper, 1991:314). Kemper, commenting on Goffman's views on conversation, compares this satisfaction with the feelings experience by the participants in religious performances where they bear ritual responsibility. He acknowledges a virtually sacred quality to conversation, because conversations put on display something extremely sacred, the self of the participants. Participants in a conversation show

emotional identification with each other. There is a tacit agreement to help each other along, to accept each other's presentation, because the failure of one produces embarrassment in others. Thus, every conversational move is fraught with emotional potential. Anger, pride, anguish, confidence, embarrassment, guilt, gratitude are potential emotional accompaniments of conversation, no matter what the content is. The "forms of talk" in Goffman's words (1981), the conversation as a social form, makes the emotion. The large uptake of mobile phones in Europe and East Asia shows the growing importance of social connectedness in the purchase and use of the device. In the French research reported by De Gournay (2002: 197) nobody mentioned the social or professional utility of the device, but they did point up the relevance for personal life and interpersonal communication.

I have explained before that mobile phones help to transform "nowhere places" (transition spaces like trains, stations, airports) into third places (Lasen, 2002). Third places are meeting places where people spend time and relax, let down the façade and be themselves, like bars, pubs, cafes, clubs and shopping centres. The main activity in such places is chatting and playfulness. Their features are youthful humour, comradeship, freedom from social bonds and obligations, therapeutic power and desire for change and relationships between sexes, flirting and courting. Such places present emotional advantages: conversation, relaxation, friendship and feeling of belonging. Places are differentiated from each other according to the emotional value attached to the experiences, encounters and relationships that happened in them. Objects and places wear the mark of those who were in contact in them and carry their memory. **Mobile phones receive the emotional value of the exchanges and relationships carried out and sustained through them**.

- Mobile phone use also permits the redefinition of codes of human interaction, the **renegotiation of the norms governing social and emotional relationships and the display of emotions** in public contexts. These are norms concerning courtesy, reciprocity and accessibility (De Gournay, 2002:195). About this last aspect, **mobile phones become medium for the "publicisation" of emotional fulfilment**. They announce to our fellow travellers, pedestrian or work colleagues how much we are in demand, how full our life is (*Ibid*. 200). De Gournay interprets this possibility of renegotiating the norms as an elimination of the criteria for evaluating social capital. Good manners, verbal skills, signs of refinement in dress and level of education — all these elements of social competence — are not necessary when interacting from a distance with a mobile phone. By asserting that using a screen or a telephone nobody is required to display the slightest social competence, De Gournay fails to

account for rules and etiquette that characterise mobile phone communication, and she reproduces a social fear already present in the early days of the landline telephone, that the adoption of a new device would entail the abandonment of good manners and politeness (Lasen, 2002).

- Users also have a physical response to **touching** the device. The way mobile phones are held and touched is one of the aspects that make this relationship different from other ICT devices. Mobile phones are used as props in daily life role playing (Strom, 2002). A prop is an active device that encourages and accentuates acting in a specific manner. Although people often buy mobile devices to carry out specific interactions, these devices are not in general designed to facilitate a positive relationship between users and people in their vicinity, but rather to create a good relationship between a solitary user and the device. Mobile devices influence the body language of users. According to Strom, **current mobile phones often restrict the body language of users, making them appear less attractive**: "A man using a mobile phone may walk around with his head in a strange angle, resembling someone with a toothache, while shifting the phone back and forth, searching for a natural position where the small egg-shaped phone fits between his ear and mouth." Therefore Strom points out the need for an extended type of interaction design, which takes into consideration that each mobile device conveys a specific impression of the user and facilitates a specific relationship between the user and people in the vicinity.

- Closeness to the body makes mobile phones a **technology of intimacy** (Fortunati, 2002). The consumption and display of mobile phones have pleasurable affective or emotional components, as an extension to one's own body (Bartezzaghi, 1999). Intimacy is linked to touching and to the pleasures of the body, affections and sexuality. There are various links between phone and sexuality related to the different functions: voice, SMS and now images. Phone sex, either in intimate conversations between lovers, as a form of business, or as abusive anonymous obscene calls, is a heritage from the landline telephone (Marvin, 1988: 88; Katz, 1999: 231-278). Mobile phones also convey expressions of sexuality, from the jokes about the vibration function and the exchange of texts where the characters form obscene images, to pornography through pictures and video. The possibilities for developing sex fantasies and games through 3G is directly addressed in the advertising of picture phones, and also by popular media, like The Sun, which understands 3G as: Girls, Games and Gambling. Hutchison and Virgin have agreed deals with Playboy to provide soft porn content for mobiles. A report from the IT

research company Visiongain forecasts that profit from pornographic materials transmitted to mobile phones will reach an annual $4bn by 2006, out of a total porn spend of $70bn (Nicholson, 2002).

- **Personalisation** of the device concerns ring tones, covers, pictures, and also the communications made and the information stored, all of which contribute to build a unique and personal device. The mobile phone is an expression of one's personality (user quoted in Ling, 2002). The use of mobile phones is associated with personal lifestyles. They have a value and act as a symbolic marker. **Mobile phones receive a range of meanings linked to identity, sexuality and desire**. For instance, Cooper, Green and Moore (2000) analyse the role of mobile phone associated with gay lifestyles, as they appear in fiction like "Queer as Folk" and in the practices and discourses of young urban gay men. In the interviews quoted in the article, those men consider the mobile phone as a means to maintaining real-time contact with "significant others", a decisive element of the gay lifestyle. The interest of such statements does not lie in their accuracy. On one hand, there is not just one gay lifestyle; on the other, the convivial use of mobile phones to strengthen friendship bonds and to maintain personal networks is not exclusive to gay men. But, in that a common use is considered a particular and distinctive one, linked to a specific group and lifestyle, it demonstrates the importance of mobile phones as personal devices as part of one's own personality; as well as in the making of imagined communities.

- People are attached to the **content stored** in the phone, possibly to convey their **"**relational capital" everywhere they go (Fracchiolla, 2001). Mobile phones can contribute to the sustainable development of social capital (Goodman). This is based on the complex of connections between people and groups of people. The amount of social capital in any society results from the number and quality of those connections. Quoting Robert Putnam (2000), Goodman distinguishes between two types of connection: "bonding" or exclusive social capital, and "bridging" or inclusive social capital. Bonding social capital is inward looking and tends to reinforce exclusive identities, as in teenage peer groups. Bridging social capital is outward looking and encompasses people from different social groups; as in open source software programmers or football supporters. These latter groups are examples of the contemporary "tribes" described by Maffesoli (1996) or the leisure communities described by Elias: temporary gatherings of people linked by expressions of affectivity and with a relatively spontaneous, though ephemeral, integration without any other aim than enjoying the company of others (Elias and Dunning, 1986); or the 'imagined communities' described by Benedict Anderson (1991), where people

identify with a large category of unknown strangers. The relevance of such groups where members share interest and temporary identification instead of sharing identities is growing in our societies; an example of those is virtual communities, technology mediated groups of individuals largely unknown to each other but sharing some common interest. These communities of occasion, created around events, idols, panics or fashions, often last no longer than the emotions that generated them. (Bauman, 2003: 34). For a sustainable society a mix of both bonding and bridging social capital is required. An example, provided by Goodman, of the way mobile phones contribute to bridging social capital is the storage of other people's telephone numbers. Every mobile is a repository of a large number of other people's names and numbers, some belonging to close friends and family, others to weaker contacts (bridging links), and these help the owner to manage a wide network of contacts. Teenagers have been observed competing on the basis of the number of names they have on their mobile.

- Mobile phones have the effect of making the owners think that there are third parties present— virtual presence — even when they are not using it. The possibility of being in contact is so important that the loss of this capability produces strong feelings, such as panic when users lose or forget their phone, or anger against the operator when the network fails. This aspect outlines the importance of the resilience of networks for mobile telephone users. On 20th February 2003 8.7 million Vodafone subscribers in Spain could not use their phones because of a breakdown. The journalist who reported the problem in *El Pais* newspaper described how the subscribers were left "absolutely cut off for hours, unable to make or receive calls on their mobile phones". The expression "absolutely cut off" can seem exaggerated, as other ways of communication were available. But that was the main feeling of the users, not only those who depend on their phones for work and business but also for those who use them to be in contact with friends and family. The company received more than 400,000 complaints and the regional governments of Catalonia and Andalucia considered suing Vodafone Spain. One of the consequences of the power blackout experienced by several North American cities in August 2003 was that many could not use their phones. This was very upsetting for the users whose handset batteries were fully charged, as one of the main reasons to own a mobile phone is to make calls in emergency situations.

- Mobile phones are **embedded in users' daily lives**. Many people cannot imagine a life without one. This produces what Jane Vincent calls the '**value paradox**' of the mobile phone (Vincent, 2003). Users cannot live without the phone and this makes

its value so great that they do not take it out or use it in certain places for fear of losing it. The dependency of the mobile increases the tension between the need for it and the concern about losing the device and all that it contains: phone numbers, messages and also the potential loss of the relationships that mobile phones allow.

The acceptance of the presence of the mobile phone as an indispensable element of users' everyday life has design implications (Hallnäs and Redström, 2002). **Instead of considering a phone in terms of an interactional model based on the notion of phoning, we can think of it as an artifact with certain expressions that people use to build their everyday lives**. The expressions are related to some basic form of mobile phone use, but the way of thinking about the device is different from thinking about its functionality. Given this perspective, mobile phones need to be designed on the basis of a collection of generic expressions, the expressions associated with phones and phoning. The focus is in the expressions of a mobile phone in use: How does it feel? How does it look? How does it shape movements, speech and gestures? How does it transform and present the voice? How does it express time? These expressions of the phone in use are the foundation for its presence in everyday life. As an expressional device, a mobile phone with a hands-free set is, among other things, a "talking-loudly-to-yourself" device. This is just one of many things a mobile phone can become as it is adopted as part of someone's life. It might also turn into a "flirting device" or a "check-that-nothing-has-happened-device". The existential definitions of these cases are clearly different although the basic functionality of the phone is identical. Thinking about how a mobile phone expresses itself in acts of waiting, listening, talking, writing or being connected is different from thinking about what we use it for.

This accepted and welcomed presence of mobile phones in users' everyday life would explain the emotional attachment to the mobile phone as Jane Vincent (2003) described. For her the answer could be found in the role of mobile phones in the development of individuals and their autopoiesis, that is their continuous mutual adaptation and self-production in a reciprocal relationship with their changing environment. Vincent affirms that the emotional attachment to the mobile phone owes as much to the development of individuals and their autopoiesis as to the connectivity that mobiles afford. She seems to consider both aspects separately. Nevertheless connectivity and communication are the main aspects of individuals' development and the building of their life.

- As we know since the studies of Emile Durkheim (1915), the sharing of emotions is

crucial for the creation and maintaining of **social bonds**. Bauman's description of the situation of the unbound contemporary individuals, forced to tie together whatever bonds they want to use as a link to engage with the rest of the human world, "by their own efforts with the

help of their own skills and dedication", gives a strong insight in the role of mobile phones in our societies as a suitable tool to accomplish this task of providing connections. Mobile phones also respond to the other need outlined by Bauman, namely that these bonds should be "only loosely tied, so that they can be untied again, with little delay, when the settings change". **Mobile phones and their promise of perpetual contact and permanent accessibility provide the assurance of connections that need to be ceaselessly renewed. But they are also the witness and accountant of this anguishing situation where contacts and relations cannot be taken for granted: "Why didn't I get any message today? Why didn't she call me back?"**

Bauman (2003: xi) also observes how **nowadays the language of connectedness replaces the language of 'relationships'**. People talk about 'networks' instead of partners, of being connected instead of relating and relationships. The difference is that notions as **'relations' and 'kinships' make salient the mutual engagement while excluding its opposite disengagement, whereas networks stand "for a matrix for simultaneously connecting and disconnecting". Both are equally legitimate choices and enjoy the same status and relevance**. Both aspects, the facility to connect and the facility to cut the connection, to screen incoming calls and to cut short conversations, have made digital networks popular and highly used. In mobile phone use the threshold for making contacts has become lower, especially when texting. Mobile phones allow people to do things that are difficult to do when they are face-to-face, in situations emotionally charged as 'breaking up' or 'asking out'. In these cases technology facilitates the task, enabling people to evade some of the awkward social consequences these situations entail when face to face (Harper, 2003), though, in the case of dumping someone, at the cost be being considered a coward, cheap and tactless.

Connections are 'virtual relations', easy to enter and to exit. But networking becomes an all-consuming endless task, where mobile phones provide help at the same time that they multiply the occasions for being in touch, the calls and answers to manage. Paradoxically they can reduce the **complexity** of managing one's relational capital and networks while keeping the level of complexity by amplifying the number of contacts and opportunities to get in touch one has to fulfil.

The role of the mobile phone in deepening social bonds has been mainly highlighted in the case of teenager users (Taylor and Harper, 2002; Kasesneimi and Rautiainen, 2002; Skog, 2002, *Revista de Estudios de Juventud* n.57), though this function is not exclusive to this age group. A collective use of the device, as in the case of texting, strengthens this bonding function of the mobile phone. The circulation of text messages between friends within social groups, group reading and composition of text, mean that text is a communal activity that reinforces group behaviour (Goodman, 2002): "the messages serve to tie the group together through the development of a common history or narrative" (Ling and Yttri, 2002). These authors call this function of mobile phones, hyper-coordination (Ling and Yttri, 2002: 140). It encompasses instrumental coordination, expressive use of the mobile phone and strictures regarding the presentation of self. Ling studies hyper-coordination related to teenagers but it is not exclusive to them. Expressive use is the confirmation of a relationship. "It's a type of social interaction in which the sender and the receiver share a common, though asynchronous, experience". Exchanging a message, for instance, refreshes the contact between the two. Examples of expressive use are beeping, chain SMS messages, jokes, ritual greetings such as good night messages between girlfriends and boyfriends. The patterns of exchange mediated through phone use are dependent upon trust and reciprocity. Mobile phones provide a means of both demonstrating and testing out the trust that exists in relationships. This is born out through meeting obligations to reciprocate. The mutual dependence that derives from obligations, such as replying to text messages, binds people together, establishing and reinforcing the moral order of friendship and social intimacy (Harper, 2003).

Mobile phone users enjoy an emotional relationship with their phones and are emotionally attached to them. Mobile phones mediate types of human communication that are emotionally charged, through voice and through text, from love messages and dumping texts, to the extreme cases, like Rena Salmon who after shooting her husband's lover in September 2002 texted him: "I have shot Lorna. It is not a joke. You have both pushed me to it"[3]. The events of 11th September 2001 gave a tragic transcendence to emotionally charged communication through mobile phones. In the words of the Spanish writer Manuel Vázquez Montalban, mobile phones became part of the fragile barrier against death, with love and art. Mobile phones allowed some of

[3] This is a fascinating and tragic story, where the old scenario of cheating, jealousy and revenge is mediated by ICT. The adultery was discovered by the victim's husband who intercepted an email from Mr Salmon. Mrs Salmon texted suicide threats to her children. Divorce procedures were also discussed through SMS by the couple.

the victims of the terrorist attack to say farewell to their loved ones, “the only possibility of prevailing over the premonition of the inevitable death” (Vázquez Montalban, 2001). The sound of hundreds of mobile phones ringing under the rubble, heard by the rescue workers after the catastrophe, became the symbol and in many cases the only physical remains of all these lost lives.

3.3 Affective Mobile Phone

Affective computing refers to giving computers the ability to recognise, express and have emotions in order to improve human-computer interaction (Picard, 1997; Picard and Scheirer, 2000; Picard and Reynolds 2001), as people tend to interact socially and emotionally with computers. As described above, mobile phone users enjoy an emotional relationship with their phones and are emotionally attached to them. This emotional attachment has already been recognised and addressed by some mo-bile phone operators, as the Spanish company MoviStar that has called its Internet service for mobile phones ‘e-mocion’. Moreover, mobile phone use influences and modifies the emotional experiences and displays, as well as the affective skills of the users. Therefore it makes sense trying to imagine what an Affective Mobile Phone could be.

Such a phone could make the mobile phone experience an **emotionally richer interaction**. **As pleasing things work better (Norman, 2002), an affective mobile phone, able to increase emotional expression and therefore eliciting positive emotions, would not only improve mobile phone communication but would also help to perform tasks in work and home environments better**. Emotions influence memory, attention and perception, the way we learn, prioritise, make choices and plans. Mobile phone use plays a role in all these activities and this will probably grow in importance as data access applications become more widespread.

Positive emotions, called by the 17th century philosopher Spinoza ‘affects of joy’, augment the power of acting, the range of things that we are capable to achieve. They derive from a good encounter with a person, an idea, an object or a situation, from being affected; that is, acted upon, in a good way. These affects act as a springboard, allowing us to overcome difficulties and to think more clearly. But, emotions can also be negative, passions of sadness, resulting from bad encounters, which diminish our ability to act and achieve. Affective mobile phones could increase the possibility of making good encounters, of being connected to those who bring us joy and relieve our sadness and stress. But being a device of social connectivity, they also create the **occasion for bad encounters** (unwanted calls, excessive requests, disturbing

interruptions) and are often the witness of the lack of contact, when no call or message is received. Moreover, by augmenting our emotional expression affective **mobile phones could also facilitate the expression of negative passions, such as anger, hate, anguish and anxieties**. They could augment the display and exchange of these sad passions, which are often forgotten in the writings of affective computing theorists.

This augmented experience of mobile phone use could provide an insight in our motivations and values. **Making our phones affective could make us aware of our emotional style, which is based in our system of values and meanings; and could help us to understand and use intuitions and emotional influence in our everyday communications**.

Having in mind that the **design of a device and its services provides the context for an experience, but not the experience itself** (Djajadiningrat, Overbeeke and Wensveen, 2000) affective mobile phones would not determine what will happen, but should allow users to explore and cooperate with their phones. With regard to the actual mobile phone experience, affective mobiles could **increase the beauty of phone use and interaction**. Emotions are displayed and expressed by verbal and non-verbal behaviour, so the aesthetics of the mobile phone experience could be improved by extending the range of non-verbal and tactile communication, allowing mobile phones to be not only multimedia but also **multi-sensuous devices,** including hearing and sight of course, but also touch. Touch could be a way of transferring and receiving emotional messages through the device. For instance, by pressing certain parts of the device we could send non-verbal messages, like vibrations, or a sudden rise of temperature, to the receiver's handset. This multi-sensuality would not only make the phone more appealing, and uses and interactions richer, but it would also help those with impaired speech, sight and hearing.

An example of this kind of devices is the prototype "Touch Phone", designed by Rosalind Picard's team at the MIT Media Lab (Picard and Scheirer, 2000). Through an abstract visualisation using screen-based colour changes, a standard telephone is able to communicate how it is being held and squeezed. The handset has been modified to include a touch-sensitive surface that conveys the user's physical response over a computer network. The recipient sees a small coloured icon on his computer screen that changes in real time according to the way his conversational partner is squeezing the telephone handset. The colours of the Touch Phone icon correspond to the strength of squeezing, mapped to the colour spectrum. If the user is in a relatively relaxed state (as expressed by touch), the icon is blue. If the user is extremely tense, the icon will turn red. Neutral states produce green and yellow hues. The Touch Phone

utilises a standard emotion-color mapping, where colours with longer wavelengths (reds and oranges) represent stress, and the colours with shorter wavelengths (blues and greens) represent physical relaxation. This mapping is based on anecdotal information of the ascription of emotion to colour, as well as being supported by sensory psychological findings.

Affective mobiles would augment the expressions of the phone. The aesthetics of the device are grounded in these expressions and in identity, and not only in its creative or artistic surface (Hallnäs and Redström, 2002). It is a matter of use, interaction and expression (what do phones do, what do they make us do with them) and not only of appearance. For instance, making mobile phones a means of communication with those in our vicinity could also increase the beauty and excitement of the interaction. This would be in a one-to-many way, between people who do not necessarily know each other, and without needing to know other people's phone numbers.

Taking into account affects and emotions is to be aware of the social and cultural context of phone use and also of the difference, plurality and ambivalence of emotions. An affective mobile phone can play an active role in the **emotional attunement** present in any kind of interpersonal communication. Affective mobiles would have a broader affective bandwidth. The amount of affective information relayed through the device would be higher, as the possibilities of expressing affect and mood are incorporated. This information not only concerns the kind of feeling or emotion but also the shades, degrees, the emotional tonality of the exchange and the personal state of the participants.

The design of an affective mobile not only needs to take into account the different functions (voice, text, multimedia, ring tones, etc.) and expressions (flirting, checking that nothing has happened, waiting, being open to connection, etc.) of the phone, but also the different kind of participants in the phone experience. Mobile phones mediate exchanges between different instances: one-to-one communication, one-to-many, access to data, collaborative use of the phone, face-to-face interaction with those present locally. Therefore **affective communication through mobile phones could have different kind of recipients: people we know, as friends, family, colleagues and acquaintances; strangers in anonymous communication with those in our surroundings or on the Internet; and also a third category of familiar strangers, from the participants in a chat room to clubbers sharing the same place and music, exchanging words and glances**. An example of communication with strangers in our vicinity is the prototype device "*the LoveBomb*" – a mobile device that allows people to anonymously communicate feelings of love (happiness) and sadness. The

device contains a radio transceiver that the user can employ to send out shock waves of love, affecting people in the proximity carrying a LoveBomb device (Hansson and Skog, 2001).

A consequence of an emotionally richer phone experience is an improved connectivity, a better way for phone communication to sustain and create social bonds. Though affective mobile phones could **reduce the frustrations of phone communication, they would not eliminate the frustration and paradoxes of social bonds and human communication**. These belong to the nature of human communication and to the kind of social relationships involved in present societies and cannot be solved by new and more sophisticated digital devices.

Affective computing theories and designs seek ways for a computer to **recognise, express and have emotions**. Are the three aspects equally useful and interesting for affective mobile phones? How should they express users' emotions? And should they also be capable of recognising, developing and controlling users' emotional display?

3.3.1 Expression of emotions

The design of an affective mobile phone should take into account that emotions represent ways of "being acted upon". Affects are emergent phenomena, bringing with them something that was not there before, which does not have a mechanical causal relationship to the conditions out of which they came (McCarthy, 1989). The conditions never determine completely what will happen. Affects occur unexpectedly, subject to random encounters, and therefore are not under control of the person who experiences them. Therefore, affective mobiles should **allow a spontaneous and flexible display of affects, in order to grab the opportunity of what to express and how to do it**.

Through our upbringing, we learn how to express, but also, control and hide our emotions. **Affective mobiles could help to express emotions but also to control them**. One of the main aspects of emotional intelligence consists in how to control and hide negative, embarrassing or unsuitable feelings. Phones already facilitate the possibility of choosing whether to display or not the emotions experienced, for instance by using "cooler" channels of communication like text, where the senders avoid the possibility of being betrayed by their voices and can think twice about what they are going to say and to answer. The choice of avoiding the display of emotions should be maintained and maybe improved in affective mobiles. These could also play a more **active role in advising and alerting the user about the display of what are considered socially inadequate emotions according to the context and the kind**

of communication and recipient. This possibility refers to the role of the phone as a provider of self-knowledge for the users, making conscious what usually is not. Thus it could be a help to change users' behaviour. If phones acted this way, they would be agents of the civilizing process (Elias, 1982), helping to deepen the trend in Western societies to increase the control of affects and the ban of emotional expression from the public space. However, affective mobile phones could serve the opposite purpose. They could allow a richer expression of affects, increasing the display of emotions in public that mobile phones already provide. Or they could promote self-control and discipline, as well as facilitating a more discreet use in public places. In both cases, the success of such applications would require the possibility to choose whether and when to use these services. It is not certain that all users would appreciate their phones advising them about their emotional style. It could be easily perceived as an intrusion. The final word on how to use the affective capabilities of the phone should belong to the users, according to their preferences, constraints and the context of the communication.

Phones that react to users behaviour have been designed in the project Social Mobiles (IDEO,http://www.ideo.com/portfolio/re.asp?x=50172), such as SoMo1, the electric shock mobile. This phone delivers a variable level of electric shock depending on how loudly the person on the other end is speaking. As a result the two parties are induced to speak more quietly. The designers' suggestion is that these phones would be given to repeat offenders who persistently disturb others with their intrusive conversations. One can see clearly in this example that the aim of this project was to make people think about mobile phone use and not to commercialise these designs. Though, acknowledging the different personalities and tastes of users, sado-masochist users and those interested in experimenting with pain could be attracted by such a phone. This comment is not a joke, as affective mobiles have to fit different emotional styles, even maybe those considered extreme. Another prototype preventing the display of emotions in public places is SoMo2, the speaking mobile. This phone allows a user to converse silently: a person receiving a call in a quiet space can respond without speaking, using simple but expressive vowel sounds that they produce and intone manually. This is the antithesis of text messaging in that it conveys rich emotional nuance at the expense of textual information.

An additional **problem for affective mobiles arises from the possibility to facilitate the expression of all kinds of emotions, including anger and hate, with a broader affective bandwidth**. **Such phones could be used to harm other people, adding new possibilities of aggression, which would reduce the adoption and acceptance of the device**. Another Social Mobile prototype illustrates this issue.

SoMo5 is the catapult mobile. This phone can be used to launch sounds into other people's phone conversations. Firing the catapult transmits a sound into the noisy user's phone. This provides a direct yet discreet way of invading their space. Businesses could supply users with a choice of interrupts to launch from their phones, as sounds, images or melodies.

The catapult phone is an example of how a mobile phone could be a **device for local interaction**. Mobile phone use in public places is already a way of communicating with those in our surroundings. Both use and the device itself provide information about users, and not only by eavesdropping the content of the conversation. Mobile phone use projects messages, such as "I'm not alone", "I'm a busy person and my work is very demanding", and acts as a medium for the "publicisation" of emotional fulfilment (De Gournay, 2002). The collective use of the mobile is another example of local interaction, for instance when several persons are sharing the phone conversation, as happens in Spain (Lasen, 2003), or showing text messages to friends. Affective mobile phones could improve both kinds of interactions, with the collective use of the handheld device and the ability to send information to strangers nearby, extending the emotional attunement to those in our vicinity.

Phone users could influence their environment, the mood of the place, adding mystery and diversion to normal pattern of perceiving and behaving. For instance, users could send non-intrusive signals to nearby phones, such as vibrations, discreet sounds, or colours. Affective mobile phones could be a kind of peripheral awareness device, as those already employed in CSCW, acknowledging the benefits of diversion that creates opportunities for serendipitous communication and for an increase of coherence in groups. Mobile phone users are already using their phones to communicate the mood of a place by talk and also by sending pictures and texts from football stadiums, concert venues, clubs, holidays resorts, classrooms and offices. Affective mobiles could improve this kind of communication and open it to those whose phone numbers are not in our phone book.

There are different styles of expressing emotions and feelings, depending on cultural factors, social contexts, groups and individual personality. Mobile phones should be **flexible enough to suit different styles with different values and meanings and to help the accomplishment and creativity of these different ways of expression.** They should offer choices of applications able to communicate a certain mood instead of providing instructions about what to express. Nowadays, examples of choices that can communicate a certain mood are smileys in SMS, coloured screens, music or ring tones. These could be implemented in order to be more emotionally expressive. An

example is to provide different performances of the same melody used as a ring tone. Using emotionally coloured ring tones could develop enjoyable applications; ringing signals corresponding to different emotions could be associated with different telephone groups or numbers. Thus, when a call arrives, the corresponding ring tone is played. The possibility to control the ring tone of the receiver's phone could be included so that the caller could attach an 'emoticon' to the number called, determining how the ringing tone would be played in the receiver's mobile phone. The expressive performance of ring tones will also include different forms of the signals, such as different attack times, in order to provide happy, sad, solemn or neutral interpretations of the same melody. In future phones embedded sensors could provide information about the emotional state of the caller and convey it to the receiver through the ring tone (Bresing and Friber, 2001).

Applications to recognise emotion in emails proposed by affective computing research could be translated to SMS, for instance changing the look of the interface according to the mood (colour, music, icons, font), or sending and receiving an alert about the emotional tone of the text. The possibility of archiving messages according to their mood and emotional content could also be an additional application.

Affective mobile phone experiences could play the same role as the mimetic leisure practices described by Elias and Dunning (1986) that arouse emotions and tensions under the form of a moderate excitement, linked to situations experienced in "real life", without the concomitant risks and dangers. Mobile phones already, namely through texting, allow avoidance of some of the risks, dangers and embarrassing social consequences of certain kind of emotionally charged exchanges. In this case the lower threshold for making contact through texting, compared to conversation, facilitates emotional communication, so that the apparent lower affective bandwidth appears to be an advantage. This shows the limitation of thinking in terms of affective bandwidth. **Forms of communication "colder" than face to face, with a lower affective bandwidth, are sometimes more suitable for emotionally charged messages**, e.g. shy people, risk of losing face, embarrassment, etc. Fiction portrays this feature of mobiles, as in the story of the Belgian writer Laurent de Graeve, *Grégoire et le telephone portable* (Grégoire and the mobile phone). Grégoire is a young man who has an extremely ritualised and mediated communication with his father, a wealthy and busy chief director. They only meet once every three months for a lunch in the same expensive restaurant, the meeting always being arranged by the father's secretary. One day Grégoire's father is given a mobile phone and, for the first time in years, has the possibility of making and receiving calls himself, without the mediation of secretaries and other employees. He phones his son and they have a more personal

and intimate conversation than those face-to-face meetings over lunch. On this occasion Grégoire overcomes the constraints of his education and the fear of his father's authority and reveals to him that he is in love with another man.

3.3.2 Recognition of people's emotions

Emotions are already expressed through mobile phone communication, and the device is transforming the way we display emotions in certain places. Therefore the interest in improving emotional expression through mobile phones seems evident. Affective computing entails not only emotional expression but also the possibility of designing a digital device to recognise users' emotions in order to help users' self-understanding and to predict users' behaviour. Would it make sense to produce an affective mobile phone? One of the main problems in implementing this possibility is that **clear recognition of concrete emotions through external manifestations is not easy, as emotions are elicited as a mixture of feelings whose display style is mediated by cultural, social and personal elements**.

If mobile phones could keep a **record of the emotional style** of the user, gathering information from their emotional responses, they could help them to learn about themselves. They could make this unconscious style conscious to the individuals. Therefore affective mobiles could act as emotional intelligence tools, not only helping in the task of expressing emotions and managing emotional communication, but also providing information useful to the awareness of one's affective style. They could have a record of verbal communication, of emotions expressed in text and conversation, and also of non-verbal communication, such as the way users touch the device.

Affective computing presents the ability of recognising users' emotions as a way of learning and predicting users' behaviour. Mobile phones are personal devices and their **personalisation** is a key element of their success. It could be helpful and probably well received by the users if the devices could collaborate in this task, learning from past experiences. One possible application of affective computing, meaningful for an affective mobile phone, is **learning when to interrupt** the user's current activity by evaluating the responses to previous interruptions. The user could also collaborate in this task by setting in the phone when, where and by whom they are most willing or unwilling to be bothered by an incoming call or message. The callers could also communicate, as in the precedent example of the ring tone, the character and importance of their call.

The ability to recognise and store information about people's emotions raises some problems already acknowledged by affective computing researchers. First is the question of **privacy and disclosure of private and even intimate information**. The worry about what my mobile phone knows about me and what knowledge do I want to be stored on my phone could be overcome by providing the phone's owner with access to this information and by allowing the owner to choose what information to give and store. Moreover, users' access to this information becomes necessary in order to use the phone as a way of getting an insight into their emotional behaviour. An additional problem of the storage of such sensitive information is the **danger of losing it if the phone is lost or stolen, which could reinforce the value paradox of existent mobile phones** (Vincent, 2003), increasing the tension between the need for the device, the concern about losing it and all that it contains, and the danger of someone else, friend, partner or stranger, finding this information.

3.3.3 Possession and management

Affective computing entails the possibility of designing computers that would have and manage their own emotions. It does not seem that an affective mobile phone could be improved with such features. Mobile phone mediation is not transparent. It shapes the communication between the caller and the receiver. It makes them, up to a certain point, talk, write and move in a specific way. Users are also acted upon by their mobile phone, whose use influences emotional display and elicits emotions. But if the phone's presence became more evident as a third party in the exchange, expressing its own affects, it could disturb the participants, acting as an additional 'noise', and eliciting anger as an emotional response to the device. **When an affective mobile phone helps the users to express their emotions, people create the content of the communication, but if mobile phones had got and expressed their own emotions in whatever way, they would create the content, and this is not their purpose as communication devices.**

This characteristic of affective computing can also be understood as a way of providing a personality for the device. If we consider mobile phones as an extension of the human body and a part of the owner's personality, the **phone's personality could be understood as a mirror of the user**. Some users are already projecting an image of themselves through their mobiles (modern or retro, fashionable or pragmatic, sleek, technological explorer, etc.) that can mirror or not the reality. Affective mobile phones could be a sincere mirror, whose emotional appearance reflects users' behaviours, were they clumsy, embarrassing, or excessive. Or they could be a flattering mirror, an

ideal-self or a stereotype whose emotional style is not exactly the same as the user's one. In this case, instead of reflecting users' emotions, an affective mobile phone endowed with its own rules of emotional display and management could react to users' behaviour, helping them to control and manage their own emotional style. Again, in this hypothetical example, it would be up to the users to decide which features of their mobile's personality would be derived from their personal aspirations.

The personality of a device also depends upon its expressions (how it looks, feels and shapes people's movements, gestures, speech and expression) and the meaning given to these expressions by the users and those in contact with it. In the case of affective mobiles the emotional expression would transform the mobile phone presence in people's lives, which already entails emotional aspects, as, for instance, a way of publicising emotional fulfilment.

3.4 Summary- What an affective mobile phone could be and do.

- The interest in emotions in computing and usability is related to social changes in Western societies in the way of considering emotions and subjectivity and their relationship to rationality. These changes have been largely analysed in social sciences under different labels, such as post modernity, crisis of modernity, reflexive modernity, post-industrials societies and so on.
- Emotions are a key element in human intelligence and communication, as much in social as in human-computer interaction. They are a key element in creating and sustaining social bonds and therefore in maintaining society. They are produced by social factors, shared with other individuals and groups and change in parallel with social and technological changes.
- Affective computing refers to giving computers the ability to recognise, express and have emotions in order to improve human-computer interaction, as people tend to interact socially and emotionally with computers. Applications of affective computing are found in different shapes (wearables, autonomous agents, robots) and in different areas, such as entertainment, learning systems and simulations.
- Affective computing research and applications suffer from a defective conception of emotions. They mostly ignore social issues and sociological literature concerning emotions. Affective computing and emotional interface authors tend to identify emotion with positive emotions and forget, not only emotions like anguish, anger or embarrassment that could be new obstacles in the human-computer interaction, but also the ambivalence and mixed feelings involved in any emotional experience.
- Usability research has also reacted to emotional awareness. Emotional usability includes pleasure, enjoyment and aesthetics. Designers are concerned with designing context for experiences for different users, taking into consideration the presence of the objects in the users' life and not only the use.
- Affective mobiles could make users aware of their emotional style and could help them to understand and use intuition and emotional influence in everyday communications. They could help to express emotions but also to control and hide them, becoming an emotional intelligence tool.
- Affective mobiles could facilitate both the encouragement and the control of affective expression and display. People should be able to decide the final use in relation to their preferences, constraints and context of communication.
- Affective mobile phones should not determine the phoning experience but provide a context. Phone manufacturers or operators should not create the content of the emotional expression but afford choices for the users. Emotions occur

unexpectedly, subject to random encounters, and therefore are not under the control of the person who experiences them. Therefore, affective mobiles should allow a spontaneous and flexible display of affects, in order to grab the opportunity of what to express and how to do it. This flexibility is also necessary in order to match the different emotional styles with their values and meanings, and to help the accomplishment and creativity of these different ways of expression.

- Users should also be able to adjust the affective bandwidth of their phones. Some times a lower affective bandwidth appears to be an advantage that facilitates affective communication.
- Affective mobiles would not only be multimedia but also multi-sensuous devices**,** including hearing, sight and touch. This multi-sensuality would not only make uses and interactions richer and the phone more appealing, but it would also be more useful for those with impaired speech, sight and hearing.
- Affective mobiles could also be devices for local communication allowing users to influence their environment, the mood of the place, adding mystery and diversion to the normal pattern of perceiving and behaving.
- Though the interest in the ability to recognise and to have emotions seems to be less evident for mobile phones than for computers, the implementation seems more problematic. It could serve to keep a record of the users' emotional style that would be helpful for their self-awareness, for the personalisation of the device and for the management of interruptions.
- The ability of recognising and storing information about users' emotions raises the question of privacy and disclosure of private and even intimate information. An additional problem is the danger of losing this information if the phone is lost or stolen, which could reinforce the value paradox of existent mobile phones.
- If mobile phones had got and expressed their own emotions in whatever way, they would create or interfere the content of the exchange, and this is not their purpose as communication devices.
- However, the mobile phone could have a personality that is a sincere reflection of the owner's or a more aspirational or stereotyped one.

3.5 Conclusion- From the awareness of the emotional attachment to the conception of an affective mobile phone

The relationship between affects and mobile phones, Affective Computing and the concern about emotions in the design of digital devices are examples of the social shaping dynamic between society and technologies. On one hand, the model of human

and social communication is applied to computer interaction, through the attribution of emotions and qualities to the digital objects in interaction with the users. On the other, digital technologies modify the ways of expressing emotions, the rules of displaying them. They also become elicitation factors, giving opportunity for emotions to arise.

Any kind of human communication entails the presence of emotions and the emotional synchronisation of the participants. As it has been shown in this paper, this mediation is not the only reason of the emotional attachment to mobile phones. They are also a technology of intimacy, close to the body and an extension of it. Emotional attachment is enacted in the personalisation of handheld devices and services. Mobile phones are not only an extension of the owner's presence, but they also allow the virtual presence of those linked to us by phone communication. Thus, they become an important element in the building and maintaining of groups and communities. Mobile phones' presence and expression in everyday life also take part in the personal development of the users' social skills and emotional behaviour, as when their use entails the renegotiation of the social norms about the display of emotions. Therefore the emotional attachment to mobile phones and their impact on affective behaviour are contributing to a different shaping of people's subjectivity.

The way emotions are involved in Affective Computing and in mobile phone use are deeply different. In both interactions, with computers and with phones, emotions are involved, but only mobile phones produce an emotional attachment to the device. Only they are irresistible and create dependence. Affective Computing mainly deals with the relationship between people and computers, and only a few of its applications, such as those related to e-mail, internet chat rooms or collective computer games, take into consideration a human third part, whilst mobile phones are mainly mediators and facilitators of one-to-one communication. Moreover, the relationship to the others involved in computer mediated communication and phone mediated communication is not the same. One usually knows the identity of the other person on the phone and has had the choice either to make or to answer the call. Also most of the people in contact through mobile phones have regular face-to-face encounters. That is not the case with Internet lists and chat rooms, where the users are in contact with a large number of people unknown to them. This difference entails a lower level of intimacy and larger possibilities of playing with one's identities in computer mediated communication. Computers and phones are involved with different kind of social bonds.

Emotional behaviour is in essence relational and Affective Computing has yet to resolve the question of whether users are interested in an emotional relationship with computers. Affective Computing research rarely takes into consideration the socio-

cultural context where relationships are created and sustained, while in designing applications for mobile phones the context of connectedness is the essential starting point. The place of both digital devices in our everyday life also differs. Wearables are still mainly prototypes and computers do not have the intimacy and closeness to our bodies enjoyed by phones. Their expressions and the things phone and computers make us do, from our body language and gestures to the socio-cultural skills required for the use fundamentally differ. The convergence of two modes of technologies in 3G phones, the generalisation of data communication, has to take into account these fundamental differences. As in the conclusions of the UMTS report, the advantages of emotional attachment depend on the development of personal connectivity services and not on information and data.

There is still room for innovation and creativity in personal communication through mobile phones, such as imagining what an affective mobile phone could be. It would be not only multimedia, but multi-sensuous, able to communicate with those at distance and locally. Again, mobile phones allowing an affective richer experience would not only improve mobile phone communication but would also help to improve the performance of tasks in work and home environments. Such a device could also make users aware of their emotional style and could thereby help them to understand and use intuitions and emotional influence in everyday communications, becoming an emotional intelligence tool, and not just a device for interpersonal communication. But affective mobile phones would not eliminate the frustration and paradoxes of social bonds and human communication and could indeed add difficulties to interpersonal communication, as affects are also negative and can be used to harm other people. Another problem that such devices could encounter is the effect of the ability of recognising and storing information about users' emotions on privacy and disclosure of private and even intimate information. An additional problem is the danger of losing this information if the phone is lost or stolen, which could reinforce the value paradox of existent mobile phones.

Future research should include emotional issues based on the acquired awareness about what emotions are and entail. It could portray the kind of emotional experiences facilitated by mobile phone use, understood in the context of the constitution of subjectivity: which role the mobile phone plays in the perception and building of the self, how the entity 'me and my mobile' relate to other people, keeping in mind that these questions will find a plurality of answers according to different users, and to different situations in which 'me and my mobile' are involved. This paper also provides some understanding of designers' concerns, and how certain mobile phone experiences could be improved along with some possible design suggestions.

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APP. A CONCEPTUAL INVESTIGATION INTO EMOTION AND REASON

Introduction

There is a growing interest in affective computing, emotional interfaces and new models of usability that integrate emotional and aesthetic aspects. This concern partially arises from findings in psychology and neurology highlighting the importance of emotions for the normal functioning of intelligence and reasoning. This interest comes after several decades of **critique and questioning of the traditional rationalist view on emotions: a conception that considers emotions, at best as some luxury belonging to arts and idleness, and at worst as an obstacle to clear judgement**. Therefore emotions have been relegated to private space and intimacy. Some social scientists, like Norbert Elias, consider that discipline and the self-constraint of emotion and urges become necessary in societies with growing complexity and social differentiation. In these rationalistic societies, 'emotional' is not only an adjective simply denoting that something or someone is related to emotion, but it becomes a pejorative adjective. Those characterised as emotional – women, children, primitives – are thought to lack the fundamental ability to think and decide rationally, and were placed in the lower levels of the social and even human hierarchies.

Social changes in Western societies have modified this picture. These changes have been analysed under the label of the crisis of modernity, postmodernity, reflexive modernity or post-industrial societies. In contemporary society the expression of one's subjectivity becomes almost a claimed right. The growing importance of leisure activities and popular culture, not only economically but also in personal terms of self-fulfilment, reveals that the practices and spaces where emotions are expressed are no longer considered secondary. Findings of previous research, (Lasen, 2001), show that people's expectations about work and their notion of what constitutes an ideal job (self-fulfilment, creativity, enjoyment, friendly relationships) come directly from the kind of practices and relationships characteristic of their leisure time. For more than twenty years now, social scientists have analysed these changes in the social considerations of emotions and feelings, either to denounce the tyranny of intimacy and the vanishing of public space (Sennett, 1986 (first ed. 1973)) or to criticise the excess of rationalism, acknowledging that emotions are not only individual and psychological features but fundamental aspects of social life (Maffesoli, 1993). Under the term 'orgiasm', Maffesoli includes the orgiastic, emotional, sensual and sexual aspects of social life, which constitute a constant factor of sociality. Sennet describes the intimate vision of society nowadays, where we expect warmth, trust and the open expression of feelings

throughout the range of our experiences. As much meaningful social life, namely public sphere, “cannot yield these psychological rewards, the impersonal world seems to fail us, seems to be stale and empty” (Sennet, 1986:5).

Besides the different diagnostics and evaluations, what was manifested in the realm of social sciences is the importance of seizing the role of emotions in the constitution of social experience in order to understand what is at stake for people in everyday life (Lutz and White, 1986: 431). Nowadays there is an interest in emotion by the public at large, manifested for instance in advertising or in the notion of emotional intelligence being embraced by educators and businessmen alike. This interest comes also from the awareness that emotions are vital to the effective functioning of the decision-making process.

The use of the word ‘passion’ in advertising and internal communication in Vodafone UK as in “passion for our customers” is an example of this positive attitude to emotions, being far from the rationalist view of passions as dangerous ways of blinding the mind and disturbing clear judgement. **This growing interest in emotions and in the satisfaction of social relationships could also be the sign of a problem and a frustration, as Martin Heidegger’s rule (quoted in Bauman, 2003:ix) reads “things reveal themselves to consciousness only through the frustration they cause”**.

The study of emotions needs interdisciplinary approaches, from psychology, neuroscience, sociology and philosophy, acknowledging the interplay between psychobiological and socio-cultural determinants that do justice to the complex, multi-component phenomenon called emotion. The first consequence of this complexity is the lack of a precise definition and of a common agreement of what emotions are. Another obstacle to a unified definition is the gap between emotion as an abstract category, and the experience of emotion, which always concerns particular emotions (love, anger, resentment, shame), with distinctive features.

A.1.1 Emotions and Reason

The belief in the irrationality of emotions entails that decisions should be made based on reason rather than emotions and that once emotions are involved, reasoning is corrupted, e.g. when you lose your temper. Emotions often make people do certain things without being aware of the deep-seated purposes of the action. They are ways of ‘being acted upon’. This partially explains the view that regards emotions as being essentially in conflict with human reason.

The contribution of emotions to action is considered by Jean-Paul Sartre (1971), as a way of escaping**. According to the French philosopher, emotion is a transformation of the world, when the ways of acting become too hard or when we cannot find a way. We cannot stay in such urgent and difficult world and nevertheless we must act. Hence we try to change the world, as if it were ruled by magic. It is not a game, neither a conscious attempt resulting from reflection, but the awareness of new relations and new requests. Consciousness is transformed in order to transform the object or the situation, which is impossible to seize, or the cause of an unbearable tension. Emotional behaviour is not effective. Its aim, pursues Sartre, is not really to act on the object through particular means, but to give another quality to the object or to the situation, without changing its actual structure. This conception of emotions also estranges them from truth and reason.**

The resulting stigma of emotions (poor judgement, irrationality, inappropriate and embarrassing, inherently non scientific) is less than half the story: **scientific findings contradict the idea that emotion is a luxury, only suitable for amusement, entertainment and family and personal relationships. They have an essential role in basic rational and intelligent behaviour; not only they contribute to a richer quality of interaction, but directly impact a person's ability to interact in an intelligent way**. When we make a decision, we evaluate alternatives. If we are unable to feel emotions, we are unable to place values on the different alternatives. If we cannot place values, then, there is no difference between the alternatives, and decision-making becomes seriously flawed. Hence without emotions, rational decision-making may not be possible. Emotions provide meaning, as when we attach significance to something, we attach feelings. **Reasoning provides an intellectually economical means for organising our thoughts about the world, and emotions provide us with a means for ultimately evaluating them. Reasoning helps us to refine our emotions and emotions help us to evaluate our reasoning.** This important role of emotions in the process of reasoning has been proved by neurological researches on brain-damaged patients (Damasio, 1994). However, the current method in medical research of deriving general conclusions from the behaviour of impaired individuals raises many doubts in other research fields. Too little emotion impairs decision-making, states Damasio, when describing how patients with brain damage, namely frontal-lobe disorders, appear to have normal intelligence but make disastrous decisions. Their brains are missing "somatic markers" that associate positive or negative feelings with certain decisions. These feelings help to prioritise, to limit a

mental search by nudging the person away from considering the possibilities with bad associations. A balance is needed, not too much emotion and not to little.

These considerations about the links between emotion and reason also inform the notion of **emotional intelligence**. The notion of Multiple Intelligence was developed by Howard Gardner (1973). He divides intelligence into six types: linguistic, musical, logical-mathematical, spatial, bodily kinaesthetic and personal intelligence. The last one incorporates social and emotional capabilities, which then led to the rise of what is called 'emotional intelligence'. This refers to interpersonal and intrapersonal skills, the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions (Salovey and Mayer, 1990). It involves factors such as self-motivation, empathy, self-awareness, impulse control, persistence and social deftness. According to this view, reasoning and emotions inform each other. Reasoning helps us to refine our emotions and emotions help us to evaluate and validate our reasoning. Both are necessary to understand the world.

Emotions are not opposed to thought so much as "**embodied thoughts**" (Rosaldo quoted in Lutz and White, 1986: 430), thoughts seeped with the apprehension that 'I am involved'. "Ideas are infused with value, affect, and direction, just as feelings are used to understand and communicate about social events" (*Ibid.*). Social norms about emotional display in public in Anglo-Saxon societies — that is, phlegm or coolness — seem to be the remnants of the negative view about emotions. This behaviour, far from being considered the right and rational way of acting, looks like a lack of sensibility and expressiveness in other societies.

Emotions are evaluations of circumstances that provide information about relations to other, objects and events. They are judgements about the world. Some emotions are not only judgements but they are goal-oriented judgements. **Emotions present us with a non-verbal preconscious assessment of our current situation. They influence perception and decision-making.** Examples of the effect on perception are the fear-induced phenomenon of "tunnel vision" or the joy-induced state of "seeing through tinted spectacles". Emotion is a motivating and a guiding force in perception and attention and therefore strongly affects memory. This evaluation is infused with a sense of expectancy. It is a **preparation for action**. Emotions provide the apprehension of a possible future through an interpretation of the past experience of the subject. This is their specific contribution to action and agency. Without emotions individuals would be lost in time, between a remote past and an inaccessible future (Kemper, 1978:185). Therefore emotions are basic to social action and to an

understanding of social structures and processes. They can be explained, pursues Kemper, showing what they do in social relationships. “The social sources and consequences of an emotion tell us what that emotion is” (Kemper, 1991:26).

A.1.2 The Limits of a Naturalist Approach of Emotions

Following the influential work of Charles Darwin (1872), a number of researchers believe in the universal and adaptive character of emotions and that the basic principle governing the operations of human emotions is the only thing that has remained for the most part unchanged throughout the history of humanity (Toda, 2002). The system of emotions is considered like a biological navigation software developed though evolution to be used by individuals or groups. It offers guidance for coping with the various problematic situations they typically encounter in their lives, as setting a goal in a situation-dependent way i.e. fear, whose major function is to automatically set the goal of reaching safety. In *The expression of emotions in man and animals,* Darwin splits emotions from individual experience, making them a series of absolute states that take possession of persons. Darwin paves the way to a “botanic of emotions” (Le Breton, 1998: 39), where any emotion could be described and classified without reference to people who experience it.

Several programs of cross-cultural research on emotion draw on Darwinian insights, such as the ‘neurocultural’ research programme led by Ekman (Ekman, Friesen 1992), which studies facial expressions of emotions. The search for a physiological ground of emotions and emotional expression diminishes the importance of the personal and social singularities. The individuals’ participation and the meaning they project on the event are perceived as negligible (Le Breton, 1998: 42). In this kind of approach culture has a secondary role, cultural display rules are understood as acquired conventions or habits that dictate what emotion can be shown to whom and in which context. These rules are thought to interfere with emotional responses dictated by the innate affect program. Ekman and Friesen present a systematic study of the face muscles involved in the expression of emotions called FACS (Facial Action Coding System). This is a laboratory exercise, designed to produce an objective truth about emotions. That is, it is out of context, taking into account neither social interactions nor voice and body expression. French anthropologist David Le Breton critiques this approach for being indifferent to real people engaged in affective relationships, and also because by focusing on the facial muscles, it overlooks the fact that emotions are embodied and expressed in the voice. Another problem with these kinds of studies is that gestures are isolated and not taken into consideration as part of a code. That is,

the meaning of these different gestures and muscle movements resides in the culturally contextualised sequence of expressions, in a necessary relationship with the whole of other gestures, positions, movements, and intonations. Gestures, pursues Le Breton, are signs, only meaningful in relation to other gestures, in the ritualised performance of body and speech. Emotions analysed by naturalist researchers are considered primary and universal. But, paradoxically, they do not agree on which of these are primary emotions. In everyday life emotions are not substances, fixed states found in the same form for the whole of the human species, but affective tonalities (Le Breton, 1998: 50). They colour human behaviour and are **ambivalent, expressed in mixed feelings**. Their changing nature, according to changes in cultural, social and individual circumstances also dismisses any attempt to claim the universality and biological essence of emotions. There is not a unique expression of emotion but countless shades of body and face, which account for the affectivity of a social actor in a given context. In everyday life we do not find people expressing joy, but joyful people, with their particular style, ambivalence and singularity. Darwinian approaches encounter the pitfall of the duality individual/emotion and the ambiguity of the concept of 'expression'. According to Le Breton (1998: 51), the research carried out in a laboratory, using pictures and films, or consisting in the stimulation of a group of volunteers' face muscles in order to identify nervous trajectories, ignore that emotions are all evaluation, interpretation, expression, meaning, relationship and regulation of exchanges. They forget that emotions are subject to historical changes, and symbolised through social bonds. Those approaches, pursues Le Breton, reveal what he calls an "autistic passion" for emotion, because they never consider it embedded in social relationships.

A.1.3 Emotions as Social Things

Cultural rules concerning emotions are interpreted in a different way by other social scientists like Hochschild (1979). She describes the existence of **rules about how to feel in certain occasions: parties, funerals, or when to show a smile**. Emotions only complete their function when they are given a name, which derives from the culture. Our culture directs how we feel and how we name what we feel. Hochschild proposes the notion of "emotional deviance", the experience of emotions contrary to what is prescribed, expected, in the given situation. This requires emotion management to bring them into line with the social expectations. Therefore emotions conform to collective ways of knowledge, of seeing and interpreting self, others, God or time (McCarthy, 1989; Halbwachs, 1947). Feelings are interpreted and understood. They provoke reflection and are a response to reflection and thought. **Social knowledge, transmitted by parents, teachers, peers, psychologists or priests, tells us what**

our feelings mean and what they signify. Also we learn which emotions are expected of us in certain situations and the right way of expressing them.

Emotions are "social things"(McCarthy, 1989), the product of socialisation. There is no such thing as unsocialised feelings. **"There are not core aspects of emotion which are not influenced by sociocultural factors"** (Averill, 1980). The socialisation of emotion and feelings is reflected in what Elias calls the fundamental socio-genetic law. The history of a society is reflected in the inner history of each individual who must go through a brief version of the civilising process that society has undergone. Children are not born civilised. Emotions arise from the evaluation of an event by an individual endowed with a particular sensibility. They are thoughts in action, rooted in an affective culture, linked to a system of values and meanings and inscribed in a language of gestures and positions recognizable by others. The affective culture provides schema of experience and action used by individuals to build their behaviour according to their personal history, their style and their evaluation of the situation. Therefore, the emotions are part of a social group's system of values and meanings. The biological background is socially and culturally translated in ways that can be similar but also very different from one social group to another (Le Breton, 1998) and also from one time to another, as Elias describes it. For instance, people in the Middle Age not only had different table manners and hygiene standards than today, they also had different relationships. These differences also affect their consciousness and affective economy. They did not know these invisible walls of affective reactions that separate our bodies. They did not experience the shame and embarrassment associated with the body and its physical functions that we know (Elias, 1982). Public social behaviour that we consider distressing and disgusting did not provoke the same response a few centuries ago. The level of sensibility and the physical reactions have also changed, from being initially the distinctive characteristic of a refined elite to becoming the common way of feeling and acting (*Ibid.*).

According to McCarthy, emotions are **emergent** phenomena as George Herbert Mead describes emergence: that is, they are neither substances, nor states, but emergent within acts. An emergent phenomena brings with it something that was not there before and which does not have a mechanical causal relationship to the conditions out of which it came. The conditions never determine completely what it is that will happen. Emergent changes take place within the present and are an expression of sociality. Emotions are functionally related to the physical organism but are neither reduced to nor explained by it. They are part of the conscious relations, actions and experiences of selves. The emergent quality of emotions entails that they are organised and developed in social relationships and that they conform to an age's form of knowledge.

Therefore emotions manifest cultural and historical variations. French anthropologist Marcel Mauss defined emotions as neither strictly personal characteristics, nor universal attributes of human nature but "certain ways of feeling, thinking and acting" which individuals would not have had "if they have lived in other human groups". Gay (1984), studying the "bourgeois anxiety" of the 19th century defines emotions as one of the ways a group experiences itself and its age. This experience is shaped by a culture, that is, every idea, object and artefact that contributes to the making of experience. Emotions are at the same time part of the experience and shaped by it. Gay regards the creation and growing importance of privacy as a bourgeoisie's passion. An emotion, an experience which is "felt" by virtue of social circumstances, and an experience and a collective response to this experience. Passion for privacy is in part the bourgeois's anxious understanding of their need to defend themselves from their scrutinising world and the need to relieve themselves from their self-imposed modulation, restraint and control.

A.1.4 Emotions and modern society

Some have argued that **emotions are the grounds of the making of society, the "glue" of social solidarity that holds a society together**. Emotional connectedness is the ultimate basis of social bonds. For Emile Durkheim, one of the founding figures of sociology, the social effervescence, state of heightened emotion, of rituals, festivals and celebrations, caused by the sharing of strong feelings and emotions by the participants, is necessary to sustain and create social bonds, and is therefore necessary to the maintaining of any community and society. Rituals magnify and intensify any shared emotion in the participants, which produce a feeling of solidarity. This solidarity arises from different kinds of shared feelings from the joy of celebrations to the sadness of grief and mourning. Durkheim observes **social solidarity becomes fragile in modern societies whose structures and perpetual change weaken the traditional social bonds of kinship and local communities**. Also in secular modern societies it is rare to experience social effervescence in religious rituals in a way comparable to traditional communities. He calls this situation when social bonds are threatened or severed anomie.

Zygmunt Bauman (2003) portrays the situation of the contemporary western individuals with no bonds, or at least no bonds as fixed as the kinship bonds used to be in the past, bonds that were unbreakable and attached once and for all. The denizen of contemporary societies "must to tie together whatever bonds they want to use as a link to engage with the rest of the human world by their own efforts with the help of their

own skills and dedication. Unbound they must connect… None of the connections that come to fill the gap left by the absent or mouldy bonds are, however, guaranteed to last. Anyway, they need to be only loosely tied, so that they can be untied again, with little delay, when the settings change" (Bauman, 2003: vii). This is the paradoxical situation of contemporary societies. **Societies and indeed individuals need collective bonds to survive, but the continuous change and the flexibility and mobility required make these bonds an obstacle. This schizoid relation to social links and relationships deeply influences the emotional use and attachment to mobile telephones**.

Emotion is embedded in social settings and emotional experience may be subject to social change. Emotional experiences differ across cultures and historical periods. The tendency today, as the previously mentioned Kemper (1993) highlights it, is to represent emotions as the foundation and authenticator of experiences of self. The erosion of the public life, in Sennet's terms, entails a trend of growing narcissism when modern societies erase a sense of meaningful social encounters outside the boundaries of the single self. Narcissism is understood, not as the popular idea of love of one's own beauty, but as a self-absorption, which prevents one from understanding what belongs within the domain of the self and self-gratification and what belongs outside it. The relevance of people and events is measured in what they mean to me. This obscures the perception of persons and events. Moreover, the absorption in self prevents gratification of self needs. It makes people feel, once they have attained an objective or connected with someone, that this is not what they wanted (Sennet, 1986:8). The increasing importance of intimacies of life and the disengagement of public affairs produces a twofold constriction. First, the degree of emotional risk-taking people would be willing to engage with decreases, because passions would threaten the stability of intimate life. Second, gratification of the self would become increasingly difficult, since any emotional relationship can be meaningful only when it is perceived as a part of a web of social relations, rather than the "lonely inexpressive end" of individuals (Tocqueville quoted by Sennet, 1986: 31). Intimacy becomes a tyranny by the belief in one standard of truth to measure the complexities of social reality, that is, the measurement of society in psychological terms, "the belief that social meanings are generated by the feelings of individual human beings"(*Ibid*, 339).

The internalised self-discipline of modern western societies, described by Elias, has several consequences on the emotional economy of contemporary societies. One is the emotional work (Hochschild, 1979), that is, the emotion management performed in an employment setting for a wage. This task requires one to induce or to suppress feelings in order to sustain the outward countenance that produces the proper state of

mind in others. The cost of doing this labour at work, as for hospice workers, flight attendants and all kind of “smiling services”, is that the worker can become estranged or alienated from an aspect of self that is used to do the job. Another particularity of our societies is what Elias call mimetic leisure practices, leisure activities that arouse emotions and tensions under the form of a moderate excitement. Sport, cinema, games, hunting, and dancing belong to this category of leisure. According to Elias the real polarity in social life is not between work and leisure, but between certain leisure practices allowing excitement and pleasurable tension, and the ordinary life, routine, safe, under a strong self-control of emotions and emotional display.

APP. B AFFECTIVE COMPUTING

Introduction

The human-computer interaction according to Affective Computing consists of:

- Automatic recognition of emotions by artificial vision, biosensors, voice and sound.
- Automatic expression of emotions in robots, interfaces, and characters.
- Both expression and recognition, which are related to facial and vocal expression and body movements. The influence of emotion on bodily expression is called “sentic modulation” (Picard, 1997), such as voice inflection, facial expression and posture, usually subconscious. The adjective ‘sentic’ emphasises the physical mechanisms of emotion expression. This word was coined by Manfred Clynes (1977), a pioneer in linking emotional states to physical measurements. When computers learn to recognise human emotions, they have to rely primarily on sentic modulations. Emotions modulate our muscular activity, such as the different way we press on a surface when angry and when joyful. Therefore the challenge for affective computers is not only to know what the user says, vocal recognition, but also how something is said, via vocal intonation recognition and interpretation.
- Generation of emotions: by reasoning about emotions, through expert systems following reasoning rules, inspired by biology and neuroscience to create inner mechanisms (artificial physiology, neural networks), which produce emotional behaviours and learning. Affective computing relies only on these sciences to model emotional behaviours, ignoring the crucial role of socio-cultural factors.

The importance of emotions in the theory of human intelligence has been strengthened through neurological evidence presented by Damasio. As a result many researchers in Artificial Intelligence have begun to develop computational models of emotions, simulating emotional intelligence in certain types of computer programs. Computational models of emotions are used in many applications, including personal assistance, training simulations, intelligent interfaces, and entertainment. Several researchers have directly addressed the problem of creating synthetic creatures in which affect and emotion are expressively communicated. Other researchers are exploring new ways to sense and interpret the affective state of the users. Finally with toys like Bandei’s

Tamagotchi, Microsoft's Interactive Barney, Fujistsu's Fin Fin and PF Magic's Petz, affective creatures are finding their way into the commercial marketplace.

This presentation of Affective Computing derives from the book of the same title by the MIT Media Lab engineer, Rosalind Picard (1997), which is a seminal work in this field. Picard proposes giving computers the ability to recognise, express and in some cases "have" emotions. Affective Computing is computing that relates to, arises from, or deliberately influences emotions. It includes **implementing emotions, giving a computer the ability to recognise and express emotion, developing its ability to respond intelligently to human emotion, and enabling it to manage its emotions**. The initial goal for emotional interfaces should be to stimulate appropriate emotional reactivity by demonstrating an awareness of the emotional content of an interaction. In order to approach this goal, interfaces need to recognise and predict the emotional state of the user and then synthesise and communicate an appropriate emotional response.

Computers, affirms Picard, are similar to the patients described by Damasio. They have above average knowledge of some areas of expertise, but are relatively unintelligent in making decisions, unable to associate judgements of value and salience with important decisions. Picard finds four motivations for giving machines certain emotional abilities (Picard, 2001):

1. To build robots and synthetic characters that can emulate living humans and animals.
2. To make machines that are intelligent.
3. To try to understand human emotions by modelling them.
4. To **make machines less frustrating to interact with**, the most relevant for her.

A computer with emotional intelligence will be one that is skilled at understanding and expressing its own emotions, recognising emotion in others, regulating affect, and using moods and emotion to motivate adaptive behaviours. Every computer does not need all of these affective abilities all the time. Adapting human emotions for computers should help computers acquire some of the benefits of emotions: more flexible and rational decision-making, ability to address multiple concerns in an intelligent and efficient way, ability to determine salience and valence, more human-like attention and perception, and numerous other interactions with cognitive and regulatory processes. Human-like abilities to recognise affect should make it easy for computers to perceive human responses, which will help them to adjust their behaviour. Computers should be adapting to people, facilitating the kind of interaction familiar to them. Moreover

emotional responses can be seen as information given out directly and "for free' by the user, and that systems could use these signals to improve services to the user.

B.1.1 Computers are Social Actors

The search for emotional interfaces is stressed by empirical studies revealing that **human-computer interaction is social and emotional even when interfaces are not designed with such interaction as a goal**. Experimental studies in the past ten years have shown that people do not respond to interactive software as a mere tool. Individuals bring to bear a wide range of social rules and learned behaviours that guide their interactions with, and attitudes toward, interactive systems. Interfaces induce a wide range of emotions in users and are assigned a wide range of emotions by them. Social and emotional responses occur when users know that they should not, and believe that they do not, exhibit these responses.

Clifford Nass and his colleagues at the Stanford University (Nass, Steuer and Tauber, 1994; Reeves and Nass, 1996) applied tests traditionally used on human-human interaction to study human-computer interaction and discovered that classic results are maintained. Individuals' interactions with computers are inherently emotional and social. Affect is a natural and social part of human communication; therefore people naturally use it when they interact with computers. Nass's studies ask which social rules do people apply to computers, through, among others, the questions about politeness norms, the notions of self and other, on what basis do users distinguish computers as self or other — the voice or the box — and the attribution of gender stereotypes to computers according to a synthetic voice. These studies also showed the gap between users' beliefs and behaviour. Experienced computer users do in fact apply social rules to their interaction with computers, even though they report that such attributions are inappropriate. Anthropomorphic characteristics of computers such as voice entail this social perception and interaction. Subjects responded to different voices as if they were different social actors, and to the same voice as if it were the same social actor, regardless of whether the different voice was on the same or different computer. Users do make social attributions towards the computer and the computer referring to itself as "I" is not necessary to generate such attributions. The theoretical implications of these experiments are that social norms are applied to computers and also the notions of self and other. Voices are social actors and notions of self and other, as well as gender, are applied to voices. Thus computers are also gendered social actors and gender is an extremely powerful cue to evaluate actions. In Nass's experiments, users respond to the computer itself, which is not seen as a

medium for interaction with the programmer. These social responses are automatic and unconscious and therefore human-computer interaction is social-psychological and findings in social psychology are relevant to human responses to computers.

These tests also present some design implications, for example that the choice of voices is highly consequential and computers do not need to refer to themselves as "I" to generate social response. These social responses to computers are not the result of conscious beliefs that computers are human or human-like. This is an important point that will be discussed further as many affective computing applications concern the building of human-like characters and interfaces. Nass and his colleagues suggests (Nass et al. 1994) that "low-overhead agents can be easily produced and can generate a wide range of social responses" without a rich human representation, and that "concern with the inability to create a photorealistic, full-motion video or other high-bandwidth representation may be highly overrated".

B.1.2 Emotion Recognition and Expression

Recognising emotion tasks derive from observation of emotional expressions and from reasoning about an emotion-generating situation. This involves sensing and recognising patterns of emotional information as well as sensing and reasoning about other situational variables. Picard claims that recognising emotion does not mean that a computer can know the user's innermost emotions. The question for designers is which emotions? Those expressed publicly and communicated through facial expression, vocal inflection, gestures or body language, which are the forms over which we have more control? Or those that are expressed via more personal contact, pulse, touch and physiological signs that most people cannot control by will? Computers have more sensors, hence more senses available than a person ordinarily have. It might have access to electrodermal responses, pheromones, brainwaves, and blood pressure. **Recognising affective states can be a good predictor for some users' behaviours. But Picard and her colleagues seem not to take into consideration the emergent and ambivalent character of emotions, and the fact that they do not arise in a clear and single manner but as a complex mixture of feelings. This and the cultural and personal variations in the emotional display would make more difficult the task of correctly assessing the emotional state of the users.**

Picard (1997) proposes some design criteria for the recognition of emotions:

- Input. Receives a variety of input signals, e.g.: face, voice, hand gestures, posture and gait, respiration, electrodermal response, temperature, electrocardiogram, blood pressure, etc.
- Pattern recognition. Predicts underlying emotion based on knowledge about how emotions are generated and expressed. This ability requires perceiving and reasoning about context, situations, personal goals and preferences, social display rules, and other knowledge associated with generating emotions and expressing them. For instance, the Construal Theory of Clark Elliot assesses the relationship between events and an agent's disposition, described by its goals, social standards and preferences, through a set of knowledge structures called *construal frames*. These frames serve to determine whether a relationship exists and to characterise the relationship in terms of a set of features called emotion-eliciting conditions. These features include desirability, expectation status, evaluation, etc. Another example is given in Cohn and Katz, 1998. A goal of research in human-computer interaction is computer systems that can recognise and understand non-verbal communication. Following the development of computer systems that discriminate between subtle changes in facial expression and recognise a speaker's communicative intent and felt-emotion, the authors proposed a prototype computer-vision based system that discriminated subtle changes in facial expressions and acoustic systems. The prototype discriminates communicative intent in infant-directed speech and felt-emotion in adult-directed speech.
- Learning. As the computer "gets to know" someone, it learns which of the above factors are more important for that individual, and gets quicker and better at recognising the user's emotions.
- Bias, the emotional state of the computer can bias the perception of emotions as it happens with humans.
- Output. Computer names or describes the recognised expressions and the emotions likely to be present.

And also design criteria for a computer that can express emotions:

- Input. Computer receives instructions from a person, a machine, or from its own emotions-generation mechanisms if it has them, telling it what emotions to express.
- Intentional vs. spontaneous pathways. The former is triggered by a deliberate decision, while the latter acts within a system that has emotion, automatically modulating some of the system's outputs with the current emotion.
- Feedback between affective state and expression.

- Bias-exclusion. The present affective state is easiest to express and this can make the expression of certain other states more difficult.
- Social display rules, when, where and how. An example is given by the proposal of architecture of a reflexive agent, capable of communicative and expressive behaviour, able to express its emotions and also to refrain from expressing them, a reflexive, not impulsive Agent (Pelachaud et al. 2001). This is one of the rare proposals in Affective Computing trying to account for the socio-cultural aspects of emotions and their embodiment in social relationship. Display rules vary depending on the culture. These are the rules prescribed by cultures about when, how, to whom to express one's emotions. Pelachaud et al. propose a formalisation of some of these rules. Whether and how to display an emotion depends on the very nature of the emotion and it is determined by the interaction of multiple factors:

    1.Emotional nature

        1.1 Emotion valence: + or -, pleasant or unpleasant.

        1.2 Emotion social evaluation; socially approved or sanctioned.

        1.3 Emotion Addressee: interlocutor or third person.

    2. Scenario factors

        2.1 Agent's display motive: consolation, empathy, advice… This is the reason, specific goal that induces us to display a particular emotion in a particular situation.

        2.2 Agent's personality: impulsive, shy.

        2.3 Interlocutor's features: personality and cognitive capacity (comprehension, experience and problem solving skills).

        2.4 Agent-Interlocutor Role relationship: power and intimacy.

        2.5 Agent-Interlocutor Personal relationship.

        2.6 Type of social interaction.

- Output. System can modulate visible or vocal signals such as synthetic voice, animated face, posture and gait of an animated creature, music and background colours, in both overt ways such as changing a facial expression, and in subtle ways such as modifying discourse timing parameters.

Affective inflection not only makes for a more pleasant interaction, but also it makes for efficient communication, giving information about valence or urgency. The affective bandwidth of a channel corresponds to how much affective information the channel lets through. It is usually assumed that technology-mediated communication always has less affective bandwidth than person-to-person communication. Potentially, communication through virtual environments could provide new channels for affect, increase affective bandwidth e.g. via sensors that detect physiological information. **This comparison between face-to-face and technology-mediated communication does not take into consideration the specific emotional affordances of ICT. It is not only a question of bandwidth, but of shades, of emotional tonality. For instance asynchronous form of communication, from love letters to e-mails and texts, provide a way of displaying emotion of the sender and of eliciting emotional responses in the receiver different from the face-to-face communication, without being less intense or inferior**.

B.1.3 Can machines feel?

Can a computer be said to have emotions? Can machines feel? Picard answers yes, if computers have the following five components present in healthy human emotional systems:

1. Emotional appearance. System has behaviour that appears to arise from emotions. This component is the most commonly implemented in machines today, in agents and robots that display emotional behaviours to look believable.
2. Multi-level emotion generation:

   2.1 System has fast “primary” emotional responses to certain inputs. Picard shares the conception of the existence in humans, like in animals, of primary emotions, fast subconscious brain mechanisms that perform high-priority survival-related functions, like surprise, anger or fear. But this conception is contested by social scientists, as exposed above, on the basis of the social and cultural determinations of emotions and their changing nature parallel to the historical changes of the social worlds. Picard quotes surprise as a primary

emotion. But situations that elicit surprise are far from being unchanged and universal and depend on the experiences of those surprised.

2.2 System can generate emotions by reasoning about situations, especially as they concern goals, standards, preferences, and expectations. This is the way emotions are most frequently generated in machines today, especially in animated software agents. A set of rules for appraising a situation is constructed to generate emotional states given certain inputs. The computer can deduce that a sequence of events causes an emotion to arise. By the same reasoning, applied to its personal events, it can cause an emotion to arise within itself. This can happens without any so-called conscious awareness or feeling of what the machine is doing.

3. Emotional experience: cognitive awareness, physiological awareness, and subjective feelings. Through emotional experience we gain insight into our own motivation and values. We become able to better understand and utilise the powerful influence emotions exert. The quality of conscious awareness of our feelings and intuitions currently defies mechanic description, much less implementation in machines, asserts Picard. The functions implemented in machines should not be confused with the experience of self, that humans have.
4. Mind-body interactions. Emotions are not just thoughts. The system's emotions interact with other processes that imitate human cognitive and physical functions, e.g.: memory, perception, decision making, learning, concerns, goals, motivations, attention, interest, prioritising, planning, sentic modulation, immune system functions and regulatory mechanisms. Emotions often involve changes in bodily systems inside and outside the brain.

Consciousness is a prerequisite only to the emotional experience and not to the generation of the emotion. It is not necessary for all emotions to occur. However, consciousness provides an enlarged understanding and ability to act. For a computer to become aware of the emotions, for generalising and learning from them or for otherwise managing its emotions, entails it to have at least some capability for self-reflection, a basic function of consciousness. Some more sophisticated emotions may require consciousness before they can be generated, e.g. a concept of self seems to be necessary for developing shame and guilt. But if computer scientists can give computers all the functions that deal with complex unpredictable inputs in an intelligent and flexible way, carefully managing the limited resources, dynamically shifting them to what is most important, judging importance and salience, juggling priorities and attention, signalling the useful biases and action-readiness potentials that might lead to intelligent decisions and actions. Each of these functions may someday be

implemented by means other than emotion. “We may find once we have implemented all of them, and integrate them in an efficient, flexible, and robust system, that we have essentially given the machine an emotion system, even if we don’t call it [that]” (Picard, 2001).

B.1.4 Applications

According to Picard (1997), any application involving an affective computer will require attention to:

1. What is the relevant set of emotions for this application?
2. How can these best be recognised/expressed/developed?
3. How should the computer respond to the user given this information?

Picard’s lab has created new technologies that enable computers to sense, understand, and respond to human signs of confusion, frustration, anger, interest and joy, among other emotions (Picard and Reynolds, 2001). Some of the devices prototyped include jewellery and shoes for sensing states such as frustration or stress, “expression glasses” that can sense expressions such as confusion or interest, and a “sentic mouse” that can discern slight variations in finger pressure that tend to be indicative of valenced information: liking or disliking. These novel interfaces are a few of many possible examples of ways to augment our interaction with computers, facilitating greater bandwidth communication without demanding any extra effort or training on the part of the user. In her book Picard proposes **applications of affective computing in entertainment, learning, social development, preventive medicine, consumer relations,** etc. both for consumer products and for further understanding of human emotions:

- The affective mirror, an agent that interacts with a person, helping him to see how he appears to others in various situations, e.g. recruitment interview. Use of affect recognition, helping people to advance their own interactive skills.
- Tools that recognise and express affect could be used to expand the affective bandwidth of email: a voice with inflection could read the email to you, the interface could change its look and feel to signify tone, facial expressions of the sender could be transmitted. An agent could alert you of the tone before you send it, and do the same for your incoming mail.
- Text-to-speech systems that can synthesize affect in speech

- Helping autistic people. They have problems in recognising the meanings of other people's emotions. Emotional computers could help them to suitably express emotions, and have empathy.
- Consumer feedback, software that pays attention to the user's affective responses, to look for when they encounter unusual stress or frustration, also in order to implement the trustworthiness of e-commerce and e-banking interfaces (Basso et al. 2001; Kim and Moon, 1998). The role of emotional intelligent interfaces in e-commerce is presented by Bergeron, (2000), as an interface that would not only know how to express emotions, but how to manage them and how to use them to modify the behaviour of the customer. The advantage when compared to a human customer service representative is the level of consistency. Computer interfaces do not have moods and are not affected by the turnover and training of new employees.
- Learning systems. (Marsella and Gratch, 2002; Gratch, 2000).
- Online role-playing communities, expanding the possibilities of expression in virtual reality.
- Tools that aid retrieving and editing video. Affective annotations could provide a relatively compact and salient index for retrieval of data.
- Agent that learns the user's preferences from watching his/her affective responses. PETEEI is an example (Seyf et al., 1999). This cyberpet is based on a fuzzy logic model for simulating emotions in agents, with a particular emphasis on incorporating various learning mechanisms so that an agent can adapt its emotions according to its own experience. PETEEI is also designed to recognise and cope with the various moods and emotional responses of its owner.
- Software that learns when is the right moment to interrupt the users to give them information.
- Recognising affect in small talk.
- Animated agent faces, which are preferred in game contexts, as was revealed by a study of Tomoko Koda (1996), based on experiments where the desirability of emotional expression was evaluated while a person and a software agent played poker.
- Interactive entertainment that incorporates the audience's emotions, to capture explicitly aspects of the audience's affective response and weave this into a performance (Nakatsu et al. 1999).
- Helping to determinate what constitutes an 'essentic form', that is, the essence of what communicates the emotion, the mood, in a film for instance.

- Sensitive toys. (Strommen and Alexander, 1999). Social interfaces are thought to make technology use more enjoyable and natural by mimicking familiar social conventions. Building interfaces that engage user emotions have a far stronger rationale when the users are children. Emotions in educational interfaces for children not just improve the interface's quality, but they can play an important role in achieving learning goals of the product itself. Puppetry invites children to pretend that inanimate objects are sentient and to respond to their speech and actions as if they were being produced by social agents. This "as if" engagement is a sophisticated form of dual representation in which children interact with an object endowing it with imaginary properties while simultaneously understanding that the doll is just a

toy. Pretend play fosters intellectual growth because it engages children in two levels of thinking simultaneously: the physical world of the toy and the imaginary world where toys are used as props for acting out imagined events. Putting these intellectually rich processes to work in technology interfaces makes the interface itself a prop for engagement, a design philosophy very different from the traditional tool-based notion that interfaces should be "transparent" or invisible to the user. Interfaces that add playful elements as humour, warmth, spontaneity and personality are not suitable for all applications, not for productivity tools for instance. But in situations where learning and mental growth are goals of the interaction and when children are the intended users, pretend playmate interfaces have a valuable role.

B.1.5 Believable Agents

One main application of affective computing is the design of believable agents. **A believable character is one that provides the illusion of life**. This notion, borrowed from animation techniques, refers to elements that permit the audience's suspension of disbelief and the user's belief in an agent, whether they regard it as a partner, assistant, supporter or just a machine. Illusion of life refers to the conveyance of a strong subjective sense of realism. Emotion is one of the primary means to achieve this believability, this illusion of life, because it helps us to know that characters really care about what happens in the world, that they truly have desires. This contrasts with the fighting characters of current video games, which are merely abstract symbols of action and engender no concern (Bates, 1994). Bates does not realise that this lack of concern is probably one of the appeals of the game. Unlike army simulators testing the reactions of a soldier when killing someone, computer games would not be more

attractive if they show the pain, horror and distress of characters being attacked by the player, unless they were particularly sadistic.

The aim to create believable characters has lead Artificial Intelligence research to look to animation techniques. These techniques reveal the importance of appropriated timed and clearly expressed emotion. **Making an agent believable is easier if it shows its own personality. The oddity, the quirk, gives personality to a character**. This is an argument against an abstraction mechanism that allows the building of a library of modular behaviours that could be used in any character. Therefore interfaces' architectures must support quirks and this may mean that they need to allow regularities, as expressed in abstraction barriers, to be broken (Basso et al. 2001). This is a rudimentary way of reproducing the human individual emotional style, the different declination of the common emotions.

In many articles about affective computing applications we read that the interface of technology is expected to permit the suspension of users' disbelief and thus provide the illusion of life, that they are now communicating with a real agent and not with a computer (Lee). But those researchers forget that a **computer is "a real agent", which does not need to be human, even illusory, to interact successfully with the user**. As Nass points out, and quoted above, a rich human realism is not necessary. Users know that they are interacting with machines and that does not prevent them expressing and experiencing emotions. Users in virtual reality or interacting with robots also act "as if", they do pretend play, as the children described in Strommen and Alexander's research. Projects in robotics, such as Feelix, a simple humanoid LEGO robot that displays different emotion through facial response in response to physical contact (Cañamero, 2002), follow these ideas. This project aims to study emotional expression for the purpose of social interaction. It represents a minimalist perspective. The agent owns a small set of features that would make expression and interaction believable and easily analysable. It assesses to what extent we could rely on the tendency humans have to anthropomorphise in their interactions with objects presenting human-like features. This small set of features follows the guidelines proposed by Breazeal for robots to achieve human-like interaction with humans. The robots should have a cute face to trigger the 'baby-scheme' and motivate people to interact with them. According to the aetheologist Eibl-Eibesfeld, the baby-scheme is an innate response to treat as an infant every object showing certain features present in children, such as big head, big round eyes, and short legs. Kismet, the robot created by Breazeal (2000) also follows this schema. Kismet is designed to be a sociable machine, to communicate and interact, to understand or even relate. The area of sociable machines blends art, science and engineering. Kismet is a model and a

metaphor of human infants' relationship with their caregivers. Given Kismet's youthful appearance, people use many of the same behaviours that are characteristic of interacting with infants, e.g. people intuitively slow down and exaggerate their behaviour when playing with it, which simplifies the robot's perceptual task. Along a similar vein, the design should minimise factors that could detract from a natural infant-caretaker interaction. Ironically, affirms Breazeal, humans are particularly sensitive in a negative way to systems that try to imitate humans but inevitably fall short. **Humans have strong implicit assumptions regarding the nature of human-like interactions and they are disturbed when interacting with a system that violates these assumptions. For this reason, she consciously decided to not make the robot look human**.

Following the idea put forward by Masahiro Mori quoted in Cañamero 2000, the progression from a non-realistic to a realistic representation of a living thing is non-linear, reaching an "uncanny valley" when similarity becomes almost, but not quite, perfect. **A caricaturised representation of a face can thus be more acceptable and believable to humans than a realistic one, which can present distracting elements for emotion recognition and where subtle imperfections can be very disturbing**. **Moreover, users do not forget that they are interacting with machines. An interface too human could be perceived as intending to fool them**.

B.1.6 Possible concerns

Picard in *Affective Computing* also describes what could be the possible concerns and ethical problems of the applications of emotional interfaces.

- The first problem is **misleading people**, as it was discussed above concerning believable agents. Emotional interfaces can create confusion about whether the user is interacting with a person or a machine. They can also produce anger if the users perceive the intention of creating an illusion of reality as a way of fooling them. Emotional interfaces could also generate expectations of the computer abilities of human-like intelligence, understandings and actions that they are unable to deliver. Trust in computers, that today largely resides in their objective and mechanical character, could be influenced by the expression of affects and emotions when communicating information.

- Emotional interfaces generate also the need for **manners and etiquette** codes for using affect intelligently. Poorly timed or overdone affect will be worse that no affect. The default of no emotion is perceived as stoic, which is good; poorly implemented affect is perceived as being emotionally stupid, and that is worse than no emotion at all. Computers can be expected to appear juvenile at first, when they are just learning to express affect.

- Respect of **privacy**. Computers can gain access to users' emotional life, and could elaborate models of this private information.

- Accuracy in recognising emotions, lie detection and computer objectivity. What can be recognised in you against your will? Computers are thought to be objective, but they are biased by their programmers and by what they have learned.

- Symmetry in communication, the ability to see what emotion the computer is recognising in you, but how to do it? The question is who has access to the user's expressive information and how to avoid the dangers of unwilling monitoring. Depending on the application, the information that the computer has recognised can be ignored or announced in various ways- but the decision should be up to the person who is being observed.

- Centralised recognition and control, monitoring problem. **Threat of knowing and controlling user's feelings**: politicians, advertisers, co-workers, marketers, prospective employers and potential lovers. We already manipulate emotions (music, caffeine, drugs) but these emotion modifiers are acceptable to us because we are in control, and we fear what might happen if we lose control. Mood manipulations against somebody's will have already been the object of science fiction books (Stephen Bury 1994 *Interface*).

- Other hypothetical problem of computers acting emotionally, recognising and expressing affect, exhibiting creativity, solving problems intelligently, and showing empathy is whether they could bring **harm by emotional actions**? We can call this fear the HAL syndrome, after the well-known affective computer featured in Kubrick's *2001* (Stock, 1996), the computer who kills the users because fears of being disconnected. Picard's advice is that computers will at least need to regulate their emotions to maintain a balanced operation and also need to go through rigorous tests to prove their

abilities before being put in positions of authority, not dissimilar to those which people go through to earn such positions.

- Creativity and flexibility are necessary components of intelligence. They imply **unpredictability** of the computer's behaviour. In this case how can humans be in command of human-machine systems?

- The notion of computers as "smart tools" is shifting toward a notion of computers as "servants", would it entail the need for computer rights?

B.1.7 Summary

Can our future interaction partners, autonomous agents, be programmed to show artificial emotions as well as the capacity for emotion produced by observing affects in others? Current preoccupation of researchers and engineers in robotics is artificial emotion- providing autonomous agents with the capacity to perceive and interpret human emotions as well as have emotions themselves. These issues concern the computer sciences' research field called 'affective computing'. The reason for this is the realisation on the part of the computer industry that skilful but emotionally illiterate robots will not be acceptable to users in the long run. Computers are increasingly powerful in recognising emotional expressions in the face and in producing appropriate facial expressions themselves. The possibility of producing "real artificial emotions" is hotly debated. Emotions and their display are learnt through individual experiences in precise cultural contexts. They become an aspect of people's personality. Adherents to the view that human emotions necessarily encompass irreducible subjective feeling qualities deny this possibility, which would provide machines with a kind of subjective personality.

Computer sciences and design (see the forthcoming book *Emotional Design, Why We Love (or Hate) Everyday Things,* by D. A. Norman, www.jnd.org/books.html#E&Dbook_notes) try to marry emotions and machines, allowing interactions between humans and technological devices to be more similar to human communication. This has also been facilitated by the widespread use of information and communication technologies beyond the realm of work environments. Through many studies, emotions, shared knowledge and self-presentation have been acknowledged to be the main facilitators of human-human communication. These studies have inspired many researchers to look for alternative ways to solve the human-computer interaction problems using human-human interaction as a model. E.g.

developing personalised interface agents, agents that learn about the users and try to assist them in any way possible, trying to make the interface more appealing and to invoke emotional responses from the user in the process. “Over the last decade, user interface design has focused primarily on system capability and usability. The coming years will see greatly increased attention to the subjective user experience, including the aesthetic and emotional impact of computer use” (Hayes-Roth et al. 1998). Affective computing aims to improve human-computer interactions and to increase the affective bandwidth of technologically mediated communication. As people’s interactions with computers are already social and emotional, giving computers the ability to recognise, express and, in a future, even to have an emotional system, seem to be a promising approach to making human-computer interaction less frustrating. However, the purpose of this implementation is not to make computers be, or to appear to be, like humans. This could upset the users, instead of making agents and software believable. People’s aim is to successfully interact with the computers, not to believe that they are communicating with humans. Applications for affective computing are found in software for current computers, wearables and robots, for entertainment, toys and games, simulations, virtual environments and learning systems. This new way of building computer systems also raise new ethical concerns about the possibility of misleading people, trust, respect of privacy and monitoring.

The concept of emotion employed by Affective Computing ignores social issues and sociological literature concerning emotions. The theoretical background of most of the applications of Affective Computing is the kind of naturalist approach that does not account for a social and cultural definition of emotions. This choice is understandable because the simplified and systematic conceptualisation of emotions and emotional expression makes easier the formulation of emotional models susceptible to be implemented in software, robots and other computer devices. But this way of considering emotions will be an obstacle to the main objective of affective computing: the achievement of the emotional interaction between users and devices. The ignorance of social issues and the consequent limitation to their view of emotions could explain the deceptive aspects of many of the robots created, whose behaviour seems to be only understandable by their creators. Also, affective computing and emotional interfaces authors tend to identify emotion with positive emotions and forget, not only emotions like anguish, anger or embarrassment that could be new obstacles in the human-computer interaction, but also the ambivalence and mixed feelings involved in any emotional experience.

APP. C EMOTIONAL USABILITY

Introduction

> *"Humans are not specialised animals, but capable of almost infinite adaptation. They are self-aware and constantly in search of increasingly powerful and sophisticated prosthesis to allow them to enhance their senses and overcome their physical or mental limitations. Mankind aspires to an idealised superhuman model, close to the divinity. We tend to attribute a spiritual and emotional value to the sophisticated devices that we create; we don't need those devices any more for our survival, they are created only for the satisfaction of our narcissistic desires. The conception, design and production of successful devices will almost inevitably appeal to emotional and narcissistic desires, which are now deeply rooted in human nature. Designers, artists, engineers therefore have to conceive hybrid products and services that satisfy emotional needs and evolving human desires, which are mostly centred on the enhancement of our physical and intellectual capabilities. The designers of hybrid objects and services should therefore explicitly recognise and understand their mythic and emotive affects, and not just the technological, operational and functional aspects"* (Deliverable Number D4.3.1 Title: Report on Workshop 1 "Beyond the gadget", CHIPS, Consumer Hybrid Intelligent Products and Services, Project funded by the European Community under the "Information Society Technology" Programme (1998-2002). www.chipsweb.org).

Traditional usability refers to the successful attainment of some predefined goal by a majority of users within a specified period of time and with a minimum number of errors. **Emotional usability refers to the degree to which a product is desirable or serves needs beyond the traditional functional objective** (Logan, 1994). Usable designs are not necessarily pleasurable ones. The field of usability design takes root in the cognitive sciences- a combination of psychology, computer science, human factors and engineering. These are all analytical fields characterised by scientific basis and experimental rigour. The hidden danger is to neglect areas that are not easily addressed in the framework of science and engineering (Norman, 2002), like aesthetics and enjoyment. Skills used when interacting with products may be considered on three interrelated levels: cognitive skills, perceptual-motor skills and emotional skills; knowing, doing and feeling. Affect and cognition can both be considered information processing systems with different functions and operating parameters. Both interpret and make sense of the world. Each system affects the other.

The surprise, pursues Norman, is that **we now have evidence that pleasing things work better, are easier to learn, and produce a more harmonious result**. Affect has a major impact on how well we perform tasks. For instance, a negative affect, like stress or fear, focuses the mind, leading to better concentration and reducing distractions. Positive affects broaden the thought processes, making us more easily distracted but also more creative. When people are in a relaxed situation, the pleasant, pleasurable aspects of the design will make them more tolerant of difficulties and problems in the interface. When we feel good, we overlook design faults. Therefore attractive things works better. Norman points out that this is a heretical sentence, not the usual message of people who espouse making products more usable.

Fun is a potent determination of subjective judgements of usability. Perceived fun, the extent to which using a software system is enjoyable in its own rights, can accelerate usage intentions if the software system is already perceived as useful. Perceived fun had an even stronger effect on users' satisfaction than perceived usefulness, as objective usability is not always perceived by the users (Hassenzahl et a., 2000). Caring about positive emotions is not reflected in traditional human factor practices. There is a growing interest in the HCI research community in fun and pleasure. But it is far from having a coherent understanding of what enjoyment actually is and how products and processes can address it. One reason is the subjectivity of enjoyment and the consequent suspicion of HCI researchers about the introspective, personal judgements of users. Beliefs, needs and opinions seem to be too fuzzy, maybe too contradictory, irrational and non-predictive to provide grounding for design decisions. This seems to be the same reason that orientates researchers and engineers in affective computing towards naturalist models of emotions. Both seem to forget the social character of subjectivity that allows a reasonable level of systematic understanding and prediction.

The entertainment industry has imposed fun and enjoyment as an important software requirement. But, beyond the entertainment applications, **is the accepted distinction between "work" and "leisure", "tool" and "toy" really useful?** (Monk et al., 2002). In regard to the social expectations quoted above (Lasen, 2000), the answer would be no. People expect self-fulfilling, friendly relationships, challenge and pleasurable enjoyment in work environment. Business communication uses the language of emotions to motivate workers and emotional intelligence in training. And professional software applications are inspired in games e.g. game-like, metaphoric cover stories for standard process control jobs as possible means of addressing boredom and vigilance, problems inherent to routine tasks. Like a UNIX process manager based on the shoot-em-up "Doom" (Chao, 2001), where running processes are represented as bloodthirsty

monsters in a dungeon and process priority is lowered by shooting the process monsters. The tools/toy dichotomy seems to be inappropriate and even misleading when it comes to design software systems. A more disturbing example of the collusion of toys and tools is when the Pentagon meets Hollywood. The Institute for Creative Technologies, a research centre in the University of Southern California, is bringing together defence research and Disney Imagineering for the design of US Army training simulators.

People are neither interested in a dull but useful tool, nor in a fancy but useless 'toy'. The challenge for HCI is to systematically address hedonic requirements and to combine them with goal oriented requirements. When designing devices, the need is also to take in consideration other situations beyond work and playing games. To be truly beautiful, wondrous and pleasurable, the product has to fulfil a useful function, work well, and be usable and understandable. Designs can be judged by their ergonomic quality, e.g. simplicity and controllability and also by their hedonic quality, e.g. novelty and originality. Ergonomic quality includes dimensions related to traditional usability, i.e. efficiency and effectiveness, task-related functions or design issues. Hedonic quality comprises dimensions with no obvious relations to the task the user wants to accomplish with the system, such as originality, innovativeness and beauty, although users may regard these qualities as important for their own sake. Both qualities, ergonomic and hedonic, are sometimes contradictory. The ease of use implies simplicity, which is partly incompatible with fun. For instance, if we agree that what makes computer games fun is a mix of challenge, fantasy and curiosity (Malone, 1981), each of these aspects consists of several principles and recommendations for designing, among those, principles both consistent and contradictory to the notion of usability. Providing fantasy is consistent with the idea of using metaphors to increase familiarity and thereby the usability of a system. But the principle to foster curiosity by designing a system that is novel and surprising is contradictory to the traditional conception of usability, as novelty and surprise must impair at least the external consistency of the software, a core principle of usability. In usability design fun may conflict with the task-related efficiency and effectiveness of the software system. What is needed is an extended concept of usability, which adopts enjoyment and satisfaction of the user as the major design goal.

The notion of emotional usability entails designing **user experiences** instead of merely making software usable. New design methods have been proposed in order to solve the limits of the traditional view of usability, such as that, regardless of functions, controls of current electronic products not only look the same, but also require the same actions. A 3-step method for designing **emotionally rich interactions**

(Wensvenn et al. 2000), that is interactions that rely heavily on emotions expressed through action, is an example of the change from product design into designing contexts for experience. “People should be able to communicate their emotions *to* the product, not at it” (Wensvenn et al. 2000). Design has to capture experiences in the right context, by the persons themselves in their own environment. Verbal questions alone cannot stimulate people to explore their emotions and experiences and nor can words describe them fully.

This method translates Picard’s three issues for affective computing to product design:

1. What are the relevant emotional aspects for a context for experience?
2. A. What sources of information on these aspects does the product have at its disposal?
   B. How can the product get hold of this information?
   C. How can the product communicate to a person that it received this information?
3. How should the product adapt its behaviour to the person on the basis of this information?

The pamphlet for action proposed by Djajadiningrat, Overbeeke and Wensveen, (2000) is an attempt to answer these questions, giving guidelines to design products suitable for rich and emotional interaction.

1. **Don’t think products, think experiences**. Users are not interested in products but in challenging experiences. The designer needs to create a context for experience rather than just a product. It must be **a context rather than an experience because designers cannot impose a particular experience to the users, who are bound to explore the design in their own manner**.
2. **Don’t think beauty in appearance, think beauty in interaction**, of which beautiful appearance is one part. ‘Aesthetics of use’ seeks cooperation with the object, which, it is hoped, might enhance social contact and everyday experience. Human Computer Interaction viewed as user-tool emphasises task-related considerations. In this case the only emotions that matter are task motivation, the satisfaction of a job well done, and the intrinsic pleasure of feeling in control of the interaction. Alternative to the tool model is a social model of interaction in which interfaces are deliberately designed to mimic familiar human social interactions. HCI as a partnership or collaboration between user and computer.
3. **Don’t think ease of use, think enjoyment of the experience**. Focusing on ease of use tends to encourage a narrow view of what ‘use’ is with respect to technology, emphasising efficiency and productivity over exploration and curiosity. With a correspondingly narrow range of models of usability, interaction tends to be self-

similar, mundane and boring. Aesthetics of interaction moves the focus from ease of use to enjoyment of the experience.

4. **Don't think buttons, think rich actions**.
5. **Don't think labels, think expressiveness and identity**.
6. **Metaphor sucks**. The challenge is to avoid temptation of relying on metaphor and to create products that have an identity of their own.
7. **Don't hide, don't represent. Show**. It is the designers task to make the physical components visible and make optimal use of them in the interaction process.
8. **Don't think affordances, think irresistibles**. The emotional aspect of the notion of affordance has been neglected. People can be attracted to act, even irresistibly, so, through the expectation of beauty of interaction.
9. **Hit me, touch me and I know how you feel**. If we design products, which invite rich actions we can get an idea about the user's emotions by looking at these actions. Triggered by the work of Damasio, designers are becoming aware that emotions are not a luxury, but a necessity in rational decision-making. Often this is translated into a need for sensors for physiological measurement, heart rate, blood pressure and skin conductivity. The interaction with physical objects opens up other ways of detecting the emotional state of the user. Our interaction with the real world expresses our emotions. The problem of this approach is that it skips the interpretation of emotions in a social context, sharing the illusion that the physical measurements can reveal the whole truth of emotions, as if the figures of blood pressure or heart rate alone could say if a person is experiencing fear, sorrow, hate or love.
10. **Don't think thinking, just do doing**. Handling physical objects and manipulating materials can allow one to be creative in ways that flow diagrams cannot.

Djajadiningrat, Gaver and Frens (2000) propose two methods for understanding design possibilities, beyond a narrow focus on usability. One is interaction re-labelling, in which possible interactions with a known mechanical device are mapped to the functions of an electronic device to be designed. The other is designing for extreme characters, in which fictional users with exaggerated emotional attitudes are taken as the basis of design to highlight cultural issues. These methods may help designers in considering physical interactions with products on the one hand, and the socio-cultural role their products will take on the other. The second case involves the design for an appointment manager, a handheld electronic device. The starting assumption of the project is that the device needs to have some idea of the user's preferences and feelings about each appointment. The extreme characters chosen were a drug dealer, the Pope and a promiscuous twenty-something woman.

The two techniques described in that article aid designers in achieving richness on the actions and role levels. Interaction relabelling tries to open up the spectrum of actions that can be used. It makes us aware of the richness of actions present in mechanical artefacts, which is absent in the controls of electronic products used in everyday life, from Hi-Fi to PDA. It also helps to explore how the interaction influences the relationship between user and product. Designing for extreme character tries to expose those emotions and character traits, which remain hidden in scenarios for supposedly real-life characters because they are incorrect or embarrassing. The technique reminds us that in order to design humane products, these 'undesirable' emotions and character traits cannot be disregarded as they are, after all, what makes us human. This technique integrates emotional usability by aiming to account for the different emotional styles of particular individuals.

In the same line researchers in Picard's team at MIT try to design **affective objects, which have the capability to change the way that people communicate, implementing aspects of non-verbal communication**. Through their sensing and expressing capabilities, they have the power to mediate and make visible things that are not normally communicated. They have the potential to change and augment what it means to communicate emotion, both reflexively to oneself and inter-individually to a conversational partner. In building expressive devices that use abstract modalities as communications media, they are guided by psychophysical and artistic principles. The "Touch Phone", described above, is an example of affective object designed by this team.

Examples of speculative design prototypes that explore non-instrumental values are presented in Gaver and Martin (2000). The design criteria are impressionistic displays, influence of the users in their environments, intimacy, insight, mystery and diversion from normal pattern of perceiving and behaving. The development of peripheral awareness devices in CSCW acknowledges the benefits of diversion that creates opportunities for serendipitous communication and for an increase of coherence in work groups. This awareness is being extended to new domains for intimate and community relationships (Gaver, 2002). In this case digital technologies move from the workplace to everyday life. When this change occurs devices should change their values too, as in the prototypes presented by Gaver, more sensuous and less explicit and symbolic than the systems used for peripheral awareness in the workplace.

Users' experiences with information technologies in everyday life imply **a shift from efficient use to meaningful presence** (Hallnäs and Redström, 2002). They become part of people's life, a part of who we are, how we live and how we express ourselves,

being more than “components of a continuously available toolbox”. The presence of these devices is not their mere physical existence in someone’s surroundings, but their existence in everyday life based on an invitation and acceptance from the users. For instance, the mobile phone has become a personal object invested with emotional attachment and is not just a tool for communication. They have become a part of someone’s life. There is a proper place for them in our life world. These aspects are not taken into account by functional descriptions that focus on general objectives of use without any reference to the specific person who uses them in some specific situation. A description based on a device’s presence in someone’s life is related to a particular meaning given to a specific unique thing. **Presence depends on how the device expresses itself as we encounter it in our everyday life. “A thing always presents itself through its expressions”. Therefore the authors propose thinking of artifacts as expressionals, as bearers of expressions rather than functions**. The act of acceptance is a matter of relating expression to meaning or of giving meaning to expressions. This perspective places aesthetics at the centre of design. Aesthetics does not mean the creative or artistic surface of the devices, but it is about how their expressions form an identity that makes the “meaningful building blocks in someone’s lifeworld”. Aesthetics is understood as a logic of expressionals. Focusing on aesthetics when designing entails focusing on expressions as a leitmotif for our understanding of the device. Use and presence are complementary perspectives to describe and define an artifact. According to Hallnäs and Redström, thinking in terms of presence opens up new design spaces. Digital devices lose their unique position and become one out of the many different materials we use to build everyday life. This perspective tries to expose basic aesthetical choices involved in designing for presence. For instance, waiting, being connected, being open for communication, communicating when in motion, etc. are elementary acts of mobile phone use, whose expression should be carefully taken in account when designing a phone as an everyday thing, present in people’s life.

C.1.1 Summary

Emotional usability extends the realm of the traditional way of understanding usability, adding pleasure, aesthetics and fun. This concept acknowledges the obsolescence of the tool/toy view applied to digital technologies. It entails new ways of conceiving technological design, less design of objects and more design of context for experiences involving emotional aspects, taking in account the specificity of the different users. In the user's experiences, devices not only have functions but also expressions that derive from their presence in the users' everyday life. This is a new way of understanding design that adds to the traditional engineering and scientific skills the support of psychology, sociology and arts.

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Wireless Future Studies

WFS

This book presents the work of Amparo Lasen, the Vodafone Surrey Scholar, who was funded by Vodafone Group Research and Development at the Digital World Research Centre (DWRC), University of Surrey. Starting in September 2001, the work ran for three years, and explored historical, cultural and emotional factors in understanding mobile phone users and usage. It was grounded in previous research carried out at the Digital World Research Centre, and in particular, a DTI-LINK project called STEMPEC (The Socio-Technical Shaping of Multimedia Personal Communications) supported by Vodafone and others.

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