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The Influence of Mobile Phone Users on the Design of 3G Products and Services

This article discusses some examples of the social practices that dominate the ways in which many people have appropriated mobile communications. It will explore how these behaviours might have a bearing upon the arrival of future 3G (third generation) mobile communications products and services by examining how, alongside the continued demand for innovation and design in mobile communications, some very simple functional, economic and emotional needs are defining the basic requirements for mobile communications.

available but also by the ways that people have incorporated the mobile phone products and services into their everyday lives. Events such as the mass-market adoption of texting (the short message service (SMS)), the rejection of WAP (wireless application protocol) in the 1990s and the current obsession with camera phones, albeit for taking and showing rather than sending images, are all examples of the ways in which people have sometimes reacted to new services in ways unintended by developers. People have rejected, appropriated and sometimes embraced, mobile phone innovations. In so doing, they are shaping some of the design of future products and services delivered on 3G technologies.

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Introduction

The development of the mobile communications industry has to date been largely driven by the decisions of suppliers and regulatory frameworks. This is demonstrated by the evolution of several generations of mobile communications technology from the simple analogue voice-only services of the 1970s and 1980s to the digital multimedia voice and data services of the present day. The changes in the technology have been generally appreciated by users except, perhaps, those who experienced loss of service due to the closure of the analogue network or the redundancy of their mobile device. The current transition to 3G capabilities and its plethora of potential new products and services is yet another example of a new technology needing to find new applications. However, in this instance, since the old mobile technologies co-exist and indeed prevail, for the time being at least, there has never been a greater choice of services over a mobile phone.

This current portfolio of mobile communications services has, arguably, not only been shaped by the technology made

Social Shaping of Technology

There is little doubt that the development of new mobile communications technologies is having a bearing upon people's everyday lives, but the question is always to what extent, in what manner and at what level. At the same time, the ways that people are appropriating the new products and services has a particular impact on how much of the technology is actually adopted and how much is discarded. From the combination of influences, these technologies have been the enablers for the new jargon of the text message, the reportage of public and private events via camera and videophone, as well as the e-mail connectivity that keeps businesses in contact.

The mutual shaping of technology and society is a concept that has found credence only since the early 1990s[1]. Indeed, the idea that the social practices of people might actually shape the use, and even the ultimate development paths, of these new technologies as much as the technologies themselves might shape social practices is still anathema to some who believe that technology is invented independently of

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society and imposed upon it. The reality is that new technologies such as 3G are actually born out of a multitude of activities and events that extend beyond the simple specification of a technological capability. Indeed 3G will encompass more than simply the products and services enabled by new international standards, themselves adopted to deliver services such as new content and gaming over broadcast media. Moreover, as noted above, once made available new technologies can be used in unforeseen ways, which equally include being rejected and being embraced in ways and to an extent that had not been anticipated by developers[2]. Hence, in this article it is argued that the existing social practices of mobile communications users will shape not only the adoption of 3G but determine also its further technological development. This will occur in the same way that, for example, the short message service has evolved from a network management tool into a messaging service delivering over 25bn texts in 2004 in the UK alone[3].

These are not the only examples of how the use of mobile phone services was influenced by the pre-existing circumstances of eventual users. Looking back to the first public mobile phone services launched in the mid-1980s, technological design did indeed shape the initial service offering. However, despite the limited software capabilities of the first networks and their associated billing systems, what they did also was to make mobiles available to a far wider range of people. These people now had affordable access to a similar mobile phone service to that which had been available for many years to only a very few. The original service, available via private mobile radio (PMR) systems, had already established a *modus operandi* for mobile communications from which users of the new mobile phones in the mid-1980s could learn. The sense of exclusivity of the first private car-phone service designed for the business customer was expanded to a wider market by mobile phone companies. The newly launched mobile phone products were branded and targeted as business-only services, a situation that prevailed for over five years. People who used PMR were already fulfilling a desire to be in contact with work colleagues and friends when they were away from a fixed phone point. The new public mobile phone service not only met their existing need through a new system but also made the service available to many more people. As a consequence of the virtually ubiquitous mobile communications service in the UK, today's public telephone boxes and paging services are now almost obsolete.

The recent introduction of the 3G technology for mobile communications is already finding its place among the wide range of existing offerings. The 2.5G services of camera, videophones and e-mail have established the ground rules for the adoption of the more advanced mobile phone capabilities. In particular, people buying the latest phones use digital cameras and the personal computer as their exemplars, their reference points, building upon the existing practices developed in relation to older technologies[4, 5], specifically in relation to the camera phone[6]. As a consequence the market for some older technologies has itself been affected. The thirty-five mm camera is being withdrawn from sale in the UK high street in favour of digital models, sales of which have been affected in turn by camera phones[7].

Similar exemplars will again be sought to respond to new 3G services, but there is no guarantee that those new services will be adopted because of their similarity with past services, especially if people are reluctant to relinquish that with which they are familiar and at ease. The earlier brief account of some of the developments of mobile communications in the UK shows how mobile communications technology and society are so closely intertwined, each influencing and shaping the other at every new stage of evolution[8]. One additional message from that history is that, overall, mobile phones created an addition to people's lives rather than simply substituting for previously existing telecommunications options. On the one hand, pagers may become obsolete, public telephone boxes used less, and some fixed line calls have switched to mobiles. Yet fixed lines are still used and the availability of the mobile has led to many new communications that would not have been made before. The result is that mobile phones have expanded the ecology of communications technologies, and in so doing have become as important to work, family and personal life as the fixed phone and other communications systems. Analysis of the taxonomy of the mobile phone in earlier studies put it thus: 'In simple terms, the history of the mobile can then be described as, first of all, a period of individual business people pulling the technology; second, their success leading to a period of business management pull, which resulted in a sufficient level of familiarity with the general public, for a third period during which the consumer at large adopted the technology very rapidly; fourth, this eventually resulted in the situation we have now where having a mobile phone is virtually a social necessity'[9].

Social Influence of Mobile Phone Users

The exclusive business-only car-phone products of the 1980s are a far cry from the handheld, hands-free, mass-market, multi-mode mobile devices of today, but the pattern of adoption for each new layer of service capability remains much the same. People observe and experience the services used by others and absorb those aspects that are relevant to them. Research by the Digital World Research Centre (DWRC) suggests that there are three key social factors that would appear particularly to influence what people discard or do not use as well as what they decide to adopt. These are:

- firstly, the functionality of the service – what people use the mobile phone for;
- secondly, the economic factors that determine how much they can spend on services;
- thirdly, their emotional response or attachment to all that the mobile phone engenders.

These key factors are discussed in more detail below.

Functionality – what people use the mobile phone for

Research carried out for the UMTS Forum published in 2003[9] and 2004[10] examined processes that contributed to the social shaping of 3G by exploring the current ways that people use mobile communications services. A key finding was that mobile devices are, in general, not used to contact people the caller does not know but instead they enable more intensive relations with already existing social contacts. People are using their mobile phones to talk and text people they already know and these are mainly for social purposes – friends and family, keeping up with the action, etc. Similarly, if calls are made to business contacts, these are mainly contacts that are already friends and close colleagues; they are, in other words, keeping in touch, not necessarily doing new business.

In this sense, mobile phones are essentially personal devices, sustaining personal lives and commitments. The slow take-up of data services (texting excepted) demonstrates that person-to-person functionality is valued more highly than person-to-information functionality. The mobile phone has become so closely associated with friends and family and with social connectivity that it has become indispensable and, for some, too valuable to lose. In some cases, this includes the very communications to those phones. Text

messages are kept and not deleted if they hold a special meaning – some teenagers were found to regularly transpose their text messages on to their computer and have kept a record of them all[11].

Looking to the future, it was encouraging to find in the UMTS study[10] that users were willing to try out new things. These 'user explorers', so-called to distinguish them from technology experts and enthusiasts, were of any age and could be business or personal users. However, this willingness to adopt new ideas was tempered by the reluctance to discard old ways of doing things (often as back-up), especially in businesses where a variety of ICT is used simultaneously or piecemeal. This was the same for children and adults. In addition, they expect things to change, but they do not necessarily have any ideas as to what future mobile communications might be like. Yet, they do expect that there will be additional services and new handsets at least once or twice a year[12].

People appear to be less interested now than in the past by how mobile communications work or whether they can understand how to use it. They know now that they do not need to understand the technology in order to make the mobile phone work and suppliers have also provided easier-to-use interfaces. However, some respondents in the UMTS studies[9, 10] complained about the difficulties of setting up their mobile to use data services and suggested that it required more than a casual knowledge of the technology to interpret the instructions. Most people use their mobiles for the basic services of text and voice and, as is examined in the next section, they develop strategies for making the most of bundled packages and negotiate shared access of all types of ICT within their household and business groups to ensure they optimise the mobile phone services. This willingness to embrace the new while finding ways of keeping hold of past practices is fundamental to understanding how 3G will be adopted.

Economic factors – how much people spend on their mobile phone

Examining the social practices of mobile phone users in more detail, DWRC explored how their household and personal expenditure influenced their use of the mobile phone[13].

Special analysis of the Family Spending Survey for 2002-03[14] showed that only half of households with mobiles reported spending on them. It appears that while in some cases this was because others paid for these phones (such as employers), in other cases it was because they used the phone very little. Those households that did report spending on their mobiles spent on average £9 per week, or some £500 a year.

A group of special note here are children. The Family Spending Survey for 2003-04[15] shows that children aged 7–15 spent on average 50p per week on mobile phones, out of a total weekly expenditure of £13. Girls aged 13–15 are the biggest spenders – £1.50 per week out of £21.50. DWRC's own research on children aged 11–16 years showed that the cost of the phone was split between them and their parents – and they were indeed very price conscious. The mobile phones were not paid for by the children, who received them as gifts or when other family members handed them on as their own devices were upgraded. The children would make short voice calls such as to request a lift home or to say where they were, and used text messaging with their friends. Long voice calls were made on their home fixed-line phones or by using voice over Internet. The children also participated in the elaborate strategies that were found to have been developed for optimising tariffs and sharing devices within the household, and among friends.

Previous research in the 1990s had indicated that for many people the size of the fixed phone bill was an issue, leading to complaints within households and, for a substantial minority of households, efforts to ration usage[16]. The UMTS study[10] indicated that this same process was still at work as people's communications increased and tariffs became ever more complex. Once again DWRC found discussions within households and sometimes decisions to switch tariffs and operators because of cost issues[17]. This decision was sometimes influenced by the offer of free calls to social network members with the same operator. Although we know that overall people do not use up the free minutes associated with their packages, some individuals and households clearly did try to optimise them, especially where bills were an issue because their total communications had increased. Certain households time-shifted their calls on the mobile and fixed line to take advantage of the times when calls were free. These were only some of the more common tactics, but there were household-specific ones as well, depending on the degree to which costs were felt to be getting out of control.

If we turn to another technology, the camera phone, this and other studies[16] were suggesting that at least in the early days people were not incurring the costs of sending MMS (multimedia messaging) but

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often simply showed pictures they had taken to people they were with. Alternatively the pictures were downloaded to a PC via Bluetooth and/or sent as attached files with e-mail. More research on this topic is needed, but it is suggested that these practices may be due as much to costs as they are to problems of interoperability or simply to not understanding the unfamiliar and expensive tariffs for MMS. The implication of all this is that only a limited number of people are going to adopt and use 3G services whose price is set at quite a high level. Where people are concerned about communications costs, they are at best only going to be willing to adopt something that adds incremental value. Indeed, in order to make people familiar with the technology and let them explore how it might be useful in their particular lives (as well as showing benefits to social networks by demonstration and word of mouth), then perhaps there should be a free or heavily discounted trial period for some new services.

Emotional response – people's attachment to their mobile phone

The UMTS Studies[9, 10] found that mobile phone users appear to have a more emotional relationship with their mobile device than they do with other computational or communications devices. This manifests itself in a variety of ways. Apart from the tendency to use person-to-person services in preference to person-to-information services as discussed earlier in this article, it is important to observe the very ways that people talk about the device. People tend to use emotional terms to describe their experiences with the mobile phone such as, 'We often have panic situations when the battery runs down', or 'I love it because we are not restricted' when talking about being able to phone friends wherever they are. The mobile phone itself is an inanimate object and as such it acts as a conduit between people who already have some form of relationship and especially between those who are close to each other. The mobile phone leads to the feeling of being near to loved ones described by some as having a sense of on-going 'connected presence'[18]. Knowing that friends and

family can be contacted with a few keystrokes means that people remain as if tethered to each other by their mobile phone. Being alone no longer means being on your own as one can be geographically isolated from other people but still in contact via a mobile phone[19]. Indeed, for some people it has become almost an extension of their body as they hold and fondle the device even when it is not in use.

People's relationships with their mobile phone extend also to the information contained and stored in the device itself. The personalisation of the device begins the moment the SIM card is inserted and preferences are chosen for call diverts, messaging services, ring tones and more. Additionally, the device will contain a record of telephone numbers, e-mail addresses, notes, diary dates, pictures, video and sound clips and much more that is unique to the user. While some of these can be replicated by back-up devices, not all the personalisation of the mobile phone can be retained and once lost may be irreplaceable, a fact that does not go unnoticed by the users. Some people find that their mobile phone has become so valuable to them that they leave it behind at home if it is at particular risk of being lost or stolen, such as at a nightclub or on gym day at school when changing rooms are the target of thieves.

It could be argued that people's attachment to their mobile phone is a result of their relationship with others, for using a mobile phone is not usually a solitary preoccupation. The increasing range of computer games on mobile phones has, however, introduced a new dimension to the device which may add an extra layer of attachment, one that is solely between the device and the owner and may not involve a third party. In the aforementioned study on children's use of mobile phones and ICT[12] it was found that boys and girls used their mobile phones to play games, even if they did not play games on their PC or a games console. The children expressed dismay at the realisation that new mobile phones may not have familiar games on them or that they may have to pay to download games, both of these being examples of ways in which they had become emotional about the

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content their mobile phone delivered. This desire for the familiarity of old computer games on new devices is a key learning point for the design of new products and services. People become attached to the old ways of doing things and although they are happy to embrace the new expect to do so in the context of familiar surroundings. The examples of this found among the children also included favourite ring tones as well as the familiar text messaging and voice call services that they expect to find on any new device.

Although people's emotional response to mobile phones may, in extreme cases, result in the value paradox of the device being left at home because it is too valuable to lose, in most cases it is about the attachment people feel to the emotional responses that using the mobile phone provokes. It is also about the need for familiarity of products and services so that the device, and new devices in particular, can be used quickly and easily to keep in contact with friends and family.

Conclusions

This article has explored, through the examination of research by DWRC and others, the ways that people have appropriated, rejected and shaped new mobile communications services and in so doing it has highlighted some specific examples of social practices that should be taken into account in the design of future 3G products and services.

Firstly it has been argued that people will expect to use their 3G products and services to meet their every day needs but these services have to build upon the ways in which they have always conducted themselves. For example, mobile users will want to talk to other people, mainly friends and family, the difference being that they may now want to enhance this with text, taking pictures and possibly video too. They may also want to extend their repertoire to include games, broadcast services and the Internet but it is likely to be the services that enable person-to-person connectivity that will have priority.

Secondly, it is important always to remember that a significant influence on the use of the mobile phone is the amount of money that is allocated to the bill each month. As was found in the research, people will curtail their use of the mobile phone when money is short but they will not give it up, ensuring they maintain the ability for the person-to-person connectivity because the mobile phone has now become such a vital tool in their everyday life.

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Finally, it has been argued that the emotional response that people have to their mobile phone is a likely key influence on their future adoption of new services. Mobile phones have now become indispensable for many users and for some too valuable to lose. People speak about their mobile phones in emotional terms and have become attached to all that they engender, especially the feeling of connectivity with friends and family. This emotional attachment appears also to extend to the familiarity of some services on their device, such as favourite games and ring tones.

Recognising the social practices of people who use mobile phones today is key to the successful design of new products and services. Designers of 3G should thus be cognisant of the very simple functional, economic and emotional needs discussed in this article and that have been shown to form some basic, and fundamental, requirements for mobile communications services.

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