The new information and communication technologies (ICT) have become common in advanced societies. Particularly the number of portable appliances used in working life and leisure activities has increased remarkably. In 2002, about 80 to 90 percent of households in the Nordic countries owned at least one mobile phone (Nordic Information Society Statistics 2002). More than half of Europeans used them regularly at that time (OECD 2002). More recently, consumers have become familiar with personal digital assistants (PDA), communicators, digital cameras and MP3-players. However, many social scientists consider that the ‘mobile revolution’ is yet to come. It is believed that only the large-scale use of audiovisual (AV) materials on mobile platforms can make it happen.

In general, the proliferation of ICT has generated many visions about radical changes in social life. ICT is argued to influence not only people’s use of time, but also their career opportunities, community involvement and social networks. Access to new technical appliances is likely to influence significantly people’s social practices either directly or indirectly (e.g., Liewrouw 2001: 22-23, Wellman et al. 1996). Perhaps the most visible effects relate to working life. It has been argued that ICT will eventually diffuse the distinction between work and leisure, because employers are no longer dependent upon physical locations or office hours (e.g., Rojek 2000: 90-91). At the same time, the new technology also permits work to become part of leisure time. At least in many white-collar jobs, it has already become the norm to spend long hours at the office or at home connected to the Internet. It is likely that mobile appliances, too, support this trend (e.g., Andersen et al. 2003, Blom et al. 2002). The mobile phone constitutes an effective way of keeping employees always at hand.

But besides the ongoing changes in working life, mobile technology also enables people to move, obtain information and interact with each other without physical restrictions. In this sense, the new mobile technology has been characterized as breaking down the ‘chains of time and space’ (e.g., Kopomaa 2000, Mäenpää 2001). It is argued that the notions of shared experiences and emotions constitute an important part of this. With a mobile phone, one gains the freedom to make and receive calls practically anywhere. However, in addition to increased opportunities for social interaction, wireless communication also provides sources of entertainment and information. This means that television programs, movies or Internet sites can all be transmitted to phones, PDAs or other mobile platforms. The wireless solutions represent more immediate sources than did previous solutions, because people can use the media contents wherever and whenever they want.

It is feasible to assume that the new appliances and the growth of media choices create better opportunities for information retrieval and entertainment enjoyment for consumers. For example, information ranging from the books available at a library to the changes in the television schedule may be accessed most effectively through the Internet. In many cases, it is helpful to have access to that information when one is moving outside the home. The thought of having access to favorite television programs in, e.g., public places or cafeterias is also appealing.

The new appliances make entertainment available regardless of location. Most contemporary network and content providers assume that even the transmission of television programs and movies to
mobile platforms will be relatively unproblematic. They also seem to assume that consumers will be willing to watch movies and other typical television content on their mobile appliances. But we consider that these assumptions are not realistic. There are many conceivable restrictions on the utilization of AV-material on mobile platforms. Both the transmission of required data over a wireless network and particularly the required conditions of use may become highly problematic.

This article discusses some of the restrictions on the mobile use of AV-materials. By AV-material we are referring to full-motion picture with sound. Thus, our aim is to offer theoretical grounds for the notion that use of video recordings, television broadcasts and other related multimedia presentations on mobile platforms may be highly problematic. While this article relies on the idea of a ‘typical’ pattern of mobile phone use, we believe that it contributes more generally to the prospects and restrictions of testing AV-content on the wireless small-screen platforms.

First, we take a short look at the criteria for adopting new technologies and at the changes some argue new technologies have had in our everyday life. References are made particularly to the Nordic research literature. Subsequently, we examine how the mobile phone is typically used and ask what kind of restrictions there could be on the exploitation of AV-materials.

**Proliferation of ITC in Advanced Societies**

The basic criterion for adopting any new product is that consumers use the required appliances and software. In general, the reasons people start using certain products are linked to price, complexity and the relative advantage and usefulness of the products. Briefly, some products are cheaper than others, easier to use or provide other advantages that make them suitable for particular purposes. However, there are considerable differences in the rate of implementation of technological innovations. This suggests that to understand the adaptation process, it is important to know a few things about the technology itself.

One way of explaining the process of technological adaptation derives from the perspective of diffusion theory. Everett Rogers (1986), for example, proposed that the characteristics of new products, as such characteristics are perceived by members of society, determine their rate of adaptation. According to him, there are a total of five important attributes of an innovation. These are: 1) relative advantage, 2) compatibility, 3) easiness of use, 4) reliability, and 5) observability. According to diffusion theory, these five attributes explain the success of any new form of technological innovation, how comfortably and easily it fits into people’s life (Fidler 1997: 12-13). Briefly, this means that, in society, there are groups of earlier and later adopters of the technology who perceive the benefits of the new products differently. ‘Early adopters’ are immediately able to exploit or make use of something new. ‘Late adopters’ are likely to use new products only after the general attitude toward adopting them has become positive.

What eventually explains the success of the new products depends on the consumer segments. Adaptation of technological innovations is a function of people’s willingness to try new products (Hargittai 1999: 704). This is why consumer attitudes often play a crucial role here. The influences of early adopters are essential to any new consumer product or service; early adopters convince the overall market to become adopters. Individual economic and socio-cultural resources are among the most important factors determining which group a person will belong to. Especially young, highly educated and wealthy people are often placed in the centre of potential early adopters of ICT. A high level of education has also been associated with frequent use of various technological appliances such as computers, the Internet and mobile phones (e.g., Henderson et al. 2002, Rice and Katz 2003, Wilska 2003). In addition, some people naturally have generally more positive attitudes toward technology than do others.

In general, it is reasonable to assume that the perceived characteristics of technological innovations at least partly determine their rate of adaptation. In contrast to the old technology, the new alternative must offer certain benefits. Again, mobile phones may be used as an example in this respect. They may be viewed as more advantageous than wired telephones simply because of the increased mobility they provide. But despite the attractiveness of diffusion theory, it is clearly too much a technology-oriented approach. It rests on the idea that all successful innovations will finally be implemented by most people in society. As we know, however, this is not always the case. Some devices may never gain widespread acceptance, but may still be rather successful. Electric toothbrushes or razors, for instance, represent these kinds of innovations.

It is often fruitful to consider how potential users make sense of the implemented technologies. After all, people use technological devices only when they...
consider that products and services will have some significance in their life. What kind of characteristics we can identify in the use of typical mobile appliances? Which characteristics make them significant and valuable for consumers?

**Empirical Studies of Characteristics of Mobile Technology Use**

The new mobile ICT are changing the patterns of communication, time use and how these patterns are organized in everyday life. The most widely used mobile appliance is, of course, the mobile phone. There is no doubt that it is a very powerful and cost-effective communication tool for most people in advanced societies. In addition to offering the freedom of making and receiving calls anywhere, a mobile phone can be a real timesaver for those who need to be in touch with others at all times. There is also a body of empirical research on patterns of mobile phone use.

Many studies have shown that the mobile phone has influenced particularly the lifestyles of young people. According to Terhi-Anna Wilska (2003), the combination of private telecommunication and hanging around in public places has become a new, appealing way of keeping up social networks for the under aged. It is easy to imagine that by using mobile phones, young people are able to have more ‘privacy’ in their lives. Parents have only limited opportunities to control children’s activities, because they do not necessarily know who their children’s friends are (Wilska 2003: 442). Phones enable teenagers to choose who to include in their circle of close friends and who to exclude. This may be accomplished simply by answering or rejecting certain calls and sending text or SMS-messages. Moreover, many additional functions such as new logos, skins and ringing tones may be used to personalize the phone. In this way, mobile phones may have some importance also at the level of social identity formation (Skog 2002: 270, Kasesniemi 2003: 95-103, 217-222). According to some, mobile phones enable people to live as if they were in two places at once (e.g., Mäenpää 2001: 119-120, Kopomaa 2000).

Naturally, the patterns of mobile phone use differ considerably across individuals. Not even young people should be viewed as a homogeneous group of users. In general, however, mobile phones may be considered almost as ‘standard accessories’. Practically everyone who is familiar with using a telephone knows also how to use a mobile phone. Consumers feel the basic functions of the mobile phones are comfortable and easy to use. This partly explains why mobile phones have diffused so quickly in advanced societies. In many ways, the mobile phone also constitutes a private communication tool: the service is intended for one user only. It is also expected that the subscriber will answer the calls personally. In recent years, features such as a clock, calendar and others have made phone use increasingly versatile. Perhaps the improvement of audio feedback possibilities and photographic options have made mobile phones serious competitors to digital cameras and Minidisc-players. At any rate, multimedia messages (MMS) including still images are now one of the most advertised additional services throughout Europe.

Because mobile phones are already rather diffused in advanced societies, they cannot reflect one’s wealth or social status. This is probably one of the reasons why consumers have become interested in other mobile and portable devices. PDAs and other palm-held computers are of importance here. They may be used as a notebook or a calendar, and more recent versions allow access to the Internet. PDAs have been considered particularly as practical news media in many mobile contexts (e.g., Räsänen and Kortelainen 2001, Kallinen 2002). Though they may not become ubiquitous as fast as conventional mobile phones have, they are becoming clearly more multifunctional. They are in wide use in many workplaces using wireless local area networks (WLAN). In this sense, it is reasonable to assume that typical patterns of mobile phone use will concentrate on phone calls and SMS-messages also in the future. Recent user statistics support this kind of interpretation. Many of the more advanced additional services such as MMS are used extremely seldom in the Nordic countries (see Nordic Information Society Statistics 2002). Perhaps other mobile platform appliances can provide more compatible platforms for certain additional features?

There is also a body of research on mobile technologies besides phones. Unfortunately, however, the use of other devices has not been studied in everyday contexts. Empirical studies usually focus on how users perceive the new technology they are using or on what kind of attitudes users have toward certain products and services (e.g., Laarni and Kojo 2001, Räsänen and Kortelainen 2001). Despite this, the results are relatively consistent in a sense that users often make comparisons between new technologies and certain older technologies. Such comparisons are made even when respondents are directly asked to abstain from making them. For example, watching streaming video messages on various types of pocket screens is often compared with watching television (Repo et al. 2003), and using
news services on a PDA is often compared with conventional web pages (Isotalus et al. 2002).

We may consider that earlier experiences have considerable effects on current experiences when users encounter a new type of medium or technology. On the one hand, this suggests that familiarity is a key feature when adopting new technologies. On the other hand, however, new products and services are likely to be used only when they are experienced as more advantageous than other products/services, i.e., when they are seen in a comparative light. Features that are new or improved in comparison to earlier technology may make innovations successful. In this sense, we can refer directly to the implications of diffusion theory. Perceived usefulness and easiness of use are crucial factors in making new technologies appear user-friendly. These factors cause user needs and the possibilities of a technology to meet.

As discussed earlier, mobile ICT are often argued to provide a sense of time saving. It is clear that making a phone call on the way to work may save time for other things. Simultaneously reading an email message on the move, for example, may have similar effects. However, in the description of these occasions, the role of context or environment should be seen as very important. Under certain circumstances, we feel free to take a phone in our hands, but sometimes this is not possible at all. In other words, while different mobile services may be used practically across all contexts, when and where to consumers actually have the need to use them?

We consider that type of content is one of the general components in the analysis of different mobile contexts. Particularly in the case of AV-material, it is important to consider how materials should be presented across contexts. Needless to say, watching the nine o’clock news, a football game or a feature film from a pocketsize mobile television sounds very appealing. TV-like content could provide consumers with entertainment during boring situations as well as the latest news. While this may be true, we believe that there are essential technological and situational problems in utilizing moving picture and sound in almost every context. What are the prospects of exploiting AV-materials in different mobile contexts? What kinds of restrictions exist?

Value of AV-materials Across Mobile Contexts

We consider that there are problems associated with use of AV-materials in mobile appliances. This applies both to entertainment and informative materials. Paradoxically enough, the mobile context may be an obstacle to moving images, although mobility itself is easily considered a characteristic of public utility. Mobility per se is not an extra value that automatically improves any service. A main criterion is whether a certain feature or material is useful in a mobile context: if people feel they need it while they are on the road.

Typical of mobile communication is that it interlocks with and merges into everyday actions. The communication is temporally spread out, either because it occurs between other things or simultaneously with other things. Particularly typical of mobile phone use is that one talks into the unit while walking or driving a car. Text messages also enable communication in situations where no sound or conspicuous action is allowed. Messages may be written while at church or attending to a lecture. Other pocketsize communication devices are easy to use anywhere and any time, so generally speaking work efficiency increases and apathy decreases.

Yet is secondary mobile communication possible if the content is in audiovisual form? Spreading attention across several things is problematic, at least when it involves looking simultaneously at several targets. This is why it is almost impossible to write text messages while walking in foot traffic, which is a common situation, unless one can use the keypad without looking at the keys. In other words, exploiting AV-material is difficult while moving from one place to another, except in the case of public transport, where the passenger’s attention is not required.

Watching a moving image with the technical equipment available today while the viewer is also moving is practically impossible. It is most unlikely that, in the near future, visibility can be connected to mobility in such a way that it would correspond to the typical mobile phone phenomenon of ‘walking and talking’ on the phone. Perhaps the moving image is after all ‘transmitted’ entertainment or information transfer, and not really mobile. One is more or less free to choose where to watch, but the content in AV-format is transferred from one rather static situation to another, instead of maintaining constant availability. However, if the AV-content is short enough in format, it could be used to fill short breaks during the everyday routine. Then the potential watching situations would increase, and we would be nearing mobile use.

The mobile context also inevitably creates situations in which private and public life spheres collide (e.g., Puro 2002: 23-24, Nafus and Tracey 2002). This means that private matters are increasingly dealt with in public situations. Using a mobile
phone in the presence of strangers no longer receives a great deal of disapproval. But what happens if, for example, one is watching the news in the bus? If earphones are not used, it is inevitable that embarrassing situations will arise both for the viewer and the bystanders (Repo et al. 2003: 14). Even if earphones are used and the viewing is not heard by the bystanders, the user may not want them to see what is being viewed on the display window.

Regarding entertainment, the AV-format may be generally viewed as controversial. A portable device offering entertainment is without doubt interesting. People often want to have a break from work or escape boredom. Thus, the thought of being able to watch TV-serials during lunch break may sound appealing. Yet relaxing, which is the main goal of entertainment, is hardly possible in the mobile environment, at least not in the same way as at home on the couch, close to the fridge and microwave. It may be claimed that entertainment can probably function as useful content only temporarily (e.g., while waiting for the bus). In this case as well, the content should be shorter in format and faster in tempo than traditional TV entertainment, for example.

The exploitation of mobile images is limited by, in addition to context, technical aspects. It may be that in practice we are far from real mobility, that is, a situation in which AV-material is carried with us everywhere and available all the time. The benefits of wireless devices may be limited to urban areas if the wireless net does not cover areas outside population centers. The durability of the battery of the device may be a source of problems. Watching a full-length movie would probably require connection to the electric net, which may not be possible everywhere – especially in transport vehicles and outdoors. Additionally, the technology per se may restrict viewing enjoyment if the qualities of the screen (e.g., screen size and resolution) are not optimal or if the memory capacity is not large enough to run moving images smoothly. Picture quality should be taken into consideration, together with sound quality. According to many studies, problems related to these aspects are felt to cause more disturbances than in AV-material (e.g., Laarni and Kojo 2001: 113, van Schaik and Ling 2001: 520-521, Repo et al. 2003).

The technical properties of the devices also limit the secondary use of AV-content. Mobile or moving images do not automatically make time use more efficient, because people’s ability to do several things simultaneously and in an interlocking manner is limited. If one must accomplish something else while watching the screen, at least one’s hands should be freed from holding the device. This is why hands-free appliances became compulsory auxiliary devices for drivers using mobile phones. Thus the different ‘multitasking’ features can be problematic, both regarding attention focusing and the physical limitations of use. When a person’s sight and hearing are occupied with something, it is difficult for him/her to orientate to yet another thing. Thus, viewing AV-entertainment while, for instance, riding a bike requires a device that maintains its position in the field of vision automatically and content that does not demand high concentration or simultaneous attention to picture and sound.

While discussing the moving image and its commonness in mobile devices, we must ask critically whether AV-material is capable of attracting users as a form of information transmission or entertainment. Even though it is true that a moving news image can transmit more information than plain text that is heard or read, it is often less trouble for the user to use text-based information (e.g., Anderson et al. 2000, van Schaik and Ling 2001). When information needs to be accessed rapidly via a mobile device, the text-based web sites are far easier to use than is AV-material, for example (Repo et al. 2003: 26-28). There is no better way to show news that arouses strong emotions than the television-like broadcast. Images such as the collapse of a skyscraper in a terrorist attack or the farewell party of a renowned newscaster are considered situations one simply must see. It is, thus, not enough to be told afterwards what really happened. Moreover, important news images are shown on TV several times during the same week.

The exploitation of AV-material in the mobile environment is clearly restricted. All previous interpretations are not based on strong empirical evidence. The information presented here, however, is partly supported by empirical studies and conclusions based on theory and observations of everyday life. Consequently, it is possible to present a short summary of the factors that, in the future mobile environment, will probably need to be evaluated with respect to mobile image use.

**Next Phase in the Mobile Revolution?**

The issues discussed above offer valid considerations of why the use on mobile platforms of video recordings, television broadcasts and other related multimedia presentations may be problematic. The process of acceptance of new appliances and service forms as part of everyday life is quite slow, although different PDA appliances have rapidly become com-
mon during recent years. Moreover, regarding AV-material, use of mobile devices entails two types of problems.

First, there are the problems related to the limitations set by the context of use. Generally speaking, it is often difficult to follow mobile images and sound while the user her-/himself is moving. The potential situations of use are mainly when the user has stopped momentarily or for a longer period. One of these context-bound problems is also the fact that it is hardly possible to follow AV-material efficiently while doing something else. Thus, the backside of the efficiency of content presented in AV-format is the fact that attention cannot be directed at anything else that is going on.

Second, there are always the questions linked to the utilized technology. The quality of transmitted images, for example, may not yet be good enough for most potential consumers, who have become accustomed to television and web quality. These are naturally technical problems that are more likely to be solved than the problems related to the mobile context. However, according to the interpretations presented here, it would seem that the design features of wireless appliances must be carefully planned considering their possibilities for and restrictions on use.

It is, of course, impossible to evaluate in advance the success of a given innovation. The descriptive definitions presented here – situation of use and technical solutions – also contribute to this. In spite of this, however, the needs and purposes for use people experience may be considered, in addition to the price, the main factors affecting the how rapidly a device becomes common.

Particularly with respect to the context of use, these questions are crucial when evaluating the possibilities of using AV-materials in PDA appliances. We may discuss these problems based on the success of the appliances and the services developed in them that are already on the market. For example, can something more general be said about the expectations of use of contents designed for mobile devices based on the evaluation of use of PDA appliances and WAP services? Does the weak success of the game phones launched on the European market in 2002-2003 tell us something about the future problems of exploitation of AV-material?

Naturally, the truthfulness of the answers to the questions posed here must be considered primarily empirical. Consequently, more research information on these issues is constantly needed, also in the fields of cultural and behavioral sciences.

Note

1. In autumn 2004, the world’s leading mobile phone vendors – Nokia, Motorola, NEC, Siemens, and Sony Ericsson – announced their co-operation in the new mobile broadcast services. This new service will enable efficient mass delivery of any multimedia content to mobile platforms. The primary service they have in mind is mobile TV, a way to receive television content on mobile phones through transmission over a mobile broadcast network (see eFinland 2004 for details).

References


Introduction: Collecting Twelve Studies of Walter Benjamin

- Graeme Gilloch Fabricating Aura: The Face in Film
- Tara Forrest The Politics of Aura and Imagination in Benjamin’s Writings on Hashish
- Dag Petersson Transformation of Readability and Time: A Case of Reproducibility and Cloning
- Catherine D. Dharvernas The Aura in Photography and the Task of the Historian
- Claus Krogholm Sand Ruinous Aura: From Sunset Boulevard to Mulholland Drive
- David Kelman The Inactuality of Aura: Figural Relations in Walter Benjamin’s "On Some Motifs in Baudelaire"
- Peter Fenves Is There an Answer to the Aestheticization of the Political? Some Remarks on a Passage in Benjamin’s "Work of Art" Essay
- Mikkel Bruun Zangenberg In the Midst of the Monad: Reflections on Auratic Alignments of the Everyday in Liebniz and Benjamin
- Henry Sussman The Afterlife of Judaism: From the Book of Splendor to Benjamin’s Shooting Stars
- Erik Steinskog The Decay of Aura/The Aura of Decay
- Jae-Ho Kang The Phantasmagoria of the Spectacle: A Critique of Media Culture
- Beryl Schlossman Images of the Aura: Some Motifs in French Moderism