Links with the Past

Reading News from PDA and Comparing It to Other Media

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All types of mobile technologies are fast becoming ubiquitous. Furthermore, new forms of these are being continuously developed worldwide. Cellular phones are already an established technology everywhere in the developed world. The number of WAP (wireless application protocol) phones is also increasing. In addition, a small-sized portable computer has been developed. So-called handheld computers or PDA (personal digital assistant) devices can be seen in regular use nowadays. Moreover, PDAs are becoming more multifunctional and acquiring new properties due to new developments. The number of handheld computers has been predicted to increase fast. In the next few years, handheld computers have been forecast to be as general as conventional computers (Albers, 2000).

Earlier types of PDA were only used as a notebook or a calendar, but newer versions allow access to the Internet nowadays. Consequently, the news services are thought to have a huge potential for these mobile devices. It is easy to carry a handheld computer with you thus it may be a practical news medium in many contexts. It is possible to read the news anywhere or check the latest news quickly with a handheld computer at any time. Some news producers have already started to develop news services that are designed especially for PDAs.

PDAs provide new opportunities and also pose challenges for designers of online news. The news can be read in new situations, the displays on these devices are much smaller than in computers, and the users' relationship with this mobile technology may be more intimate than with traditional media. Furthermore, research is needed, because this technol-

ogy differs from that of the traditional media in some critical aspects. However, the online news with handheld computers has been barely researched so far. A lack of research concerning news in mobile terminals is understandable because the diffusion of these devices has only begun recently.

The interesting point concerning a new medium in general is to what degree do users see it as a new form of traditional media or do they see it as a completely new medium. In both of the cases, the expectations which have developed in the use of other media will have an influence on how users access the news by new technology. We have expectations on how the news should be presented, there are certain patterns concerning news consumption and of course certain preferences. We also automatically compare the new news medium to old media. Such comparisons (what we are comparing, how we are comparing and in which context we are comparing) tell us what kind of constructs we have concerning the news and what kind of role old media have in the adopting a new medium. This paper focuses on this comparative process.

Earlier it has not been carefully considered how people discuss older media when they are testing a new technology as far as we know. Of course, many earlier studies are closely related to this issue. The most typical perspective to consider when adopting a new technology has been to observe the diffusion process. The diffusion theory (Rogers, 1986) focuses on the adopting process and how the characteristics of an innovation perceived by members of a society will determine the rate of adoption. Therefore, the focus of the research has been on the attributes of innovation, characteristics of adopters, and social situations. Because diffusion is an interesting question for producers, market, and consumers inter alia, it has been the predominant issue. Whereas, people's constructs concerning the new news media are

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seldom researched, although they have been seen to be in the background to diffusion.

Fidler (1997) has comprehensively described how adopting a new technology is always based on the past. He emphasizes that familiarity is critical to the suitable and easy fit of a new medium within the general consumer market. Historically, adopting of new communication methods is based on the familiar links to earlier or existing forms. He writes: 'Successful forms of new media, just as new species, do not emerge spontaneously from nowhere. They all required links with the past' (p. 17). He calls this process as mediamorphosis in which coevolution and coexistence are central and which new media gradually emerge from the metamorphosis of older media. From this perspective it is understandable that in the adoption process the old media have an important role and experiences of them create our constructs to consider for new media. Further, the history of communications technologies reveals that new innovations are often based on old ideas and the roots of innovations may be far back in history (Winston, 1998).

Expectations always have a central role in media reception. Development of expectations and the effects of them with those of mass media have been well described as a concept of media logic. Media logic (Altheide & Snow, 1979) refers to the logic of the presentation and interpretation of messages. It develops in the course of interaction between consumers and the medium. Through acquaintance with the medium, consumers gradually learn how messages are presented. Consequently, consumers develop expectations which they want to see fulfilled and producers aim to fulfill consumers' expectation as well as they can. Hence it is in the mutual interest of consumers and producers for expectations to be met and conventions followed.

When we use a medium, we usually adopt its media logic automatically. Therefore, we have a highly developed media logic of old established media, such as radio, television and newspapers. Our expectations of these media even relate to details of their format. Most of us have also become familiar with the media logic of online news. For example, we recognize them as the news, we know the rules of the design, and we know how to move from one web page to another. When we use a medium which we have not used before, we have not yet adopted its media logic. Therefore, we cannot base our interpretations of messages on the new media logic per se. However, they are unavoidably based on the media logic of the other media. Consequently, the earlier media experiences create our ex-

pectations, constructs, and personal media logic when we are dealing with that of a new technology.

Earlier studies on online news have usually made comparisons with printed newspapers. These comparisons show that the printed newspaper design is the most accepted pattern for designers of web newspapers. Both analysis of web pages (Peng et al., 1999) and interviews with creative directors (Lowrey, 1999) reveal that web news tended to follow the traditional printed design principles in the US. Furthermore, a study which examined producers, their product and the users of German online dailies showed the same trend (Neuberger et al., 1998). According to this study, online publishers and users base their activities and expectations on printed newspapers. The users know what to expect of a site from the name of the printed version. Their expectations concern both the content and design of online news. Moreover, consumers' perception of printed news and online news seems to be based on a similar factor structure (Sundar, 1999). The design of printed news is included in the media logic of online news, because users expect to see the format of newspapers in web news, producers meet those expectations.

So far very little is known about how users react to the online news with a handheld computer.

In their study, Schierhorn and Wearden (1999) asked subjects to read news from a portable document viewer (PVD), newspaper and newspaper web sites and to evaluate them. The results indicated an overwhelming preference for the PDV format over conventional newspapers and web site formats. The study also appeared to provide some evidence that people have different preferences among different approaches to digital news delivery. This result suggests that PDA could also be seen as a new approach to digital news delivery.

Goal and Methods

The aim of this study was to assess how people consider when they use the news service with handheld computer. The users were interviewed after using the news service but they were not directly asked to compare a handheld computer the other media. The idea was to consider whether the users automatically compare a new technology with the older types and how they do so. However, the purpose was not to prompt them to make comparisons. For instance, people could mention other media when they gave reasons why they did not like the news service or why they would like to use this kind of service in the future. From their comments it was analyzed

how frequent it is for users to mention other media, what they actually say and in which context they say it. For this reason, the study outlines the constructs which are based on the earlier media experiences which people use when they encounter a new medium.

In the study, 80 people were interviewed. The interviewees were students from two universities in Helsinki. Their age varied from 18 to 49 and mean of the ages was 24.5 years. Both genders were equally represented. The participants had voluntarily signed up for the study and they were offered a cinema ticket as recompense. All of them used a computer more than once a week, but 85% had not previously used handheld computers. Three of the participants used a handheld computer on a daily basis.

The participants were initially asked to read the news from the PDA. Half of the participants read fourteen financial news stories that were chosen from the online edition of the Finnish financial newspaper *Kauppalehti* and the other half read twelve news stories that were chosen from the online edition of the evening paper *Iltalehti*. The logo of the newspaper was also visible on the PDA display. The items and length of the news stories varied. The design of the news was basic and resembled the structure of typical online news with a touch screen graphic interface. The headlines were on the headlines page and by clicking the headline it was possible to see the whole story.

After the reading, the participants were interviewed. The interview was semi-structured and contained a list of questions which were used. However, it was also possible to change the order and wording of the questions in order to make them more appropriate to the context. First, the subjects were asked to describe what kind of experience the reading was. After that the interviewer asked what they thought of the experience of using handheld computers and if they liked it or not. Then they were asked to tell what they thought about reading news from handheld computer and whether they would like to do it if they would own such a device. Their opinion was also sought on the design of the news service and what suggestions they had for developing the service. The length of the interviews varied from four minutes to twenty-four minutes, the variation depended entirely on the length of answers.

Data from the interviews were analyzed qualitatively with NUD*IST Vivo software. The advantage of the software use is that it helps to produce an explicit, systematic, and well-documented analysis (Kelle & Laurie, 1995; Räsänen, 2001). It also makes it easier to handle a large quantity of interview material. In the analysis, hierarchical categories were used to classify the interview data (see Richards & Richards, 1995). In practice, all segments from the interviews which included a reference to other media were coded first. They were divided into subcategories depending on which medium was mentioned. Secondly, it was analyzed whether comparison included an evaluation (PDA news are better or worse). Displacement of other media was also divided to subcategories in this analysis. The NUD*IST Vivo program made it possible also to consider how the coded categories are overlapping.

Results

The discussion on other media was general. Only one of the interviewees did not mention any other medium in her answers at all. All the other subjects mentioned another medium at least once. The most typical way of describing it was to mention how the news service resembled or differed from the news in some other medium. The other general way of speaking was to think aloud whether they would be willing to use the new device and under what circumstances it would replace the other media. Thus, speaking of and comparing with other media was common. Making comparisons included two dimensions, comparison of qualities of media and comparison of the uses of media.

There were two media that were mentioned in most of cases. About half of the references concern newspaper and a third of them were about Internet and computer. Mentions of the other media, such as cell phone, WAP phone, television, radio, and book, were remarkably less frequent. A handheld computer was also compared to a postcard, cartoon, video and magazine on one occasion.

The references to other media could be classified into three categories: positive evaluations, negative evaluations and neutral comparisons. A positive evaluation meant that the news service using the handheld computers was evaluated as being better than some other media, whereas negative evaluation meant it was worse. The evaluations can further be divided into three subcategories: a handheld computer can be seen better or worse, similar to or different from another media, or the evaluation is not explained. First, we will report on how the participants reasoned if they evaluated a handheld computer better or worse than other media.

The news service in handheld computer was most often compared to a newspaper. The evaluations were more often positive than negative. A newspaper was seen to differ from handheld compu-

ter more often than resemble it. The most positive difference was the size of the device compared to newspaper that was seen quite impractical and cumbersome in use because its big size. Some of the interviewees said that it would be easy to carry a handheld computer and they could read it anywhere. Thus reading of news would not be bound to a locality. Reading the news from a handheld computer was also evaluated as being faster and easier especially when looking for certain news story than with newspaper. Some participants said that it was easier to concentrate on news because you see only one item at the time, whereas in a newspaper other news on the periphery may distract the reader. The PDA was also evaluated as being better because absence of rustling sound of a newspaper. Additionally, it was evaluated many times handier than a newspaper. The following extract includes arguments for PDA use:

> *Interviewer:* 'Yeah, what was, in your opinion, the best thing about reading this news?'

> *Interviewee:* 'Perhaps the fact that it's not tied to any specific place like reading the newspaper. It would be possible to read these, for example, in a bus or in some narrow place or when the kids are sleeping and you don't want to rustle.'

A handheld computer was also evaluated positively because of its similarities with newspapers. Interviewees said that reading the news from PDA resembled that of reading newspaper because there are certain similarities in the design, the width of columns for example. It was also seen that glancing through the news was possible in both media. The following extract concerns the similarities in design:

> *Interviewer:* 'How about the display. How suitable it was for this kind of news reading?'

> *Interviewee:* 'Yeah, it was quite good. The column was relatively narrow, a bit like in the newspaper. When you're reading from the screen, reading gets really tough, especially when the text is long.'

In the negative evaluations, interviewees made three main points. They would have wanted to see pictures just as in newspapers. They also said that it is easier to perceive the news story from a newspaper, because it possible to see at glance length of the story and insert titles and headlines. Furthermore, scrolling and shifting a page with PDA was criti-

cized by some participants. The news service was also criticized a few times because it resembled a newspaper too much. The participants expected to see something different or they just did not like typical features of newspapers that were also used in PDAs. Some interviewees thought that news stories in newspapers are more thoughtful, because there is more space for them. In the following extract, the news service is evaluated negatively because of both similarities and dissimilarities with newspapers:

> *Interviewee:* 'There could have been like, well there was this big block of text without any, there were headings but there weren't any subheadings in the upper part of the article. It would have given a clearer image if up there had been subheadings and links to them. I liked some pictures there as well. It would have been a bit nicer if there hadn't been just text in the news. The long text block doesn't fit in here as well as it fits in the newspaper. But here it could have been possible to use some colour pictures or above all some interactive elements. But it might not be possible to get things like that in these. Anyway its content was based too much on text.'

In neutral comparisons it was typical to consider whether a handheld computer would replace a newspaper and where and when it could be probable. Participants often talked about how they use a newspaper and what kind of habits they have concerning reading the news reading. Sometimes interviewees just mentioned what in the design was similar or different from in newspapers. On a few occasions, they told what they thought about a given newspaper's content in general or considered costs between a newspaper and handheld computer.

Comparisons to computers and the Internet were the second biggest category of references and these evaluations were more often positive than negative. The PDA news was evaluated as bring better because the device was portable and small and therefore it was possible to use it in many places. The device was also easier to use than a computer, the design was evaluated as being more distinct than most of the WWW-pages and a narrower column was perceived as easier to read. The positive similarities with computers were the familiar browser and the same operating principles as in the Internet. Negative references were various, but a few participants preferred bigger displays. In the neutral references the similarity between the news service and online news in Internet was emphasized. A few participants

also experienced the same problems with PDA and desktop computers such as difficulties in scrolling, but some also had ideas as to how the news service could take advantage of certain services from Internet such as links to further information. When participants considered possible future use of the news service they often mentioned something about their habits or contexts to use computers and equated this to the use of PDAs. The following extract is a typical example:

> *Interviewer:* 'So, you haven't used handheld computers like the one here earlier?'

> *Interviewee:* 'Well, not exactly that one, but it was surprisingly similar to ordinary web browsers that are used with big computers.'

The other media were mentioned much less frequently than newspapers and computers. A Handheld computer was said to resemble a cell phone or a book few times and it was seen easier to use than a cell phone or WAP in some answers. Other media were usually mentioned when the participants talked about their media use in general and considered whether they would need this kind of device or not. In this category, the qualities of media were compared less often than the use of media.

In addition to direct comparisons with other media, it was typical for participants to talk about how PDAs would change their media use or whether they would replace the old media. In these references they usually mentioned another medium being the medium which could be replaced by a PDA. Often, the interviewees talked about in which context they could use a handheld computer. The most frequently mentioned situation was during commuting or travel. The participants said that they could read news from PDAs on the way to somewhere in bus, metro, and tram. In the context where space is limited, the PDA was seen generally handier than a newspaper, because it can be carried with in the same way but it is easier to use. For example, reading a morning paper using a PDA on the way to work was mentioned a few times as a possible situation for using it. Furthermore, the localities where a newspaper or a computer are not available such as café, summer cottage or in a meeting were mentioned as possible places to use a PDA. From the talk about situation it could be inferred that a handheld computer is primarily a threat for a newspaper because it could be used in those situations where a newspaper was formerly read. The follow-

ing two examples describe the talk about the situations:

> *Interviewer:* 'If you had a device like this for your use, would you read news in it?'

> *Interviewee:* 'Well yes. It is basically the same thing as reading short messages from a phone but in a broader sense. I'd probably be spelling them every morning and evening. Especially in places where I normally either listen to radio or send short messages or do something like that like in a tram. It wouldn't be any extra trouble to read the news. Because in my opinion it resembled reading the short messages quite a lot if you think closely.'

> *Interviewee:* 'Basically in any situation where you have one. Of course if you think you're at work or at school there usually is either newspapers or an actual computer available but perhaps in bed at night you could read things you haven't otherwise read during the day, like your own routines, which in my case means NHL-results and news. For that purpose this machine is handier than even a laptop or especially even actual [desktop].'

It was also seen that a handheld computer could replace old media because of its qualities. Speed and the opportunity for personalized topics were mentioned as additional value which a handheld computer has in comparison to other media. In particular the PDA was seen as practical if one wants to follow certain news such as sport results, or course of events in real time. It was seen as a speedy way to check the latest news. Additionally, the interviewees said that they would like to use a PDA, if they could read more customized news topics than with newspapers. In the next extract the interviewee would use a handheld computer to supplement her traditional media use:

> *Interviewee:* '…The good thing in here is that if there's some piece of a news that you want to follow, like if you read from the paper in the morning that there's going to happen something today, whether it's a presidential election or such like or some, what would I say, like financial situation or something, then you could follow the event during the day, for example peek every hour whether something has occurred.'

Discussion

The results of the present study confirm Fidler's (1997) thinking, that adopting new forms of media is based on the familiar links to earlier or existing forms. This is because the participants often mentioned an older medium when they talked about handheld computers and it was typical to compare traditional media with a new medium. They spontaneously put a new technology into the same category with other media and evaluated its pros and cons spontaneously by comparing it to media which they had former experiences of. They also considered how a new medium would fit to their former habits of media consumption. In addition, perceived similarities with old media were evaluated positively in most cases and the similarities caused disappointments on only a few occasions. A few interviewees hoped that a new medium would also have offered new forms of informing. Positive attitudes toward familiar forms of media are consistent with an idea that successful forms of new media have continuity with the past through links.

People seemed to use two basic dimensions in their comparisons: valence and discrimination. They mainly decided whether a new media is better or worse than an old one (valence), but they also compared and discriminated between similarities and differences with other media (discrimination). Therefore, the perceived qualities were mainly expressed as familiar or unfamiliar and positive or negative. Reeves and Nass (1996: 111-118) have also shown that valence is a primary evaluation of mediated experience. On the basis of these main constructs of evaluation it would also be possible to draw up a two-by-two frequency table. This can be seen as a basic structure of evaluation of a new medium and could be used in developing new communication technologies in general.

The discussion on media use indicates that people do not easily perceive new methods of using new media. They talked about where and when a handheld computer would be more practical or easier to use than traditional media. In other words, in which context a new medium could replace an old one. Their existing patterns of using media create a construct to which they tried to compare a new medium. They did not perceive that the news service with a handheld computer would radically change their media use by increasing it or create new patterns. Portability of the device could, however, transfer their habits so that instead of reading a newspaper at home they could read same news elsewhere with a PDA. In past experience of mobile phones it was observed that people typically had restrictive ideas of how they would use it, but the first a month of use rapidly modified their expectations (Palen et al., 2000). Probably the same holds for PDAs in that the actual nature of use would differ from what users themselves initially predict.

The highly valued qualities of PDAs, when compared to other media, seemed to be their small size and portability. Because of those qualities it was seen primarily to replace a newspapers, because papers easy to carry but difficult to handle it in many places. In general, handheld computers seemed to be somewhere in the middle ground between newspaper and traditional computer in peoples' mind. The most likely explanation for this is in the design of the news service. The design resembled a typical design of online news which is, in turn, based on the design of newspapers (Peng et al., 1999). Additionally, the users were familiar with the logo of newspaper which were visible on the PDA display. In earlier research, the users knew what to expect of a site from the name of the newspaper and these expectations influenced both the content and design of online news (Neuberger et al., 1998). Therefore, it is not a surprise if people tend to think of newspapers on the basis of design. On the other hand, portability was also related to a newspaper and a handheld computer. Perceived similarities with computers may be explained by design, the same operating principles, and the name of device.

In this case the design seemed to be an important element in evoking the constructs of other media. The interesting point is, however, that interviewees did not normally separate the forms of design and the qualities of the device when they evaluated the news service. Perceived similarities and differences could be related to the design as well as technical properties. The news service was thus evaluated as a package and not separately either as a technology or an application. Perhaps novice users are not experienced enough to separate these two dimensions, or more likely this is way to construct media in general. Traditional media are also often seen more as a form of information than separately as technologies and their applications. For example, television is normally seen as an entity in its own right and people seldom think which conventions of television are based on its technological properties and which are culturally established formats (Isotalus, 1996).

Moreover, the mode of information explains why people tend to think of just newspapers and computers when they compare a handheld computer to other media. Text-based media are probably seen to resemble each other more than radio or television. If

the news would have been heard from a PDA instead of reading it, people would likely have thought firstly of radio. In contrast a moving image would probably have caused associations with television. In this case the stimulus was however text-based, although multi-media communication is also possible in handheld computers. The text-based stimulus is reasonable, because it represents the most prevalent form of online news and it is also the form which can be used in all handheld computers despite their limited capacity. On the other hand, the study can be criticized on a textual bias just as most of the previous research on computer-mediated communication (Soukup, 2000).

The references to other media did not include much information about users expectations. On a few occasions, the subjects hoped the news service included the same services as some online news services on the WWW already including links for further information or possibility for chat. Sometimes it was mentioned that it was easier to use a PDA than what some of the subjects had expected. Moreover, these expectations of difficult use were mainly based on experiences with computers. This suggests that users would have used the media logic of online news to interpret the news in the first place. On the other hand, it also indicates that users did not have media logic which would have been developed in relation to the services with handheld computers.

There are some limitations in the research, although the stimulus was designed to resemble real online news. The clearest difference was that the news was ready loaded into the PDA and a user did not need to download them from a desktop computer as in the real situation. The users were also asked to read all news stories, although under normal conditions they would have read only the news which they are interested in. This study also concerns the very first encounter with a new news medium. Users' thoughts on a medium can however change rapidly after longer experience. Consequently, it would be interesting to study the comparing process when users have used a novel technology a few weeks. It could be presumed that comparing would decrease as a function of time.

To summarize, the present study outlines the construct which are based on users' earlier media experiences and which they use on the first encounter with a new medium. The interesting point is that the analyzed references appear in users' talk without them being prompted to compare various media with each other. Users seem to automatically and spontaneously compare qualities of new media with traditional media and consider whether new media would replace traditional media in some situations. The new media is thus directly evaluated as a part of our present media environment.

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