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Is It Fun to Go to Sydney? Common-Sense Knowledge of Social Structures and WAP

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ABSTRACT

This paper investigated how people navigate through early Wireless Application Protocol (WAP) sites using their common-sense knowledge of social structures. The study is based on a close analysis of 9 videotaped test sessions of WAP use situations taped in Helsinki, Finland between 2000-2004. The data was transcribed using standard conventions of conversation analysis, and analyzed in an inductive fashion to identify and describe the ways in which subjects used their common-sense knowledge in navigating through WAP. The analysis reveals how the structure of WAP makes it necessary for people to rely on their common-sense knowledge in trying to decide what to do next when on a particular WAP page, but also how common-sense knowledge leads them astray. The analysis is qualitative. The conclusions point out the ambiguous role of common-sense knowledge and relates WAP to previous technologies like the pre-visual Internet of the early 1990s.

Keywords: *Wireless Application Protocol (WAP), conversation analysis, ethnomethodology, common-sense knowledge of social structures, user experience.*

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1. Introduction

Do you know whether it is fun or work to go to Sydney? The question may sound curious. Most of us would probably answer that it depends--many contextual factors would define the experience. For example, if the person is a banker who has work in Australia, she would probably think about it as a work trip. However, if the banker is planning her holiday, and is talking about going to Sydney with her husband as an alternative to Toronto, the answer is probably different. Or, imagine a teenager who wants to learn English. How does a trip to Sydney fare in his imagination? Clearly,

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there is no way to answer this question correctly if thought about in the abstract. Indeed, the whole question may feel absurd: how can you know the answer without knowing the particulars of the situation?

Still, it is just these kinds of questions that information technology sometimes throws at us. As this paper will demonstrate, sometimes we are forced to decide whether it is fun *or* work to go to Sydney and, due to the way in which technology functions, our answer to this question is *either* right *or* wrong. This paper analyzes what happens when users are forced to choose between a limited set of options when trying to navigate within Wireless Application Protocol (WAP), and these options come in conflict with their common-sense knowledge of society. Introduced to the marketplace about eight years ago, WAP still exists today as a technical platform, though it quickly proved to be a major failure in human terms, a failure which ruined the social perception of mobile technology for years.

Like other digital technologies, mobile technology has been characterized as a revolutionary technology (Mosco, 2004), with good reason. A few years earlier, Internet mobile phones had changed the ways people communicated, worked, maintained relationships, and thought about themselves (Katz & Aakhus, 2002). Combining these two technologies seemed a recipe for success. However, WAP soon became the best example of a failure of mobile technology. Although WAP has survived as a background technology, as a consumer technology WAP has been a massive failure, especially given what the telecom industries and investors believed (Teo & Pok, 2003; Barnes, 2003). With Japan and South Korea as possible exceptions (Ishii, 2004), only a small percentage of people who own a mobile phone use it to connect to the Internet. The most typical reasons for not connecting are cost, slow access speed, and hard-to-read screens (Anil, Ting, Moe, & Jonathan, 2003; Okada 2005). Also, although people who have tried out WAP-based services generally have a more positive attitude towards the service, and are willing to put up with inconveniences of use, they still see privacy and lack of content as unacceptable obstacles for using the technology widely (Anil et al., 2003; Ramsay & Nielsen, 2000).

Few theoretical attempts to explain the failure of WAP have focused on the cognitive dissonance between high expectations and the reality of user experience. Teo and Pok (2003) have explained the failure of WAP with what they called the “decomposed theory of planned behavior,” which claims that behavior results from behavioral intention, which in turn is explained by attitude, subjective user norms, and perceived behavioral control. Attitudes are explained by factors such as perceived usefulness of

the technology, ease of use, and compatibility with the user's existing values. Subjective norms are explained by reference to group influence, while perceived behavioral control is composed of beliefs about having the necessary resources and opportunities to adopt a WAP phone. Structural equations showed that an intention to adopt a WAP-enabled phone was associated with attitudinal and normative factors, but not by perceived behavioral control (see also Cheong & Park, 2005; Pagani, 2004; Kim, Lee, Lee, & Choi, 2003).

This paper builds on a small body of ethnomethodological work on mobile communications (Koskinen, 2000; Arminen 2001; Arminen & Raudaskoski, 2003) and advances another explanation, which takes a different approach to how people came to experience WAP. Ethnomethodology is a sociological tradition with its origins in the writing of Harold Garfinkel (Garfinkel, 1967). It is interested in the methods that people use to organize their ordinary, practical activities, ranging from questions to gender identities. It is this focus on methods of ordinary action that gives the tradition its name. When mobile technology is studied from this perspective, the focus is on how people navigate their way through technology in concrete terms; a well-known attempt to study technology from this perspective is Suchman (Suchman, 1987; as cited in Hutchby, 2001). Like other technologies, the use of WAP is always rooted in the local circumstances of ordinary life. More specifically, such use is rooted in local methods of reasoning, "local" here referring to the fact that people act in situ, using whatever resources they happen to have around when they face problems. This reasoning is based on what people know about their society, and individuals use this knowledge in navigating their way through it. For WAP, the key issue is that people use their ordinary, age-old methods in navigating their way through WAP interfaces, but these ordinary practices do not help much given the semantics used in building them.

2. Common-Sense Knowledge of Social Structures

From the standpoint of an ordinary user, the most curious feature of WAP is its user interface. The WAP interface is necessarily fitted to the small screen of the mobile phone (Picture 1). Due to its small size, only a few items can be made visible simultaneously. As no reliable search engines (such as Google or Yahoo on the WWW) exist for WAP, any WAP service tends to have a deep interface. Most content

exists deep inside the system. In order to access content, people have to go though a series of higher-level pages. By implication, concepts in the higher level are out of necessity abstract and difficult to understand. One has to go through these higher-level menus to get access to more concrete terms like company names. When one enters these pages, they face the same problem again. Thus, when a WAP page appears on the phone screen, the user has to read it, locate candidate selections from its menu, construct a relevance order between these candidates, and select the best candidate or return to a previous menu. Suchman (1987, p. 132) calls, with good reason, such actions “situated inquiries”: when users see a page, they have to think about what to do next with very little information to help them.

A typical WAP user interface utilizes ordinary language terms, but gives little specification about their meaning. In consequence, in conducting situated inquiries, people have to rely on what Garfinkel has called "common-sense knowledge of social structures" (Garfinkel, 1967). Sometimes situated inquiries are relatively straightforward. For example, after seeing the term "weather," one expects weather forecasts and maps. Sometimes, however, they are far more complex, as in the case of "entertainment." In seeing this term, one can fairly easily conclude that it contains items like movies, live bands, live comedy, and perhaps also theater and ballet performances. However, such a conclusion is already contextual. If service providers make a distinction between cheap thrills and "art," they may not situate "ballet" and "opera" under "entertainment." But, if there is no category for art, they may have to conclude that opera belongs to entertainment (see also Arminen 2005, p. 205-206).

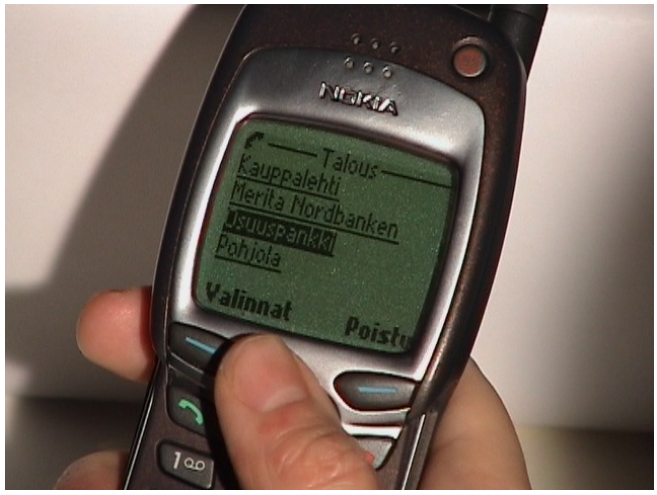

Figure 1. An Early WAP-enabled Mobile Phone (Nokia 7110)

Common-sense knowledge of social structures constitutes an important resource for using WAP, but has several unintended consequences. In particular, any technology that builds on common-sense knowledge of social structures is not free from moral judgments, and users will attempt to find meaning in the interface, no matter how divorced from their common-sense knowledge it turns out to be. As a comparison, we can think of one of Garfinkel's “breaching experiments” (Garfinkel, 1967), where he made a group of students believe that they were talking to a counselor while in fact they were talking to a programmed, random agent. The students thought they were getting advice on their personal problems, and treated the answers as reasonable, searching for and finding meaning in them. Students sought a pattern in these random answers; they assembled a body of knowledge of social structures in the course of the conversation (Garfinkel, 1967). Something similar takes place with WAP. One has to assume that "airlines" are under "travel industry" rather than under, say, "children." You have to assume that common-sense knowledge of social structures will help you work through the system. If this proves not to be the case, the results are similar to those described by Garfinkel in the "breaching experiments": frustration, bewilderment, and even anger based on loss of trust in one's ability to act. If others do not construe their lines of action on ordinary, common-sense knowledge, one does not know how to act with them. What is at stake is something far more important than mere convenience.

This is the case with technology, too. If the logic of the system does not correspond to ordinary experience rooted in ordinary circumstances, ordinary society, and common-sense knowledge of social structures, it is difficult to use: methods people use to understand the system misguide them and do not help in problem situations. This is what happened when people use WAP. If they see links on some page, they have to infer what happens if you open these links by relying on their common-sense knowledge. That is, they generalize from constituent parts, and take action depending on these generalized patterns (Garfinkel, 1967, p. 72-73). As they go deeper in the system, they may see things that tell them that the pattern they inferred was indeed the right one. However, if what they see tells them that the system's version of common-sense knowledge does not correspond to theirs, they may start to doubt their ability to use it, and come to judge it negatively. While people may initially have thought that the system was good, and were willing to grant a certain clumsiness to it, they may change their minds, come to expect problems, and see their rare successes as exceptions that prove the rule. The philosopher Aron Gurwitsch talks about changes in Gestalt contexture in this situation (Gurwitsch, 1964, p. 134-135).

3. Data and Methods

Our data consists of 9 videotaped test sessions, each lasting approximately 30 minutes, taped in 2000 and 2004-2005. In the tests, pairs of university students were given several tasks in the portal supplied by the Helsinki-based mobile operator Radiolinja. The setup followed Suchman's procedure (Suchman, 1987). One subject was using the mobile phone while the other assisted him/her by giving advice and suggestions as they navigated through the menus.

The videotaped sessions were transcribed for analysis using the standard international conventions of conversation analysis (Table 1).

All pairs were given five tasks and had seven minutes to perform each task. In this article, we focus on two sequences, how the participants reasoned their way through the service to find the Helsinki Stock Exchange general index (HEX), and an attempt to order an airline ticket to Sydney, Australia. These cases provide an acid test for WAP technology. The index of the stock exchange ought to be semantically simple in the sense that most people associate money with useful, practical things.

The ticket to Sydney, on the other hand, is semantically ambiguous. As noted previously, "traveling" is fun for one, business for another, work for a third, and an investment opportunity for a fourth. Still, it is simple when compared to, say, music, which for practical purposes offers an almost infinite variety of subcategories and evolves constantly.

There ought to be few difficulties finding a key institution in a semantically simple domain. If it proves to be a problem for users, these problems escalate in more semantically complex domains, like "technology" or "art."

Transcript Symbols (adapted from Jefferson 1984)	
(.)	Micropause, or interval of 0.1 second in talk.
(0.4)	An interval of 0.4 seconds.
'n [she sa]id [But th—]	Overlap begins and ends.
=[[I'm saying [[But no::	Utterances start simultaneously.
Wha:t	A colon indicates an extension of the sound it follows. Each colon is about 0.1 seconds.
.	A period indicates a stopping fall in tone.
,	A comma indicates a slight fall in tone.
?	A question mark indicates a rising inflection.
?,	A combined question mark/comma indicates a slight rising intonation.
;	Continuous intonation.
/ \	Rise and fall in intonation
Wha:t	Underlining indicates emphasis.
WHAT	Loudly.
what	Quietly, or in whisper.
hhh .hhh .nhh	Outbreath, inbreath, and inbreath through nose respectively. Each "h" is about 0.1 seconds.
(what)( ) say	Single parentheses indicate transcriber's doubt or best guess.
((door slams))	Double parentheses indicate various features of the setting or transcriber's comments.
.mt .pt	Click or a smack of tongue, and the same in English.
.nff	Snuffling.
#that's true#	Creaky voice.
@what@	Markedly different tone than elsewhere.
$wht's th't$	Laughing voice.
W(h)hat	Within words, (h) is a laughter token.
He HEHE ha	Laughter tokens.
wh—	Cutoff of a word.
And th( )<	The speaker halts some unit in progress.
>she said<	Quickly.
System activities:	
<SELECTS OPENING PAGE>	The user performs an activity with the device.
{SYDNEY 2000	Menu opens.
@Connecting to@	System messages to the user.

Table 1. Transcript Symbols

For this paper, I have studied 3 men and 7 women, who were university students with no expertise in information technology or user interface design. None of the subjects had had a mobile phone supporting WAP and only two of them had ever tried one. Everyone either owned a mobile phone or was familiar with them. The screen of the Nokia 7100 mobile phone that was used in the test showed only five lines of text (Figure 1). The first line on the top is a static heading line and the content of the WAP-

page can be scrolled down and viewed so that four lines are visible at a time. In addition to the roller wheel used to browse the text and click hyperlinks, there are two function keys below the screen whose functions are shown at the bottom of the screen. Usually, the left button is used to access the mobile phone's internal menus, such as bookmarks and preferences, while the right button is used to return to the previous menu or to select or cancel an operation. Given that the design of basic WAP browsing is still similar today, and WAP is still very much a novelty for ordinary users, the data we collected in 2000 is still relevant.

The context in which the data was produced was an unnatural laboratory-like situation with characteristics that do not apply to real use. Nevertheless, we trust that this setup nevertheless makes available layers of naturally-occurring reasoning and methods. This analysis describes ordinary methods people use to solve problems they face in action. Analysis proceeds inductively (ten Have, 1999). In analyzing data, we quickly realized that the most crucial difficulties take place in the first two minutes after the service is opened. Consequently, we focus on these two minutes.

These data are small for the purposes of the social sciences, but follow the conventions used in industrial usability studies (Nielsen, 1993, p. 173-174). For our purposes, these data are large enough. Although small, they nevertheless provide enough depth to study what people do when faced with WAP for the first time in their lives, and how they make judgments about this technology based on their experience. Also, it shows that combining conversation analytic accuracy with usability practices is possible for usability studies. The validity of this analysis does not depend on statistical generalization but, as generally in “thick description” (Geertz, 1973), on how richly the description captures what users do when faced with certain situations, and what features of the situation drive their action. In addition, detailed transcripts make it possible for readers to independently form a judgment about the analysis. If it is found plausible, its contribution lies in the fresh perspective it provides on navigating in WAP.

4. How Common-Sense Knowledge Works

Anyone with some experience of life knows many details of society, and knows how to use that knowledge in navigating its structures, whether real or virtual. When browsing Radiolinja’s WAP system, this was the case with many tasks. People knew

perfectly well how to work their way through issues like finding movie tickets. For most of us, going to movies is fun, not work. Also, we know that most people go to movies to be entertained. This inference is easy enough from the standpoint of common-sense knowledge of social structures.

To illustrate, in WAP in 2000, one was forced to begin navigation from the main menu, which gave two main options to choose from, "utility" and "entertainment" (Figure 2). As we have already seen, this selection may be a problem for users. If they have to choose whether "going to Sydney" is "entertainment" or "utility," how should they respond? Whatever one's own viewpoint, it is also easy to imagine someone who might interpret the situation differently.

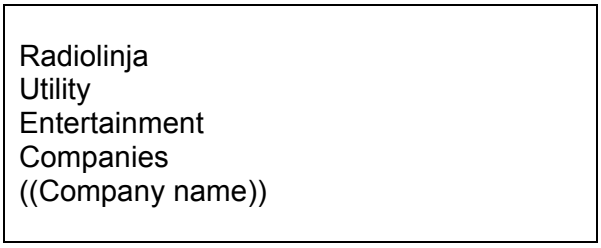

Figure 2. The main page of the Radiolinja WAP service

In many cases, this choice does not pose problems of any kind. For example, Example 1 gives us a clue of how people work their way through the menu to selection. After a short detour, K and T finally decide that if they want to book tickets to Sydney with their phone, they have to get to the utility menu rather than try to find it from other items on the main page. In this excerpt, they find their way to a menu that makes it possible for them to order the ticket. The interesting thing is that they stay in the menu and do not question it. Apparently, nothing in the utility menu suggests to them that the previous choice was wrong. As Koskinen, Repo and Hyvönen (2006) argue, when WAP is understood as an interactive device, it has to be looked at as a three-part sequence. People make a guess, based on what they see in front of their eyes. When the next page appears, items on that page either validate or refute that guess (Arminen 2001; 2005, p. 202-204). In Example 1, there is nothing dramatic in sight; instead, K and T see the item travel, which makes them confident that they are on a right path. When they find Finnair, the main local airline in Helsinki, and see the item "destinations," they conclude that they are close to the end.

Example 1.

01 K No:(0.4) uti- it's got to be in utility

02		<CHOOSE>
03		{UTILITY}
04	T	=yea it could be (.) I didn't come to check (0.2)
05		travel, let's see what's in it
06	T	(scrolls)
07		<CHOOSE>
08		{@CONNECTING TO THE SERVICE@}
09		(5.0)
10		{TRAVEL}
11	T	Finnair
12	K	=[Finnair
13		[<CHOOSE>
:		((4 lines removed))
17		{@CONNECTING TO THE SERVICE@}
18	T	Does Finnair have a service from whi-
19		(scrolls)
20	T	flight schedules
21		((scrolls))
22	K	o-offers
23		(0.4)
24	T	but I'm not su- are you sure it's the-
25		((scrolls))
26	K	eh services perhaps (.) let's see it is it
27		in it (.) or in destinations
28		<CHOOSE>
29		{SERVICES}
30	T	destinations (0.2) Sydney (0.4) do you find
31		Sydney (2.0) Oh but ordering the ticket is there
32		<CHOOSE>
33		{@CONNECTING TO THE SERVICE@}

This example illustrates first that people have common-sense knowledge of (real) social structures and second that they are able to use this knowledge to navigate through virtual structures. Some of this knowledge is generic in the sense that anyone with a minimum of life experience knows how to unpack “entertainment” and apply this

knowledge. This category breaks down naturally into movies, rock concerts, opera, and so forth. If one knows that this is the case in Finland, one may infer that Switzerland and Malaysia cannot be too different: in this sense, parts of common-sense knowledge are transferable. However, some of this work is local: without knowing the particulars of Finnish society, one cannot know that to get to the “Stock Exchange,” one has to make a detour through *Kauppalehti*, a leading economic newspaper. It is of course possible to understand that one can get to information concerning the stock exchange through the economics pages of the main newspapers and economic press, but it is impossible to know the best route unless one knows that *Kauppalehti* is the main economic newspaper in the country. In Switzerland and Malaysia, the path through economic journals is different in terms of what is available at the level of the user interface.

Common-sense knowledge of social structures varies with circumstances and different people have different versions of it. If you are talking to someone, you have to make sense not just of society, but also of whether the interlocutor's understanding of society is similar to your own. This is also the case with WAP: you cannot know how the system works without using it. Somehow this knowledge is assembled on the fly while using the device. It is this work that is crucial if we want to understand WAP: it is not a disembodied system that people just learn to use. Rather, they have to work their way through it. Without this work, the system could not function.

5. Problems with Common-Sense Knowledge: Siren’s Songs and Ambiguators

When a WAP page appears on the phone screen, the user has to read it, locate candidate selections from its menu, construct a relevance order between these candidates, and select the best candidate or return to the previous menu. If the user concludes that her initial choice was correct, she continues to the next screen. She may also return to the previous screen to select another path if she concludes that the selection was wrong. Two types of errors take place in this process (Suchman 1987, p. 163-169). There is a “false alarm” when the selection is correct, but the user thinks it is incorrect. Another error is when the user proceeds on a “garden path,” where she continues to a third page even though the previous selection was incorrect (Arminen, 2005, p. 206-208). It is the user’s task to realize these errors from information that

appears on the screen. In WAP, common-sense knowledge of social structures sometimes leads to successful outcomes, but also to garden paths and false alarms.

Garden paths. There are several reasons for garden paths. First, abstract, ambiguous terms suggest the wrong ideas. What does “fun” mean in the abstract? Second, common-sense knowledge leads people to see several links on any page as good ways forward, even though all but one of these links leads to a garden path. This is what happens in the following case. Here T and K are trying to order a ticket to Sydney. In the Radiolinja service at the time, the opening page include "Sydney 2000," a page which provided users with updates about what was going on in the Sydney Olympics.

Example 2. 1.56.30-1.58.30

01	T:	yea (.) OK (.) Sydney two'ousand
02	K:	ordering tickets to Sydney two'ousand
03		{RADIOLINJA MAIN PAGE}
04	T:	Is it Finnair or Sydney two thousand
05		(scrolls)
06	K:	It could be Sydney two thousand. Perhaps they've
07		gathered things there
:		((nine lines omitted))
17	T:	Go to Sydney two thousand
18	K:	Let's check this Sydney two thousand
19		<CHOOSE>
20		{@CONNECTING TO THE SERVICE@}
21	T:	Are there services by Finnair
22	K:	( )
23		(scrolls)
24	T:	sports.com What's that
25	K:	I think it's sports news
26	T:	Perhaps I'm in the wrong place

Unlike in Example 2, in which K and T realized that they are on a garden path, people often stayed on a garden path for a long time because their common-sense knowledge of social structures led them astray. Typically, there were items on the new page that could be taken as evidence that the user was on the right track. For instance, when

people were searching for the stock exchange, they typically found several pages that were related to money and financial management. When one is browsing the page of a bank, and sees several links to “indexes,” it is practically impossible to know what this term refers to without first visiting it. Similarly, if one is trying to find the opera, and gets to a page with theatres, ballet companies, and performance artists, it is easy to maintain the idea that opera is in this set even if it is not actually there.

The problem is that common-sense knowledge also takes people deeper into the system. I will call items that capture people’s attention and lead them further astray “Siren’s songs.” Next is an excerpt that shows how such items can, against a certain browsing history, lead people on long excursions down the wrong paths. Here, A and B have gone from the “economy” page to “banks,” and finally to “Osuuspankki,” one of the larger national bank chains, and concentrate their efforts on finding the stock exchange on the bank's page. While browsing that page, they find the word "indicator," which functions as a Siren’s Song, for it suggests that they are about to find the stock exchange – after all, the stock index is an indicator. When they open that link, however, they get a list of countries. Instead of taking this as evidence that they are going in the wrong direction, they believe they will find the Helsinki index through Finland, where Helsinki is located. At least two things make such inference logical: the history of browsing has so far backed up such an inference. Secondly, it is not unnatural to think that from a country you can get to its capital, and in the context of the financial world, finally find a major economic institution, the stock exchange.

Example 3. Garden path

01	A	wo- wo- wabits, wabits. (0.5) @what's that@
02	B	scroll down (**[**if (it'd be there)
03	A	**[**yea
04 ->		**[**{IN**[**DICATORS} **]**
05		**[**{NEWS HEADLINES}**]**
06		((s1 scrolls the menu))
07 ->	B	try (cou**[**ntries)
08	A	**[**no
09		{COUNTRIES}
10		(3.0)
11	A	no but,h is that hex- h. (.)

12 ->B hex is **[**(.) Helsinki Stock Exchange
13 A **[**It is sort of like in **[**Helsinki
14 **[**<COUNTRIES>
15 {@CONNECTING TO THE SERVICE@}
16 (3.0)
17 **[**kr-hmmhh. ((clears throat))
18 **[**{WA**[**PIBS}
19 **[**{CHOO**[**SE TOPIC}
20 **[**{AUSTRIA} ((s1 continues browsing))
21 (3.0)
22 {ESTO**[**NIA}
23 B **[**mmm**[**-mm
24 A **[**{FINLAND}
25 <FINLAND>
26 {@CONNECTING TO THE SERVICE@}
27 (1.0)

Things get even more complicated if a person begins to question a society's basic, common-sense geography, and indeed, developments in society may also make common-sense knowledge practically worthless. In one case, one of the students did not trust his ability to classify the stock exchange as "utility" because "following the index of the stock exchange is entertainment (0.8) *nowadays*". This remark relates a social institution to a change in society in a perfectly respectable manner – financial matters no doubt have become news items and a subject of entertaining reporting – but simultaneously leads to confusion about where to place financial management in the dichotomy of utility/entertainment on the Radiolinja Main Page. It is not just items on the menu that prove confusing: it is also the nature of common-sense knowledge of social structures that may confuse the matter.

False alarms. There is a "false alarm" when the selection is correct, but the user thinks it is incorrect. Here, common-sense knowledge of social structures makes the same items that function as Siren's Songs on garden paths ambiguous. I will call these items "ambiguators." When people face items that appear ambiguous, they start to suspect whether what they are doing is right in the first place. In Excerpt 4, O and K are working on the stock exchange task. They are in *Kauppalehti*, which has a link to the main index of the stock exchange, then called "HEX." However, Kauppalehti offers

several items that, from the standpoint of common-sense knowledge of social structures, might provide a way forward. They choose “currencies” instead of “HEX,” but then after trying it they go back to *Kauppalehti* apparently because they took not finding HEX in currencies as an indication of being on a false path. The notion of “currencies” functioned here as an ambiguator.

Example 4. False alarm

01 O Now you are back in [Kaup<palehti>
02 K [Yes:,
03 O *Right*
04 (2.0) ((scrolls the menu))
05 K *There you've [got now [that] tie-*
06 N [*( ) [It is] it is not in hares*
07 [<SELECT>
08 [{COMPANY SHARES}
09 K .No, [no
10 [<GO BACK>
11 [{SHARES}
12 N *(It is, it is in) in[dexh,*
13 K [It is not [here, [it's got to be
14 N [[no
15 [<GO BACK>
16 [{KAUPPALEHTI
17 (0.2) ((scrolls))
18 N How about currencies, curren*cies*
19 <SELECT>
20 {@CONNECTING TO THE SERVICE@}
21 N Now it is mak[ing a [connection.
22 K [.jyeah[
23 [{CURRENCIES}
24 (3.0)
25 N Va[lu-, it is currencies bu:t, is is not [any (.) index
26 K [Eh- [*mm,*
27 N No, we- [(.) usch,
28 [<GO BACK>

29		[{KAUPPALEHTI}
30		(1.4) ((scrolls))
31	K	Hmh.
32	->N	No, it [is not in Kauppa]lehti
33	O	[What next.]
34		(0.2) ((scrolls))

Here we see how the same procedures that people use to make sense of what they see may keep them in garden paths for prolonged periods of time. Working from common-sense knowledge early on leads users down a garden path, but while on that path, they see evidence indicating they are on the right path. The problem lies in that common-sense knowledge of social structures often takes people to wrong choices – either to completely wrong paths, or away from the right ones. Of course, if garden paths and false alarms are but momentary nuisances, they are not a problem for people or technology. As difficulties mount, however, people become less confident about their choices and about whether they can trust their knowledge of society in surfing the virtual world. Sooner or later, they start to doubt their previous guesses. Transcripts are full of moments where people wonder what they are doing, and try to make sense of whether they are on the right track with little clue of where they are.

6. Common-Sense Knowledge of Social Structures as a Double Bind

Above, we have seen how people repeatedly face problems in navigating WAP, often ending up in garden paths and false alarms with no clear sense of where they are and where they are heading. These problems often have their origin in common-sense knowledge of social structures, more specifically in knowledge of society's institutional structure and its ways of classifying these institutions. When people realize that in order to navigate WAP, they have to rely on their common-sense knowledge of social structures, but that they cannot trust this knowledge, they are in a double-bind: they have to trust their common-sense knowledge, but they know they cannot trust it (Bateson, 1979). In the tapes studied here, these feelings are expressed in many ways that formulate experience, and also have consequences for it. For instance, in Example 3, line 14, we met a laughter token that shows insecurity about the system. In other

data, there were several instances of laughter and joking about the logic of the service. More commonly, we find instances where participants talk about their insecurity openly (Example 1, line 24).

These expressions also come in the form of negative judgments. In Example 5, K and A are browsing the “economy” page, reading its objects out loud (lines 1-18). Following a suggestion by A in line 18, K tries out one alternative, “news” in line 19, but gets an error message. In line 22, K makes her judgment about the response available with an expletive that leaves little doubt about what she is feeling.

Example 5. On a garden path: scrolling a sub page of the Economy page

01	K	It’s [not here
02		[((scrolls))
03	A	myeah (.) it’s not there
04		(0.7)
05		((scrolls))
06	K	I don’t really ( )
07	A	=[( ) ( ) ([ )]
08	K	[her]e is [n’th’ng]
09	A	[stocks
10	A	Return, return (.) com-
11	K	=[{selects RETURN}]
12		[{the KAUPPALEHTI page appears}]
13	K	((scrolls down the page))
14	A	Investment funds
15	A	Currencies
16	A	News
17	K	((scrolls))
18	A	Take News
19	K	{g[oes to CHOOSE}]
20		[{selects CHOOSE}]
21		[{system message: NO REPLY RECEIVED}
22	->K	*Oh shit* ((finger on the scrollbar))
23		=[{presses RETU[RN}]
24		[{the KAUPPALEHTI page appears}
25		(0.7)

26 ((scrolls))

Another way to express the double-bind situation is through descriptions of emotional states and moods. In Example 6, K and N are trying to find their way to the Stock Exchange, but have not found it. After more than 5 minutes of trying in vain, they get to *Kauppalehti*, which does offer one possible route to the destination. However, they didn't find the HEX index through *Kauppalehti*, and tried the bank page instead, with no success. After N's frustrated "Nn no:::, HMH" in line 6, the research assistant intervenes, asking what the problem is. N ventures to explain how she is convinced that *Kauppalehti* would have been the right route (lines 8-9), and is joined by K in this judgment (line 10). However, N also continues to give a reason for why they did not find their way to HEX through *Kauppalehti*: they got tired of searching and banging their head against the system (lines 9 and 13). Again, K immediately aligns with N's explanation (line 14).

Example 6.

01	K?	We'd-, We'd have gone further [if we had, we had let it]
02	N?	[Yah if we had immed-=]
03	N?	let is *call*
04		(4.0)
05		{WAPIBS (Choose topic)}
06	N	No no:::, no, HMH.
07	R	What's the *prob(lem)*
08	->N	We'd have got there, absolutely we'd have got there
09	->N	fr[om Kauppalehti but we, just got tired (.)
10	->K	[Yeah we would, yeah, .yea, yea
11		<GO BACK>
12		{WAPIBS (Choose main topic)}
13	->N	in waiting that it makes the [ca[ll
14	->K	[[*nyea*
15		[<GO BACK>
16		[{ECONOMY}

WAP pages are complex, and often provide ambiguous responses to guesses people make when browsing previous pages. And indeed, once users get a response, there is

still much to do. They have to find out whether it is relevant, and how it helps them search for information. Often the only way to proceed is to go to the next page, which is teeming with Siren's songs, and items that are ambiguous in terms of common-sense knowledge of social structures. As the user interface of a service becomes a Kafkaesque labyrinth, frustration amounts and is reflected in the fleeting judgment regarding the technology – even when one is using it for the first time and initially considers it beneficial. These judgments may result in cognitive dissonance (Teo & Pok, 2003), which may partly explain why WAP was a failure. However, as even this cursory look at actual, embodied and social use of WAP shows, such judgments have a practical background. The reasons for these judgments again lie in the confusions described in the previous section. Something similar takes place when people come to realize that they have gone through several false alarms for no reason.

It is this labyrinthine feeling that is formulated in what appear to be fleeting comments in talk. However, these fleeting comments are in fact rather significant. As these judgments become formulated in talk, they may also come to be shared, as in Example 6, in which K and N commit themselves to the idea that they got too tired to try *Kauppalehti* long enough. As such, these judgments are only formulations of ongoing activities, but if people get committed to them, and build their lines of activity on them, they establish changes in Gestalt contextures (Gurwitsch, 1964). It is important to note that these changes of Gestalt contexture from "good" technology to "bad" technology take place quickly. In our study, it took participants only a few seconds to become confused, insecure, and embarrassed, and only a few minutes to define WAP as a useless technology. Saying such items out loud makes doubt public, and makes it possible for other people to align with the new Gestalt contexture.

7. Discussion

Like so many other digital technologies between 1995-2001, WAP was initially hailed as an inevitable success that was supposed to bring the Internet to everyone's pocket. The reality proved to be different. In effect, WAP became one of the major failures of information technology, and also the biggest failure of mobile technology.

Several explanations have been proposed to account for the failure of WAP. Most typically, these have been non-theoretical in nature. For example, it has been pointed

out that WAP is inconvenient to use, people do not trust that it is safe, WAP is slow, and it is technologically unstable (Anil et al., 2003). Perhaps the only theoretical attempt to explain the failure of WAP has been proposed by Teo and Pok who, using Web questionnaire data from Singapore, proposed that cognitive dissonance between the promises of the industry and the reality explains the failure of WAP. However, they also argued that an intention to start using WAP largely stemmed from attitudinal and normative pressures rather than behavioral ones.

In contrast to these explanations, this paper has followed the ethnomethodological tradition (Koskinen, 2000; Arminen, 2001; Arminen & Raudaskoski 2003; Arminen 2005; Koskinen et al., 2006) and studied WAP as firmly rooted in local circumstances of use and, more specifically, in common-sense knowledge of social structures (Garfinkel, 1967). This paper has argued that users have to rely on their common-sense knowledge to be able to use WAP but that, simultaneously, this common-sense knowledge is a source of many of WAP's problems. The failure of WAP is endogenous: rather than being rooted in the external circumstances referred to in mobile telephony literature as being typical hindrances for using mobile phones – like regulations and impoliteness (Ling, 2004) – I believe the problems of WAP are rooted in what people know about society and more particularly, its institutions. To get to their destination in WAP, people have to use their knowledge of society in conducting the "situated inquiries" (Suchman, 1987) necessary to get through the hierarchies of the system.

One of the main problems of WAP is the small-and-deep interface that necessitates using classifications that are so abstract that they are simultaneously dependent on, and out-of-touch with, common-sense knowledge of social structures. On one hand, people have to use common-sense knowledge of social structures in navigating WAP sites. On the other hand, in navigating WAP, people constantly face items that are confusing and lead them to what Suchman (1987) called garden paths and false alarms. As a result, user experience deteriorates, and indeed our transcripts show many instances of less-than-happy feelings and emotions within situated inquiries. As these negative instances mount, people may come to define WAP as something that is not designed for them. Since they cannot trust their ability to get what they want from WAP, they stop using it. Technological solutions in WAP have been so out-of-touch with ordinary methods of reasoning that people simply cannot "tame" this technology.

The data for this paper is old, stemming from the first generation of WAP. However, although other technologies have come to market, the problem is still there. Many WAP sites are still structured almost exactly as in this paper, consisting of links that are

typically only one word long. In more modern phones, navigation is increasingly based on visual icons, making navigation easier and less dependent on one's ability to use one's common-sense knowledge of social structures.

As Ramsay and Nielsen (2000) note in their interview study of WAP users, WAP at the turn of the century was in many ways like the Internet before the latter became visual and multimodal with the introduction of the World Wide Web around 1994-1995. The pre-WWW Internet was mainly used by research scientists located in universities. In contrast, WAP was built for the masses. Thus, it came to be used in completely different practical, social, and institutional circumstances than the Internet. For example, although finding someone's e-mail address before Altavista, Yahoo, or Google required lots of guesswork that was largely based on common-sense knowledge, knowledge of the real world and its virtual version was usually available in the use environment, the university. WAP users walking around somewhere do not have access to knowledgeable colleagues who could help them tackle technological problems. The other important precursor, *i-mode*, popular in Japan, also shows a different way of how devices with small-screens are embedded in ordinary society. For instance, i-mode was built on existing common-sense categories familiar to people from classified ads (Matsunaga, 2000; Natsuno, 2003). People knew how to navigate *i-mode* because its classification had been tested in the marketplace for years before they were coded into the phone. In brief, the social organization around the Internet made it easier to use, but there was no such buffer for WAP.

These precedents suggest a cautious generalization regarding other technologies. If the design of a system only builds on ordinary knowledge, but not on a tradition of knowledge created by institutions like the classified advertising industry or universities, common-sense knowledge of social structures easily becomes ambiguous, turning user experience into a maze. Unless the nature of common-sense knowledge and the social organization of use are taken into account in design, technology is likely to fail, or be successful only under certain specific conditions. For example, as Ramsay and Nielsen (2000) noted years ago, WAP was in many ways similar to the pre-WWW, pre-visual Internet which survived, if not flourished, in academia, where people did have quick and cheap access to technical help. When we turn to consumer technologies, this precondition, "social soil," is missing. WAP suggests how a blatant disregard of this fact and the assumption that people are able to make sense of items on screen using common-sense knowledge of social structures is untenable in many circumstances. More than anyone, designers ought to be aware of the perils of believing that they

since they understand the system, others will too. In their work, designers develop a culture that helps them understand how items and classifications in menus work. They are a special case of a far more general problem.

This paper was based on classic ethnomethodology that found its basic formulation in Harold Garfinkel's *Studies in Ethnomethodology* (Garfinkel, 1967). The framework has proved to be useful in studies of work and computer-supported collaborative work, or CSCW (Heath & Luff, 2000) and increasingly also in design (Arminen, 2005; Kurvinen, 2007). In methodological terms, the aim of this framework is explicating action in detail in situations in which it happens rather than explaining it by such social structures like gender or class. However, since the basic thrust of the analysis focuses on explicating how ordinary action is organized *in situ*, the analysis almost necessarily leads to results that are to some extent self-evident and common-sensical. However, this does not mean that analysis is uninformative. On the contrary: a thick description (Crabtree, 2003, p. 27-28) of ordinary action lays bare just those ordinary skills that people usually take for granted and find uninteresting. As this paper has shown, however, it is just these skills that make technology work – or not work. They make up the seen but unnoticed "social soil" that technologies cannot do without – even when people are not aware of the many features of their action. For designers of technology, explicating them is crucial: a technology like WAP, designed for ordinary circumstances, comes to be judged by how well it works in them.

In sum, although WAP may have been the first step in making the Internet mobile, it forced people to make simplified choices in complex, context-dependent matters like deciding whether going to Sydney is fun or work. One consequence of this property is that people had to spend time and energy deciphering items they encountered on WAP pages. In this work, they had to rely on their common-sense knowledge of social structures. However, this knowledge was a mixed bag. Sometimes, it helped people navigate through the system; just as often, however, it led them astray. Unintentionally, WAP became what Garfinkel (1967) called "breaching experiments," explorations into how ordinary activities were constructed. Just as in Garfinkel's study, where students desperately tried to find meaning in arbitrary answers to their question by a supposed advisor, WAP users face a system in which their quests for meaning were, for all practical purposes, met with inexplicable answers by the system. The difference between breaching experiments and WAP is ultimately a matter of scale which, in the case or WAP, was industrial. The fate of WAP shows how neglecting orderly properties

of ordinary actions may lead to technological failures on a massive scale even though there clearly exists a need for the technology.

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