Workplace Studies

An Ethnomethodological Approach to

CSCW

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1. Introduction

During last two decades, ethnomethodology, a research tradition, originating from sociology, has got an increasingly stronger position in many fields outside sociology. Computer-supported collaborative work (CSCW) is one of these fields. In particular, work done at and around Xerox PARC has become influential in ways in which we think about human action and humans interacting with technology. Words such as "situated action," "indexing," and "reflexivity" have become a part of everyday parlance not just in sociology and many fields of linguistics, but also in that part of computer science that deals with designing systems for human users.

Many of these notions have their origin in a sociological tradition called ethnomethodology (EM). The most important text of the tradition is Garfinkel (1967). This paper gives a brief overview of the central concepts and developments in ethnomethodology, particularly from the standpoint of an emerging body of research within the field. This emerging research deals with a variety of computerized - or in other ways technology-driven - work environments, and is about to get dubbed as "workplace studies," even though the central work in this area is still to come out (Heath 2000). The point in this tradition is to see technology and human action as an intertwined pair. In historical terms, this tradition formed one part of a reaction against structural and institutional sociology and also Chomskian linguistics, in which ordinary action and talk was seen as a defective and corrupted version of societal structure or syntax.

This paper does three things. First, it gives a brief outline of the basic concepts of EM (sections 2 and 3). Secondly, it demonstrates some of these concepts with an empirical example, a Wireless Application Protocol (WAP) service (section 4). Third, it describes briefly some exemplary research from this area (section 5).

2. Ethnomethodology (EM)

Anyone who talks about EM faces a dilemma: it is a research practice rather than a theory. It is difficult to pinpoint any single set of concepts that best describes EM. Instead of such linked body of concepts - this is what social scientists usually understand by "theory" - EM is best described as a set of research policies. The first, and still the most influential, of such lists is from Harold Garfinkel, the founder of the tradition. In his opinion, EM is a research program that takes seriously

> (1) the indexical nature of action: *every* term, concept, category, act, activity, etc. is ultimately defined by its occasioned use - like terms such as "here," "that," and other indexicals that are not understandable outside the "context" of their use;
> (2) the practical nature of action: although words and actions are indexical, this does not seem to halt action. People are perfectly well able to make sense of what's taking place around them. In practical activities, they resort to rules such as "et cetera," "let it pass," and so forth, and through these rules;
> (3) its reflexive qualities: action is a self-referential process in which words and actions create a template for further actions that (re-)interpret and stabilize prior actions, and become templates to subsequent actions. It is not possible to understand action without its context, *and* vice versa: "context" for some term is created in that same action in which it takes place. (Today, this feature of action called its "situated" quality).

It is this observable order that is the awesame achievement or what Garfinkel calls "the immortal ordinary society." It is this society that is the focus of EM studies in all its forms. There are no privileged subjects for research. People are not "cultural dopes," run by drives, structures, or meanings from behind their back; rather, they are reasoning, watchful creatures who are doing their tasks in contexts of their own creation.

Observable order is, according to EM, radically local. Somewhat paradoxically, it is *not* fragile. On the contrary, it is robust. People trust to their sense of order and knowledge of methods of

joint action, and correct their fellow members who depart from those methods too radically. For Garfinkel, this is the "accountable" nature of action. We have to show in our action that we use the same methods of action as others in an observable and reportable fashion. If we don't, we are expected to account for our deviation, or someone corrects us. What is at stake here is not just social control, but our trust in our competence to act properly (cf. Garfinkel 1963).

There may be "recursivity" in action, especially in technological contexts in which one part of action, the technological side, is more or less the same each time, and where much of action is hidden from the user. Still, people who are doing their work within a technological environment act *here and now*, their action has a quality of *"just-thisness,"* or *haeccity*, in Garfinkel's recent parlance (see Garfinkel and Wieder 1992).

Thus, even in highly standardized environments, people involved in some action *create* through their actions the same context they are producing and in which they take action. Each activity is unique, takes place *"another first time"* for participants of that action. Members involved in producing and maintaining some line of activity index "single" actions into their sense of this line of action, and take subsequent action which, again, is seen against the background of this main line. Action is reflexive thoroughly: to use a more familiar term, it is "situated," as Lucy Suchman has proposed to call this quality of action (1987).[1]

3. Some types of action

As mentioned above, human action is not fragile, something that is about to break down at any moment and somehow miraculously manages to be orderly. This is because people co-construct

their actions using a set of members' methods, or "ethnomethods." These methods of action are obviously different in various situations. Some of the main types of action are "*ordinary conversation*." By this term, ethnomethodologists mean conversation that has no underlying plan that coordinates the structure of interaction. Ordinary conversation is organized on a turn-by-turn basis: participants listen to each others' turns, and build their next turns on those turns. Simultaneously, they provide a context for the subsequent turn (see Sacks, Schegloff and Jefferson 1974; Heritage 1989: 210-211). Ordinary conversation is locally organized: its order is based on adjustment work by participants. "*Institutional interaction*," in contrast means interaction that is oriented towards accomplishing more or less complex institutional tasks such as diagnostizing illnesses and writing cures in physicians' work. Its vocabulary, structure, and sequential structure is so built that these institutional tasks can be achieved (see Drew and Heritage 1992). In most cases, institutional interaction is organized as a sequence of questions done by a professional and answered by the client. The underlying order is provided by professionals, in various occupations differently. Nowadays, most research in ethnomethodology and conversation analysis focuses on institutional interaction and its sequential structures.

In addition, there are other orders that build on these more preliminary forms. Thus, at the workplace, many activities are built using texts like agendas as methods (Koskinen 2000). Similarly, there are social arrangements such as chairing that provides structures for action (Boden 1994). There are also less formal methods involved: for example, many meetings are coordinated by reference to various "membership categorizations" (see Sacks 1972). At UIAH, we constantly and obstinately distinguish Industrial Designers from Graphics Designers and New Media People. We also share - and constantly "do" - an idea of a difference between UIAH

people and engineers. Some of these methods are more material. For example, in scientific laboratories, much of work takes place according to sequences specified in methods protocols that are built into equipment (see Garfinkel, Lynch, and Livingston 1981). Similarly, in many forms of computer-supported cooperative work, people work with technology that provides a sequential ground within which they work and do their work (more about this later). In most cases, these device-specific or programmed sequences of action are built to imitate - or at least to emulate - competent practice.

However, for a designer, the problem becomes the reflexive quality of action - designers create a context in which the user acts, and specifies the steps that the user has to take in order to accomplish his or her task. In this work, he has various resources in building his actions. These resources range from semantics and visual elements in the interface to the local history of interaction. Since this local history is unique in each particular occasion, people act in a unique fashion each time, even though the "stimulus" is exactly the same. Even in highly standardized environments, people surprise. It is sensitivity to reflexivity that is the main import of ethnomethodology to design. Ethnomethodology's main contribution to design is that it provides several concepts and detailed research practices that provide useful insights into how action is construed in the first place and thus, by implication, how it could be modeled according to those methods that people use in constructing their action.

4. An Example of Situated Action: Nokia 7110 and the Phone Operator Radiolinja's WAP Service

Let's put some of these concepts to work to see how they help us to understand how humans and machines interact. I'll provide an example to make these concepts less abstract. This example is a

recent commercial innovation called "*Radiolinja*," which is a Finnish wireless portal that uses WAP (Wireless Application Protocol) technology.

The Radiolinja WAP service's main page consists of four words that act as hypertext links to further categorizations of services. These four links are named "utility," "entertainment," "companies," and "Radiolinja." Most of the services are behind "utility" and "entertainment." The former indexes services that are apparently defined as useful by Radiolinja, while the latter indexes services that have something to do with entertainment. It is apparent that both categories are exceedingly vast and undifferentiating from the user's point of view. In practical terms, the only way to learn what is behind them is to try the service. Thus, in ethnomethodological terms, these words are indexical, although the amount of ambiguity and indexicality varies quite a lot between different categories. Technologically speaking, the current WAP service is much like the WWW in the early nineties. The system offers the UTILITY category as the best guess for the user. (Picture 1).

To illustrate ethnomethodological concepts in more detail, I made a demonstration with two users using Nokia 7110 to browse the Radiolinja service. Both are first-time users in their mid-twenties. One was female, another male. The latter had extensive new media expertise, while the former was familiar with hypertext and the Web only as a user. To make the demonstration simple, I gave both four tasks (see Table 1). These tasks produced a tape of 30 minutes; thus, on average, it took almost four minutes from the two users to find one particular service.
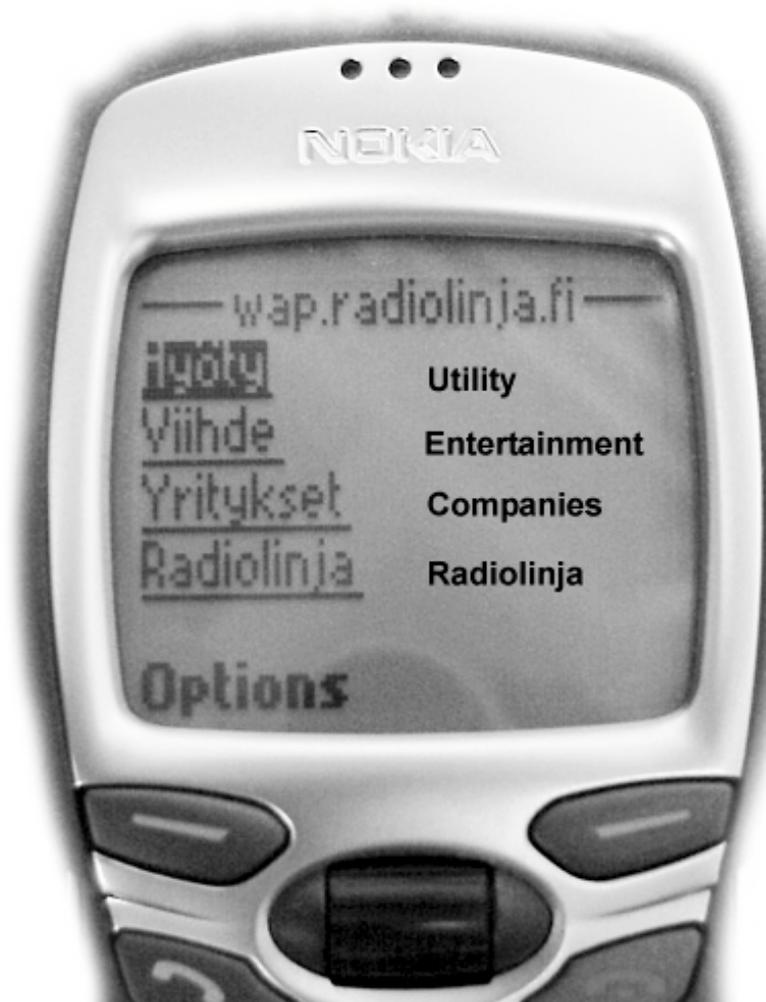
Picture 1. The Main Page of the Radiolinja WAP Service

Table 1. Users were asked to search the following four WAP services

1. The Helsinki Stock Exchange Main Index (HEX)

2. The National Museum (this task was a trick: unlike Opera or The Museum of Modern Art,

The National Museum of Finland does not yet have WAP pages)

3. Finnair flight schedule from Helsinki to London on April 10th

4. The Finnish Science Center *Heureka*.

I will report the results of the first task only. An ideal, experienced user would navigate to the HEX index using the following sequence of thirteen steps:

Table 2. Sequence to the Helsinki Stock Exchange (HEX) WAP service

1	Screen:	The phone's default screen
2	Action:	Press Menu
3	Screen:	Messages
4	Action:	Roll down to "Services" screen
5	Screen:	Services
6	Action:	Choose "Home"
7	Phone Action:	Calls to Radiolinja (with those default settings used in this demo)
8	Phone Action:	Connecting to the Service
9	Screen:	Radiolinja main menu: wap.radiolinja.fi
10	Action:	Choose "Utility"
11	Action:	Choose "Money"
12	Action:	Choose "Stock Exchange"
13	Action:	Choose "HEX index"

Ideally, this sequence takes the user from the main menu of the Nokia 7110 to the current value of the HEX index. Notice that once the user is in the Radiolinja main menu, she can get the current reading of the HEX index in only five steps. There is a waiting period when the phone builds a connection to Helsinki Stock Exchange, but other parts of the sequence can be done with the 7110's Navi^{TM} roll.

Enter the user, and the situation gets more complicated. Here's what happened with one user ("K"), who is assisted in the process by IK ("I"). Transcription symbols are in the Appendix.

Extract 1. From Radiolinja Main Page to "Utility" Main Page
```
1          ((screen: @wap.radiolinja.fi@ main page))
2    I     Okay. (.) Try to find HEX,sh (0.3)
3          the Hex general index from *there.*=
4    K     =FROm here[,h
5    I               [.juu
6          0.9
7    K     {Options}
```

```
 8   p     0.2 @Connecting to the service@
10   K     No but [now I went ba[*ck,h*
11               [((scr: utilit[y main page))
```
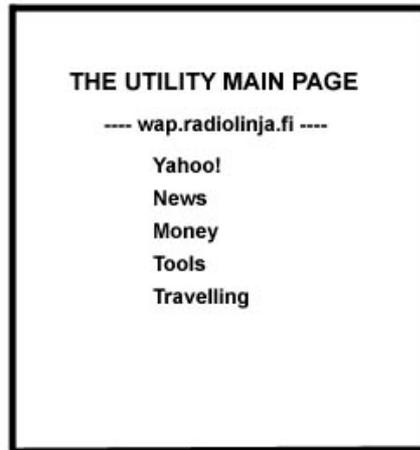
THE UTILITY MAIN PAGE

---- wap.radiolinja.fi ----

Yahoo!
News
Money
Tools
Travelling

```
12   I                              [Joo. 0.2 [but try it,<
13   K                              [         [.tjoo
14                                  [((K browses @utility@))
15        0.3
16   K    .mt 0.3 [News, [money,h 0.7 Let's see
17              [{News}[{money}
```

Here IK gives the task to K, who is in the Radiolinja main menu (lines 2-3). She had been practicing the user interface for approximately two minutes by now, and takes the next step quickly in line 7. In line 8, the phone connects to the service, and takes K to the next menu, which she identifies as familiar to her (line 10). IK confirms her choice in line 12, still at the end of her turn while she is still speaking. Simultaneously, she chooses the menu "UTILITY," which takes her forward in the service.

However, notice an analysis that was implicit in her action: when IK asked her to go to the HEX main index, she immediately located the HEX index as something that belongs to the UTILITY category. She could not know whether this was true (she had not used the service before). Her selection of UTILITY shows that for her, stock exchange is something that belongs to useful

things. Also, she implicitly assumes that the service provider has understood the place of the

index similarly. After a waiting period of 0.3 seconds she gets to the next menu, "UTILITIES"

which, first provides her with more material of how the UTILITY item in the main page is

structured, and provides her with data for the next step:

Extract 2. From "Utility" Main Page to "Money" Main Page
```
15          0.3
16    K     .mt 0.3 [News, [money,h 0.7 Let's see
17               [@News@[@money@
18    K     [what kinds of things are the[re,
19          [((K browses the @utility@ me[nu))
20    I                                      [*mm*
21          0.3
22    K     *.hhh* (.) It has to be in this mon*ey.*
23          0.3
24          ((presses options, new selection menu appears))
25          1.4
26    I     *joo?*
27          1.8
28    K     Does it go [there now (*fro[m here*
29               [{Options}      [((@Connecting to..@))
30    I                                 [joo?
31          1.4
```


Notice how she infers the location of the Helsinki Stock Exchange from the menu in front of her.

Here, she enters a menu that is not familiar to her. What she does in lines 16-18 is that she

browses the menu with the Navi^TM roll, and finds an item named MONEY from the list of items

in the menu. She quickly eliminates other items than the MONEY item from consideration, as

her utterance in line 22 shows. In line 24, she rolls the selection bar over the MONEY item, after

which she asks IK to ratify whether the Stock Exchange is really there. Note that although IK

ratifies her analysis, she has already selected the item before IK's ratification (line 29). The

whole process of going through the menu took her approximately 2 seconds. During this time

she managed to browse through the menu with her eyes and the phone's Navi roll. While she was

browsing, she was thinking out loud the logic of the system, eliminated other alternatives, chose

the "MONEY" item, and voiced her inference. Furthermore, she did the whole process in interaction with IK, who was by her side this time, watching the camera.

In line 32, she gets to the MONEY menu, and shows what is inside this menu. After a glance of 1.0 seconds, she gives a recognition token "The::[:re::,h=", through which she shows that she has found what she is looking for: The Helsinki Stock Exchange. Simultaneously, she browses the whole menu. After doing that, she is confident that she has found the Stock Exchange, and asks IK whether she should go there (line 38). After receiving a go ahead signal from IK (line 41), she goes to the new menu.

Extract 3. From "Money" Main Page to the Helsinki Stock Exchange WAP Page

```
32          @The "Money" menu appears@
```

THE MONEY MAIN PAGE

---- wap.radiolinja.fi ----

Euro
Hex
Index
Interest rates
Stocks
Funds
Currency
Kauppalehti
MeritaNordbanken
:

```
33          1.0
34    K     The::[:re::,h=
35              [((browses the @Money@ menu down))
36    I     =Okei?
37          0.4
38    K     Shall I go all the w[*ay.*
39                           [((chooses "HEX" from menu))
40          0.2
41    I     Just go all the way,h
42          0.4
```

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Notice that there are two alternatives to the Stock Exchange Index in the MONEY page. There is the very word "index," and there is the item "HEX." Here we see the local history of interaction at work. K does not hesitate for a single second in her choice between these two items, even though they both suggest that she finds some kind of index by performing them. However, remember that in line 3, IK gave her a task by saying that she ought to search the HEX index. Here she uses this item as an indexical background in navigating through the layers of the Radiolinja service.

There is no need to go further in this example. Instead, it is important to pay attention to certain features of how action is construed in this sequence.

> (1) The User interface and the structure of the service dictate the overall sequence through whish K has to access the HEX index. Still, there is much hidden work involved throughout. Some of this work is interactional, and embedded in the history of this particular interaction.
> (2) There is a task to be performed, and it takes several steps to do that task. This series of steps is arranged in a sequence by the designers of the system, and gives the framework for the user's action
> (3) The user does lots of work in performing the task given to her. She does some explicit reasoning (see line 22), but in the main, her reasoning is embodied rather then done in so many words (in particular, see lines 16-20).
> (4) Her embodied action and talk are in reflexive relationship to each other (see esp. lines 16-20), elaborating each other. However, this pair gives her and IK also grounds for reasoning together about the system (lines 28 and 30), and for performing other kinds of cooperative actions such as instructions-following instructions -pairs (see lines 34-41). Both are monitoring the system, and its actions, and there is a conversational relationship between IK and K.
> (5) In terms of ethnomethodological concepts, this case also illustrates well the notions of indexicality and its practical implications: K learns the meaning of items at upper level menus by selecting them, and browsing menus that appear.

Although local history is not visibly available here as a means of action; however, it is apparent in later parts of the sequence, when both subjects explicitly said that they know where to find some service because they had seen them before. In all, this brief case shows that action is

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"situated" even in a simple case in which everything seems to go smoothly. Apparently, a more experienced user could have performed these actions quicker, with less explicit and embodied work. However, even an experienced user has to make sense of the state of the phone and the service that is being communicated to her.

5. Research Related to CSCW

Ethnomethodological and conversation analytic studies typically continue these themes and elaborate them in more detail. In most cases, the systems and groups (or "the production cohort," as the current term in EM goes) studied are far more complex than in the above case. Typically, best research today focuses on collaborative action in many kinds of real settings. In many current technology-mediated environments, most human processes are heavily technologically mediated. The point in the above example was its minimal character, which helped us to illustrate the power of some ethnomethodological concepts. When we situate ethnomethodological thinking into a typical technologically intensive workplace, like the stock exchange, or a research laboratory, we see how concepts illustrated earlier help us to understand the interaction of humans with technology.

For example, in a study of a scientific research vessel, Goodwin (1996) paid detailed attention to the ways in which scientists, assisting researchers, and the ship crew visualized the depth of the water for within a sampling grid outside the Amazon delta. In this ship, most of the visualizations used by research scientists - no matter whether they were geophycisists, oceanologists, or from some other discipline - to were mediated by several pieces of scientific equipment. These equipment consisted of measurement instruments, computer graphics, and

printouts from both of these, among other things. The process of sampling water for research was also mediated by a complex network of phone calls and radio calls through which various members involved in action coordinated their efforts so that they got a scientifically acceptable result for their studies.

Other exemplary studies have focused on airport control rooms (Suchman 1996; Goodwin and Goodwin 1996), underground control rooms (Heath 1996), and on stock exchanges (Heath, forthcoming). Most of these studies have explored the ways in which several members monitor on-going actions at various technological surfaces of the workplace, and how they coordinate their efforts almost without effort. Picture 2 gives a rough idea of the complexities involved in airport controllers' work. In this picture, three air traffic controllers are discussing through technology and using technology about events taking place at a remote airport gate, to which they have only a technology-mediated access. In this picture, there is a problem with stairs at a gate. PP is trying to persuade another airline (Pacific) to loan stairs, but does not succeed because Pacific does not have appropriate equipment. Notice how intensively technology is involved in this exchange. Almost all interaction takes place through radio, or some other communications device, and an important part of the visual field is also technologically mediated. Still, the heart of action is in talk: negotiation between parties takes place in talk.

The important point in this picture to notice is that people constantly utilize their mundane reasoning skills to fit their actions to those same on-going lines of action they are simultaneously producing. It is often just these silent skills that form the bedrock of order at any workplace. In many situations, people fill gaps in technology, and construe their action together with their peers in ways that are more or less in line with official organizational policy. In many cases,

their action consists of multiple, even conflicting, orientations at the same time. Still, the focus is on work and its organization.


Figure 10.
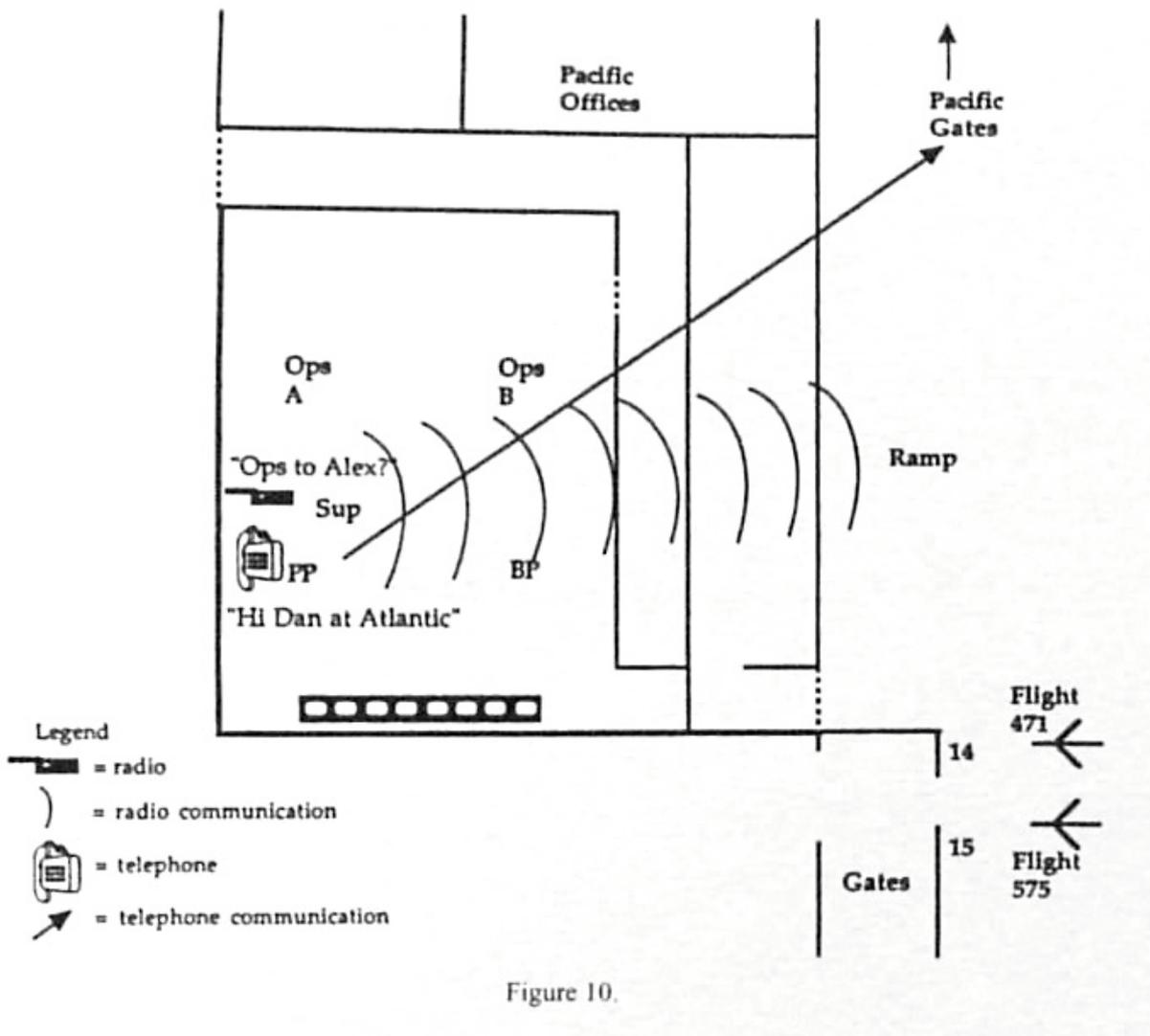
Picture 2. Airport control room (taken from Suchman 1996)

6. Discussion

Currently, EM provides by far the most sophisticated theoretical framework for understanding situated action. In particular, it is the only research tradition in the social sciences that studies

action *in-situ,* as it happens. It shows how complex human activities are, and how orderly human action is, even though it may appear chaotic, if we look these sequences of actions through our traditional sociological, psychological, or linguistic theories. The most important point of EM is that it is sensitive to the unique qualities of human action, and is capable of analyzing its situated and reflexive qualities. The basic concepts and research policies of EM are devised to help us to understand the local, emergent features of action in their recursivity and stability.

For CSCW, EM has provided several seminal concepts, most notably Suchman's (1987) notion of "situated action." In addition, EM and its cousin, conversation analysis, has provided a research agenda that aims to study the orderly character of human action. With the exception of traditional experimental laboratory research, there are few rigorous competitors in this area in the social sciences (or in psychology). Also, these competitors face difficulties when faced with very complex processes. Especially, the issue of external validity is troublesome for them, which is not the case with EM and CA that almost always work with data from natural settings.

Finally, EM also increasingly structures thinking of major theorists in the social sciences. From these theorists, EM gradually gets built into other social sciences, including business studies, as well as to common-sense thinking. Therefore, it is good to know something of the discipline, even though it takes an immense amount of time to read any paper written by people in this line of research.

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Transcription conventions (adapted from Jefferson 1984a).

(.)	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.
$what's that$	Laughingly.
W(h)hat	Within words, (h) is a laughter token.
he HEH HEH hah	Laughter tokens.
wh-	Cutoff of a word.
And th( )<	The speaker halts some unit in progress.
>she said<	Quickly.

Activities in WAP:

`<SELECTS OPENING PAGE>`	Performing an activity with the device
`{SYDNEY 2000`	Menu (or page or state) that is opened through the activity.

In a more precise transcript the cursor location on the display could be shown through underlinings.

```
{UTILITY}
   {SHOPPING}
       {TRAVEL}
          {ECONOMY}
[((@Connecting to..@))
```

`{UTILITY}`
`   {SHOPPING}`
`       {TRAVEL}`
`          {ECONOMY}`
	Cursor location. In the utility menu, the cursor is finally placed upon "economy."

`[((@Connecting to..@))`	Messages from the system, available to the user.

```
WAP data: Transcript /IK 27.3.2000
 1   scr                                        @wap.radiolinja.fi@
 2   I      Okay. (.) Try to find HEX,sh (0.3)
 3          the Hex general index from *there.*=
 4   K      =FROm here[,h
 5   I               [.juu
 6          0.9
 7   K      {Options}
 8   p      0.2 "Connecting to the service"
 9          2.3
10   K      No but [now I went ba[*ck,h*
11              [((scr: utilit[y main page))
12   I                        [Joo. 0.2 [but try it,<
13   K                        [         [.tjoo
14                            [((K browses @utility@))
15          0.3
16   K      .mt 0.3 [News, [money,h 0.7 Let's see
17              [{News}[{money}
18   K      [what kinds of things are the[re,
19          [((K browses the @utility@ me[nu))
20   I                                   [*mm*
21          0.3
22   K      *.hhh* (.) It has to be in this mon*ey.*
23          0.3
24          ((presses options, new selection menu appears))
25          1.4
26   I      *joo?*
27          1.8
28   K      Does it go [now there (*thi[s way*
29              [{Options}      [((@Connecting to..@))
30   I                              [joo?
31          1.4
32          @The "Money" menu appears@
33          1.0
34   K      The::[:re::,h=
35          [((browses the @Money@ menu down))
36   I      =Okei?
37          0.4
38   K      Shall I go all the w[*ay.*
39                            [((chooses "HEX" from menu))
40          0.2
41   I      Just go all the way,h
42          0.4
43   K      {Options}
44          0.2
45          ((@Connecting to the service@))
46          4.2
47          ((HEX general index appears))
48          1.5
49   I      Oh well h? (.) [>Seventeen thousand
50   K                     [/uh huh?\
51   I      (fourteen) plus zero point eighty
52          four?,<
53          0.2
54   K      /uh huh?,\=
55   I      =Okei. (.) Search next (.) The National Museum.
56          0.2
```

```
57   K     {Back}
58         ...
```

```
Notes
```

[1] The term "situated action" leads us to think about using technology in the following way. The first "gestalt" people get when faced with an UI (or some other piece of technology) is its initial state. It suggests some features, and makes some less easy to see. Users use this "gestalt" in navigating forward; as they go on, they keep checking whether the gestalt still works. It may be changed. At all times, users' reasoning is situated in evolving action; it is embodied in the users' fingertips, not just in cognitive processes.

As Suchman (1987) notes, this is a radically different perspective from traditional cognitive and plan-based thinking, which is intentional and based on the idea that people work using cognitive structures. In plan-based thinking, when someone has an aim, then he user gathers information, and plans his course in the interface (i.e. specify an episodic and ordered cognitive structure for the task). Then he executes his plan, and monitors the progress of the plan. If he finds problems, then he corrects the plan, and goes back in the hierarchy of nodes in the plan.

Notice that EM easily incorporates the idea of complex cognitive structures, or even theories, and given them a status in guiding action. However, they are seen as methods of action used by some people but, and this is important, action is always situated and reflexive in character. It is mainly only if action is situated in an institutional setting in which people are held accountable for making sure that their reasoning follows and respects certain, say, professional cognitive structures, that the creative qualities of action are played down, and action can be described in institutionalized cognitive terms.