

COMBINING MOBILE PHONE CONVERSATIONS AND DRIVING – STUDYING A MUNDANE ACTIVITY IN ITS NATURALISTIC SETTING

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ABSTRACT

We report an ethnographic fieldwork on the highly valued mobile phone use in conjunction with car driving. The study is motivated by recent discussions on possible regulations in this area. Our fieldwork reveals different ways, e.g. adaptation of button pressing on mobile devices to traffic situations and provision of remote awareness through conversational cues, in which drivers combine driving and phone talk to each other in natural settings and real conversations. This is of critical value when discussing safety of mobile phones and cars.

Keywords: ethnography, fieldwork, mobile phone, traffic, car, driving, hands-free, safety

INTRODUCTION

In this paper we account for everyday activities, which goes on when people pursues mobile phone conversations when driving. We focus on how the drivers coordinate their conversations with all the practical activities at hand to make both driving and conversations as smooth as possible. We have used ethnographic fieldwork as a method to account for these activities. This research-method has earlier only been of limited use in the area of traffic safety research.

Mobile phone use is an important activity going on at the roads. People make and receive calls when going to and back from work, as well as during their free time (2, 15). Not only professional salesmen, with car-mounted phones, engage in phone conversations. Common people chat in their handheld phones as they travel from home to work. The safety aspects of this practice have always been an issue and several countries legislate to control the way people use their phones in their cars. A number of research projects have addressed the safety issues, i.e. mainly controlled experiments where the driver takes part in staged conversations. On the contrary, this study focuses on this activity in a naturalistic setting to acquire knowledge on the drivers' activities when combining phone use and driving. Our findings shows that drivers use a number of available resources, such as providing awareness to the remote person on the phone as part of the conversation; adapting phone use to the traffic situation and using everyday skills to divide the attention, to make their activities as safe as possible. These findings are important, among else, when evaluating the validity of the controlled experiments regarding the potential danger of talking in the phone when driving.

RESEARCH ON DRIVING AND TALKING IN PHONES

In the following we account for related work with relevance to our study. Earlier research shows that: *first* driver reacts slower to the traffic situation when engaging with the phone, and *second* that it is hard to find as many real crashes as could be predicted.

Controlled experiments show that the distance to cars in the proximity is negatively affected as well as the ability to drive a straight path when talking in a phone. Further, mobile phone use has negative cognitive effects on the drivers' attention to traffic (1, 3). These studies are performed in driving simulators (1, 2, 14) or in more realistic settings i.e. "on-the-road" studies (3, 5, 18). Many of these studies concern the effect of making a call, i.e. dialing when driving (18). However, the interest to control the experiment has very much distorted the unit-of-analysis when accounting for phone conversations per se in their studies. The way they set up to establish "phone conversation" is very unrealistic (5). For example Alm and Nilsson let the driver interact with a tape-recorder, which provides queries to be solved (1, 2). Brookhuis et al (3) and Trbovich et al (21) provide the driver with arithmetic problems. Serafin (19) lets the driver converse with a computer.

Recently, result from crash data analysis has come to question the value of this research. First, conversation appears to be most associated with crashes because the driver can be so engaged in the talk so the attention to traffic is critically affected (7, 15). Crash data analysis implies that it is the conversation that affects driving more than handling the phone (15). Thus, legislation demanding hands-free phones will not have any substantial impact on the safety. Instead other technical solutions could be more appropriate for safety reasons. In a recent short-talk article, Punitha Manalavan et al presented a study where in-car-conversations are treated as an awareness problem (14). They argue that it is not the holding of the phone, listening to music, etc that impedes the driving, but the conversation per se. Further, the problem occurs when non-present conversationalists lack accurate awareness of the traffic situation. In critical situations, the non-present conversationalist disturbs the driver by keeping on talking. Manalavan et al propose an awareness mechanism, which provide non-present participants with different sounds, or even silence, which could make the other person aware not to engage the driver in the conversation in these situations.

Second, crash data analysis suggest that the number of crashes, which may be attributed to mobile phone use, is much smaller than would be expected by a statistical model based upon driver inattention factors (15). The residual could be explained either by insufficient crash data, or inadequately designed experiments. The latter case is supported by additional findings from the experiments which indicate that drivers attempt to compensate for the attention that is paid to the phone during a mobile conversation e.g. by slowing down (2, 5, 7, 15). The difference between theoretical lab studies and actual accidents calls for further analysis. Goodman et al (7), as part of a comprehensive report on the topic by the U.S. National Highway Traffic Safety Administration (NHTSA), asks for a focus on the conversation itself:

"The relationship between the intelligence test Q&A dialogues and the content of normal cellular communication is unknown. Such results may represent worst-case or atypical voice communications... A better understanding of the nature of actual cellular telephone communications in business and private calls is sorely needed (7)."

The issues brought up, regarding the value of controlled experiments of mobile phone use, is similar to the large discussion in social science on the benefits of quantitative or qualitative social science (20, p 144-160). Controlled experiments have their strong point in their reliability, whereas representations generated through qualitative methods, such as ethnographic fieldwork, have the strength in validity. Therefore, Goodman's critic on the validity of current research suggests not only the choice of conversations as a topic, but also inclusion of other methods. To increase the validity of the research on driving and mobile phones, we suggest a focus on conversation in its naturalistic setting. The analysis of naturally occurring conversations is the focus of ethnographic research and conversational analysis. In this field, there is a growing interest for social and interactional studies of mobile phone use (4, 22). The geographer Eric Laurier has in a specific project applied this approach to the study of mobile work and mobile phone use in cars.

The central question in Laurier's studies concerns holistic issues on how mobile work is accomplished in a car setting and in an office (11). In the article "Notes on dividing the attention of a car driver", he provides some answers to the question how the drivers do other things at the same time as driving (12, p 2). Following his interest in the study of details of everyday activities, he also claims that doing other things when driving is not so new and obscure that we initially imagine:

"There are legitimate involvements of driving that could cause an accident but are dealt with as part of the commonsense grounds of driving: looking for too long at speedo, fuel gauge or rear view mirror. Learner drivers have to learn how to divide their attention appropriately between monitoring speed ahead, the rear view mirror and the instrument panel (12)."

Laurier's research is an important source of inspiration in our study. In the following we will argue for continued use of ethnographic methods to get a picture of phone use and driving.

STUDYING EVERYDAY ACTIVITIES IN NATURALISTIC SETTINGS

This study is conducted according to the standards in the ethnographic research tradition. It is pursued with reference to three important methodological principles, i.e. *participant observation*, inclusion of *member's viewpoints* as well as *holism* (17, p 109). *First*, it states that the researcher share the day-to-day activities of those studied to be able to describe the unit-of-analysis accurately. *Second*, the researcher must not only represent what is visible, but also the intentions, norms etc that makes the activities rational from the members' perspectives. Thus, the method provides a familiarity with the

members to understand their motivations and intentions. *Third*, human conduct must be understood with reference to the naturalistic setting in which it occurs. Field observations make the researcher understand both the details of the human practices and the norms and intentions of the members in a culture. The sociologist Joseph Gusfield is a champion of ethnographies of traffic events (9). He has argued for close analysis of everyday activities also to understand traffic behaviour:

“My intent in raising the question of purpose and the meaning of the driving event was to focus attention on the immediate context in which the event occurs... It concentrates on how the event emerges in interaction with others... To look at traffic safety at its micro level is to understand how the actual situations of using traffic are enacted (9, p 7).”

The study is also informed by the sociological approach ethnomethodology (6), with a narrow focus on the intricate details on the process of group life as on-going accomplishments (17, p 110). By detailed analysis of empirical material, such as recordings of conversations, this research reveals knowledge on the ways in which members accomplish common understanding during social interaction and achieve coordination by engaging with observable activities of other members (10).

DATA COLLECTION

In order to understand how drivers combine phone conversations and driving it is important to capture details as the activity unfolds. We have therefore video recorded the conversations between the participants, as well as their observable behaviour. The data collection took place during 2002. We followed and video recorded seven drivers (see table 1 for an overview of the participants in the study). We selected drivers who spend time on the roads on their work hours, e.g. salespeople and service technicians, to increase the possibility to collect data on conversations in cars.

Our analysis required the complete conversations, a comprehensive view of the traffic-situation, and at last a view of how the driver handled the vehicle. We recorded both conversational partners if the driver used car-mounted hands-free. This was preferable for the analysis of conversations. But we also wanted to study people using standard mobile phones. The drivers use phones of three different types. First, mobile phones used in the car with no extra equipment, will be named *handhelds* in the following. Second, mobile phones temporarily put in a holder on the dashboard, connected to a remote speaker and a microphone, will be named *car-mounted phones*. Third, mobile phones equipped with an earphone, and microphone on a cord, will be named *hands-free phones*.

By sitting in the car and using a single video camera we have been able to alter the perspective between activities in the car, and the traffic-situation. But the video recordings show only some of the visual details that occupy the drivers' attention. And if the camera is directed towards traffic we miss both the drivers face and the perspective showing gearshifts. Thus, the video camera is not a way of collecting complete visual data. It is rather a tool for the researcher that provides much better data than only an audio recorder.

The subjects have agreed on being recorded, and we have promised to present them in a way that protects their anonymity. They have also been requested to inform us if some conversations were not appropriate to record, and should be deleted. In some cases their colleagues, who made some of the calls, were informed about the study.

The study generated a substantial body of recordings. In total we recorded ninety-five phone calls, all of them performed while seated in the vehicle. However, numerous mobile phone conversations were observed during the fieldwork. Several of them were not recorded due to technical reasons; the calls were performed outside the vehicle, etc. Furthermore, all the empirical data has not been used in this article, only a few sequences have been chosen to illustrate the findings.

The conversations have been transcribed and coded, i.e. categorized into a set of themes. The coding scheme evolved while working with the material, and has been a necessary tool when analysing the material. The transcriptions, as presented, account for only parts of the conversational activities. The level of detail is chosen with reference to the claims we are making. For example, we have not coded the pauses more accurately than by inferring three dots when necessary. And we are only briefly referring to the tempo of the talk. The findings are presented according to standards in ethnographic research, which demand that the empirical data is made visible in conjunction with the analysis. The excerpt is presented in a left column for the conversation and a right column for observable behaviour.

Peter and Leif

We spent a total of twelve working days accompanying two consultants in the construction of district heating. Their main area of expertise was the practical supervision of construction such as adjusting building plans. They spent half their working hours outside the office, either with customers or on construction sites. During the study, they took part in thirty-one mobile phone calls. Both of them used a handheld mobile phone, with no hands-free equipment.

Anders and Lars

They both worked as lorry drivers, delivering food to supermarkets in the Stockholm area. Anders was observed during three days. He used two handheld phones: one for work calls and one for private calls. During our field study he made ten calls and received five. Lars was observed during two days, and as a consequence of his early working-hours he did not use his mobile phone too often. During the two days we were following him we did not record any calls. He only received one single call, and that was while working inside the store.

Paul

Paul worked as a manager for a group of salespeople at the same company as Anders and Lars. He shared his time between the office, and meetings at the stores. He drives approximately 30.000 kilometres each year. Earlier he was a frequent user of a car-mounted phone, but due to a recent change of phone, the units did not work together. During the one-day fieldwork, he used a hands-free phone while in the car. In our recordings from the fieldwork on Paul we have in total eight calls.

Eric

We spent three days studying a salesman who travels over a vast geographical area. Each year he drives approximately 100.000 kilometres, and is a frequent user of a car-mounted phone. He used his car both as a means of transportation, but also as a mobile office. He visits his customers on a regular basis, every sixth week. He is responsible for the display of his products at each store, and for the logistics. In our recordings from the fieldwork with Eric, we retrieved in total sixty-four calls.

Sven

We also followed Sven who works as a manager at a company responsible for telecommunications infrastructure. He drives to visit different sites in a large region to organize their work tasks. As a consequence, during the fieldwork, he mostly drove on country roads. We spent two days with Sven, which included almost five hours of driving each day. While phoning he used a car-mounted phone. During the fieldwork, we recorded eight calls.

Table 1. Overview of the people studied in the fieldwork.

ANALYSIS

Our fieldwork revealed a number of ways in which people adapt driving and phone conversations to each other. We were able to observe how they acted to situate calls to the driving and the traffic; how they favoured specific traffic situations for button pressing, and how they provided awareness of the traffic situation to non-present conversationalists, to adapt the talk to the complexity of driving. We also saw how they transformed different kinds of work tasks to things that could be solved by talk in order to get the most out of the time in traffic.

A decent place to talk

The participants in this study noticeable favour a car in motion for phone conversations. People adapt their activities to make calls when driving e.g. terminating conversations when reaching their destinations. In the following example the explicit choice of the driving situation for conversation is observable. Eric uses a car-mounted phone, which made it possible to record both the conversationalists.

The conversation takes off when Eric listens to a message on his voice-mail as he leaves a parking area. He immediately returns the call to Fredrik, who left the message:

Fredrik: the Sport Shop, Sandstad, Fredrik
 Eric: hi Fredrik! Eric Sport Products
 Fredrik: hi
 Eric: how are you?
 Fredrik: I'm fine!
 Eric: sounds good...
 Fredrik: ...will you be in the car for a while?
 Eric: If I will be in the car for a while? yes, you
 can give me a call
 Fredrik: yes, I'll call you
 Eric: sounds great
 Fredrik: bye

[On the way out from the parking area, he looks for the missed calls to retrieve the number to Fredrik. He calls just before heading out on the road.]

[The right hand on the gear stick]

[Moves his right hand from the gear stick to hang up. Keeps the hand by the phone to prepare for the next call.]

Excerpt 1

Fredrik is busy working in the shop and would rather speak later. This is expressed when he asks if Eric will remain in the car for a while, and also observable in the way Eric responds by adding that he will be available for a call.

Thus, their conversation clearly shows how they act in ways in which the time spent in the car is also similar to the time available for incoming calls, i.e. telephone hours. The excerpt nicely shows how both the driver, and the non-present conversationalist, orients themselves to the car as a legitimate place to talk in their on-going interaction.

Dividing the attention

Although the car is a favoured place for conversations, talking while driving demands competent dividing of the attention. This is visible in the following example.

Anders is driving his lorry through downtown Stockholm, when he decides to make a call. He picks up his handheld phone from the right-side pocket in his trousers. He starts to press the buttons on the phone and looks intermittently down at the phone and out through the windscreen. He puts the hand on the steering wheel. Then, he let go of the wheel and continues to dial. He puts the hand on the wheel and makes a gearshift with the hand that is holding the phone. He continues to press buttons, and then makes another gearshift. He looks at the phone, and then swaps the hand holding it. He puts the phone to his ear, and let go of the wheel with his other hand and quickly touches his nose:

Hi... eee Jeff there *[inaudible]*. Sam... Roland... Sam then?

[He lets go of the wheel for a moment. Then puts his left elbow on it during some six seconds. He moves his right hand toward the gear change lever. He leans back and grabs the wheel with the right hand]

he's got the same thing then... eee... okay

[Hits the turn-signal and makes a gearshift, then a lane-change]

...mmm... twenty-fifth today... does he play in... that's *[inaudible]*... burgers

[Hits the turn signal again, but unlock it by putting his right arm through the steering wheel]

you've not seen any playlist... you can only see the gamedates... mmm... but you can't see that either... it's just games tuesday... wednesday and thursday... but there's nothing there if he's playing... okay then I have to... can't be all these days... it'll be game... it's a series that is easier... it's two games that are more difficult... you call me?

[puts the turn-signal on, puts it off with his right hand]

But what do we do tomorrow?

what do we do tomorrow?... let's see... how Sam is feeling then *[inaudible]* no but I'm thinking whether you should have had it on tuesday then it wouldn't have been any idea if he's ill... mmmm... yeah... see you tonight... good yes bye...

[He lets go of the wheel and itches himself with his right hand on the chest. Then he grabs the wheel again]

[He lets go of the wheel and puts his phone with the right hand against the left ear. He itches himself on his head. Grabs the wheel]

[Switches the phone to the other ear]

[Lowers the phone. Looks at it. Presses a button. The lorry has been standing still in a queue for a while, but now it starts to roll. He stops pressing the buttons. Holds his right hand on the wheel together with the phone. Makes a gearshift. Right hand on the wheel and takes the phone with his left hand and puts it in the pocket]

Excerpt 2

This excerpt shows the skilful performance when dividing the attention between making a call; steering; hitting the turn signal, etc. It is one of those tacit skills that are hard to describe in text even though it is visible on the video recording. But the act of dividing the attention between the phone and the manoeuvring is an everyday thing, as are the dividing of attention between all other small tasks going on when driving, such as combining gearshifts; looking at the speedometer and looking out through the windscreen (12).

Further, there are other things going on in this excerpt. He let go of the steering wheel five times. But four of these occasions are not required to make the phone call and drive. Rather, he let go of the wheel to scratch himself, and to be able to lean forward as to take something of a rest.

The data underscores Laurier's interpretation of phone use as only one of several ways of dividing the attention. In the other cases we also find similar examples, such as when Eric is playing with a pen at a number of occasions and when Paul folds a paper in a way that resembles the art form of origami at the same time as he is driving. Making a call with a cell phone and driving is on the one hand a new phenomenon that occurred with the new technology. On the other hand it is as old as the need to scratch yourself when you drive.

Adapting button pressing to traffic

Making a call is a demanding activity. It involves a number of skills to be performed, such as accessing a phone number and dialling, at the same time as manoeuvring the car. Our fieldwork reveals differences in the ways in which drivers prepare for dialling.

Preparations in the proximity of a junction with traffic signals

Anders makes calls, on a handheld phone, in highly complex traffic situations. He is a lorry driver working in the busy downtown region of Stockholm. He made nine different calls during our two-day visit in his lorry. They reveal an interesting pattern as to how and when he makes these calls. It seems that calls are made in connection to traffic signals or junctions. Four out of these calls were made when approaching, or when arrived at, a junction with traffic lights. A single call were also made when approaching a roundabout where a car in his lane were visibly standing still waiting for a gap in traffic.

In the following case, Anders makes a call when approaching a junction in the crowded and narrow streets of downtown Stockholm. He hits the turn signal and then grabs the handheld from his pocket.

Howdy Adam, it was the daily dose so you
could give me a call when you come into your
room... see ya... bye

[He presses the buttons to enter the phone number without looking out of the windscreen even once; lifts the phone to his ear, and then looks carefully to the left and to the right. No hands on the steering wheel. The gear is shifted with his right hand and the lorry makes the turn. He drops the right hand from the wheel and makes another gearshift. He lowers the phone and looks at it; puts it back to his ear]

Excerpt 3

Anders has a clear tendency to make outgoing calls when coming up to a junction or traffic signals. As in the excerpt above, a red light makes it easier to drop the hands of the steering wheel and dial the number without looking out of the windshield. As the lorry is standing still, he will not get into any trouble when he prepares for the conversation. Further, the preference for situations where the lorry is standing still is even more evident when considering that traffic is very complex in junctions where the paths of the vehicles intersect. Still he looks for a junction to make a call.

It is also important to recognise that the junction and the traffic signal do not necessary provide him with an opportunity to stand still when dialling. In some occasions, he has already initiated the call before the lorry comes to a stop. In another occasion, the light turns green and the vehicle accelerates as he dials. Thus, Anders does not wait until the lorry stops. He is in no way dependent on that situation to establish a phone conversation. The junction and the traffic signal is rather a resource, which occasionally makes his life easier.

Preparations before leaving and for expected calls

The driver can also chose to make preparations before he takes off, or even perform tasks which he otherwise would have done while driving e.g. initiating calls This is a strategy, which we observed at eight occasions during the field study with Eric. He benefit from the brief moment of being stationary, by looking for numbers and dialling. Since he is using a car-mounted phone he does not need to perform any manipulations to handle the call, except from hanging up.

Occasionally, Anders expects that an incoming call will arrive soon e.g. due to a preceding breach of network connection during a call. Then, he puts down the phone on the seat between his legs and not in the ordinary place in his pocket or attached to the belt. This preparation is done to easily retrieve the phone and to quickly answer the call. Seeing that he does this procedure only at the occasions while he is expecting a call, and not as soon as he enters the vehicle, it does not seem to be the most convenient solution while driving.

Summing up, the driver has different ways in which he adapts the button pressing to traffic. First, he looks for those moments in the journey when the vehicle is rolling as little as possible. This is preferably when he comes up to a traffic light or a junction with cars standing still in his lane. Further, the placing of the handheld is varied with reference to the likeliness of an incoming call. Finally, the drivers also initiate outgoing calls before starting the drive.

Adaptation through Traffic Talk

Occasionally, the traffic situation becomes a topic in the conversation. It happens eight times during the recorded fifteen conversations with Anders when he travels in the city centre. The comments were of two different kinds i.e. initiating the termination of calls and configuration of focus of attention. The latter will be discussed in the following.

Providing remote awareness

The dominant way of talking about traffic provides the non-present conversationalist with awareness of traffic situation. In the following example, Anders dials a friend when approaching an intersection. The call comes through as he makes a turn in the junction, and we recorded his part of the conversation on the handheld:

Hi man...what's up?... No it got late yesterday... I probably was home aaaa at eight something... then Lena dropped by	[Anders puts on the indicator as we head into the junction]
...ha ha ha..yeah yeah it's sad... it's not possible to pass there... exactly...	[Quickly spins the wheel around]
yes they came in second... they lost in the final... what was I about to say?... the sweaters... the jacket... she got a blue XL but she wanted a black XL... yeah but it was no that she didn't... you said there was some colour that didn't exist... it doesn't?	[Puts on the indicator to prepare for the turn taking in the next section]
....okay so there's no black... okay... yes I got the two last...	[He holds a paper in his left hand that also holds the wheel. He quickly let go of the wheel as he hits the indicator]
...yeee... noo... what was I about to say?	[Turns the wheel with the left hand]
Eeee... yeah... yee	[Puts down the paper at his right side and switches the hand that holds the phone]
mmm yes yes	[Gears up, grabs the paper with his right hand this time. Hits the indicator with the right hand, which makes him reach it through the wheel. Puts down the paper again]
...what was I about to say...	
...I have to make sure to proceed cautiously. I'm at Östermalm where it's so fucking narrow... but a medium blue	[Long pause, makes the turn with the vehicle]
medium no but I don't have the energy for that... a medium blue... yes	[Sighs]
	[Gears up]
	[Drives straight forward, shifts gear by letting the right hand drop from the wheel]

Excerpt 4

Anders talks as he manoeuvres through the dense traffic on narrow streets. He even succeeds with holding a piece of paper in his hand, which is needed for the conversation. His voice is calm through the entire conversation. He was supposed to turn left at a junction, and had to put on the indicator. But as he started to make the turn he discovered that one of the cars was parked too close to the junction. He states to the person in the phone "it's not possible to pass there". Directly thereafter he returns to the topic without changing the tone or the tempo of the conversation at the same time as he quickly spins the wheel around and find his way back to the road where he came from. When the traffic situation became too dense, he made the tricky situation available for his conversational partner.

The next junction also demands lots of attention. The non-present speaker is provided with several conversational features providing awareness of the situation. It starts when the tempo of his talk become slower which displays his hesitation. Then, he explicitly takes the turn of the conversation twice by saying "what was I about to say?" Taking the turn in the conversation makes it explicit that he has to think. This means that the conversation partner has to wait for Anders to continue the conversation. This gives him time to cope with the traffic situation. Finally, he makes the situation a topic for the conversation by talking about the narrow streets in those particular parts of Stockholm: "I have to make sure to proceed cautiously I'm at Östermalm where it's so fucking narrow [sighs]."

The traffic talk made the situation available to the non-present person. Thus, the attention to driving and talking is coordinated by different conversational resources such as *shift of tempo*, *turn taking* and *choice of topic*. Further, the sequential use of these resources can be seen as an escalation, which provides him with increasingly amount of control of the conversation to adapt it to the traffic situation.

Temporality

The temporality of the traffic talk is of importance to understand how phone use and driving is coordinated. In the previous section, the time to provide the other person with different clues varied. The first situation occurred abruptly, even though the vehicle was moving slowly. Thus, he got straight to the point as he said that it was "not possible to pass there". In the second case, the situation unfolded slowly which was made clear to the non-present conversation partner in the up-scaling of comments.

Occasionally the situation occurs prompt, demanding his attention momentarily. Then, there is no more time than to give a whistle as the call for attention is coming up very fast. This is the case when Anders makes a turn and the lorry hits the curbstone. He whistles before continuing the conversation.

Thus, even though there is no time to use the previously discussed conversational resources, he is able to make the non present conversationalist aware that he has to focus more on the driving and less on the talking for a while.

Reserving traffic talk to coordinate adaptation

The importance of talk about traffic as a means to provide awareness of complex situation is underlined in the following example. Again, Anders is driving in the central parts of Stockholm talking on his hand held:

... he he... does it work... where are you? [He stops at a red light and shifts the gear with his left hand]
...we were just at the Tomtebstreet... we are in Vasastan here now so here you get the creeps... no it's not so bad...

Excerpt 5

There is a pause just before Anders start to talk about his location. It is probably the other person who asks him where he is, as Anders himself asked where the other person was located. Thus, the positioning does not become a topic because he wants to provide awareness about a tricky traffic situation that requires his attention; even though he makes the claim that the situation gives him the creeps. He quickly withdraws that claim saying "it's not so bad". By this statement he is taking care of the interpretation of the traffic claim to avoid the conversation partner from acting in a way that would disturb their conversation. Thus, Anders reserves traffic talk to a means to coordinate phone conversation with traffic interaction.

In conclusion, the remote conversationalist has an awareness of the traffic situation although he is not present in the vehicle. The conversational resources that are described provide the non-present with means to understand both how much time that is needed by the driver as well as the urgency of the drivers' attention towards the traffic situation.

Chaining Conversations

Even if it is possible to read and write documents while driving (12) we have seen examples on their attempts to decrease this kind of mixed activities. A legible strategy to handle the complexity is to chain conversations. By chaining conversation, we mean to handle work tasks introduced in a call, which involve document handling, by directly making an additional call and delegating those tasks. At least fourteen of the recorded calls performed by Eric can be categorized into this group. The following excerpt starts by the completion of a call from Bernard:

Eric: I'll call immediately
Bernard: super
Eric: bye. [He stops at the traffic light, with a few cars in front of him. He hangs up and dials a new number.]
Answering machine: welcome to Sportproducts... many people are calling at the moment
Rebecca: yes (Eric: super)... yes
Eric: I've a panic-order to the shop in Göteborg [Interrupts the answering machine]
Rebecca: calm down
Eric: I'm in a panic... send the stuff

Excerpt 6

In this case, Eric promises to take care of an order while speaking with Bernard at a store. The customers prefer to call him when making their orders instead of calling directly to the office due to his special relationship with these customers. He ends the conversation by saying that he will call at once. The remote part accepts this as a confirmation that Eric will take care of the task. Immediately after hanging up, he benefits from the stop at a traffic light and dials the number to the office. He asks them

to deliver the goods as soon as possible. This procedure is a legible strategy to avoid the paperwork it otherwise would have meant to fill in an order form. When performing the tasks immediately, i.e. chaining conversations, he only needs to memorize the details for a short period of time. This was also observable in the fieldwork on Anders in his lorry. Two of the calls he made were directly preceded by incoming calls.

By directly chaining conversations they solve the problem of lacking the possibility to do office tasks such as writing notes and documents, scheduling etc. They adapt to the driving situation by delegating the work, which O'Hara et al refers to as "device proxying." (16) But this adaptive behaviour generates additional conversations as compared to a non-driving situation where they could have taken care of the task themselves.

CONCLUSION AND FUTURE WORK

Our fieldwork reveals a practice where the drivers' adapt their driving and mobile phone conversation to each other. Their conversation clearly shows how they act in ways in which the time spent in the car is also similar to the time available for incoming calls, i.e. telephone hours. The act of dividing the attention between the phone and the manoeuvring is an everyday thing, as are the dividing of attention between all the other small tasks that are going on when driving such as combining gearshifts; looking at the speedometer; looking out through the windscreen or scratching the body. Dialling is an activity that occasionally calls for adaptation to traffic. It involves a number of skills to be performed such as accessing a phone number and dialling that number, at the same time as manoeuvring the car. The driver adapts to the traffic situation and look for those moments in the journey when the vehicle is rolling as little as possible. This is preferably when he comes up to a traffic light or a junction with car standing still in his lane. Further, the placing of the handheld is varied with reference to the likeliness of an incoming call. Finally, the drivers plan for outgoing calls before starting the drive. The traffic situation is made available to the non-present conversationalist in the phone. Thus, the attention to driving and talking is coordinated by different conversational resources such as shift of tempo, turn taking and choice of topic. The order of these resources, as well as they way in that the traffic is accounted for, make the non-present conversationalist aware of the traffic situation. Thus, they can collaboratively converse in a way that is adapted to the traffic. The drivers conducted office work in their cars. It is possible to handle those issues that should be solved by phone conversations even though the driver would have been at the office. But the drivers also take care of tasks by doing an additional call, that in an office situation could have been handled by traditional paper work. This is observable in the chaining of conversations.

The result of our study has significance for previous investigations. Goodman et al (7) suggests that the difference in the amount of crashes, as prognosticated from the experimental studies and the figures derived from crash data analysis, derives from compensatory behaviour of the drivers. Our study reveals a broad range of adaptation of talk and driving. The drivers do not just pursue their mobile conversation unaffected by the traffic situation. Instead they make the situation as smooth as possible. Thus, the residual, between theoretical prognostications from experiments and the crash data, could be generated by the efforts made by the driver to make the talk as safe as possible.

We have seen a number of examples where the drivers make calls in specific situations such as when approaching traffic signals. This is a parallel to the observation made by Eric Laurier when the drivers brought forward documents etc only when they found themselves in a traffic queue on a motorway (12). But our observation differs in an important way. The red light is not in any way a precondition for their activities. It is rather a weak resource. Calling could be done when approaching a place where the car maybe could come to a stop, than choosing a place where this is less likely. But the traffic situation does not decide what the driver could do. This is important when considering possible design implications of the study. It is easy to imagine a system which only allows the driver to engage in button pressing where the conditions resemble those that the driver look for, e.g. a traffic light showing red. But this could be very disturbing for the driver who do not act and think of these situations as so determined for phone calls.

Finally, our result does also have an implication for Manalavan et al (14) and their emerging research in the CHI-community. They suggested, in contrast to other researchers, that conversations between present conversationalists were safer than talk between a driver and a non-present conversationalist. This is due to the latter speakers lack of awareness of the traffic situation. We found a number of examples in the conversations taking place in crowded and narrow streets where the remote conversationalist were provided with resources to understand the traffic situation. Thus, the conversationalists could collectively adapt to the road context. They adapt their conversation to traffic. This finding supports the earlier research (7) where no difference is seen between these two conversational types. Again, the role of adaptation should not be underestimated.

Finally, the way in which people do their phoning will change with the development of the mobile phones themselves. It is important to recognise that the amount of calls is not a constant as when considering legislation demanding hands-free to make these calls potentially safer. As noted by Goodman (7) technical support that makes phoning easier could make drivers call more. This phenomenon can escalate whereas the drivers' chain calls, i.e. transforming office tasks to conversations. Car mounted phones makes it easier to handle the phone. But the problem of handling other tools such as calendars and documents is not solved. Thus, to use the phone it is essential to transform these activities to talk, which increase the amount of conversations.

Fieldwork methodology, supported by video recordings, has much to offer when understanding how drivers engage with their phones. But the methodology and the topic have to be developed further. We need more accurate video recordings to be able to improve the analysis of the relation between the traffic situation and the driver. We also need a broader documentation of the drivers' activities, e.g. handling of car stereo, to understand the role of the mobile phone. It would be especially interesting to compare adaptation to traffic between co-located and remote conversationalists.

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