

The Communication Dynamics of Mobile Telework

Donald Hislop & Carolyn Axtell

FIRST DRAFT: PLEASE DO NOT QUOTE WITHOUT AUTHORS PERMISSION

(e-mail address for correspondence: d.hislop@shef.ac.uk)

Paper presented to:

ACADEMIC TRACK

6th European Conference on Organizational Knowledge, Learning and
Capabilities

ABSTRACT

Research on virtual working has highlighted how the lack of face-to-face interactions in such contexts affects communication dynamics and the ability of workers to develop and sustain interpersonal relationships. This paper applies these ideas to a neglected, but increasingly important category of virtual worker, mobile teleworkers. These are workers whose work activities require them to be spatially mobile, working between a range of different locations, for example to visit customer sites. The paper presents the analysis of a small scale case study research project which examined a number of different mobile telework occupations. The analysis presented here focuses solely on the consultants interviewed. The paper concludes that the communication dynamics of the consultants were shaped by their patterns of spatial mobility, as well as the nature of the work tasks they undertook, and the character of the communication technologies they had access to.

INTRODUCTION

As has been shown in the academic literatures on teleworking and virtual/dispersed working, it is becoming increasingly common that workers have to collaborate with colleagues who are geographically dispersed. In such work contexts a significant amount of communication is mediated by information and communication technologies (ICT's). Research into virtual working has shown how this means of working and communicating has significant impacts on both the nature of the social relationships that workers in such contexts develop, as well as their communication dynamics (DeSanctis & Monge 1999, Jarvenpaa & Leidner 1999, Kraut et al 1999, Maznevski & Chudoba 2000, Wiesenfeld et al 1999).

This paper contributes to this subject area by examining the communication dynamics of a relatively neglected type of virtual worker: mobile teleworkers. In reviewing both the academic literatures on teleworking and virtual working the topic of spatial mobility, i.e. the extent to which workers have to travel between sites to conduct their work, is neglected. For example, the telework literature typically focuses on home-based teleworkers, and doesn't acknowledge that such workers may need to be spatially mobile. Further, while the virtual work literature takes account of spatial factors through considering how a lack of face-to-face interaction within virtual teams affects their working, only one such study examines the spatial mobility of such workers in any depth (Orlikowski 2002).

Consequently, how workers' patterns of spatial mobility affects the communication dynamics within virtual teams is a topic requiring greater attention.

The paper presents evidence to suggest that the need to be spatially mobile in work is a necessity for an increasingly significant proportion of workers. This paper examines the inter-relationship between three topics in relation to mobile teleworkers (see Figure 2, later). Fundamentally, it examines how the communication patterns and behaviours of such workers are shaped by the work task and type of travel involved in their work, and the ICT's they use to communicate with others.

In doing this the paper analyses some original empirical data drawn from a small scale project looking at one type of mobile teleworkers: consultants in the UK. One of the main conclusions of the paper is that the patterns of spatial mobility of the consultants did have a significant impact on their communication dynamics.

In the following section, the term mobile telework is more fully defined. After this, the second main section presents some secondary statistics to illustrate the growing significance of spatial mobility in (tele)work. The paper then reviews the virtual work and telework literatures to demonstrate the extent to which they have neglected to analyze spatial mobility, with the literature review concluding by pointing towards the themes and concepts from this literature which will be used

to analyze the communication dynamics of the mobile teleworkers examined. The final major section of the paper then presents and analyzes fieldwork data from the research that is relevant to the topics examined.

WHAT IS A MOBILE TELEWORKER?

The first task to be undertaken is to define the key terms used in the paper: mobile, or nomadic teleworking, and spatial mobility. Spatial mobility refers to the pattern of physical movements between locations that workers undertake in the conduct of their work, with the degree of spatial mobility involved in work varying enormously. For example, production workers in a car factory, or customer service representatives in a call centre have relatively low levels of spatial mobility, as they work primarily at one particular site. In contrast, workers that have more significant levels of spatial mobility, where a significant amount of travel between different locations is required, include consultants, drivers and delivery staff (such as post workers), and travelling sales/service staff who require to visit client's sites to sell, service or repair equipment.

In defining mobile telework a useful starting point is the telework literature. Typically, definitions acknowledge the diverse heterogeneity of jobs that can be categorized as telework. One of the most comprehensive and all encompassing

conceptual definitions of telework is that developed by Daniels et al (2001). Drawing on Gray et al (1993), they define teleworking as,

'working remotely from an employer, or from a traditional place of work, for a significant proportion of work time [t]he work often involves electronic processing of information, and always involves using communications.' (Daniels et al 2001, p. 1153).

In terms of spatial mobility, this literature acknowledges that telework can be done from a range of locations, such as the home, remote work centres, customer sites, or from a number of sites. The essential distinction between mobile teleworkers and other types of teleworker is that for a significant part of their time, mobile teleworkers do not work from a fixed location. More formally, Daniels et al (2001, p. 1154), who prefer the term 'nomadic telework', define it as work,

'done by people whose work usually involves travel and/or spending time on customers' premises, who may be equipped with laptop computers and mobile phones to support their mobile work.'

However, while this definition provides a useful starting point, it has to be recognized that it is relatively generic and broad ranging, covering a wide diversity of occupations/jobs. For example, when the issue of the base/s that mobile teleworkers work from is considered, this heterogeneity becomes apparent. Thus mobile teleworkers may use either their home, or an office as a

static base. Alternatively, they may use both an office and a home base. Finally, they may have no fixed base at all. To provide a more fine-grained conceptualization of mobile telework a three-dimensional framework based on the location of where work is carried out is developed. This framework has three extreme poles, and scope for (almost) infinite variance in between (see Figure 1).

The three poles in this framework represent:

1. Pure, mobile workers, who have no fixed location that they work from at all (either home or office).
2. Pure organizational workers, who work full time on their employer's premises.
3. Pure home-based teleworkers, who work full time from home.

Insert Figure 1 about here

The heterogeneity in the nature of mobile telework jobs is not simply shaped by the type of base/s worked from. For example, other important variables include the amount of time such workers have to be spatially mobile, the geographic extent of their mobility, and the character of their client interactions. This diversity can be usefully illustrated by comparing the nature of the work done by mobile teleworkers that were examined as part of an exploratory piece of research conducted by the authors (see methodology section for more details). One group examined were domestic appliance service engineers, and the second was some human resource management consultants from two separate consultancy

companies based in the North West of England. Thus while the consultants used both their office and homes as static bases, being mobile for typically two to three days per week, the service engineers had no static base at all, and were mobile all the time. Secondly, while the consultants had to travel to clients all over the UK, and occasionally overseas, the geographic distances covered by the service engineers were more restricted, being limited to a relatively small region. Finally, their client interactions also varied significantly, with the project based nature of the consultants' work meaning they spent extended periods working with one particular client, while the service engineers typically visited 3-4 different clients per day. Thus, while both groups of workers can be defined as mobile teleworkers their spatial mobility patterns varied significantly.

THE GROWING IMPORTANCE OF GEOGRAPHIC MOBILITY IN (TELE)WORK

Having defined and conceptualized mobile telework this section illustrates the contemporary significance of such work, which has grown over recent decades due to a large extent by advances in information and communication technologies. The structure and functioning of business organizations have undergone profound levels of change since the mid 1970's. Some writers suggest that the extensive mobility of goods, images, ideas, money and people that has occurred as a consequence of these changes, represents one of the

defining characteristics of work and society at the start of the twenty first century (Hardill & Green 2003, Kaufmann 2002, Urry 2000a,b).

A fundamental catalyst to this process has been the continued rapid development of information and communication technologies. Most obviously, the development and miniaturization of mobile telephones, laptop computers, and other related technologies facilitate the increased mobility of workers (Dix & Beal 1996, Felstead et al 2003). Mitchell (2004, p. 204), for example argues that '*mobility*' represents one of the '*crucial affordances*' of mobile telephones. Thus these technological developments have the potential to free workers from the confines of their workplace, and support the geographic dispersal of work colleagues from each other through allowing work based interactions to be mediated via a bewildering range of technological devices.

Less obviously, but arguably equally important, have been development in transport systems and infrastructures, such as inter-continental train networks, and the growth of cheap, short haul flights. Kaufmann (2002) suggests such developments combined have facilitated a change from the simple '*contiguity*' of regions and countries, to their growing '*connexivity*', where spatial distance is less and less of a barrier to social interaction. As a consequence of such changes Felstead et al (2003, p. 2) conclude that,

'...office work is increasingly becoming detached from individual and personalised cubes of space, marked by walled cells or allocated desk space, and is increasingly being carried out in a variety of different places such as at home and on the move.'

The remainder of this section presents two sets of statistics to illustrate the growing importance of spatial mobility in work. Firstly data is presented on the number of mobile teleworkers in Europe at the start of the twenty first century. Secondly UK specific data on changes over time in the number of home and mobile workers is also presented. In looking at statistics on the number of mobile teleworkers a note of caution is required. Estimates on the number of teleworks vary enormously dependent upon the particular definition used (Baruch 2000, Sullivan 2003). Thus the figures presented here should be regarded as indicative rather than definitive.

The European statistics presented are taken from two separate projects funded by the European Union (EcaTT and EMERGENCE¹) (see Table 1). A number of observations can be made regarding these statistics. Firstly, there are obvious differences in the two sets of statistics, which are based on the different sampling methods used, and also the different definitions used. For example one of the key reasons why the number of home-based teleworkers in the EMERGENCE

¹ The acronyms stand for Electronic Commerce and Telework Trends (EcaTT), and Establishing and Mapping of Employment and Relocation in a Global Economy in the New Communications Environment (EMERGENCE).

survey (Bates & Huws 2002) is consistently and significantly lower than the EcaTT survey is that this survey only counted full-time, home-based teleworkers, whereas the ECaTT survey included part-time teleworkers. Despite these differences both sets of statistics suggest that mobile teleworkers represent a significant sub-set of employees in the countries surveyed.

Insert Table 1 about here

The data on how the number of home and mobile workers in the UK changed between 1981 and 2002 is taken from Felstead et al (2003), whose analysis is based on the UK government's annual Labour force survey, a large-scale representative survey of the UK's workforce (see Table 2). This data shows that firstly, in both 1981 and in 2002, the percentage of the UK workforce that was mobile exceeded the number of home-based workers significantly. Thus, in 2002 this data suggests that while 673,000 UK workers were home-based, over 2,100,000 were mobile workers. Secondly, comparing how the numbers employed in these type of work changed between 1981 and 2002, while there was a 94.5% increase in the percentage of home-based workers, this was somewhat dwarfed by the 231% increase in the percentage of mobile workers that occurred during the same period.

Insert Table 2 about here

All the statistical data presented thus points to the conclusion that not only can a significant number of contemporary workers be categorized as mobile teleworkers, but also that the numbers employed in such types of work are increasing significantly. However, despite this, and perhaps somewhat surprisingly, mobile teleworkers have received little attention in relevant academic literatures.

THE NEGLECT OF SPATIAL MOBILITY IN RELEVANT ACADEMIC LITERATURE

In reviewing the contemporary academic management literatures on telework and virtual working, a search of the electronic database BIDS (Bath Information Data Services) was used. These searches were conducted between the years 1999, and 2004 (inclusive), identified only journal articles published in English, and only the titles of the articles were searched for relevant key terms. In relation to teleworking, the two search terms used were 'telework' and 'home working', and in relation to virtual working the three search terms used were 'virtual work', 'dispersed work' and 'distributed work.' These searches produced a total of 17 articles on teleworking/home working and 26 articles on virtual/dispersed/distributed working (see appendices 1 & 2). The articles produced by these searches were then analyzed to see whether either the theme of 'spatial mobility' was examined, or whether they contained empirical data on

mobile teleworkers. As the two literatures examined are relatively discrete, they are examined separately.

As outlined earlier, at the conceptual/definitional level the telework literature discusses mobile telework. However, a starkly different picture emerges at the empirical level. Fundamentally, empirical studies of mobile teleworkers, and spatial mobility are virtually conspicuous by their absence. Thus of the 17 articles on teleworking reviewed only one mentioned and examined the theme of spatial mobility (Hardill & Green 2003) and only two made an explicit mention of mobile teleworkers (Mann & Holdsworth 2003, Simpson et al 2003). However, even this presents a falsely optimistic perspective, as the article on spatial mobility is largely concerned with spatial mobility in terms of the amount of commuting that people in dual career couples undertake. Thus its focus is more concerned with spatial mobility in relation to getting to work, than spatial mobility in carrying out work. Further, in neither of the two articles that briefly discussed mobile teleworkers were they empirically examined. Instead the empirical focus of the telework studies which examined the perspective of teleworkers was exclusively on home-based teleworkers. Thus, in relation to Figure 1, these telework studies have only examined workers located on the bottom horizontal axis, from pure home based workers, to workers who divide their time between working at home and working in an office.

This neglect of mobile teleworkers, and the theme of spatial mobility is to some extent replicated in the literature on virtual/dispersed/distributed working. The central concern with this literature is how advances in ICT's have facilitated dispersed, distributed or virtual working (a range of terms are used by different writers), where people can work and collaborate with others without having to be geographically proximate.

Of the 26 relevant articles that were reviewed, six were purely theoretical and 20 contained some original empirical material. In relation to spatial factors generally, one specific theme, how the frequency of face-to-face interactions affect the dynamics and performance of such work arrangements, examined by one third of the empirical papers (Grabowski & Roberts 1999, Kirkman et al 2004, Maznevski & Chudoba 2000, Orlikowski 2002, Sole & Edmondson 2002, Wiesenfeld et al 1999). However, only one of the 26 papers reviewed examined mobile teleworkers, workers for whom travel is a common, significant and intrinsic part of their day-to-day work, in any detail (Orlikowski 2002). In all the other papers, mobile teleworkers were not explicitly examined. The way virtual working was defined in these papers did not specifically exclude mobile workers. Thus, for example, Cramton (2001, p. 346) defines virtual organizations as involving,

'groups of people with a common purpose who carry out interdependent tasks across locations and time, using technology to communicate more than...face-to-face meetings'

This definition therefore allows for workers in virtual organizations to be mobile. But, with the exception of Orlikowski (2002) a curiously static perspective on work is taken by this literature. The implicit assumption is that the work of those participating in dispersed work activities involves little spatial mobility. In conclusion, both literatures emphasize how technological changes facilitate remote working: people no longer need to be physically in the same location to work together. But the potential for spatial mobility is a neglected theme of analysis.

ANALYTICAL THEMES AND METHODOLOGY

This section outlines the broad theoretical perspective in which the paper is embedded, and highlights the themes and concepts from the virtual working literature that are used here to examine the communication dynamics of the mobile teleworkers studied. What the virtual working and teleworking literatures have shown is how the technology mediation of communication in such work contexts has a fundamentally important impact on the nature of interpersonal relations and communication processes (DeSanctis & Monge 1999, Jarvenpaa & Leidner 1999, Pauleen & Yoong 2001). While ICTs allow geographic distances to be spanned, and facilitate distributed working, they also have a profound impact on the nature of communication processes that occur in such contexts.

The methodology utilized to analyze the fieldwork data collected was template analysis (King 2004). As the research undertaken was a small scale, exploratory study of a neglected group of workers, the analytical methodology was inductive rather than deductive. A deductive approach was initially used to generate themes to be explored in the interviews. These themes were taken from the virtual working and teleworking literature, For example some of the topics explored in the interviews included how people's sense of identity was shaped by the nature of their work, and how trust and social relations with colleagues were sustained when opportunities for face to face interaction were limited.

However, the detailed template analysis of the interview data collected was developed more inductively. The initial template used was based on the exploratory interview themes, but this was developed and substantially refined through the close, repeated reading of the interview transcripts. Through this process, a number of specific concepts and categories were developed, with these being then linked to specific concepts developed in the existing virtual working literature.

This process of analysis suggested that one of the key factors which distinguished the mobile teleworkers examined from the home-based teleworkers, and virtual workers examined in the mainstream academic literature, in terms of the communication behaviours they undertook, and the knowledge processes they were involved in was the level of predictability and stability of

their communication processes. While the communicability of home-based teleworkers and spatially static virtual workers was relatively predictable and fixed in nature, the communicability of the mobile workers varied significantly, dependent upon a number of factors including the communication technologies available to them, the type of work tasks undertaken, and the type of travel they required to undertake. The way these topics are conceptually inter-related is best summarized diagrammatically (see Figure 2).

Insert Figure 2 about here

The analysis of the interview data suggested some important ways in which these variables were related. Further, a number of themes and concepts from the existing virtual work literature helped to more fully conceptualize the relations between them. Firstly, Maznevski & Chudoba's (2000) longitudinal study of virtual teams, which understands their communication dynamics as being made up of series of discrete 'communication incidents' which create structured temporal rhythms, points towards the importance of looking at the temporal dynamics of the communication processes undertaken by the mobile workers. Secondly, Orlikowski's (2002) study of distributed R&D work, which as outlined earlier was the only study in the virtual working literature to examine the spatial mobility of the workers examined in any detail, helped understand not only the importance of face to face meetings, but the functions they can serve. Finally, use is also made of concepts developed in Jarvenpaa & Leidner's (1999) study

of virtual teams, which examines the difficulty of developing and sustaining trust in such contexts, and the mechanisms through which it can be developed.

Before presenting the analysis of the empirical data collected the nature of the sample population that is examined is outlined as well as the research methodology that was utilized to collect the data.

RESEARCH METHODOLOGY

The empirical data presented in the paper is drawn from a small scale, exploratory, case study based investigation of a number of different occupations that can be categorized as mobile telework. However, the central focus of the study was on two contrasting jobs: consultants and service engineers. Thus, of the 29 interviews that were conducted, 24 of them were from these two occupational groups. Of these 24, 18 were with consultants drawn from two separate organizations and six were with service engineers, drawn from only one organization. The intention had been to interview an even number of consultants and engineers, with interviewees for both occupations being taken from two separate organizations. However, access difficulties meant that we were only able to gain access to service engineers in one organization.

The focus in this paper is narrowly on the consultants. The two consultancy companies from which the interviewees were drawn were small UK based human

resource management consultancies, with one employing 12 consultants, and the other employing 30. These case study organizations are thus not intended to be representative of all types of consultancy companies. The objective of the research was to use a case study methodology to provide a rich, qualitative insight into the lived experience, work patterns, communication dynamics and general work context of the consultants/mobile teleworkers interviewed (Hartley 2004). The research undertaken, and analysis presented is indicative and illustrative, rather than being generally representative.

The primary data collection method utilized in the study was semi-structured interviews. In the company with 12 consultants, seven were interviewed, and in the company with 30, eleven were interviewed. Further, a representative cross section of consulting staff from both organizations were interviewed, including managing directors, consultants of varying degrees of seniority as well as new recruits and trainees.

DATA/ANALYSIS

The central thematic focus of the paper is on how the communication dynamics of the mobile teleworkers examined is related to and shaped by both the work tasks and patterns of mobility they undertake, and the information and communication technologies they use to interact and communicate with others.

However, the data analysis section is divided into three separate sections. Thus the first section utilizes Maznevski & Chudoba's (2000) work to understand the temporal rhythms of the consultants communication dynamics and how they are shaped by the spatial mobility patterns of the consultants. The second section utilizes Jarvenpaa & Leidner's (1999) work to conceptualize the communication behaviours of the consultants when they have to communicate electronically with work colleagues, for example when they are travelling and working at client sites. Finally, the third section of the analysis utilizes Orlikowski's (2002) work to consider the importance of face-to-face communication and its role in sustaining inter-personal relations.

Spatial Mobility and the Temporal Rhythms of the Consultants' Communication Processes

As discussed above, mobile telework is extremely heterogeneous, and can involve quite different patterns of mobility, and the use of different types of work bases. The specific mobility patterns of the consultants are described here and the relationship between them, and the temporal communication rhythms of the consultants are then examined.

As illustrated in Figure 1, the consultants examined can be located quite close to the centre of the triangle as they have an office base which they use on a regular basis, they require to be spatially mobile for much of their time, visiting clients

and working at their sites, and finally, they also occasionally work from home. The typical working patterns of the consultants interviewed can be summarized in the following selection of quotations.

'I'm probably out about on average 1.5 to 2 days a week and in the office the remainder of the time with a bit of working from home.'

'I'm away for a couple of days, three days, four days at a time. Certainly Fridays typically I'm in the office and one or two of the other days I would be in the office or working from home, typically.'

'I will perhaps spend two days of the week with clients working at project management level, which are about reviewing the quality or guiding a project, but not so much in delivery. I will spend probably another day or two in my office at home again on the telephone talking to people who are involved in projects, talking to clients, trying to make sure that projects run smoothly and effectively and then a day in Oxford [main office] on Friday where I come in and we have various meetings and we catch up sort of.'

'OK let me describe this week. Actually it's been mainly business development this week, so for example, Monday I can't remember what I was doing, I was in the office. I know! I was designing in the office a management development centre for [client name] in Spain. We're going to be running that in April. So I was designing that. On Tuesday I spent the day in Plymouth, I drove all the way down

to Plymouth [from near Manchester], met 4 people within [client 2]. That was all business development, it was a piece of work we were picking up from there, which is appointing a new sales manager. And drove all the way back that night, got home very late. Wednesday, yesterday, drove to Leeds and had an initial client meeting with [client 3] because we are running a team-building day with their IT managers in May. And today I am designing a presentation that we're giving tomorrow in Gatwick, so tonight I'm going down to Gatwick. I shall be leaving here about 7 this evening, get into Gatwick God knows when, stay in a Travelodge® overnight, and tomorrow morning I'm giving a presentation to [client 4], at 1030. And I shall leave there at 12 o'clock on Friday and drive all the way back home again! So kind of on the road work. A lot of travelling up and down motorways. I know motorways inside out.'

Overall, there was a weekly rhythm to the work patterns and mobility of the consultants interviewed in both companies. In general they typically spent the start and the end of each week either in the office or working from home, and the middle of each week out visiting clients, with the amount of time spent visiting clients sites typically vary from between two to four days per week.

Further, either travelling to, or working at client sites, significantly affected both their ability to communicate with work colleagues in two ways. Firstly, it affected their availability (their ability to participate in communication processes) and secondly, their communicability (the nature and quality of the communication

interactions they were involved in). For example, while working at client sites the type of activities involved in, such as giving presentation, running training sessions, inhibited their availability to work colleagues. In such situations, their availability to communicate was restricted to lunch times, breaks, and evenings. For example two interviewees said,

'whenever I'm out of the office I try and phone in at least once a day, generally at lunchtime, if I'm on a training course.'

'maybe like at lunchtime, if John was ever working from home or out, he would ring me at lunchtime and say 'hi, how are you, how was your morning.'

Another example of such impacts relates to the process of actually travelling to clients. Travel had a number of impacts on both their communicability and availability. Firstly, face-to-face communication is only possible with travelling companions, while communication with others has to be done electronically. However, while large amounts of driving was regarded as tiring and stressful in itself, the consultants sometimes felt that this could be made into more useful time through the opportunities it gave to telephone people. Such calls were also a mixture of formal work related calls, and more social calls. For example, the following comments were made by various interviewees,

'if you're driving for four hours, two hours to Oxford, two hours from Oxford, you have a choice, you can sit and listen to the radio, you can use it to unwind in terms of stress although that's quite difficult on the M4 when there's road works Or you can actually use that time to make 'phone calls, you can have a mobile 'phone set up in your car which is kind of a hands free.'

'So you basically, for a two hour meeting, the whole day is gone. And then that's when the old phone comes in handy because you can get on the phone to clients and contacts and do things on the go.'

'I've phoned up people on the other side of the business just to have a chat. I've been driving home on a Friday afternoon from Bristol. "Who can I call up? I know, I'll phone Jerome." Have a bit of a laugh, a natter. I don't do that probably yet enough. And also it's alright for me, I'm in the car, it's Friday afternoon, I can phone up for a natter.'

One potentially positive impact of driving on communication is that it provides the opportunity for extended face-to-face communication with travelling companions, which may be difficult to achieve in other circumstances. One trainee summarized this as follows,

'I suppose in a way, because you are on the road and doing things, car time is quite important, like sitting in car, one-to-one, for example, you won't see Colin [a

senior consultant] *that much and then you will go on a trip with him, so like 3 hours in a car and it will be just you and him and that can be really important because it can be like real quality time, so he is like 'how are you, how are you doing, how do you think things are going' and you can ask how the company is doing and stuff and that can be really useful, because you get quality time one-to-one with different people that you normally wouldn't.'*

Finally, a negative potential impact off travelling on the mobile workers communicability is the unreliability of telephone network coverage, which can disrupt conversations. Thus one interviewee said,

'...likewise when you are on the train and your mobile is constantly cutting out, even if you are trying to use the phone discretely without disturbing anyone else on the train, um, if you are constantly having to repeat the same conversation that can be hugely frustrating.'

Maznevski & Chudoba (2000) argue that a useful way to understand the temporal dynamics of communication within virtual teams is to consider these interactions as being made up of a series of discrete 'communication incidents.' Looking at the pattern of such incidents over time builds up a picture of the temporal rhythm of communication dynamics. In analyzing the communication dynamics of the consultants, the combined effect of their patterns of spatial mobility together with the travel and work activities they undertook had a

discernible impact on the temporal rhythm of the consultants' communication processes, helping to create a regular, weekly rhythm. This rhythm had two typically distinct phases, each of which will be examined in detail below. Firstly, while travelling, or working at client sites, communication with work colleagues was typically frequent, regular, and technology mediated, either being done via e-mail or mobile phone. Secondly this pattern was usually punctuated by weekly face-to-face meetings in the office, which, as will be seen, are regarded as vitally important by the consultants in helping to sustain their ongoing social relations with colleagues.

Communication Patterns While Out of the Office

Jarvenpaa & Leidner (1999) highlight the difficulty of developing and sustaining trust based social relations within virtual teams, when limited opportunities exist for face-to-face interaction to occur. However, from the analysis they undertook they suggested that a number of communication behaviours and actions could play a positive role in both facilitating the development of trust (during the early stages of a working relationship) and sustaining trust (during ongoing work activities). The two main communication behaviours they found to help sustain trust within virtual teams were firstly, being predictable and reliable, and secondly providing timely and substantial responses.

While, as outlined above, communicating with colleagues when out of the office was difficult, the consultants interviewed also revealed that despite this, they made significant efforts to remain in constant communication with their work colleagues. For these workers, mobile phones were invaluable as they provided a way of contacting people almost irrespective of location (as long as there was network connectivity). Thus, when out of the office, one of the main characteristics of their communication dynamics was the frequent use of their mobile phones. For example, two interviewees said the following,

'It is essential that you make a proactive effort to manage contact with colleagues. ... I maintain contacts with regular telephone calls to colleagues.'

'Wherever we are I will ring John[project manager] or he will ring me, even just to say 'how was your day, what are you up to', um, and then he will say what he has been doing. Yes, everyday I talk to John just to keep in touch.'

Further, ensuring they are always available to be contacted can mean leaving the mobile phone on a lot, even when abroad. Thus, one senior consultant interviewed said the following,

'I've said to my team, my mobile is switched on twenty four hours a day, call me whenever you want.'

And later, said,

'... the mobile 'phone, having it on or taking it to the States [USA]. The fact that I've got a tri-band phone now means that I'm receiving 'phone calls at five o'clock in the morning in the states or whatever because people are up here [the UK], it's nine o'clock in the morning, ten o'clock in the morning.'

Arguably, this demonstrates the consultants using the type of communication behaviours that Jarvenpaa & Leidner suggest will help sustain trust among work colleagues, i.e being reliable and timely with their communications. While much of this frequent, out of office communication was for formal, work related purposes, there was also evidence that one aspect of it was more informal, motivated by the explicit objective to help sustain inter-personal relations with colleagues. Thus the following comments were made by interviewees,

'It's two-way, formal and informal. I mean silly things like is if I'm not in for a while, one way I find of trying to remind people I'm still here is to send them jokes provided I haven't received them from them in the first place.'

'... it can be quite a lonely job and sometimes you feel in need of a bit of contact with colleagues and sometimes you can sense that colleagues value a little bit of contact so you need to give that. I mean there are some calls which on the face of it might appear, um, like chit chat but are actually quite important because it

gives you an opportunity to sound out how other people are thinking, how other people are feeling and stay in touch.'

'if I am working out of the office all week, I will just ring in and speak to people have an informal chat. Just to find out what the latest gossip is and everything.'

Overall therefore, despite the constraints that travel and work activities place on the consultants when they are working out of the office, their communication dynamics during these periods can be characterized as involving a significant amount of technology mediated communication particularly via their mobile phones.

The Importance and Function of Face-to-Face Communication

While trust based social relations can be sustained, to some extent by technology mediated communications alone, occasional face-to-face interactions can play a fundamentally important role in strengthening social relations among workers who predominantly work at a distance from each other (Maznevski & Chudoba 2000, Nandhakumar 1999). This was also the conclusion of Orlikowski in her study of the dispersed R&D work of Kappa (2002). For Orlikowski, the function and utility of face-to-face interactions for dispersed workers is threefold. Firstly, they provide a way for people to sustain trust and demonstrate commitment within pre-existing social relationships. Secondly, the richness of

face-to-face communication allows for complex information and knowledge to be shared. Thirdly, they allow the development of social relations with new colleagues, and people with whom there is no pre-existing social relationship.

Consultants from both companies indicated the importance with which they regarded their weekly opportunity to interact with colleagues on a face-to-face basis, which most frequently occurred on a Friday. In neither organization were Fridays formally designated as days when consultants had to be in the office, but in both organizations such a practice had virtually become an institutionalized, but informal and uncodified part of the working culture. Thus two consultants noted that,

'we tend to be in on Friday so that's a least one day a week you get to see people.'

and,

'I will always make sure that I'm here once a week. Especially on a Friday when everyone's around.'

Further, in line with Orlikowski's conclusions, the consultants found these arrangements to not only be good for exchanging work related information, and convening formal, face-to-face meetings, but also more informally, to sustain

their social relationships with each other. Such sentiments are embodied in the following quotations,

'you need to squeeze a lot into one day in terms of catching up with people. Talking about the different projects you're working on. Just catching up with them about work and life in general because the thing you would normally do across the week in terms of socializing with your colleagues, you have to squeeze all that into one day.'

And,

'...when you are in, you do a lot of gossiping, catching up, if you can, if you're not busy and that's what you generally do ... if you are in the office once a week, you probably do spend about an hour of that chattering about anything basically. You might call that time-wasting but it's important, I think, to keep that contact going with other people.'

CONCLUSION

A number of general conclusions can be drawn from the analysis conducted here. Primarily, the work tasks and travelling that the consultants examined were involved in did have a marked effect on their communication dynamics. More specifically, the character of their spatial mobility had a significant effect on the

patterns of their communication dynamics. This was visible in that a distinctive temporal rhythm to their communication dynamics was visible. Thus, when they were out of the office, their communications, while being constrained by their travel and work commitments, were characterized as very frequent but simultaneously relatively brief, conducted largely via the use of mobile phones. For workers who are spatially mobile, and who need to contact others who are spatially mobile, mobile phones proved a particularly invaluable communication tool. The other phase in the temporal pattern of their communication dynamics was that this type of communication was punctuated by regular weekly face-to-face meetings, which virtually all interviewees regarded as being vitally important.

The research also showed that this communication pattern was shaped not only by the functional needs of the tasks being undertaken, but also by a sensitivity of the workers to the importance of sustaining effective ongoing social relations with colleagues they only saw face to face intermittently.

A more general conclusion from the research is that it highlights the need for more research and analysis on mobile teleworkers/virtual workers, not only because spatial mobility is an increasingly common element in contemporary work, or even that they are simply a neglected sub-category of virtual worker/teleworker but because their communication dynamics appear to be quite distinctive from more geographically static, office/home based workers.

BIBLIOGRAPHY

- Ahuja, M. Carley, K. (1999). 'Network Structure in Virtual Organizations'. *Organization Science*, 10/6: 741-757.
- Ahuja, M. Galetta, D. Carley, K. (2003). 'Individual Centrality And Performance In Virtual R&D Groups: An Empirical Study', *Management Science*, 49/1: 21-38.
- Baines, S. (1999). 'Servicing The Media: Freelancing, Teleworking And 'Enterprising' Careers, *New Technology, Work and Employment*, 14/1: 18-31.
- Baruch, Y. (2000). 'Teleworking Benefits And Pitfalls As Perceived By Professionals', *New Technology, Work and Employment*, 15/1: 34-49.
- Bates, P., Huws, U. (2002). *Modelling eWork in Europe: Estimates, Models and Forecasts from the EMERGENCE Project*. Falmer, Brighton: IES (Institute for Employment Studies).
- Becker, M. (2001). 'Managing Dispersed Knowledge: Organizational Problems, Managerial Strategies and their Effectiveness'. *Journal of Management Studies*, 38/7: 1037-1051.
- Brocklehurst (2001). 'Power, identity and new technology homework: implications for 'new forms' of organizing', *Organization Studies*, 22/3: 445-456.
- Bryant, S. (2000). 'At home on the electronic frontier: work, gender, and the information highway', *New Technology, Work and Employment*, 15/1: 19-33.
- Castells, M. (1996). *The Rise of Network Society*. Oxford: Basil Blackwell.
- Clases, C. Bachmann, R. Wehner, T. (2003). ' Studying Trust in Virtual Organizations', *International Studies of Management and Organization*, 33/3: 7-27.
- Cunha, M. daCunha, J. (2001). 'Managing Improvisation In Cross Cultural Virtual Teams', *International journal of Cross Cultural Management*, 1/2: 187-208.
- Cramton, C. (2001). 'The Mutual Knowledge Problem and Its Consequences for Dispersed Collaboration'. *Organization Science*, 12/3: 346-371.

- Daniels, K., Lamond, D., Standen, P. (2001). 'Teleworking: Frameworks for Organizational Research', *Journal of Management Studies*, 38/8: 1151-1185.
- DeSanctis, G. Monge, P. (1999). 'Introduction to the Special Issue: Communication Processes for Virtual Organizations'. *Organization Science*, 10/6: 693-703.
- Dimitrova, D. (2003). 'Controlling Teleworkers: Supervision and Flexibility Revisited', *New Technology, Work and Employment*, 18/3: 181-195.
- ECaTT (1999). *Electronic Commerce and Teleworking Trends*. Statistics taken from ECaTT website (www.ecatt.com - 19/7/04)
- Fairweather, N. (1999). 'Surveillance In Employment: The Case Of Teleworking', *New Technology, Work and Employment*, *Journal of Business Ethics*, 22/1: 39-49.
- Felstead, A. Jewson, N. Phizacklea, A. Walters, S. (2002). 'The Option To Work At Home: Another Privilege For The Favoured Few?', *New Technology, Work and Employment*, 17/3: 204-223.
- Felstead, A., Jewson, N., Walters, S. (2003). *The Changing Place of Work*. Working Paper No. 28, Centre For Labour Market Studies, University of Leicester.
- Furst, S. Reeves, M. Rosen, B. Blackburn, R. (2004). 'Managing The Life Cycle Of Virtual Teams', *Academy of Management Executive*, 18/2: 6-02.
- Grabowski, M. Roberts, K. (1999). 'Risk Mitigation In Virtual Organizations', *Organization Science*, 10/6: 704-721.
- Gray et al 1993
- Hardill, I, Green, A. (2003). 'Remote Working: Altering the Spatial Contours of Work and Home in the New Economy', *New Technology, Work and Employment*, 18/3: 158-165.
- Harris, L. Ogbonna, E. (2003). 'The Organization Of Marketing: A Study Of Decentralized, Devolved And Dispersed Marketing Activity', *Journal of Management Studies*, 40/2: 483-512.
- Hartley, J. (2004). Case Study Research'. In C. Cassell and G. Symon (Ed's), *Essential Guide to Qualitative Methods in Organizational Research*.

London: Sage.

Hinds, P. Bailey, D. (2003). 'Out Of Sight, Out Of Sync: Understanding Conflict In Distributed Teams', *Organization Science*, 14/6: 615-632.

Hinds & Kiesler (2002) *Distributed Working*. MIT Press.

Hughes, J. O'Brien, J. Randall, D. Rouncefield, M. Tolmie, P (2000). 'Some 'Real' Problems Of 'Virtual' Organisation', *New Technology, Work and Employment*, 16/1: 49-64.

Huws, U., Jagger, N., O'Regan, S. (1999). *Teleworking and Globalization: Towards a Methodology for Mapping and Measuring the Emerging Global Division on Labour in the Information Economy*. Brighton, IES (Institute for Employment Studies).

James, D. (2004). 'Joint Book Review', *Sociology*, 38/1: 203-206.

Jarvenpaa, S., Leidner, D. (1999). 'Communication and Trust in Global Virtual Teams'. *Organization Science*, 10/6: 791-815.

KasperFuehrer, E. Ashkanasy, N. (2003-04). 'The Interorganizational Virtual Organization: Defining A Weberian Ideal', *International Studies of Management and Organization*, 33/4: 34-64.

Kaufmann, V. (2002). *Rethinking Mobility: Contemporary Sociology*. Aldershot, Hampshire: Ashgate.

Kerrin, M. Hone, K. (2001). 'Job Seekers' Perceptions Of Teleworking: A Cognitive Mapping Approach', *New Technology, Work and Employment*, 16/2: 130-143.

King, N. (2004). 'Using Templates in the Thematic analysis of Text'. In C. Cassell and G. Symon (Ed's), *Essential Guide to Qualitative Methods in Organizational Research*. London: Sage.

Kirkman, B. Rosen, B. Tesluk, P. Gibson, C. (2004). 'The Impact Of Team Empowerment On Virtual Team Performance: The Moderating Role Of Face-To-Face Interaction', *Academy of Management Journal*, 47/2: 175-192.

- Kraut, R. Steinfield, C. Chan, A. Butler, B. Hoag, A. (1999). 'Coordination and virtualization: the role of electronic networks and personal relationships', *Organization Science*, 10/6: 722-740.
- Kurlan, N. Egan, T. (1999). 'Telecommuting: Justice And Control In The Virtual Organization', *Organization Science*, 10/4: 500-513.
- Mann, S., Holdsworth, L. (2003). 'The Psychological Impact of Teleworking: Stress, Emotions and Health', *New Technology, Work and Employment*, 18/3: 196-211.
- Maznevski, M., Chudoba, K. (2000). 'Bridging Space over Time: Global Virtual Team Dynamics and Effectiveness.' *Organization Science*, 11/5: 473-492.
- Medcof, J. (2001). 'Resource-Based Strategy And Managerial Power In Networks Of Internationally Dispersed Technology Units', *Strategic Management Journal*, 22/11: 999-1012.
- MontoyaWeiss, M. Massey, A. Song, M (2001). 'Getting It Together: Temporal Coordination And Conflict Management In Global Virtual Teams', *Academy of Management Journal*, 44/6: 1251-1262.
- Orlikowski, W. (2002). 'Knowing In Practice: Enacting A Collective Capability In Distributed Organizing', *Organization Science*, 13/3: 249-273.
- Perez, M. Sanchez, A. deLuisCarnicer, M. (2003). 'Top Manager And Institutional Effects On The Adoption Of Innovations: The Case Of Teleworking', *Prometheus*, 21/1: 59-73.
- Peters, P. denDulk, L. (2003). 'Cross cultural differences in managers' support for home-based telework: a theoretical elaboration', *International Journal of Cross cultural Management*, 3/3: 329-346.
- Pyoria, P. (2003). 'Knowledge Work in Distributed Environments: Issues and Illusions', *New Technology, Work and Employment*, 18/3: 166-180.
- Sawhney, M. Pradelli, E. (2000). 'Communities of Creation: Managing Distributed Innovation in Turbulent Markets', *California Management Review*, 42/4: 24-54.

- Simpson, L. Daws, L. Pini, B. Wood, I.(2003). 'Rural telework: case studies from the Australian outback', *New Technology, Work and Employment*, 18/2: 115-126.
- Sole, D. Edmondson, A. (2002). 'Situated Knowledge and Learning in Dispersed Teams', *British Journal of Management*, 13: S17-34.
- Staples, D. Hulland, J. Higgins, C. (1999). 'A Self-Efficacy Theory Explanation for the Management of Remote Workers in Virtual Organizations'. *Organization Science*, 10/6: 758-776.
- Sullivan, C. (2003). 'What's in a Name? Definitions and Conceptualisations of Teleworking and Homeworking', *New Technology, Work and Employment*, 18/3: 158-165.
- Tietze, S. (2002). 'When 'Work' Comes 'Home': Coping Strategies Of Teleworkers And Their Families', *Journal of Business Ethics*, 41/4:385-396
- Tietze, S. Musson, G. (2002). 'When 'Home' Meets 'Work': Temporal Flexibility as Lived Experience' *Time and Society*, 11/23: 315-334.
- Urry, J. (2000a). *Sociology Beyond Societies: Mobilities for the Twenty-First Century*. London: Routledge.
- Urry, J. (2000b). 'Mobile Sociology', *British Journal of Sociology*, 51/1: 185-203.
- Wiesenfeld, B. Raghuram, S. Garud, R. (1999). 'Communication Patterns As Determinants Of Organizational Identification In A Virtual Organization', *Organization Science*, 10/6: 770-790.

Appendix 1

Academic papers on teleworking and home based working (1999-2004). From BIDS.

Dimitrova (2003)
Hardill & Green (2003)
Mann & Holdsworth (2003)
Perez et al (2003)
Peters & denDulk (2003)
Simpson et al (2003)
Sullivan (2003)
Felstead et al (2002)
Tietze (2002)
Tietze & Musson (2002)
Brocklehurst (2001)
Daniels et al (2001)
Kerrin & hone (2001)
Baruch (2000)
Bryant (2000)
Baines (1999)
Fairweather (1999)

Appendix 2

Academic papers on Virtual/dispersed/distributed working (1999-2004). From BIDS.

Furst et al (2004)
KasperFuehrer & Ashkanasy (2003-04)
Kirkman et al (2004)
Ahuja et al (2003)
Clases et al (2003)
Harris & Ogbonna (2003)
Hinds & Bailey (2003)
Pyoria (2003)
Orlikowski (2002)
Sole & Edmondson (2002)
Becker (2001)
Cunha & daCunha (2001)
Cramton (2001)
Medcof (2001)
MontoyaWeiss et al (2001)
Hughes et al (2000)
Maznevski & Chudoba (2000)
Sawhney & Pradelli (2000)
Ahuja & Carley (1999)
DeSanctis & Monge (1999)
Grabowski & Roberts (1999)
Jarvenpaa & Leidner (1999)
Kraut et al (1999)
Kurland & Egan (1999)
Staples et al (1999)
Wiesenfeld et al (1999)

Figure 1: Three Dimensional conceptualization of occupational types based on location of work

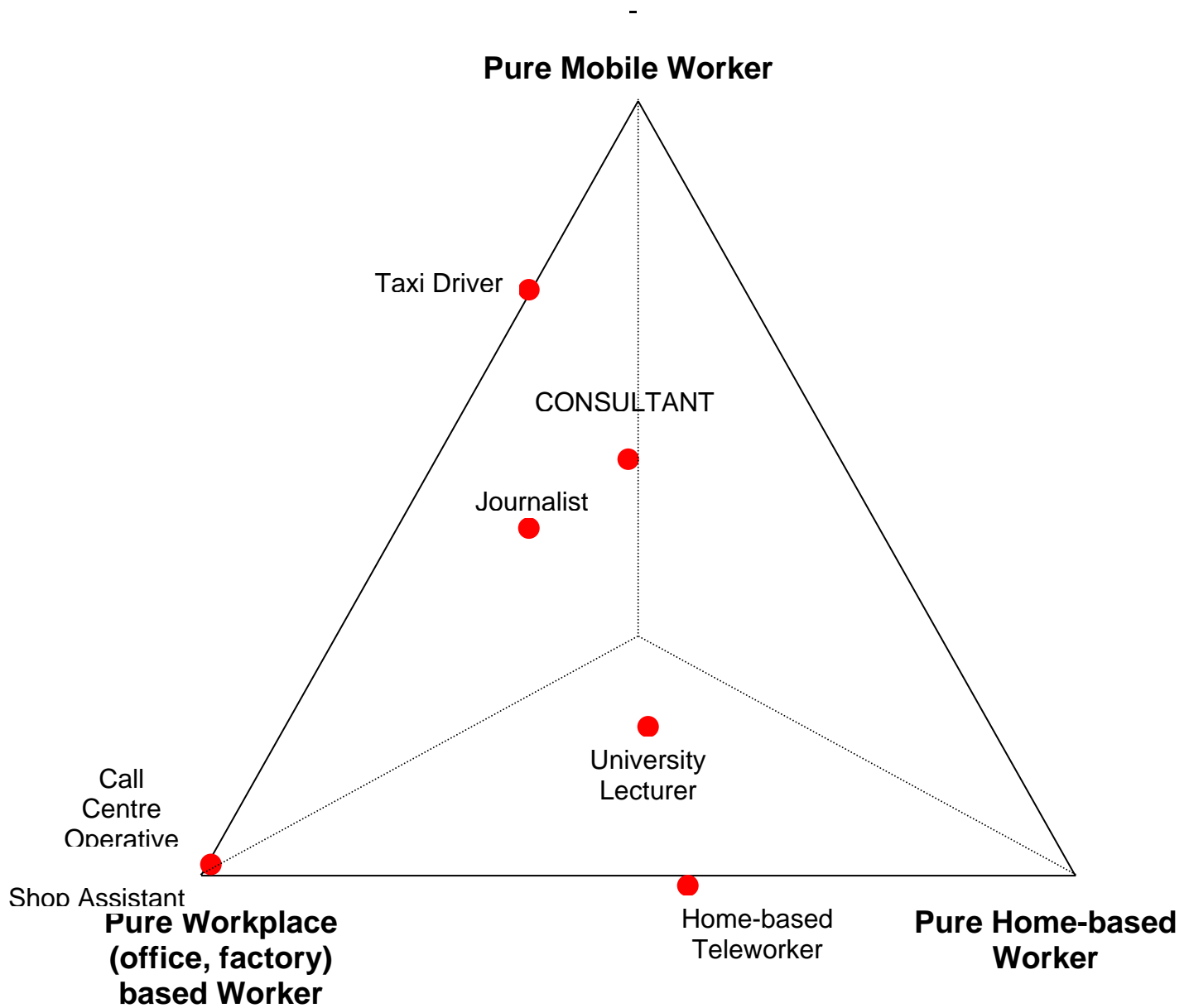


Figure 2: Relations between topics examined

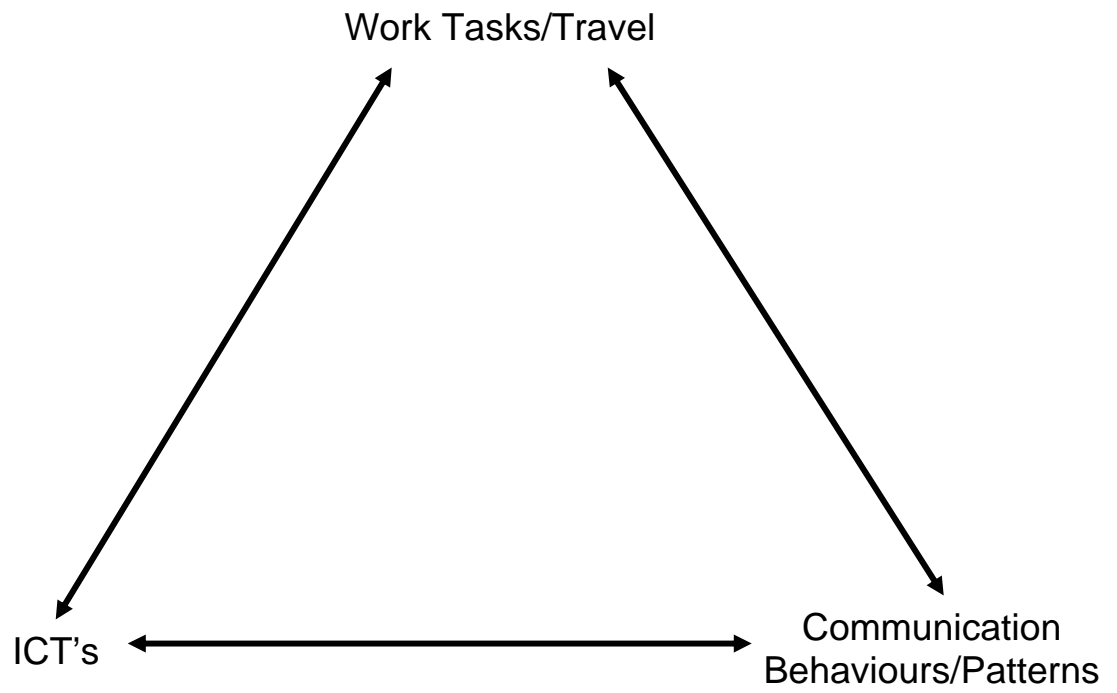


Table 1: Absolute Number of Mobile Teleworkers in Europe

Country/Region	Absolute Number of Mobile Teleworkers		Absolute Number of Home-based Teleworkers	
	Bates & Huws (2002)	EcaTT (1999)	Bates & Huws (2002)	EcaTT (1999)
UK	1,000,000	550,000	190,000	630,000
Benelux & France	870,000	510,000	230,000	560,000
Denmark, Sweden & Finland	510,000	210,000	100,000	470,000
Germany & Austria	640,000	520,000	230,000	540,000

Table 2: Changes in number of Home-based and mobile workers in the UK,
1981-2002 (From Felstead et al 2003, Table 1)

	Percentage of UK workforce 'working mainly at home'	Percentage of UK workforce 'working mainly 'in different places using the home as a base''
1981	1.5% (345,000 workers)	2.8% (642,000 workers)
2002	2.4% (673,000 workers)	7.6% (2,130,000 workers)
Percentage Change 1981-2002	94.5%	231%