Teleworking and the Internet: Exploring the Sociological Impacts of Information Technologies on Communication, Work, Individuation and Social Solidarity.

by

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B.A., University of Western Ontario, 1995

A Thesis Submitted in Partial Fulfillment of the
Requirements for the Degree of

MASTER OF ARTS

In the Department of Sociology

We accept this thesis as conforming
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ABSTRACT

It is estimated that by the year 2001, there will be over one million teleworkers in Canada and over 30 million teleworkers in the United States (Inno Visions Canada, 1997: 2-3). These statistics, combined with the fact that little is known about the impacts of relocating workers from the traditional workplace to the home, were the major issues prompting this research. This thesis examines the social impacts of information technology on North American teleworkers by addressing two main questions: 1) How do teleworkers experience and value computer-mediated communication? And 2) How does telework impact upon the processes of individuation and social solidarity? The concepts of individuation and social solidarity developed by Emile Durkheim help to contextualize this research theoretically. From July to October 1997, an on-line questionnaire designed to collect data via the Internet was electronically posted. To locate a teleworker sample, a combination of over 400 e-mails and on-line requests were sent to organizations, corporations and individuals thought to be associated with teleworking. In total, 18 teleworkers voluntarily completed the questionnaire. The findings suggest that computer-mediated communication facilitates the efficient and productive accomplishment of work: 89% percent reported having greater control over how they conduct their work; 56% reported both fewer interruptions and increased productivity; and 61% indicated working more hours per week. However, even though 83% reported spending more time with their families, 72% indicated that decreased interaction and face-to-face contact with co-workers is a disadvantage of teleworking. Furthermore, although the majority of respondents reported decreases in both face-to-face contact

(78%) and socializing (61%) with their colleagues, most also stated that they enjoyed teleworking more than working in a traditional office (83%) and would like to telework for their entire career (67%). This thesis also examines the advantages and disadvantages of collecting data on-line and provides suggestions for conducting future research involving information technologies and telework.

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Acknowledgments

I am indebted to Dr. Alan Hedley for his helpful and detailed supervision in all stages of writing my thesis. My gratitude goes to Dr. Ken Hatt for his enduring support, enthusiasm and advice. And my utmost appreciation goes to Sabrina, my family and friends for their support, encouragement and editorial assistance.

CHAPTER 1

Introduction

Two-thirds of Fortune 1000 companies currently have telecommuting programs, half of which were instituted in the past two years. A majority of those with telecommuting programs expect them to continue to grow, while nearly 60% of executives from companies without programs expect to institute one within the next three years.
(www.teleworker.com/quotes.html, 1997:1)

As we enter the 21st Century, work, communication and interaction have the potential to undergo significant changes. The revolution and use of information technologies throughout the world are challenging fundamental conceptualizations of how people live their lives. From our individual neighbourhoods to the world at large (often termed the *Global Village*) computer networks such as the Internet are redefining many social, economic and technological features of our lives. Part of the information technology revolution involves the ability to work from home via a computer and the Internet, thus presenting a viable alternative to the daily commute in and out of the city centre. By reintegrating the home and the workplace, some believe that telework may hold the promise of the future through a return to the past. The cottage industry that was replaced by industrialization is now a suggested alternative to those social ailments stemming from the industrialization of work and society. Whether or not in response to recent corporate downsizing, business process re-engineering, outsourcing and/or technological developments that uprooted many workers and marked the end of many businesses, a workforce of teleworkers is emerging. While we do not know if telework represents the future trend of work for large numbers of individuals, we do know that its impacts on human interaction and social solidarity are likely to be significant.

Telework first appeared in mass public consciousness during the early 1970s. Developed in response to the energy crisis, working from home (telecommuting) instead of commuting to work was presented as a viable way to conserve fuel (Huws, 1991:22). While the idea of teleworking in the 1970s may have been well-intentioned, the telecommunications infrastructure, affordability, and capability of personal computers at that time made this idea impractical, if not implausible. Today, however, with the development of information technologies (IT) and the personal computer (PC), working from home is not only economically and technologically feasible, but for many individuals and corporations an attractive means of production.

The advanced networking of computers around the world, such as the Internet, facilitates the global transmission of information. Accessing an office database to download documents needed to complete a task has been possible for a number of years. Today, however, individuals connected to a computer network can collect information from, and communicate with, individuals, corporations and databases connected to the same network throughout the world. In the case of the Internet, access to over 170 countries worldwide presently exists (Salamon, 1997:2). Concomitant with Internet growth, more and more businesses are offering their services and selling their products "on-line". At the present time, not only can we purchase groceries over the Net, we can book airline tickets, read or listen to the news, and even view our children playing in daycare (via a web camera and web site). Undoubtedly, developments in IT have dramatically increased our opportunities to communicate with the world around us. With access to a networked computer, the entire world of on-line information and on-line individuals becomes accessible to any other networked computer or individual in the

world. Unlike the teleworkers of the 1970s, today's teleworkers can do more than simply work from home; in many regards, they can fulfill numerous personal responsibilities, needs and interests.

Telework may be viewed as a product of the larger telecommunications and information technologies revolution. Conceived as crucial for recent and future social and economic development, "telecommunications technologies and services are increasingly seen as the central nervous system of the evolving world economy of the twenty-first century, not merely as a concomitant of future growth and welfare but as a precondition for both" (Snow, 1988:153). The reasons for viewing IT as revolutionary are threefold: first, it allows for lower-cost production of existing goods and services; second, it produces new goods and services; and third, it involves the convergence of computer and telecommunications services (Snow, 1988:159). Remarking on the speed and impact of technological change, Rockwell et al. (1995:152) note:

> The 1990's are not a time of incremental improvements; they are a time of qualitative change that is quite properly described as a revolutionary era. This is an era in which the cost of computing cycles is rapidly approaching zero, in which mass-storage devices are doubling in their capacity in less than a year's time, and in which communications technology is, if anything, advancing more rapidly than is computer technology.

Within North America, the economic importance of IT is made apparent by the funds allocated to IT infrastructure projects by both the American and Canadian governments. In the US, up to $2 billion a year has been allocated for its National Information Infrastructure Program (Menzies, 1997:106). In Canada, the Chrétien government has set aside funds under its own $6 billion infrastructure project and allocated over $100 million to CANARIE (Canarie, 1997). CANARIE is largely a

private-sector consortium that was created in 1993. It was designed to facilitate the "development of critical aspects of the communications infrastructure of a knowledge-based society and economy in Canada, and in so doing to contribute to Canadian competitiveness in all sectors of the economy, to wealth and job creation and to our quality of life" (Canarie, 1997).

For the purposes of this research, "telework is work that, as a result of the application of information and communications technology, is separated from the location of the employer for at least 20% of working hours" (Weijers et al., 1992:1049). For work to be considered telework it must meet four criteria: one, it consists of the processing of information in a broad sense; two, it results in measurable output (reports, accounts) that can be planned and fitted into a whole of activities; three, it does not depend on face-to-face or physical contact; and four, it must involve the use of telecommunications and advanced information technologies (such as the Internet, intranets, Local Area Networks (LANs) or Wide Area Networks (WANs)) as an essential and central feature of the work (Weijers et al., 1992:1050; Bibby, 1997:1). Within this research, the terms *telework* and *telecommuting* are synonyms, and the Internet is defined as a worldwide network of electronically linked computers, characterized by continuous growth, dispersed control and organization, and operating on the Transmission Control Protocol/ Internet Protocol (TCP/IP) suite. TCP/IP is a computer network protocol which allows computers to communicate with each other through a wire (Carroll and Broadhead: 1996: 90). As there are many components to the TCP/IP suite, only the most basic components involved in transferring data across the Internet will be presented, using the analogy of the postal service.

When a letter is sent via the postal service, the typical process is to put the letter into an envelope and write on the envelope the recipient's address as well as one's return address. This happens automatically when sending data over the Internet. First, data to be transmitted are directed into an electronic envelope called an IP Packet. This packet has the sender's IP address and the IP address of the recipient. The telephone lines, Ethernets, fiber optic cables, and satellite transmissions, which are equivalent to the trucks and planes of the postal service, transport the data to and from Internet routers (or postal substations) where the packets of information are directed to the recipient's address. Upon arriving at the intended address, the IP packet is opened and the data are available to the user.

This may seem simple enough, but suppose that you had to send someone a book and the Post Office only accepted letters? What could you do? As Krol (1992) notes: "You could rip each page out of the book, put it in a separate envelope, and dump them all in a mailbox. The recipient would then have to make sure the pages all arrived and paste them together in the right order. This is what TCP does" (p. 23). TCP software on your computer takes the information that you want to send, breaks it into pieces, numbers each piece so that upon receipt the data can be verified and put back into the proper order. It then places the data into a TCP envelope, which in turn is placed into an IP envelope, and finally given to the network. Once in IP Packet form, data can be transmitted throughout the Internet. Upon receiving the IP Packets, the TCP software on the receiver's computer collects the envelops, extracts the data and puts them into the proper order. If data are missing or corrupted, the receiving computer requests retransmission of the required data until the process is successful (p. 23). Thus, the process of sending data

throughout the Internet is made possible with the universal transmission protocol known as TCP/IP.

With the development of computer networks and a transmission protocol enabling computers to communicate, numerous tasks involving the use of computers can be completed at remote locations. Just as there are numerous types and variations of occupations, individuals conducting telework may be classified into five main groups (Kellerman, 1993:84; MTA, 1997:2): 1) 'Privileged workers', or those employed by a corporation or business who want to work at home and have the proper conditions to do so; 2) those forced by their employer to work at home (especially part-time female workers); 3) informal or illicit teleworkers (individuals working from home with no corporate approval or in defiance of policy); 4) self-employed, freelance, or entrepreneurial teleworkers; and 5) after-hours home workers. In this research, I will be examining the first two of these categories – corporate teleworking. By virtue of the large employee population, the implementation of teleworking programs by multinational corporations will presumably have the greatest impact on work, communication and social interaction for North American societies. This will especially be the case should corporate teleworking become a job requirement rather than an option.

Early estimates of telecommuting in Canada suggested that by the mid-1990s, 15 percent of the workforce would be working away from a central office (Cordell,1985:33). Currently, statistics on teleworking in America, as reported on the World Wide Web, vary dramatically. For example, *Teleworking Related Quotes* web pages (1997:3), citing the *NBC Nightly News* on March 22, 1994, state: "in 1990 there were ... 2 million telecommuters .., 7.8 million this year [1994], and by 2001, an estimated 30 million

telecommuters." Exceeding this estimate by many millions, the *Telecommuting & Home Office Exposition & Conference* web site (1997:1) notes that "there are 23 million corporate home workers today in the US workforce (11 million telecommuters and 12 million high-tech after-hours workers). By the year 2000, approximately 55 million US workers will be telecommuting or working remotely." Although the accuracy of these statistics may be questionable, even the lower estimate provides us with an indication of the social and economic importance of telework for North American society. *OECD* (1996) and *World Competitiveness Report* (1995) statistics denote similar trends in IT development and employee utilization of information and Internet technology among workers in the United States and Canada.

The initial step of reintegrating work and home through teleworking involves relocating workers from their workplace to their home. Illustrating the point that the geography of work is changing, Bibby (1997:1) notes:

> If, for example, business documents or correspondence are stored in paper form in a conventional office filing cabinet, the workers responsible for processing that information must clearly work in the same room -- or at least within close geographical reach -- of the files they need.
> When the same information is stored in digital form, by contrast, the data required can be extracted, worked on and eventually re-filed from a computer located hundreds or thousands of kilometers away. In theory (if not quite yet in practice), the workers can be based anywhere in the world.

While relocating the worker is the most definitive characteristic of teleworking, the impacts of this relocation are largely unknown. For example, in the relocation from workplace to home, workers spend less time in the physical presence of each other. This aspect of relocating is of primary concern. As human face-to-face interaction among workers occurs less frequently, thus affecting workplace solidarity, what consequences does this have for individual teleworkers?

In decreasing the social density of the workplace through having individuals work out of their homes, how is the social solidarity brought about by the industrial revolution altered by the onset of the information revolution? Wellman et al. (1996) expand on this line of questioning:

> The privatization of relationships affects community, organizational, and co-worker solidarity. Virtual communities are accelerating the ways in which people operate at the centers of partial, personal communities, switching rapidly and frequently between groups of ties. Whether working at home or at an office workstation, many workers have an enhanced ability to move between relationships. At the same time, their more individualistic behavior means the weakening of the solidarity that comes from working in large groups. (232)

As information technology develops at a rapid pace, the social impacts on solidarity are difficult and problematic to determine or predict. As many of us struggle to stay abreast of new technologies and are quick to incorporate these technological developments into our lives, too often there remains little or no time to reflect upon the social consequences of our actions. As we continuously pursue faster and more sophisticated technologies to help us complete our work, the need to improve our computer skills often takes priority over attempts to improve relationships with those around us. Because teleworking is largely accomplished by utilizing the latest information technologies, sociological investigations of the effects of teleworking on the lives of individuals and their sense of social solidarity should be conducted in an effort to understand better the impacts which teleworking may have. As increasing numbers contemplate whether or not to telework, empowering these individuals and companies with the knowledge to make informed decisions is a reasonable goal.

Pursuing this goal, my thesis will explore how the information revolution, through the reorganization of work and the reintegration of work and home, may impact upon

individuals' lives and the social solidarity of groups. As the number of individuals engaging in telework throughout North America is forecast to increase dramatically, there are numerous questions requiring answers: how does interaction mediated by computers compare to face-to-face interaction? do teleworkers feel isolated because they are working at home? do teleworkers spend greater amounts of time with their families and within their community as a result of being relocated at home? is co-worker solidarity and interaction that occurs in the workplace missed by teleworkers? how does telework influence the creation and maintenance of social solidarity? We are attempting to answer these questions to understand better the sociological impacts teleworking has on individuals and society.

CHAPTER 2

Theoretical Context

Occurring just over two hundred years ago, the industrial revolution had a great impact on the social and physical organization of work, labour and society. Reducing the demand for human labour in the agricultural sector and moving traditional cottage industries into the urban centre, the institution of work experienced profound changes as the density and volume of cities increased. The establishment of work and time around the production of goods provided the structure upon which cities were organized. Labour markets were developed, and time became defined as either productive (labour) or nonproductive (leisure) (Hughes et al.,1995: 8-10).

The expansion of transportation and communication networks were two fundamental technological advances brought about by the industrial revolution. As they greatly improved access to markets, raw materials and labour, these networks were crucial to the industrial revolution's development. Trains and railroads in the early 1800s provided a far more efficient means of mobilizing people and freight than canals and carriage (Hedley 1992: 88). The invention of the printing press, telegraph and telephone provided the wide-open channels needed for industrial-era communications. Countries developing mass production and mass consumption required mass communications and a means of efficiently delivering their new products (Toffler, 1980: 51). As goods were delivered across the spaces of land, so too was the transmission of information. Populations became informed as information regarding national interests, politics, concerns and values were disseminated through new communication networks. These networks consisted of post, newspapers, the telegraph and later the telephone and radio

(Deschenes, 1992:4). For example, through the combination of both transportation and communication networks. Toffler (1980) notes that by the year 1836, the British Post Office was carrying "some 88 million pieces of mail a year—an avalanche of communications by the standards of the day" (p.50). Accompanied by increases in education and literacy, the ability to transmit, receive and interpret information in a timely fashion altered and encouraged the development of industries, economies and societies throughout much of the world. While these effects of industrialization are only a small portion of all the changes that have occurred, they help us to realize the enormity of the impact of the industrial revolution on work, individuals, collectivities and solidarity.

From Industrial to Information Society

As the 20th Century comes to a close, new technological developments of epochal magnitude are constituting an information revolution. Manifested in the global communication network called *Internet*, the proliferation of computer technology in North America has infiltrated society to the degree that existing conceptualizations of labour, the individual, society and solidarity may have to be re-examined. Connecting people electronically via computers and telephone lines, the Internet allows individuals and groups to communicate and transfer information instantaneously across vast distances with relatively little expense. The extent of this technological development and its universal capability creates the potential and possibility for work and home to once again become integrated. Although the population density of cities will not likely decrease in response to a growing number of individuals working from home (the reverse impact of the industrial revolution), as the transmission of information around the world

is made easier and more affordable everyday, the requirements of physically leaving our homes in order to work and entertain ourselves will lessen over time. In effect, technological developments in the means of production may have reached a level whereby workers no longer have to leave their homes in order to be productive. Of course, during the time it took for the industrial revolution to be succeeded by the information revolution, the content of production has also undergone significant changes.

Unlike agricultural and manufacturing work, which are classified in the primary and secondary sectors of the economy respectively, telework represents an emerging trend primarily within the service or tertiary sector. The increasing proportion of jobs within the service sector of the economy, which matches the declining proportion of jobs in the primary and secondary sectors, has prompted what some call 'the second industrial revolution' or 'postindustrial society' (Pool, 1990:11). Rather than producing goods, the service economy provides transportation, security, health care and other services (p.10). More specifically, rather than physically crafting and manipulating raw materials and resources to produce industrial goods, information workers within the service industry manipulate symbols and information in the creation of knowledge. Outputs such as research reports, news, databases, etc., constitute the products of value created by an information workforce (Martin, 1988:71).

Since the emergence of sociology as a discipline, the investigation of 'the individual' and 'the social' has preoccupied the minds of many great sociologists. For example, focusing on the structural aspects of society and social life stemming from the industrial revolution, Durkheim theorized that an increased division of labour brought about a transformation of social order from a solidarity based upon similarity in the

assignment of tasks and work (referred to as mechanical solidarity) to one based upon a highly differentiated and specialized organization and assignment of work (referred to as organic solidarity) (Hedley, 1992:108).

Mechanical solidarity denoted the conditions of simple societies having little in the way of specialized institutions, and held together by a collective conscience. For Durkheim, collective consciousness was the totality of beliefs and sentiments shared by the citizens of the same society. Its main purpose was to maintain order and stability among undifferentiated societies (Durkheim, 1984:226). Durkheim believed that as evolutionary trends favoured the division of labour, common consciousness would loosen its monolithic grip on the individual. Consequently, "when every consciousness no longer beats as one, social integration has to depend more and more upon the imperatives of co-operative action" (Parkin, 1992:28).

Organic solidarity represented a new social order stemming from increases in life expectancy, population density, and human interaction (Hedley, 1992:108). Durkheim theorized how organic solidarity allows individuals to achieve a degree of autonomy, while remaining accountable and responsible for the collective welfare of society. Coser notes:

> Durkheim wanted to enhance the autonomy of the individual even as he clung to the idea that such autonomy could only be attained upon secure foundations in conditions of social solidarity firmly binding its members to each other. To put the question in his own words: "The question that has been the starting point for our study has been that of the connection between the individual personality and social solidarity. How does it come about that the individual, whilst becoming more autonomous, depends ever more closely upon society? How can he become at the same time more of an individual and yet more linked to society?... It has seemed to us that what resolved this apparent antimony was the transformation of social solidarity which arises from the ever-increasing division of labour (p.xxx)." (Coser, 1984: xiii - xiv)

Represented by a functionally differentiated institutional order which combines a complex division of labour with a regulating but minimal collective conscience, Durkheim postulated that organic solidarity could achieve a balance between individualism and socialism (Müller, 1988: 142). Through organic solidarity, the individual is not wholly submerged in the collectivity. Rather everyone enjoys a measure of autonomy sufficient to allow the personality to develop along idiosyncratic lines, free of the yoke of the common consciousness. (Durkheim, 1984:118).

In addition to Durkheim, Pool (1990) notes that "Karl Marx, Max Weber, and virtually all analysts of modern industrial society have pointed to the separation of place of work from residence as a key feature" of modern industrial society (p.230). In fact, a re-integration of work and home through telework could represent a return to the integration of work and home enjoyed by farmers and craft workers which existed prior to the 18th Century, and thus could reverse a 300-year trend of the factory system (p.230).

Since the Division of Labour in Society was first published in 1893, a great deal of technological and social change brought about by the industrial revolution has occurred. While some believe that telework exemplifies the perfection of modernization through an ever narrowing division of labour (Nunes, 1995: 6), and others consider telework to represent a break from the constraints of industrialization (Ekecrantz, 1986: 11), we must resist simplistic interpretations. It would be short-sighted to assume that a reintegration of work and the home simply reverses any unattractive consequences stemming from industrialization. For example, although teleworkers may break free of

traditional workplaces, they remain tied to organizations by administrative procedures, directives, leadership, and supervision.

As teleworking decreases the number of individuals commuting to and from traditional workplaces, it also decreases the likelihood of individuals meeting by chance within community spaces. Wellman et al. (1996) note that "people in the western world are spending less time in public places waiting for friends to wander by... Community has moved indoors to private homes from its former semi-public, accessible milieus such as cafés, parks, and pubs" (p.226). However, just because teleworkers work from their home, does not mean that they are isolated from their communities. In fact, because of the greater amount of time teleworkers spend at home, it may be the case that teleworkers will develop an increased interest in and opportunity to socialize with their neighbours and other community members. Also, through participation in on-line discussion groups and the use of chat lines, public spaces are being replaced by virtual spaces. Only by tapping the actual experiences of community interaction among teleworkers are we afforded insight into the sociological impacts of the Internet upon society.

Research Questions

The purpose of my Master's Thesis is to explore how the Internet and other information technologies, through the re-organization of work and the reintegration of work and home, impact upon individuals and their social solidarity. The two primary questions this research will strive to answer are: 1) How does interaction mediated by computers compare to face-to-face interaction? 2) How does telework impact upon the processes of individuation and social solidarity?

The first question explores the communication experience of the teleworker. It is estimated that there are over 200 million people on the Internet (Netree Internet Statistics, 1997:1), and this number continues to double annually (Rockwell et al., 1995:152). The frequency of computer-mediated communication (CMC) via e-mail or teleconferencing is significant. When teleworkers are removed from the workplace and CMC becomes a primary means of communication with others, how does this fundamental change in both the organization of work *and* the means of communication impact upon the individual? Addressing this question in part, Wellman et al. (1996) state that "despite the limited social presence of CMC, people find social support, companionship, and a sense of belonging through the normal course of CSSNs [Computer-Supported Social Networks] of work and community, even when they are composed of persons they hardly know" (p.220). If teleworkers do find CMC to be an acceptable (if not desirable) way of communicating with others, we may still ask what impacts CMC have on present ways of communicating.

Suggesting that CMC will be incorporated into our present ways of communicating, Pool (1990) states that "tele-communications do not eliminate the human need to associate physically with other people; it complements such association" (p.233). In striving to answer the first question, my objective is to explore how teleworkers experience and value CMC in comparison to face-to-face communication. If teleworkers do not find CMC a satisfactory means of communicating with others, the same technology that makes telework possible may impede the quality of the telework experience. In other words, just because the Internet makes telework feasible, it does not

follow that CMC can simply replace face-to-face communication that occurs within traditional workplaces.

The second question explores how teleworking impacts upon individuation and social solidarity. Grounded in Durkheimian theory, individuation refers to the loosening of bonds binding the individual to the collective (Thompson, 1982: 83). This type of development occurs within advanced societies when a weak collective conscience allows individuals to develop their own propensities and inclinations. Individual needs are given priority (by the individual) over the needs of the collective. Excessive individualism can be so intense that it exaggerates the extent to which we are distinct from each other, and thus threatens the regulation of individuals constituting the collective within a modern organic solidary society. It is this individuation developing out of organic solidarity which Durkheim feared. When individuals lack self-restraint and moral discipline, the 'collective good' is sacrificed and social order becomes vulnerable to moral crises (Thomson, 1982: 83).

For the purposes of this research, *individuation* encompasses a number of different concepts. Not only does individuation refer to the loosening of bonds binding the individual to the collective, it also refers to the physical aspects of being alone and/or experiencing feelings of loneliness. Individuation is used synonymously with the terms isolation and atomization. Exploring both behaviour and perceptions, my goal is to identify how teleworkers experience and interpret their isolation from the traditional workplace. Depending on their living arrangements or familial status, those working at home may experience varying degrees of individuation. It is crucial to acknowledge the feelings of teleworkers because, although family members such as children or parents

may be in the home, this does not preclude the possibility of teleworkers experiencing feelings of isolation from their co-workers. Therefore, although teleworkers may not be alone physically, they may feel alone or isolated from select others, such as co-workers with whom they interacted at their previous traditional workplace.

In exploring the impact of teleworking on individuals, it is important to ask them how they feel about working alone. If a majority of teleworkers feel isolated because they work from their homes, what then makes teleworking tolerable and why do individuals continue to telework? On the other hand, if a majority of teleworkers do not feel isolated because they work from their homes, might not this knowledge encourage more individuals to engage in teleworking? In addition to questions regarding telework and individuation, this research also explores the possibility that teleworkers experience difficulty completing their work because of lack of privacy or interruptions from those within the home.

As noted, the importance of social solidarity is also exemplified in the writings of Durkheim. Illuminating the importance of social solidarity and its influence upon morality, Durkheim (1984) states: "[m]an is only a moral being because he lives in society, since morality consists in solidarity with the group, and varies according to that solidarity. Cause all social life to vanish, and moral life would vanish at the same time, having no object to cling to" (p.331). For the purposes of this research, social solidarity and not morality will be examined. Social solidarity refers to the relationships among individuals and groups within society. These relationships develop and are maintained through interaction (face-to-face or computer-mediated) with other individuals, groups, organizations, institutions, companies, etc.. Most commonly based on shared interests,

values, characteristics, membership, the strength of relationships characterizing social solidarity relies heavily upon member participation and commitment.

Similar to individuation, both perception and behaviour are crucial to the exploration of social solidarity. Investigating the impacts of teleworking on social solidarity, my goal is to explore both the importance of teleworkers' relationships with family, community and co-workers, and to calculate the number of relationships in which teleworkers engage. With regard to social solidarity: when individuals leave traditional workplaces to work at home, does the quality of their relationship with co-workers change? does the quality of their relationships with family or community intensify? does the traditional workplace provide a location in which meaningful relationships are created and maintained, or is it merely a location in which work is conducted? With regard to behaviour and social solidarity: does spending a greater amount of time in one's home contribute to increased face-to-face interaction with one's family and community? does communication with co-workers via the Internet and telecommunications increase, or does telework contribute to the individuation of workers? Through these types of questions, I hope to gather responses that will indicate the perceptions and behaviour of teleworkers in relation to the concepts of individuation and social solidarity.

Contemporary social concerns about widespread individuation and social solidarity can be observed in the work by Pool (1990). Remarking on the social impact and influence of technology on individuals and nations alike, Pool notes that only a few years ago commenting on the influence of mass media (especially television) toward conformism was a popular criticism of contemporary society (p.16). Today, the

popularity of the Internet and the increase in telework provokes the fear of a reversing trend:

> What will it mean if audiences are increasingly fractionated [sic] into small groups with special interests? What will it mean if the agenda of national fads and concerns is no longer effectively set by a few mass media to which everyone is exposed? Such a trend raises for society the reverse problems from those posed by mass conformism. The cohesion and effective functioning of a democratic society depends upon some sort of public agora in which everyone participates and where all deal with a common agenda of problems, however much they may argue over the solutions. If that agora in the media were to disappear, the same social critics who used to deplore the conformism of modern society would deplore equally loudly the atomized character and lack of community consciousness of the society of their day. (Pool, 1990:16)

In summary, as information technologies pervade North American society and we are challenged to re-conceptualize how people communicate and work, there are countless sociological concerns which invite investigation. In exploring the experiences of teleworkers as they use a PC and the Internet to conduct work and communicate, I hope to gain a better understanding of how teleworkers experience working from their homes via a computer network.

Teleworking In Context:

Discussions of teleworking often ignite people's curiosity, interest and speculation. Challenging conventional conceptualizations of how work is organized, the notion of increasing a worker's control over the work process is very powerful. As employers learn to concentrate on the value of the work completed, rather than insisting on the presence of a worker at a specified place for a specific amount of time, the normality of work is called into question. Where and when work is completed becomes less important than the quality and completion of the work. When job descriptions are redefined to incorporate the provision of working from home for certain lengths of time

(whether it means coming in to work for fewer hours each day, or only coming into the office once a week), there is increased flexibility for the worker. Consequently, for many of us, this notion of flexibility, combined with our curiosity, interest and speculations, lead to daydreams of completing work on our laptop computers in our cottage overlooking the lake, with our pets at our feet. Perhaps not a universal conception, likely it is very idealistic, but nonetheless it may be an attractive work alternative for many of us (Bibby, 1997).

So far, our discussion of telework has concentrated on its definition and classification in the service sector of the economy as well as looking at its social implications. I will here review the existing research on teleworking. Conducting telework research in the Netherlands, Weijers et al. (1992) found that when introduced voluntarily, telework was primarily beneficial for all involved (p. 1048). The benefits of teleworking for the teleworker which were *mentioned most* include greater flexibility and autonomy, as well as increased time that workers can spend with their families. *Mentioned often* were increased productivity and greater opportunities to get or keep a job. Benefits *mentioned sometimes* include a decrease in travelling time and costs (p. 1053). Among the costs of teleworking, *mentioned most* are increased isolation, insecurity about work and income, and having to furnish home workplaces. Costs *mentioned often* include the deterioration of labour conditions and fewer career opportunities. Finally, the need to mix work and family responsibilities were the costs of teleworking *mentioned least* (p. 1053).

Directing their research to the benefits and costs of telework from the point of view of the organization, Weijers et al. (1992) found that having to purchase additional

equipment and the lack of company involvement were the costs *most mentioned.* Among *often mentioned* benefits of teleworking for the organization were flexibility, productivity, increased service, and less employee turnover (p. 1053). Overall, on both micro and macro levels, it was noted that when telework is tailored to the specific needs of workers and the organization, the benefits outweigh the costs. When interpreting the work of Weijers et al., however, it should be noted that their qualitative overview of costs and benefits was based on 19 in-depth interviews and their own literature review.

In a much larger American survey of 500, Powell (1997) reports that Nortel found that productivity rose by an average of 30%, job satisfaction increased by 45% (all telecommuters reported being more satisfied with their jobs), and stress from such sources as commuting and office noise was cut by 47%. However, half of those surveyed did express concern about lost chances to exchange ideas with co-workers and lost visibility with their boss (Powell, 1997:2).

In an effort to determine the current status of the telecommuting trend – indeed to confirm whether it is a trend – KPMG undertook a survey to determine how Canadian organizations use and manage telecommuters (KPMG, 1997: Introduction). In order to provide benchmark information on teleworking, establish trends in the teleworking workforce, and identify changes taking place, KPMG distributed 2025 questionnaires to Canadian organizations selected from their National Career Consulting database and the Profile Canada database (KPMG, 1997: 3). Achieving a response rate of 20%, KPMG reported the following advantages and disadvantages of teleworking:

Advantages:

Effective use of time	71%
Improved employee lifestyle	57%
Retention of staff who would otherwise leave	43%
Quality of work	34%
Compensating only for specific units or performance	9%

Disadvantages:

Lack of face-to-face contact	76%
Lack of direct control	46%
Technical difficulties or disruptions	36%
Flexibility of tasks	19%
Rigidity of schedules	8%

(n = 403) (KPMG, 1997: 3)

The KPMG study also provided additional characteristics of teleworking in Canada: most importantly, although teleworking is presently in limited use, it is certainly growing. For example, among the organizations who responded to their survey, 14% indicated that teleworking is being actively promoted, and of those, 20% have embarked on formal pilot programmes (KPMG, 1997: 1). Interestingly, the motivation behind teleworking programs appears to come from employee-related issues rather than business factors (p.3). Even though businesses benefit from employees using their time more effectively and productively, the push to implement teleworking programs is coming from the workers themselves. However, it is also important to note that while many workers would like the option to work from home, they also believe that teleworking is not appropriate for every job. KPMG noted that "[m]ore than three-quarters of the survey respondents (78%) reported that there are some areas in which telecommuting definitely should not be used" (p.2).

Concerning the usage of teleworking programs in different industry sectors, KPMG found that financial institutions and professional service firms displayed the highest usage, while agribusiness reported none at all (p.1). Among professional service

institutions utilizing a telework program, employees within the communications sector reported the highest usage (75%). Finally, while an increase in teleworking is expected from the majority of organizations within Canada, specifically, "[t]he least change is expected by transportation organizations [and] the most change is predicted in the government sector" (p. 5).

In an investigation of the *Social Impacts of Electronic Mail in Organizations,* Garton and Wellman (1995) report that a large Toronto corporation saves $7,500 (Canadian) annually in real estate costs for each central office employee who becomes a teleworker (p. 450). If this statement is accurate, and assuming that other corporations could experience similar savings, one may expect in the near future that the implementation of teleworking programmes is likely to become corporation-driven as well as employee-driven. If employees and corporations can both benefit from a work-at-home arrangement, this win-win situation could have dramatic impacts on the structure and composition of the North American workforce. In many respects, this is a truly revolutionary possibility.

Perhaps one of the reasons why the implementation of teleworking programs has yet to become a corporate driven issue is because most teleworkers have yet to work from their homes on a full-time basis. As Weijers et al. (1992) have noted, most telework projects concern part-time telework in which employees still go to the office two or three days a week (p. 1053). While advocates say that teleworking does not have to be a full-time activity for individuals to benefit from a different work arrangement (as even a few days a month at home to work on a special project or some other specific task add up) [O'Harrow, 1997: F17], it could become expensive for employers. For example, if

employers are providing their teleworkers with the necessary equipment to work from home, and also providing equipment and space for their teleworkers to work at the office, the expense of supporting two workplaces could make the implementation of teleworking too costly. While some corporations utilize laptop computers and provide common work spaces for teleworkers who come to the office on a rotational schedule, the financial overhead and potential scheduling problems could make teleworking more costly than conventional work.

As no work arrangement can suit the needs and desires of every worker, along with the advantages of teleworking come disadvantages. As noted by Weijers et al. (1992), Powell (1997), and KPMG (1997), the decrease in face-to-face contact that occurs when workers work at home is considered to be one of the greatest disadvantages of teleworking. While the impact of decreased face-to-face contact varies for individuals, this disadvantage is mentioned to emphasize the fact that teleworking is not for everyone. As some experts have noted, "[h]ome workers have to be focussed, well-organized and socially secure. Those who thrive on office schmoozing and politics, or those who need a lot of direction from The Boss, might think twice about it..." (O'Harrow, 1997: F17). Teleworkers must be trusted to motivate themselves and organize their work and lives independently. While combining one's work and personal life to achieve a healthy and productive balance has traditionally been a challenge, the integration of work and home can create further problems and concerns. The loss of informal or unscheduled face-to-face contact and interaction that occurs in the traditional office, together with increased responsibility to initiate, organize and complete one's work at home, changes the dynamics of work significantly. Not only is it important that individuals are suited for

teleworking, they must also be trusted and supported by their employers. Finally, if the most significant drawback or disadvantage of teleworking is indeed a lack of face-to-face contact, it follows that communication becomes one of the most important factors in managing telecommuters (KPMG, 1997: i).

Computer-mediated Communication

Using computers to structure, store and process communications, computer-mediated communication (CMC) allows geographically dispersed groups and individuals to communicate at a speed and cost equal or superior to that of the telephone, mail and face-to-face meetings. Minimizing time and space barriers, information networks such as the Internet or intranets facilitate communication in many different forms (Kerr & Hiltz 1982: 2-3).

The flexibility of communication via computer-mediated communication systems allows users to interact at different times and in different ways. As information technology facilitating CMC is continually updated and refined, the quality of transmission and the ways in which individuals can communicate also increases. However, despite advances in hardware and software, the fundamental aspects and characteristics of CMC have not changed dramatically in the past 15 years. This can be evidenced in the work by Kerr and Hiltz (1982). Their analyses of CMC systems reveal a number of main components (pp. 3-4):

1. *E-mail* Messages may be sent to a single individual, multiple individuals, or a defined group. These messages can be opened, copied and forwarded to any other user. Typically, messages sent are stored in a server (hosting computer) and delivered to the recipient when he or she logs onto that server. Confirmation of the time and date of delivery is usually provided to the sender and recipient. Undeliverable mail is usually returned to the sender.

2. *Conferences* or Inter Relay Chat services facilitate on-line communication in a common writing or viewing space. Upon accessing a conference or a "chat line," the user can view the most recent text sent to the group or can access a larger archive of past conversations. While conferences are most commonly asynchronous, people contributing sporadically over a varying period of time, they more frequently transpire in "real time" with a number of users communicating at the same time. A text window displays the submitted text from the user and other group members. A moderator who supervises the topic, interest or theme in discussion usually controls membership. The duration and size of conferences have become virtually unrestricted because of advances made in IT.

3. *Notebook or Files* are personal spaces useful for drafting or co-authoring material. Within the last few years, increases in data transmission speed and information processing, combined with decreases in the cost of complex software applications (numerous programs can be downloaded from the Internet without cost) have opened up this technology to the general population. Using communication software on a computer network, groups of individuals can simultaneously view and manipulate computer files. Facilitating diverse applications and interests, the drafting and co-authoring of material may include word-processing documents, pictures or graphics, as well as audio and video files.

4. *Bulletins or Journals* are virtual spaces for the generation and submission of reports, newsletter items, formal papers and commentary. Newsgroups and bulletin boards (as they are commonly known) encourage discussions related to specific submissions, commentaries or events. Furthermore, abstracts of work are often linked to entire texts should the general public or specific individuals be interested in pursuing more information.

In terms of CMC, it could be argued that the most significant recent change is the proliferation of computer networks and personal computers throughout most of the developed world. The adoption of information technology by millions of users, combined with computer applications and services facilitating communication, may make

computer-mediated communication not just a convenience, but a necessity for increasing numbers of individuals.

The development and use of advanced communications technology continuously increase how we can communicate with those we already know as well as those we have never met. Because CMC systems allow us to communicate in new and diverse ways with individuals and groups throughout the world, the need arises for individuals to understand and predict what the social impacts of this technology will be. Many of the pros and cons of CMC centre on workplace conditions, employee relationships, levels of personal autonomy and work performance.

Among the negative consequences of CMC are increased management surveillance and control, the tendency for work to become increasingly standardized, loss of personal and group autonomy and decision making power and increased worker alienation (e.g. Sproull & Keisler, 1991; Garton & Wellman, 1995). But as Haythornthwaite et al. (1995) have noted, communication can also fulfill positive social functions, creating a sense of belonging and community among those communicating, regardless of the means of communication (p. 196). Positive consequences or anticipated advantages of CMC include "productivity and efficiency gains; greater organizational communication, commitment, and solidarity; more participatory and egalitarian decision making; better decisions, and administrative and geographic decentralization" (Garton & Wellman 1995: 435).

Because teleworking is based on or at least made possible by CMC, its negative and positive consequences play a large role in assessing what the consequences of telework will be. While investigations of CMC can exclude telework, it would be far

more difficult (if not impossible) to investigate telework without including CMC. Consequently, it is important to examine CMC as it pertains to teleworking.

Individuation and Social Solidarity

Concerns about how technology affects community have existed throughout history. For more than a century, sociologists have examined how technological changes (along with bureaucratization, industrialization, urbanization and capitalism) affect individuals and society (Wellman & Gulia, 1997:2). Currently, as the frequency of CMC increases throughout the world, many question whether CMC will isolate individuals or bring them closer together. Pursuing answers to this question, Wellman (1996) states:

> At a more macroscopic scale, the proliferation of computer supported social networks both extends and counteracts the contemporary shift away from dense, bounded groups and the sparse, unbounded networks. To some extent, by confining people to their computer screens, computer mediated communication has intensified privatized, exclusive relationships by turning people away from face-to-face relationships in public. Yet it is the highly-privatized watching of television screens that is the modal leisure activity in the western world. Hence computer mediated communication may actually be enhancing community because computer networks support public computerized conferences as well as private e-mail exchanges. Because all members of computerized conferences can read all messages – just as when a group talks in a café or an open office – groups of people can talk to each other casually and get to know the friends of their friends. (Wellman 1996: 12)

The relocation of workers from office to home changes traditional communication in two primary ways: 1) the frequency of physical contact and communication among fellow employees, employers and clients decreases; and 2) computer-mediated communication becomes necessary. As research investigating the impacts of teleworking has shown, the decrease in face-to-face contact among co-workers represents the greatest disadvantage to this reorganization of work (KPMG 1997: 3). In removing themselves from the workplace, teleworkers lose the social interaction which occurs when workers

are located in the same space. Although social interaction is not always necessary for task completion, it will nevertheless affect worker satisfaction and productivity.

Although face-to-face communication with co-workers decreases when workers are at home, it is not necessarily the case that all face-to-face communication also decreases. Although teleworkers become physically removed from co-workers, their relocation at home and in the community can more than compensate for this particular direct communication loss. Interaction with spouses, children, friends, relatives and neighbours may all increase. In fact, teleworkers could find the pressure for face-to-face communication around their homes distracting. Whether or not this is the case, it is important to note that the fact that teleworkers are no longer in the office does not mean that they will become isolated from physical contact with others. Rather the 'others' will change. Moreover, CMC may play a role in supporting social ties among individuals and groups, thus enriching the total communication experience.

Because computer networks presently connect many offices within corporations, whether in the same building or throughout the world, many office employees and all teleworkers are familiar with communicating via computers. When the organization of work changes and workers are no longer within physical proximity of one another, such as is the case with teleworkers, it stands to reason that the use of CMC will increase. Whereas CMC was a convenient way to communicate with one's fellow office worker while in the same office, for the teleworker, communication via computers is the fundamental technology which allows work to be completed in a remote location. In addition, CMC may serve an even more important function; it provides a new means of social interaction.

As I have noted, CMC facilitates global communication. Unlike pre-industrial times when community was defined by individuals in relatively close physical proximity, CMC transcends both time and distance making it possible to develop relationships with individuals around the world. Much in the same way that cars, trains, planes and telephones permitted us to broaden our definition of community and facilitated long distance relationships, CMC is the next stage in technological development. However, because it is now possible to communicate with almost anywhere in the world, it does not mean that we would want to communicate with just anyone. CMC users typically seek out others who share common interests or situations, (e.g., occupation, hobbies, sports, age, illness, nationality, etc.). The visitors to and members of SeniorNet provide a prime example of how CMC facilitates the creation and maintenance of social ties. SeniorNet is a web site which in addition to providing information and entertainment directed to the interests of an aging North American population, provides an Inter Relay Chat service whereby a number of users accessing the same web site can communicate in real time through text messaging (www.SeniorNet.com). As Wellman and Gulia (1997) note, "while most elderly users of 'SeniorNet' reported joining the Net to gain access to information, nearly half (47%) had also joined to find companionship" (pp. 5-6).

In their work on "virtual" communities as communities, Wellman and Gulia (1997) explain that while CMC adequately promotes and maintains intermediate-strength ties between users who cannot frequently be with each other, it lacks social richness compared to face-to-face communication. However, even though CMC may lack social richness, making it a less desirable means of communicating face-to-face, it does have advantages over those just mentioned. CMC promotes contact with a diversity of others

(pp. 14-15). When one is communicating on-line, interpreting the social and physical characteristics of others is far more difficult, if not impossible. Unlike face-to-face encounters which include a number of variables such as gender, age, looks and mannerisms, the written or spoken word of CMC is the sole focus of attention. This fact heightens shared interests which form the underlying bases of CMC. Rather than, say, being drawn to someone because of visual characteristics, we seek out those who stimulate or support our need for information and/or companionship. Stressing the importance of online and face-to-face ties, Wellman and Gulia (1997) note how "[a]lthough North Americans usually have more than one thousand interpersonal relations, only a half-dozen of them are intimate and no more than fifty are significantly strong (Kochen 1989; Wellman 1990, 1992b). Yet, taken together, a person's other 950+ ties are important sources of information, support, companionship and a sense of belonging" (p. 13). Thus, even if the amount of direct communication and social interaction which occurs in public spaces decreases, CMC may nevertheless provide a means through which society can be integrated and relationships with others maintained (p. 18).

As increasing numbers of individuals and businesses throughout the world come on-line, some with the sole purpose of communicating, others just out to surf the Web, the use of computers to mediate communication will also grow. Combining this evolution with developments in information technologies that allow higher quality of transmission with ease of use will bring increased richness to CMC, (most likely with the standardization of video conferencing). Thus, interacting socially via computers will likely become an increasingly acceptable medium for creating and maintaining

relationships. Much in the same way that telephones are now ubiquitous within North America, so too may CMC become just another option available to conduct business and to engage in social communication.

While it would be premature to state how CMC will affect the individuation and solidarity of teleworkers, there is reason to believe that it will supplement the loss of face-to-face interaction in the traditional workplace. Only by engaging in research can we hope to learn how working from home and communicating via computers will affect teleworkers. And hopefully, by doing this research, we will not only provide insight into the social impacts of teleworking, but also encourage teleworkers themselves to assess how this reorganization of work affects them.

CHAPTER 3

Research Design & Sample: Objectives & Results

According to Sedlack and Stanley (1992) "exploratory research is the initial probe into a topic about which one knows little or nothing. [And], any data evolving from exploratory effort are, by definition, tentative" (300-2). Because we know very little about how the information revolution will affect individuals and society, there is a need for exploratory research. Consequently, although the resulting data of this research may not be representative of the larger population from which it is drawn and the conclusions may be tentative, hopefully this research will provide insight into the social impacts of the increasing use of IT.

To consider my theoretical objectives empirically, I took a nonrandom referral sample of teleworkers within North America via the Internet. While this method does not allow me to generalize to the total population of teleworkers in North America, I considered it to be the most viable option available, because no list of all teleworkers exists. Corporations and individuals were contacted through e-mail and on-line requests. Those corporations which I knew had teleworkers, or individual teleworkers whose names I received through informal networking, were contacted first. It was my hope that a majority of contacts on this short list of corporations and teleworkers would qualify, participate and endorse my research.

The second 'plan of attack' was to contact all corporations, individuals and groups I believed employed teleworkers. This list included telecommunication companies, computer and software manufacturers and retailers, insurance companies, companies creating, using or selling products or services related to information

technology, banks, the boards of directors of any of the mentioned corporations, IT consultants and web masters. I sent either a brief e-mail explaining who I was and a request to be given the name of the person in charge of teleworking administration (see appendix A), or an e-mail requesting the participation of teleworkers which included The Letter of Introduction to Managers (see appendix B). I hoped that by including my letter to managers I would gain credibility, and thus have a better chance of gaining the participation of corporations with teleworking programs.

I found e-mail addresses in various ways. With large corporations and banks, I simply typed the name of the organization with the prefix *www.* and the suffix *.com* into the URL of the web browser. Not surprisingly, the majority of large corporations had a Domain Name providing me with their home page and a way to contact the organization (for example, www.CIBC.com). While a general e-mail address for information could usually be found on every web site, some companies preferred to have visitors to their web site complete an on-line request for information. In these instances, I simply copied and pasted the text of my letter into the text box provided.

I discovered the majority of e-mail addresses by conducting searches using keywords such as telework, telecommute, telecommunications, information technology, etc., on the WWW search engines. Among the many search engines I used, Lycos, Yahoo, Alta Vista and Info Seek provided the best results. Generally, each search produced at least one web site which provided a page of links or e-mail addresses for either corporations or individuals (such as the board of directors) I suspected might have a teleworking program.

Conducting telework searches within web sites, such as KPMG consulting and The Financial Post, also provided information and potential links to corporations and individuals involved in the teleworking field. From these lists, I mass e-mailed up to 70 individuals in one session. Over a nine-week period I made over 400 e-mail and on-line requests. Of these 400, 33 were returned as undeliverable, 7 e-mails requested further clarification and definition of telework, 62 indicated the possibility of assisting me with my research or noted that my request had been forward to the appropriate person and 79 stated that they would be unable or unwilling to help me with my research. Individuals requesting further clarification of telework were sent an e-mail defining and explaining my use of the term.

In addition to my computer-mediated requests for participation, I also phoned and faxed many corporations throughout North America. I hoped that adding a personal element to my request might increase the likelihood of receiving assistance. Unfortunately, from the approximately 30 contacts I made, only two individuals and two corporations agreed to help me by either completing the questionnaire personally or passing it on to their teleworkers.

By establishing contacts with managers of teleworking employees, I hoped to be given the names and e-mail addresses of teleworkers so that I could forward my request for participation and direct possible respondents to my web site address. If managers sent my request to their employees themselves, rather than providing me with their e-mail addresses, I followed my initial request with either e-mail letters or phone calls to these managers two to four weeks after initial contact. Regrettably, without having the e-mail addresses of teleworkers, I had to rely on managers to encourage questionnaire

participation and provide my web site address to their teleworking employees. When I was given the e-mail address of teleworkers, I sent them an e-mail letter requesting that they access my research web page (see appendix C). On most letters, web pages, the actual questionnaire and during phone calls, I requested that my research objectives and web site address be referred to other teleworkers.

While the effectiveness of referral sampling via the Internet could only be hypothesized at the outset of my research, I hoped that this technique would prove successful. Depending on the extent to which respondents directed and encouraged fellow teleworkers to the on-line questionnaire, the need for me to seek out additional teleworkers would be determined.

After the first few weeks of requesting participation through e-mail letters to individuals and corporations, I began to diversify my requests in an attempt to find more teleworkers to complete my survey. Writing to search engines and web sites related to either telework or computer-mediated communication, I explained my research objectives and indicated my need to locate a teleworking sample. Not expecting too much in the way of assistance, but feeling that I had nothing to lose, I hoped that the search engines would endorse my research by including my requests on searches including the key word telework, or that teleworking web sites would post a description of my request with a link to my research web pages. Of the 13 requests that I made, none of the search engines responded, but four of the web sites did. Of those four, one site had my request posted for approximately a week, a second posted my request during the seventh to twelfth weeks of data collection, a third posted my request during the last four weeks, and the fourth web site, while promising to look into my request, never got back to me.

Sampling Criteria

In an attempt to isolate the impacts of location and communication on teleworkers, I only sought teleworkers who met the following criteria:

1) Individuals must have had prior immediate experience working full-time in a traditional workplace setting and now conduct at least 20% of their full-time work from their home for the same employer, via the Internet, an intranet, LAN or WAN.
2) Individuals must work in Canada or the United States.

The first criterion was set to ensure that extraneous variables such as employer, type of work and total amount of work conducted weekly were held constant. Isolating the main variables of interest helped to provide a degree of confidence that answers to the research questions could not be explained away by extraneous factors. For example, teleworkers who changed their location of work and their employer were to be excluded from the research sample. As the experiences of job-changing teleworkers are likely to be significantly different from those of teleworkers who change only their location of work, it was crucial that this sampling criterion be met.

Initially, the first criterion stipulated that workers must be completing work via the Internet. I assumed that individuals connected to their employer via an intranet, LAN or WAN would also have Internet access; however, I was quickly informed otherwise. In an e-mail from an IT consultant working for a prominent *Teleworking* web site, the following suggestion was made:

> I think that one of your parameters will make it almost impossible for you to find ANYONE. It is the Internet condition. The use of this for business is still in the VERY early adoption stage. Modify it to intRAnet, LAN or WAN, then you will have a chance of finding a sample. Otherwise, your sample could be the universe itself!

Realizing that my thesis committee members had been correct in their recommendation that I include more than the Internet in my criteria of computer networks, I immediately made the appropriate addition to my letters of request for participation and web pages.

The second sampling criterion was that individuals must work in North America. Through surveying only North American teleworkers, sampling diversity was limited. Although North American culture is broad and includes a diversity of characteristics and categories, it is far less complex when compared to European culture. While teleworking has been conducted within Europe for a number of years and a European sample may reveal the long terms impacts of teleworking, the cultural, linguistic and social diversity of European countries would complicate my research objectives (MTA, 1997:2). By limiting my sample to North American teleworkers, I could focus more on the impacts of IT on teleworkers and reduce significant cultural differences. This parameter also decreased the influence of extraneous variables and increased the accuracy of my exploration.

In short, those who met specific criteria were requested to complete the questionnaire, while those who did not meet the criteria were instructed not to respond because doing so would jeopardize the accuracy, validity and reliability of my research. In my *Letter of Introduction to Teleworkers* (see appendix D) the importance of my research was documented by referring to the growing number of individuals engaging in telework and by alluding to the possible impacts of isolation or increased interaction because of working at home. As I was seeking a teleworker sample, I assumed that to some degree these individuals would be interested in, or already believe that research into the impacts of teleworking and CMC is important.

Methodology

Upon accessing the Internet address http://kafka.uvic.ca/~rburen/telework.htm, individuals were connected to my web site research page. This page welcomed visitors to my work and provided an index of links to *The Letter of Introduction to Managers, The Letter of Introduction to Teleworkers,* to Complete the Questionnaire, my e-mail address, a link to a page explaining my methodology and a link to my home page. My home page (http://kafka.uvic.ca/~rburen) consisted of three topics with links; one to my research, a link to Academic and Career Objectives and a third to my Family Web Pages. On both Letters of Introduction, I indicated the type of teleworker that I was looking for, as well as my different incentives to encourage participation on behalf of managers and teleworkers. For individuals to access my questionnaire, they first had to access my Letter of Introduction, scroll to the bottom of the page and then click on the link to either my on-line questionnaire, or a questionnaire which could be printed on the user's PC, completed and mailed to me. By locating the links needed to access my questionnaire at the bottom of the Letter of Introduction to Teleworkers, I hoped to ensure that all persons would read through my sampling criteria and research parameters. Among the research parameters, I noted the importance of my research, a guarantee of confidentiality, a disclosure that participation was voluntary and how the results would be communicated.

The initial plan was to collect all of my data via the on-line questionnaire or mail-in questionnaire (printed off from my web site). This, however, was not to be the case. As it turned out, the corporations which decided to endorse my research and pass on my survey to their teleworkers, indicated that few, if any of their workers had Internet access. It was then suggested that the questionnaire be transmitted by fax, or as an attached Word document to an e-mail. Upon faxing my letters of introduction to the corporations, I

received responses either by fax or by mail. Among the surveys still in Word document file format that I attached to e-mails, the questionnaires were completed in the respondent's word processor, either by highlighting the chosen response, or indicating the response with an X and then sent back to me as a Word file. In order to maintain a consistent format of survey responses, I entered the data from the faxed or attached file completed surveys into the on-line questionnaire.

Confidentiality was assured by receiving questionnaire responses via e-mail and through the incorporation of responses into a database file located in my computer account on the web site server. Only the computer administrators and I had access to the data in this computer account. As for the data which I downloaded onto my home computer, they were electronically secured using a password to access the computer and another password to access the data files and key. E-mail addresses were downloaded with the completed questionnaire data to ensure that only one questionnaire per e-mail address was included in the data. Any hard copy material produced indicating a respondent's e-mail address and responses was secured in a locked cabinet in my residence. No information connecting data to the respondents was included in the written research.

Upon contacting the corporations and receiving assistance in gathering a sample of teleworkers, I had planned to inquire into issues of teleworker surveillance and privacy. My concern was that if teleworkers' e-mail and Internet accounts were monitored, or if corporations had access to all incoming and outgoing transmissions, some teleworkers might hesitate to provide personal and work-related information via the Internet. In an attempt to counter this potential problem, I created a mail-in questionnaire

for those individuals who would rather print a copy of the questionnaire and mail it directly to me. While this solution was perhaps not ideal, hopefully it increased teleworker participation, anonymity and confidentiality.

The cover letter indicated that participation was voluntary. Also, after respondents had begun to answer the questionnaire, they retained the option not to answer specific questions, or to cease completing the questionnaire altogether. The results of the questionnaire and interpretation of the data are to be posted on the same web site upon completion and acceptance of the thesis. At end of the questionnaire, respondents were asked if they wished to be notified when the research was completed. Those who responded affirmatively will be contacted via e-mail, or an executive summary will be provided to their manager of teleworking.

Questionnaire

Traditionally, questionnaires were either mailed or hand delivered. Breaking with tradition, my questionnaire was posted on an Internet site. As this method of empirical investigation is in its nascent stage of development and use, an additional feature of my thesis is to assess the applicability and feasibility of this type of survey method and to report the response rates and quality of the information gathered. This is done below in the section Collecting Data On-line.

Pre-testing of the questionnaire was conducted before the questionnaire was actually posted on my web site. Individuals for pre-testing were selected through informal networking. Comments and suggestions provided helped me ensure that the questions were clear and answerable and that the format of the questionnaire was 'user friendly'. Due mostly to the fact that the questionnaire underwent multiple revisions

during the months prior to proposal defense, pre-testing did not reveal problems with the questionnaire format or individual questions.

Teleworkers who met the sampling criteria and who decided to complete the questionnaire were presented with a combination of closed and open-ended questions. Striving to keep the questionnaire clear and concise (see appendix E), I expected it to take approximately 10 minutes to complete.

The questionnaire consists of four sections. These sections and the questions in them are organized so that the quick, closed-ended and less personal questions were asked towards the beginning, followed by longer, open-ended, more personal and introspective questions. Structuring the questionnaire in this way facilitates respondent participation and hopefully maximizes questionnaire completion.

The first section of the questionnaire consists of questions which inquire into respondents' working histories. Gathering background information, such as how they became teleworkers, duration of employment and frequency of interaction with persons in the traditional workplace, helps to establish baseline information. Determining the present experiences of teleworkers throughout the remaining sections of the questionnaire, these baseline data are used to contrast the experiences of working in the traditional workplace to teleworking. Other data sought in the first section include the name of teleworkers' employers and whether or not the telework is supervised.

The second section compares present teleworking experiences to those having occurred within the traditional workplace. These questions were intended to provide behavioural data focusing on the change (or lack of change) in variable frequency. For example, *'now that you are teleworking: (a) face-to-face interaction with co-workers*

has... increased, decreased, remained the same, you don't know? (b) time spent with your family has increased, decreased, remained the same, you don't know? Presenting a diversity of questions based on the variables of CMC, individuation, work and social solidarity, this section is designed to provide behavioural comparison of teleworking to the traditional workplace.

Section three of the questionnaire focuses on the attitudes and feelings of teleworkers. Comparing respondents' feelings of conducting work in the traditional workplace versus teleworking, questions ask if teleworkers strongly disagree, disagree, neither agree nor disagree, agree, or strongly agree with various statements. The questions in this section explore how teleworkers feel about working at home via computers and the Internet. Asking respondents how their interactions with co-workers, family and their communities might have changed because of teleworking, I hoped to gather responses indicating feelings of isolation or social solidarity.

The fourth section asks personal and background questions. These questions provide information on age, gender, income, education and marital status. Collecting personal and demographic data permits a more informed exploration of the impacts of IT and CMC on teleworkers. For example, knowing the age and education of respondents enables me to calculate sample averages for these variables and to explore how these traditional sociodemographic variables relate to the experiences and feelings of individuals conducting telework.

Common to all questionnaire formats, the disadvantages I encountered include not having control over which teleworkers complete the entire questionnaire, the inability to supervise the conditions under which the questionnaire is completed, the inability to

clarify questions or probe for answers and, not being able to confirm the identity of the respondent. Advantages included the limited cost of posting a questionnaire on the Internet for virtually countless respondents, the ability to transcend time and distance (i.e. it is no more difficult to have a teleworker on Vancouver Island complete the questionnaire than it is for a teleworker in Texas), convenience for respondents to reply at their discretion, respondent anonymity and the avoidance of interviewer bias.

As the questionnaire was the main tool for gathering the responses from teleworkers, it was imperative that the questions and questionnaire format be as effective, concise and focused as possible. Without discussing the actual data gathered from the questionnaire at this point, I can state with confidence that the questionnaire was successful – it fulfilled the objective of gathering rich data. The quality of the questionnaire is without a doubt attributable to the experience and suggestions of my thesis committee members. Their years of experience conducting survey research guided me around the pitfalls inherent in this type of research. However, there was more to my research than providing a questionnaire to teleworkers. Collecting data on-line would present a number of unknown challenges and obstacles which would prove to require a great deal of patience and perseverance. Adding to the difficulty of the task was the fact that few researchers have tried to collect data on-line, and even fewer researchers have written on their experiences of using the Internet to collect data. While a great deal of my motivation to collect data on-line came from the fact that I was taking a new approach to conducting sociology, the complexity of my task was increased a great deal. As I explain in the following section, while conducting research over the Internet has many advantages for the average sociologist, there are many disadvantages as well.

Collecting Data On-line

At the outset of my research, the advantages and disadvantages of using the Internet as a medium for conducting research could only be hypothesized. However, I was very optimistic that the Internet could be a very useful and productive tool for conducting research and collecting survey data. Not only does the Internet provide an inexpensive way to collect data, it also provides the means by which research results and conclusions can be viewed and downloaded by any individual accessing a web site.

In this section, I focus on five main components of collecting data on-line. The first component locates my research experience as time and place specific. The second component focuses on the requirements needed for an effective survey and effective monitoring of the survey on behalf of the researcher. A discussion of HTML and Web Browsers comprises the third component which leads into the fourth component, using CGI scripts. Finally, other issues involved in on-line data collection, such as the type of sample, topic and incentives, comprise the fifth component. The goal of this section is to inform the reader of my research experience and to help other researchers become aware of the main issues and problems involved in collecting data on-line.

Research as Time and Place Specific

The importance of locating my research experience as time and place specific stems from the fact that information technology is rapidly changing and particular technological applications may differ among users and their Internet service providers. As this paper is written during the second half of 1997, the technology available to me as well as to the teleworking respondents is specific to this time. With advances in IT continuously taking place, the issues and concerns which I express may not be issues for future researchers or respondents. While this fact does not lessen the value of my

experience, I do wish to acknowledge that with time comes change, especially in the field of IT.

To better understand the role of the Internet as a medium of research, consider how other technologies have been adopted for use by the social sciences. The most obvious comparison is the telephone. Similar to the manner in which research via the telephone has been standardized and accepted by various academic disciplines, a protocol for collecting data on-line is now required. My research may be seen as one of many exploratory attempts to use IT in the process of conducting sociological research. As we build on each other's successes and failures, a protocol for collecting data on-line may finally be formulated.

IT Research Requirements

For individuals contemplating the advantages of conducting research on-line, it must be stated that for every obvious advantage there is an obscure disadvantage. As mentioned previously, when I began my research I focused on the obvious advantages: less paper, printing and postage and sampling over vast distances. What I failed to consider were the many limitations and costs which accompany these advantages.

The first consideration for the Internet researcher must be equipment: how will the web site be created, modified and monitored? Because the software and hardware needed to construct an effective web site were not available to me at this university, I had to obtain a computer that was powerful enough to transmit data to and from the server, as well as acquire the software which enabled the creation of graphics and web pages capable of collecting data. Therefore, there is the initial cost of purchasing the software and hardware needed to host and maintain a web site. Furthermore, as software develops

to facilitate ease of web publishing and on-line research, the computer power needed to run these advanced programs increases, thus requiring ever more powerful computers.

The second consideration is location: from where will the researcher access the server? Access to the network is needed to transfer and edit files, conduct research, pursue a sample, maintain communication with all participants involved in the research, and, of course, download the questionnaire response data. While dialing-in access is free on campus, connecting to the network from home involves a per hour charge. Although 75 cents per hour may not seem substantial, a couple of hours a day on-line for a number of months soon becomes significant. Therefore, the location of the researcher and his or her computer (on campus or off) is an issue for the researcher to consider.

HTML & Web Browsers

The third component involved in collecting data on-line focuses on HTML and Web browsing software. HTML stands for HyperText Markup Language – "a collection of platform-independent styles (indicated by markup tags) that define the various components of a World Wide Web document" (NCSA, 1997:2). Commands written between <brackets> instruct the web browser how to display the text, images, or how to execute programs or sounds. Perhaps the simplest way to gain an understanding of how HTML works is to view the tags which constitute a web page. This can be accomplished within most browsers by accessing the command "View Source." Mosaic, Netscape and MS Internet Explorer are among the most popular graphic-oriented browsers used to navigate information on the Web. Although browser software is constantly being revised and updated, their present features permit the viewing of text, images, animation and

movies, in addition to other possible tasks such as e-mail, text editing and web page design (Rockwell et al., 1995: 151).

Individuals interested in constructing their own web pages can do so without a large degree of difficulty. A number of guides to writing HTML are available on the WWW. Among them NCSA's Beginner's Guide to HTML (NCSA, 1997) is a popular choice. Depending on the complexity of the web page, one may decide that rather than creating web pages by typing the tags and text within a text HTML file, it is easier to use web editor software. The attractive feature of advanced web editing software is that one can create a web page the same way that one creates a document or article in a word processor – without having to know the finer details of HTML writing. The WYSIWYG (what you see is what you get) editor automatically inserts the tags needed for the web browsers. This allows the user to change the size or color of text, for example, without having to know the HTML command tag or the combination of numbers and letters needed to define the color – a time-saving and attractive option. Trial versions can be downloaded free from the Internet, Netscape 3.0 Gold includes an editor program, and advanced software applications such as Microsoft's FrontPage also can be purchased. Typically, the more features included within the software, the higher the price.

As one developes advanced web pages, such as those designed to collect data from a user accessing your web site, the complexity of the task increases. Depending on the length of the survey, the type of responses that are sought and how the data are to be transmitted, the process can range from a simplistic survey not requiring a great deal of expertise to a complex survey demanding the skill and experience of a computer

programmer. The more difficult aspects of collecting data on-line relate to how the researcher decides to collect the data. This will be explained and expanded upon later.

When creating the web page designed to display information and collect survey responses, the researcher has a number of options. Depending on the response being sought, whether it be numbers, text, multiple choices, single answers, etc., most browsers are capable of incorporating the form fields which accept data from the users and transmit the data to the researcher. The options available include radio buttons ⊙, check boxes ☐, one-line text boxes, scrolling text boxes and drop-down menus. Each different option has its own defining characteristic and facilitates the incorporation of certain parameters. For example, the size of the text box displayed, the number of characters allowed to be inserted into the field, the type of input allowed (numbers or text) and the proper selection of specific answers such as "do you qualify to answer this survey?" can all be controlled by defining the form fields within the web page.

The major obstacle in creating an on-line survey is having the response data transmitted back to you. During the proposal stage of my research, I spent a great deal of time discussing my data collection options with individuals experienced in web page design. The general consensus among those I spoke with was that by using a *mailto* tag in my survey, after clicking on the "submit" button, the browser would pair each question label with its response data and send all of the information to my e-mail account. This method of collecting data seemed very straightforward and unproblematic. Unfortunately, however, it was too good to be true. About the same time I was preparing to defend my thesis proposal, I began developing and testing my on-line survey. To my dismay, I soon realized that not all web browsers support the *mailto* tag command. For

example, response data from individuals using Microsoft's Browser, Internet Explorer (one of the most popular browsers in use), could not be sent to my e-mail account. Although users could complete the answers in the provided form fields, the data could not be sent to me!

In addition to the fact that not all Web browsers support the same commands (such as the mailto tag), it is important to note that web browsers often display text and form fields differently. For example, the font and form fields viewed in Netscape are larger than those displayed in MS Internet Explorer. This becomes important and potentially problematic when a researcher is trying to format a questionnaire so that all of the questions can be easily read and answered. When striving to make the questionnaire as painless as possible, the last thing a researcher wants is to have the font unreadable, or the questions and answer boxes extending off the screen. Therefore, when creating an HTML document for a web page, it is always a good idea to pre-test the files within a number of different browsers. While this complicates the task of creating an on-line survey, it will help to ensure that any individual visiting your web site will be able to view and complete your survey without difficulty. As a primary goal of most research is to gain a large sample, facilitating the ease of reading and completing the survey is very important.

Common Gateway Interface (CGI)

The fourth component of collecting data on-line defines and explains Common Gateway Interface (CGI), a complex solution required to retrieve the responses provided in an on-line survey. Having conducted research on the Internet and web page design, I had some knowledge of how CGI programs (or scripts) were used to gather response data

from HTML surveys. CGI is an executable program which allows an individual accessing your web site to run a program on your server. Unlike web pages which can only be viewed (the server sending the file information to your browser), with CGI, by clicking the submit button on the survey web page, the user executes a CGI script. Because the user interacts with the server, there are some security precautions that should be implemented. The script must be verified as secure by the web master, thus helping to ensure that hackers cannot gain access to the server through your program. A second way CGI scripts are secured is by operating them within a specific directory on the server to which only the web master and select individuals have access. Therefore, not only will a researcher require permission to use a CGI script for a web page, but s/he will also require the assistance of the web master to provide access and verify the composition of the programming.

The advantages of using a CGI script to have the response data returned to the researcher are numerous. For example, not only can the CGI script verify that required answers have been inputted (such as an e-mail address), but it can also verify that the answer is acceptable (the e-mail address is in acceptable format). Other advantages include the ability to have the response data organized and sent to a database file, have the data organized and sent to an e-mail account, and upon submission of the data, the CGI script can display a web page thanking the respondent for participating in the research, and indicate to the respondent that the data have been sent successfully to the researcher.

Smith (1997: 7) has provided a summary of the typical manner in which an HTML survey and CGI script work to collect data and transmit the results:

• Data is entered in each of the form fields, which are uniquely named, much like variables in a statistical data file must have unique names.
• When the "Submit" button is clicked, the cgi script referenced in the <FORM action=" "> tag is executed on the server and begins to receive and process the data according to its instructions.
•A typical form-handler script parses the submitted data into an array of keyword-value pairs. This array consists of each field's unique name and the value entered for that field.
• Once the data is parsed into a readable array, the script calls the server's system mailer and sends the array to a designated e-mail address.
• Finally, the script sends a default "Thank You" page to the browser, and the respondent continues along his or her way.

Smith (1997: 7)

How the response data are manipulated and organized depends on the complexity of the script. In my situation, responses were paired with the question label, sorted into numerical order and sent to me in an e-mail. From this e-mail, I entered the response data into a dataset by hand. By keeping the script simple, I sought to avoid the chances of losing any or all of my response data. However, it should be noted that a myriad of possibilities exists for controlling and transferring data from a survey to the researcher. But this itself brings to light another aspect of on-line research. Because CGI scripts are written in a computer language, such as: C/C++, Fortran, PERL, TCL, Any Unix sell Visual Basic, or AppleScript, and these languages depend on the server, having to work with scripts can become the most problematic and disadvantageous aspect of collecting social science data on-line (Cgi Homepage, 1997:1).

As a social scientist and not a computer scientist, I found the writing of HTML documents to be far less complex and difficult than programming scripts for a CGI application. Consequently, by entering into a situation whereby a CGI script is to be used, a researcher can potentially forfeit much of his or her power to control the data

collection process. In my experience, creating a workable CGI script took over two weeks. Like HTML on-line resources, information on CGI is available over the Internet; however, unlike HTML, programming for CGI applications is far more difficult to learn. I relate learning a computer language with that of gaining competence in a spoken language. For example, if researchers decide to produce surveys in a language (let's say German) other than their own, no matter how many introductions to German the researchers may find on the Internet, unless they are fluent in the language and have had experience working with it, it will be nearly impossible to learn the finer details of syntax and grammar. Because CGI programs must be 100% correct to work properly, a researcher unfamiliar with computer programming should plan on finding someone to help with the script.

Smith (1997) notes that upon realizing that MS Internet Explorer would not utilize the mailto tag command, she placed a request to an Advanced HTML news group asking for assistance with a CGI script. Within two days Smith had a workable CGI script designed to submit the response data to a data file on her server (p.9). In my research, after unsuccessfully trying to create and modify CGI scripts based on the information I had gathered from books and from the Internet, I turned to the helpdesk administrator and web master in charge of the server hosting my web pages. While this particular individual did provide me with web space to host my pages and access to the CGI-Bin to host a script, he was unwilling to help me program a workable cgi-script. Fortunately, I ran into a fellow classmate who I had met a year earlier. He had both the computer programming skills and the time and patience to help me. Within two hours of editing

the script, we had a workable program sending questionnaire responses back to me in an e-mail.

The purpose of noting the experiences of Smith and my own experience is to acknowledge the difficulty and problems that can arise when deciding to collect data on-line. Although in both cases a positive result was achieved, for first-time researchers developing an on-line survey to collect data it is important to realize that a research design dependent on information technology can involve a number of unexpected situations which are beyond one's knowledge or control. Furthermore, these 'situations' can potentially stop or seriously impede data collection. This leads to the last component of conducting research on-line; other issues in collecting data on-line.

Collecting Data On-line – The Unexpected Issues

After having defended the thesis proposal, received approval from the ethics committee to conduct research, developed the HTML document complete with the optimized format of text, graphics and form fields and created a secure CGI script to properly send the response data back to me, I felt a general sense of accomplishment, control and productivity. From all indications, data collection could begin and my research project would be downhill from this point forward. But of course, things are seldom as simple as they appear.

For example, three- and-a-half weeks after I had begun soliciting requests for participation from corporations, individuals, web sites and search engines throughout North America, the university server hosting my web pages, questionnaire and cgi-script crashed. With no-one able to access any of my web pages, the worst of all possible events had taken place. Any individuals interested in completing my questionnaire or

considering the idea of endorsing my research on behalf of their organization would receive an error message while trying to access my web site, indicating that the server requested was not responding. The only good thing remaining was that the e-mail account that I was using for my correspondence was hosted on a different server. This allowed me at least to receive notification from individuals curious to know why the web site address I provided did not work, and to send them an explanation of my dilemma and a reassurance that I would contact them again when the server was back on-line. As stated in an e-mail written by the manager in charge of a large workforce of teleworkers, and forwarded to me by the national administrator of that company's IT division:

> I tried the web site he specified, and it is not working for me.
> Were you able to connect?
> I do not want to distribute this unless the thing works.

The server was down for ten days! As for the company which had expressed an interest in helping me, it never did distribute my request to their teleworkers, nor did it respond to any future requests for assistance with my research. As I expected, because the server crashed, a long list of losses occurred: I lost control over data collection; I lost the participation of potential corporations; I lost a degree of credibility and professionalism; I lost a link to my research posted on a prominent teleworking web site; and of course, I lost potential responses to my questionnaire.

While I realize that all types of research endeavours experience problems beyond the control of the researcher, there may be a way to avoid this particular problem when collecting data on-line. If I were to conduct on-line research again, I would seriously consider the viability of having my web pages, questionnaire and script hosted on a commercial web server. While security and access issues would still remain, when a

commercial server goes down, it is typically brought back on-line in a matter of minutes or hours. Because Internet service providers are responsible for maintaining and hosting commercial accounts, they typically have emergency plans in place to protect against hackers and to restore server services in the shortest time possible. Unlike the university server which was down for ten days (apparently the individuals administering the server used the down time to rebuild the server and update the software), such down time on a commercial server is unacceptable. In the event that a commercial server was down for ten days, if the ISP itself did not go out of business, its reputation would surely suffer. Therefore, rather than entering into a situation whereby the researcher is made to feel indebted for the Internet assistance and resources offered by the university, purchasing Internet services from an ISP minimizes the impacts of a server crashing, and the researcher can demand that any problems with service be rectified immediately. Of course, additional costs would be encountered.

Other aspects of using the Internet to collect data that require attention include the type of sample a researcher is seeking, the relation of a particular topic to the demographics of Internet users, the possibility that a particular population is over surveyed and using incentives to encourage survey participation. All of these issues played a role in the degree of success in my exploratory research. While this list is in no way exhaustive, I believe that by simply determining how one's research could be affected by these issues, potential difficulties could be planned for or avoided during the data collection stage.

First, similar to conducting traditional research (or research off-line), the fewer criteria used to define the required sample, the greater the overall sampling size. In my

research, for example, by enforcing the criterion that teleworkers must have had prior immediate experience working full-time in a workplace setting and now conduct at least 20% of their full-time work from their home for the same employer, via the Internet, an intranet, LAN or WAN, numerous individuals responded stating that they did not qualify. Having established a strict criterion (and staying with it), the quality of the sample was maintained, but the sum total of respondents was sacrificed. In terms of my second criterion that individuals must work in Canada or the United States, I contemplated removing this condition when the administrator of a prominent teleworking web site located in Britain offered to include my request for teleworkers in his newsletter which is sent to over 450 teleworking members. The problem with his offer was that a vast majority of the teleworkers belonging to this group were located throughout Europe. Therefore, once again, I excluded a large number of teleworkers who may have met my first sampling criteria and been willing to complete my survey. Of course, it is impossible to know exactly how many teleworkers might have completed my survey, but it is possible to state with a great deal of certainty that if I had fewer sample limitations, my overall sample would have been greater.

Related to the issue of sampling criteria and finding potential samples on-line is the topic of the research itself. As noted in the discussion of computer-mediated communication, a large number of Internet users connect with each other in newsgroups. Depending on the topic, the size of the newsgroup and the willingness of newsgroup members to participate in a survey, newsgroups would be a good source to find on-line users. By posting messages to the newsgroup, not only could one gauge how interested newsgroup members might be to participate in your research, but one could also gain

important information relating to the topic and to the type of sampling criteria to use. In my research on teleworkers, the only newsgroup for teleworkers which I found was organized for and accessible to American On-Line (AOL) customers. While I did request assistance from AOL, I did not receive a response from them. Because most teleworking programs appear to be on a trial basis and/or isolated within a corporate intranet, it is extremely difficult at the present time to locate teleworkers in North America utilizing the Internet. Consequently, access to teleworkers on-line is limited. However, if there were a newsgroup bringing teleworkers together from around the world, one could request participation from them directly through the newsgroup. Although this would not ensure their participation, it would represent a large resource pool. Again, while I cannot know for certain, I believe that my sample size would have increased dramatically if I could have personally contacted more individual teleworkers.

Attempting to understand why very few managers of teleworking programs were interested in promoting a simple research project raises the third issue surrounding collecting data on-line and locating a sample. This issue centres on the aspect of a research sample being oversurveyed, or shielded from outside requests for assistance or questions. For instance, among the responses that I received to my request for teleworker participation, a number of managers stated that while they sympathized with the difficulty I was probably experiencing in trying to locate a teleworking sample, they were unable to assist me because their teleworkers were either oversurveyed, or, due to corporate policy, their teleworkers were unable to be identified or to participate in research outside of the corporation. Even though my request for teleworker participation included the incentive of a 2-page summary of teleworkers' responses for corporations

that had at least 10 teleworkers complete my survey, few managers decided to promote my research.

During my research into computer-mediated communication, I came across a web site which asked its visitors to complete a survey. As an incentive, the author of the web site would enter respondents' names into a draw for a prize. A few weeks after visiting the site and completing the survey, I received an e-mail indicating that I had won the prize. Surprised and somewhat suspicious, I began to correspond with the author. In one of my e-mails, after thanking him for the prize, I asked about the effectiveness of using incentives to increase respondent participation. He wrote back stating how offering an incentive in return for responses really helped drive up his response rates. Prior to offering an incentive, he used to get approximately 100 completed surveys per month. However, upon offering an incentive, he regularly received between 400 and 500 responses a month. In the draw in which my name was chosen, there were 517 participants.

Using this knowledge in my own research, in addition to offering a 2-page summary of my results, I decided to offer an incentive. Upon completion of my survey, respondents would be entered into a draw for $25.00. Although the prize was not extravagant, I felt that for ten minutes of their time, being entered into a draw for $25 dollars would be a fair. Besides, as a student I had no research funds.

In summary, within this section I have briefly touched on five components which require attention when collecting data on-line. The overall objective of this section was to reveal problems and issues which developed in my research so that future researchers may avoid or at least minimize the negative aspects of collecting data on-line. While this

research medium provides new and exciting possibilities for researchers in all disciplines, there are common pitfalls which can be avoided.

Sampling Results

Having discussed my sampling objectives and experiences of collecting data on-line, I will now provide the sampling results. The sampling results include the number of completed surveys, sociodemographic variables and the general statistics of conducting telework.

After hundreds of e-mail requests, phone calls, faxes and follow-ups, 18 teleworkers satisfied my sampling criteria and completed my survey. How I received the completed surveys can be broken down as follows: 8 teleworkers completed my survey on-line; 3 sent the survey to me as an attached e-mail file; 6 sent the survey via postal service; and 1 faxed the questionnaire.

Collecting a total of 18 completed questionnaires from a large North America population is less than ideal, and certainly fewer than desired. However, from the data gathered there is a preponderance of answers in some categories which indicates a stability of result. Obviously the results cannot be used to generalize to the larger population, but that is not to say that meaningful conclusions cannot be drawn. In fact, the responses gathered provide important insight and information into the behaviours and perceptions of teleworkers. Also, where there is overlap, my results are in general agreement with other studies of teleworkers (KPMG, 1997; Weijers et al., 1992).

The age of the respondents ranged from 25 to 53 years with a sampling average of 38. Along gender lines, 61% were female. In terms of marital status, 72% were either married or cohabiting, the remaining individuals being single (divorced or widowed). Table 1 indicates the distribution of respondents' education, with more than 67% having

completed a university or post-graduate degree. Among all 18 respondents, the decision to telework was voluntary. Total time spent teleworking ranged from 4 months to over 8 years, with the average teleworking period being 21 months. When asked how much of their current job was conducted teleworking, 67% indicated between 80 and 100 percent, 11% spent 40 to 80 percent of their time teleworking and the remaining 22% teleworked between 20 and 40 percent of the time.

Table 1: Highest Level of Completed Education (n=18)

Education	Frequency	Percent
High School	2	11
Some Post-secondary	4	22
University Degree	7	39
Post-graduate Degree	5	28

The factors and incentives responsible for respondents becoming teleworkers centre on two main categories – personal and company reasons. Only one response given as "pure chance" did not allow classification into one or both of the categories. Fifty-six percent expressed both work and personal reasons for deciding to conduct work from home. Work reasons included such responses as "office relocation", the creation of "pilot programs" and the potential "savings" of time and money. For example, in the words of one respondent, teleworking provided "savings in bricks and mortar and office furnishings and accoutrements… [and the] removal of two hours of unbillable commuting time." Another respondent noted:

> Traditional office relocated from suburban to downtown location. Telecommuting meant eliminating longer commute time downtown and parking costs. Also, needed quieter working conditions when actually in office to accomplish work.

Many of the responses alluded to the fact that a teleworking arrangement benefits both employees and the employer. This suggests that ever more corporations might address

the options of and experimenting with teleworking. Two examples of personal reasons related to the decision to telework include 1) "commute time, plus travel 3-4 days weekly and never saw my home in the daylight" and 2) "I work 7 nights on and 14 off; being an avid fisherman and scuba diver here in Florida made the decision easy."

In summary, my research sample is composed primarily of highly educated, primarily female, full-time teleworkers who are married or cohabiting, are less than 40 years of age and have been teleworking for almost two years. This composition of workers represents a reasonable group from which my main research questions can be addressed.

CHAPTER 4

Results

The objective of this chapter is to provide the survey results, first, on the computer-mediated communication experiences of teleworkers, and second, on their feelings about individuation and social solidarity. Exploring how teleworkers experience working from home in the absence of co-workers but in proximity to family, friends and neighbours, the second research question provides insight into the overall working lives of teleworkers. Finally, I examine the open-ended responses to the advantages and disadvantages of teleworking, relating these also to my research questions.

Computer-mediated Communication

The first research question explores how teleworkers experience and value computer-mediated communication (CMC) in comparison to face-to-face communication. When teleworkers are remote from the workplace and CMC becomes their primary means of communication, it is important that we ask how this fundamental change in both the organization of work *and* the means of communication impact upon the individual.

Data Analysis:

Table 2 summarizes CMC variables measuring change in teleworker behaviour.

Table 2: CMC Behaviour Variables (percent) (n=18)

Variables	**-**	**o**	**+**
Face-to-face interaction with co-workers	78	17	6
Communication with other teleworkers	--	47	53
Through teleworking, my professional community of associates	39	39	22
Working collaboratively with others	22	67	11
Difficulty completing work because of interruptions	56	44	--
Total number of hours worked per week	17	22	61

- = decreases **o** = remained the same **+** = increases

As would be expected, face-to-face interaction has decreased for the majority of teleworkers (almost four-fifths), but for more than half, this decrease is supplanted at least in part by more communication with other teleworkers. For most teleworkers in this sample, their professional community of associates has not grown. However, this is not surprising because it will be recalled that a large number do not have access to the Internet. Consequently, it is unlikely, given their disparate locations, that their professional community of associates would grow.

Concerning actual work, teleworking does not appear to make an appreciable impact on working collaboratively with others. Although the difficulty of completing work has decreased for more than half the sample, it is noteworthy that more than half also report that they are putting in more hours per week than they used to in the traditional office.

Table 3 presents teleworkers' perceptions of how CMC affects their working relations and their assessment of teleworking in general. In terms of feeling more connected to either their co-workers or employer now that they are teleworking, over half of the teleworkers reported no change. However, among those who did indicate a change, almost all noted a decrease. In relation to their job, virtually all reported that teleworking gives them more control over how they conduct their work, and that they

Table 3: CMC Perception Variables (percent) (n=18)

Variables	**-**	**o**	**+**
I feel more connected to co-workers now that I'm teleworking	39	56	6
I feel more connected to employer now that I'm teleworking	28	67	6
Teleworking gives more control over how I conduct my work	6	6	89
I enjoy teleworking more than working in a traditional office	6	11	83
I would like to telework for entire career	6	28	67

- = disagree **o** = neither agree nor disagree **+** = agree

enjoy teleworking more than working in a traditional office; two-thirds indicated that they would like to telework for their entire career.

Bivariate Analysis

In addition to simple percentages to describe the survey results, cross-tabulations allow us to examine the effect of various independent variables on CMC. Exploring how different sub-groups of teleworkers within the sample responded to the questionnaire (e.g., part-time versus full-time teleworkers), we may better understand the impacts of teleworking. For example, while we know that most teleworkers enjoy teleworking more than working in a traditional office, it would be valuable to know if one group (e.g., full-time teleworkers) enjoys it more than another group (e.g., part-time teleworkers), or vice-versa. In conducting multiple bivariate analyses, we can determine if significant differences between groups exist, and whether or not these differences appear to be consistent. In this way, bivariate analyses can potentially provide an explanation for teleworkers' responses.

For example, does the duration and intensity of teleworking have an impact on behavioural and perceptual CMC variables? In order to address this question, I recoded the variables *months teleworking*, *percentage of job teleworking* and *hours on-line per week* to enable three separate bivariate analyses. *Months teleworking* was recoded into "one year or less" *(N=10)* and "over one year" *(N=8)*; *percentage of job teleworking* was classified into "part-time" (less than 80%) *(N=6)* and "full-time" (80% --100%) *(N=12)*; and *hours on-line per week* was dichotomized into "15 or less" *(N=9)* and "over 15" *(N=9)*. Due to the small number of cases in each recoded category, the results provided in these bivariate analyses are only suggestive; it is impossible to offer definitive

conclusions about general teleworking experiences. Tables 4 through 6 present the bivariate results in relation to CMC.

Table 4: Behavioural Changes in CMC by Months Teleworking (percent) (n=18)

	1 Year or Less			Over 1 Year		
Variables	**-**	**o**	**+**	**-**	**o**	**+**
Face-to-face interaction with co-workers	70	20	10	88	13	--
Communication with other teleworkers	10	50	40	--	38	63
Through teleworking, my professional community of associates	50	40	10	25	38	38
Working collaboratively with others	20	70	10	25	63	13
Difficulty completing work because of interruptions	60	40	--	50	50	--
Total number of hours worked per week	20	30	50	13	13	75

- = decreases **o** = remained the same **+** = increases

Table 4 indicates that compared to respondents who have teleworked for one year or less, more respondents who have been teleworking for over one year reported a decrease in face-to-face interaction, an increase in communicating with other teleworkers and an increase in the size of their professional community of associates. Interestingly, more long-time teleworkers reported working more hours per week (75% versus 50%) compared to those with less teleworking experience.

Table 5: Behavioural Changes in CMC by Full-time/ Part-time Status (percent) (n=18)

	Part-time			Full-time		
Variables	**-**	**o**	**+**	**-**	**o**	**+**
Face-to-face interaction with co-workers	67	17	17	83	17	--
Communication with other teleworkers	--	67	33	8	33	58
Through teleworking, my professional community of associates	50	17	33	33	50	17
Working collaboratively with others	--	100	--	33	50	17
Difficulty completing work because of interruptions	33	67	--	67	33	--
Total number of hours worked per week	--	50	50	25	8	67

- = decreases **o** = remained the same **+** = increases

In Table 5, most of the six measures of behavioural changes in CMC indicate significant differences between part-time and full-time teleworkers. Concerning

interaction, consistent with teleworkers who have worked for over one year, more full-time teleworkers reported a decrease in face-to-face interaction and an increase in communication with other teleworkers than part-time workers. In relation to the working process, all part-time workers reported no change in the amount of collaborative working and only a few reported a decrease in the amount of difficulty completing work because of interruptions. However, consistent with those respondents who have teleworked for over one year, more full-time teleworkers reported an increase in their total number of hours worked per week compared to part-time workers.

Table 6: Behavioural Changes in CMC by Hours On-line Per Week (percent) (n=18)

	15 or Less			Over 15		
Variables	**-**	**o**	**+**	**-**	**o**	**+**
Face-to-face interaction with co-workers	67	22	11	89	11	--
Communication with other teleworkers	--	56	44	--	38	62
Through teleworking, my professional community of associates	33	33	33	44	44	11
Working collaboratively with others	33	67	--	11	67	22
Difficulty completing work because of interruptions	33	67	--	78	22	--
Total number of hours worked per week	--	33	67	33	11	56

- = decreases **o** = remained the same **+** = increases

In Table 6, again we find significant differences involving face-to-face interaction and teleworker communication by those who work on-line 15 hours or less per week versus those who are on-line more than 15 hours per week. These differences are consistent with those in Tables 4 and 5: teleworkers who indicated a high intensity of teleworking (on-line over 15 hours per week) more frequently reported a decrease in face-to-face interaction and an increase in teleworker communication. Concerning their actual work, compared to teleworkers who spend 15 hours or less on-line per week, twice

as many teleworkers on-line more than 15 hours per week for work reported a decrease in difficulty completing work because of interruptions.

Tables 7 through 9 provide the results of the bivariate analyses correlating duration and intensity of teleworking to workers' attitudes toward CMC. In summary, these analyses reveal no consistent relationship between duration or intensity of telework and feelings of being connected to co-workers or employers. While some variations do occur, the only consistent finding among responses is that of stability: regardless of how long they have been teleworking, or their intensity of teleworking, at least half these respondents indicated no change over how they felt toward their co-workers and employers. Furthermore, the analyses did not produce differences in the amount of control teleworkers feel they have over their work: the overwhelming majority reported that the teleworking experience gives them greater control in how they conduct their work. Finally, although respondents who have the most experience teleworking are the most likely to express the desire to telework for their entire career, an overwhelming majority, regardless of duration and intensity of teleworking, enjoy teleworking more than working in a traditional workplace.

Table 7: Perception Changes in CMC by Months Teleworking (percent) (n=18)

	1 Year or Less				**Over 1 Year**		
Variables	**-**	**o**	**+**		**-**	**o**	**+**
I feel more connected to co-workers now that I'm teleworking	50	50	--		25	63	13
I feel more connected to employer now that I'm teleworking	40	60	--		13	75	13
Teleworking gives more control over how I conduct my work	10	--	90		--	13	88
I enjoy teleworking more than working in a traditional office	10	10	80		--	13	88
I would like to telework for entire career	10	50	40		--	--	100

- = disagree **o** = neither agree nor disagree **+** = agree

Table 8: Perception Changes in CMC by Full-time/ Part-time Status (percent) (n=18)

	Part-time			Full-time		
Variables	**-**	**o**	**+**	**-**	**o**	**+**
I feel more connected to co-workers now that I'm teleworking	17	67	17	50	50	--
I feel more connected to employer now that I'm teleworking	33	50	17	25	75	--
Teleworking gives more control over how I conduct my work	17	--	83	--	8	92
I enjoy teleworking more than working in a traditional office	17	17	67	--	8	92
I would like to telework for entire career	17	33	50	--	25	75

- = disagree **o** = neither agree nor disagree **+** = agree

Table 9: Perception Changes in CMC by Hours On-line Per Week (percent) (n=18)

	15 or Less			Over 15		
Variables	**-**	**o**	**+**	**-**	**o**	**+**
I feel more connected to co-workers now that I'm teleworking	44	56	--	33	56	11
I feel more connected to employer now that I'm teleworking	33	67	--	22	67	11
Teleworking gives more control over how I conduct my work	11	--	89	--	11	89
I enjoy teleworking more than working in a traditional office	11	--	89	--	22	78
I would like to telework for entire career	--	33	67	11	22	67

- = disagree **o** = neither agree nor disagree **+** = agree

Individuation & Social Solidarity

Investigating variables of behaviour and perception, the goal of my second research question is to identify how telework impacts upon the process of individuation and social solidarity. Although most of the items in my questionnaire concern individuation and social solidarity, Tables 10 and 11 present only those items which have not yet been examined. However, my analysis of the results and later discussion will include all items which are relevant to this second research question.

Data Analysis:

Table 10 indicates that altering the location at which work is completed has a significant impact on the social behaviour of teleworkers. As may be expected, now that respondents telework, a majority reported a decrease in frequency of socializing with co-workers outside of the workplace. However, most teleworkers also reported that time

spent with friends and neighbours, and especially their families, has increased. Table 11 reveals that as teleworkers spend less time with co-workers and more time with friends, neighbours and family, their perceptions of individuation and social solidarity also undergo significant changes. In particular, half disagreed that they often feel lonely, and almost half reported feeling closer to their families now that they are teleworking.

Table 10: Behavioural variables related to Individuation and Social Solidarity (percent) (n=18)

Variables	**-**	**o**	**+**
Socializing with co-workers outside the workplace	61	39	--
Time spent with friends and neighbours	6	50	44
Time spent with family	--	17	83
- = decreases **o** = remained the same **+** = increases			

Table 11: Perception of Individuation & Social Solidarity (percent) (n=18)

Variables	**-**	**o**	**+**
Because I telework, I often feel lonely	50	29	23
I feel more connected to my friends and/or neighbours now that I'm teleworking	22	56	23
I feel closer to my family now that I'm teleworking	6	50	45
- = disagree **o** = neither agree nor disagree **+** = agree			

A parallel becomes visible when reported time spent with friends, neighbours and family is compared to feelings of being connected to these individuals. For example, in the same way that increased time spent with family is associated with increased feelings of closeness to family members, increased time spent with friends and neighbours is associated with feeling more connected to them. Even more interesting is the similar proportions among these associations. The percentages for increased feelings of being connected to friends and neighbours, and feeling closer to family is approximately half the percentage reported for increased time spent with these persons. While these results may be coincidental, they are nonetheless noteworthy.

Bivariate Analysis

In addition to duration and intensity of teleworking being conceivably important in producing differences among teleworkers, the number of people they work in the presence of (both previously and presently) may also be important when exploring individuation and social solidarity variables. Establishing the number of individuals teleworkers worked with in the traditional workplace, and how many persons are now in the home during working hours, is relevant to exploring the impact of relocating from the traditional office to the home. In the traditional workplace, prior to teleworking, respondents indicated that on average they worked in the presence of 12 other individuals. The range, however, was substantial: one respondent worked alone, while others reported working with up to 100 co-workers. Now that they are teleworking, 44% indicated that there was at least one person at home when they were working (range 1 to 4). Finally, 17% of respondents reported having children at home when they were teleworking.

To explore if previous and present opportunities for interaction produce significant and/or consistent differences in behavioural and perceptual indicators of individuation and social solidarity, the continuous variables *number of individuals worked with prior to teleworking and number of persons at home when teleworking* were recoded to enable bivariate analyses. *Number of individuals worked with prior to teleworking* was recoded as "five or fewer" *(N=10)* and "over five" *(N=8), number or persons at home when teleworking* was categorized as "none" *(N=10)* and "some" *(N=8).* As noted previously, it is important to keep in mind that due to the small sample, differences emerging from the recoded variables can only be suggestive of teleworkers' experiences in general.

Table 12 presents behavioural items relevant to individuation and social solidarity by the number of individuals in the previous workplace. Concerning worker interaction, it is not surprising that a greater proportion of teleworkers who worked with more than five persons in the previous workplace reported a decrease in face-to-face interaction with co-workers and socializing with them after work. Also, significantly more of these workers noted a decline in working collaboratively with others, but respondents who worked with five or fewer colleagues were more likely to report a decrease in difficulty completing work because of interruptions. Other variables relevant to the number of people previously worked with do not reveal much variation.

Table 12: Behavioural Changes in Individuation & Social Solidarity by Number of People Respondents Worked with on a Daily Basis Before Teleworking (percent) (n=18)

	Five or Fewer			Over Five		
Variables	**-**	**o**	**+**	**-**	**o**	**+**
Face-to-face interaction with co-workers	70	20	10	88	13	--
Socializing with co-workers outside the workplace	50	50	--	75	25	--
Communication with other teleworkers	--	40	60	13	50	38
Through teleworking, my professional community of associates	40	40	20	38	38	25
Working collaboratively with others	10	80	10	38	50	13
Difficulty completing work because of interruptions	70	30	--	38	63	--

- = decreases **o** = remained the same **+** = increases

Table 13 divides the responses to behavioural changes in individuation and social solidarity by the number of people usually at home when teleworkers are working. Except for the fact that more of those with no one at home reported a decrease in work interruptions, this table reveals no significant difference.

Table 13: Behavioural Changes in Individuation & Social Solidarity by Number of People Usually at Home When Teleworking (percent) (n=18)

	None			Some		
Variables	**-**	**o**	**+**	**-**	**o**	**+**
Face-to-face interaction with co-workers	80	20	--	75	13	13
Communication with other teleworkers	--	45	55	--	50	50
Through teleworking, my professional community of associates	30	70	--	50	--	50
Working collaboratively with others	10	70	20	38	63	--
Difficulty completing work because of interruptions	70	30	--	38	63	--
Time spent with friends and neighbours	--	70	30	13	25	63
Time spent with family	--	10	90	--	25	75
Socializing with co-workers outside the workplace	50	50	--	75	25	--
- = decreases **o** = remained the same **+** = increases						

Tables 14 and 15 examine perceptual changes in individuation and social solidarity by the same previous and present interaction opportunities. Similar to Table 13, these tables produce no noteworthy differences, except for the fact that a greater proportion of teleworkers alone at home disagreed with the statement, "because I telework, I often feel lonely" (Table 15).

Table 14: Perceptual Changes in Individuation & Social Solidarity by Number of People Respondents Worked with on a Daily Basis Before Teleworking (percent) (n=18)

	Five or Fewer			Over Five		
Variables	**-**	**o**	**+**	**-**	**o**	**+**
I feel more connected to co-workers now that I'm teleworking	30	60	10	50	50	--
I feel more connected to employer now that I'm teleworking	10	80	10	38	25	38
I would like to telework for entire career	--	30	70	13	25	63
Because I telework, I often feel lonely	50	30	20	50	25	25
I enjoy teleworking more than working in a traditional office	10	--	90	--	25	75
Teleworking gives more control over how I conduct my work	10	--	90	--	13	87
- = disagree **o** = neither agree nor disagree **+** = agree						

Table 15: Perceptual Changes in Individuation & Social Solidarity by Number of People Usually at Home When Teleworking (percent) (n=18)

	None			Some		
Variables	**-**	**o**	**+**	**-**	**o**	**+**
I feel more connected to co-workers now that I'm teleworking	40	60	--	38	50	13
I feel more connected to employer now that I'm teleworking	30	70	--	25	63	13
I feel closer to my family now that I'm teleworking	10	30	60	--	75	25
I feel more connected to my friends and/or neighbours	20	60	20	25	50	25
Because I telework, I often feel lonely	60	10	30	38	50	13
I enjoy teleworking more than working in a traditional office	--	10	90	13	13	75
Teleworking gives more control over how I conduct my work	--	--	100	13	13	75
I would like to telework for entire career	10	20	70	--	38	63
- = disagree **o** = neither agree nor disagree **+** = agree						

Finally, Tables 16 through 18 provide behavioural and perceptual indicators of individuation and social solidarity by duration and intensity of teleworking. Concerning behaviour, more teleworkers who have worked one year or less indicated a decrease in time spent socializing with co-workers, and an increase in time spent with friends, neighbours and family when compared to their more experienced counterparts. Concerning perception, no significant differences occur.

Table 16: Behavioural and Perceptual Changes in Individuation and Social Solidarity by Months Teleworking (percent) (n=18)

	1 Year or Less			Over 1 Year		
Behavioural	**-**	**o**	**+**	**-**	**o**	**+**
Socializing with co-workers outside of the traditional workplace	80	20	--	38	63	--
Time spent with friends and neighbours	--	40	60	13	63	25
Time spent with family	--	10	90	--	25	75
- = decreases **o** = remained the same **+** = increases						
Perceptual	**-**	**o**	**+**	**-**	**o**	**+**
Because I telework, I often feel lonely	40	30	30	63	25	13
I feel more connected to my friends and/or neighbours	10	60	30	38	50	13
I feel closer to my family now that I'm teleworking	10	40	50	--	63	38
- = disagree **o** = neither agree nor disagree **+** = agree						

Table 17: Behavioural and Perceptual Changes in Individuation and Social Solidarity by Full-time/ Part-time Status (percent) (n=18)

	Part-time				Full-time		
Behavioural	**-**	**o**	**+**		**-**	**o**	**+**
Socializing with co-workers outside of the traditional workplace	50	50	--		67	33	--
Time spent with friends and neighbours	--	50	50		8	50	42
Time spent with family	--	17	83		--	17	83
- = decreases **o** = remained the same **+** = increases							
Perceptual	**-**	**o**	**+**		**-**	**o**	**+**
Because I telework, I often feel lonely	67	17	17		42	33	25
I feel more connected to my friends and/or neighbours	17	67	17		25	50	25
I feel closer to my family now that I'm teleworking	17	67	17		--	42	58
- = disagree **o** = neither agree nor disagree **+** = agree							

Table 18: Behavioural and Perceptual Changes in Individuation and Social Solidarity by Hours On-line Per Week (percent) (n=18)

	15 or Fewer				Over 15		
Behavioural	**-**	**o**	**+**		**-**	**o**	**+**
Socializing with co-workers outside of the traditional workplace	44	56	--		78	22	--
Time spent with friends and neighbours	11	44	44		--	56	44
Time spent with family	--	11	89		--	22	78
- = decreases **o** = remained the same **+** = increases							
Perceptual	**-**	**o**	**+**		**-**	**o**	**+**
Because I telework, I often feel lonely	33	33	33		67	22	11
I feel more connected to my friends and/or neighbours	22	67	11		22	44	33
I feel closer to my family now that I'm teleworking	11	44	44		--	56	44
- = disagree **o** = neither agree nor disagree **+** = agree							

Advantages & Disadvantages of Teleworking

In addition to the closed-ended questions on teleworking, I included two open-ended questions asking respondents to cite the main advantages and disadvantages of teleworking compared to working in a traditional workplace. All 18 respondents provided at least one advantage and one disadvantage of teleworking. In total, 43 advantages and 20 disadvantages were given. Table 19 provides the responses which I coded from the teleworkers' answers. These responses relate directly to both CMC and individuation and social solidarity.

Table 19: Advantages & Disadvantages of Teleworking (percent*) (n=18)	
Advantages:	
Increased flexibility, freedom of motion,	72%
Increased productivity, better use of time, able to do more	56%
Increased control, more responsibility	44%
Increased savings (commute, wardrobe, food, etc.)	33%
Fewer distractions, don't have to deal with people	33%
Disadvantages:	
Decreased interaction and face-to-face contact with co-workers	72%
Lack of direct control in the traditional office	22%
Working too much	11%
Other	6%
* *Because of multiple responses, the percentages do not equal 100%*	

Advantages

The most commonly cited advantage was increased flexibility (72%). Encompassing both personal and work examples, responses indicative of flexibility included: 1) "schedule maintenance – I am able to do more based on the fact that I can make up lost time during evening hours;" 2) "increased flexibility with my family;" and 3) simply, "flexibility." As the most popular advantage of teleworking, increased flexibility has consequences both for CMC and for individuation and social solidarity. Although it is impossible to know definitely, it is certainly conceivable that increased flexibility decreases the likelihood of interruptions, enables teleworkers to work more hours per week, contributes to their enjoyment of telework and allows them more discretion in their non-work relationships.

Increased productivity was the second most cited advantage (56%). Relating solely to the completion of work, examples included "better use of my time" and "I'm much more productive." Concerning primarily CMC, increased productivity may both contribute to and be a consequence of the advantageous aspects of teleworking. For example, increased productivity may be the result of decreased face-to-face interaction

and fewer interruptions, but may also increase satisfaction with telework and the desire to continue teleworking.

Encompassing both personal and work aspects of teleworking, increased control was the third most reported advantage (44%). As two respondents explained: "I feel much more in control of my work and personal life;" and "[I] feel more in control of my schedule – I can work when I want (within reason)." In comparison to the closed-ended responses indicating that teleworking gives the majority more control over how they conduct their work, significantly fewer respondents noted increased control as an advantage of teleworking. However, similar to the 'increased flexibility' examples, when teleworkers experience increased control in their personal and working lives, and they attribute it to CMC, this will more than likely have positive consequences for CMC, individuation and social solidarity.

Finally, increased savings and decreased interruptions were the last two advantages of teleworking both reported by one-third of respondents. Concerning increased savings, teleworkers noted that working from home saves them time, costs (insurance and gas) and reduces stress. As one respondent stated: "... no time lost sitting in traffic jams, money saved on lunch, parking and clothes." Concerning decreased interruptions, although a one-third response is moderate compared to the 56% of teleworkers who indicated a decrease in *difficulty completing work because of interruptions* in their closed-ended responses (Table 2), it is nevertheless an important feature of CMC. Establishing that a decrease in interruptions is a positive aspect of teleworking, two questions might be asked: 1) Does CMC facilitate decreased interruptions? And 2) How does this decrease in interruptions influence individuation

and social solidarity? Here a paradox becomes apparent. Fewer distractions and increased productivity through CMC appear to be significant advantages of teleworking, yet decreased interaction and face-to-face contact, both elements of individuation and social solidarity, are noted as disadvantages. Consequently, determining how a teleworker can decrease interruption, while at the same time increase interaction appears to be a teleworking dilemma. I will return to this dilemma in the final chapter, but first we should examine in greater detail the most commonly cited disadvantages of teleworking.

Disadvantages

The majority of respondents (72%) indicated that decreased face-to-face contact and co-worker interaction was a disadvantageous aspect of teleworking. "Less camaraderie with your co-workers," "sometimes feeling of isolation" and "lack of face-to-face collaboration" are examples of teleworkers' responses. Consistent with the closed-ended responses indicating a decrease in *face-to-face contact with co-workers*, and *socializing with co-workers outside of the traditional workplace* (Tables 2 and 10), this disadvantage relates directly to behavioural aspects of CMC and individuation and social solidarity. By removing themselves from the traditional workplace and the presence of co-workers, respondents experience the disadvantage of decreased face-to-face contact and co-worker interaction. Having to sacrifice face-to-face interaction with co-workers to increase face-to-face interaction with family, friends and neighbours, appears to cause a trade-off associated with teleworking. Furthermore, because most respondents indicated decreased face-to-face co-worker interaction as a disadvantage of teleworking, the importance of these relationships should not be underestimated or forgotten.

Lack of direct control in the traditional office was the second most cited teleworking disadvantage (22%). For example, one respondent reports having "less control of office 'fires' that arise in your absence" and another indicates that "new employees are more difficult to deal with because they do not have an understanding of my skills through personal contact. Conflicts can arise." The third most cited disadvantage was "working too much" (11%). And finally, the remaining disadvantage of teleworking classified as *other* (6%), was the following statement: "You must be disciplined when working in a personal environment to complete your work obligations."

In an attempt to further explain the advantages and disadvantages listed in Table 19 in relation to CMC and individuation and social solidarity, I cross-tabulated the responses by duration and intensity of teleworking. However, this analysis produced no significant differences. The major advantages and disadvantages were equally reported by both new and experienced teleworkers.

It now remains my task to summarize the major results of my analysis and to make sense of them in terms of the two research questions I posed at the outset. This forms the main substance of Chapter 5.

CHAPTER 5

Eighteen teleworkers completed my questionnaire. The majority have a university degree or some post-secondary education. This high level of education is reflected in their job titles; most respondents indicated being either a manager or president. Approximately two-thirds are women. Overall, the factors involved in these respondents becoming teleworkers are attributable to both personal and corporate reasons. However, all of them can be classified as "privileged teleworkers" because they were not forced into this work situation; they volunteered to become teleworkers. Hence, I am dealing with a special subset of all teleworkers. Consequently, it is important to remember that my results can only be applied to *voluntary* teleworkers.

Summary of Results

Computer-mediated communication

BEHAVIOUR:

On average, my respondents have been teleworking for slightly less than 2 years. Most telework full-time and spend over 15 hours per week on-line completing work. One of the major results of CMC is that face-to-face interaction with co-workers decreases for the majority (78%). However, this decrease in face-to-face interaction is supplanted at least in part by increased communication with other teleworkers (53%). While the size of teleworkers' professional communities of associates does not appear to change, most (61%) reported working more hours compared to when they worked in the traditional office.

Bivariate analyses indicate that *duration of teleworking* is the most significant variable affecting the behaviour of teleworkers. Compared to newer teleworkers, those

who have teleworked for over one year more frequently reported decreases in face-to-face interaction with co-workers, increases in teleworker communication and increases in the size of their professional community of associates. Also, significantly more responded that their total number of hours worked per week had increased.

PERCEPTION

Concerning their attitudes toward telework, over 80% of these respondents indicated that they enjoy teleworking more than working in a traditional office; two-thirds would like to telework for their entire career. Perhaps explaining part of these sentiments is the fact that close to 90% of the entire sample responded that teleworking gives them more control over how they conduct their work. Furthermore, the bivariate analysis revealed that all long-time teleworkers expressed the desire to telework full-time.

Reinforcing this interpretation is the additional fact that, in response to open-ended questions, these teleworkers most commonly mentioned increased flexibility, productivity and control as the main advantages of teleworking. It is important to note however, that decreased interaction and face-to-face contact was the main disadvantage of telework.

Individuation and Social Solidarity

BEHAVIOUR

Prior to teleworking, on average, these respondents worked in the company of 12 other workers. However, now that they are teleworking, more than half reported that there is usually no one at home when they are at work. What consequences does this have for their interactive behaviour? Although most (64%) reported a decrease in socializing with co-workers outside of the traditional workplace, almost half (44%) reported spending more time with friends and neighbours and almost all (83%) reported

spending more time with their families. Consequently, rather than there being an absolute decline in interaction among teleworkers, there appears to be a change in who they interact with. Also, it will be remembered that more than half of these teleworkers reported an increase in communication with other teleworkers.

PERCEPTION

How do these teleworkers feel about the changes in their interactive behaviour? Fifty percent disagreed with the statement that because they are teleworking they often feel lonely; less than one-quarter agreed. Although most (56%) felt neither more nor less connected to friends and neighbours, almost half (45%) did respond that they feel closer to their families now that they are teleworking. Consequently, although these teleworkers have experienced significant changes in their patterns of interaction, most have reacted positively. However, this does not deny the additional fact that the most commonly cited disadvantages of teleworking were loss of face-to-face contact with people at work and being out of the office loop.

Comparing the Results

Comparing my results to those of previous teleworking research, it should be noted that discrepancies may exist among the samples. Unlike my research which only sampled teleworkers, previous research by Weijers et al. (1992) and KPMG (1997) reported conducting surveys and/or interviews with organizations and companies that employ teleworkers. Consequently, there are many similarities between my research questions and the objectives of previous telework research, but the working status of respondents may differ. However, in an effort to assess the validity of my exploratory data, I feel that a comparison with previous teleworking research is required regardless of the potential sampling differences.

Overall, the data I collected are in agreement with previous studies. For example, in a qualitative overview of teleworking costs and benefits, the advantages *mentioned most* were greater flexibility and autonomy, as well as increased time workers can spend with their families (Weijers et al.,1992). Similarly, in my research respondents indicated increases in flexibility and freedom of motion (72%), as well as time spent with family (83%). The findings of Weijers et al. (1992: 1051) were based on 19 in-depth interviews with Dutch government institutions and organizations, as well as their own literature review. In terms of increased flexibility, further consistency is found by comparing my results to The 1997 KPMG Telecommuting Survey. KPMG surveyed 1,600 large and medium-sized companies in the private-sector and 425 organizations in the public sector of Canada (1997: i). Achieving a 20% response rate, KPMG found that 71% of respondents indicated "effective use of time" as the number one advantage of teleworking (1997: 3). Assuming that "increased flexibility and freedom of motion" is comparable to "effective use of time," the comparability of results is encouraging and points to the existence of teleworking trends.

Moreover, in my research, 56% of the respondents indicated that "increased productivity" was a main advantage of teleworking. This finding is also consistent with other research. In Weijers et al. (1992:1053), "increased productivity" was *mentioned often* as an advantage of teleworking, and in a survey of Nortel teleworkers, productivity was noted to increase by an average of 30% (Powell, 1997:2). Although Powell (1997) reports on a survey of 500 Nortel teleworkers, it is not indicated if these individuals responded voluntarily. Finally, consistent with my finding of the cost saving advantages of teleworking, Weijers et al (1992: 1053) reported a similar result.

As well as consistencies in the advantages of teleworking, there are also parallels in the disadvantages. In the KPMG study (1997:3), 76% percent of teleworkers indicated a "lack of face-to-face contact" as the most disadvantageous aspect of teleworking. This finding is almost equal to the 72% of respondents from my research who reported decreased face-to-face contact as the number one disadvantage of teleworking. Similarly, Weijers et al. (1992:1053) found that increased isolation was the cost of teleworking *mentioned most* in their study.

In summary, although my research was exploratory, the sample small and sampling discrepancies may exist between my research and previous research, the consistencies of my data with previous research provide me a degree of confidence that my findings are reflective of a broader cross-section of North American teleworkers.

Discussion

It is estimated that by the year 2001, there will be over one million teleworkers in Canada and over 30 million teleworkers in the United States (Inno Visions Canada, 1997: 2-3). These statistics, combined with the fact that little is known about the impacts of relocating workers from the traditional workplace to the home, were the major issues which prompted this research. I was confident that an investigation of teleworkers could provide one way to examine new technological impacts on individuals and society.

The work of Emile Durkheim helped me to contextualize this research theoretically. Durkheim theorized that the changing structural aspects of society and social life stemming from the industrial revolution brought about a transformation of social order from mechanical solidarity to organic solidarity. For Durkheim, organic solidarity originated from increases in life expectancy, population density and human

interaction (Hedley, 1992: 108). Investigating how individuals could achieve a degree of autonomy while remaining accountable and responsible for the collective welfare of society, he postulated that organic solidarity could achieve a balance between individualism and socialism through the combination of a complex division of labour and a minimal collective conscience (Müller, 1988: 142).

Today, as millions of individuals incorporate information technologies into their lives, the concerns which influenced Durkheim 100 years ago remain valid. Exploring the sociological impacts of computer-mediated communication on teleworkers, this research addressed two main questions: 1) How do teleworkers experience and value CMC in comparison to face-to-face communication? And 2) How does telework impact upon the processes of individuation and social solidarity?

Computer-mediated communication

With respect to Question 1, the findings suggest that although a majority of teleworkers reported positive experiences of teleworking, it is difficult to answer in a comprehensive manner the question of how teleworkers experience and value CMC in comparison to face-to-face communication. Even though information technology and CMC makes telework possible and allows teleworkers to communicate with fellow co-workers via a corporate intranet, LAN or WAN, few in my sample were able to go beyond their corporate networks to utilize the vast and expanding communication infrastructure of the Internet. (For example, only eight respondents completed my questionnaire on-line.) Consequently, when comparing face-to-face communication with CMC, it is important to remember that most of the teleworkers researched here were basing their comparisons on quite limited CMC with fellow employees.

Answering the first question with this caveat in mind, the findings suggest relative acceptance of CMC among teleworkers. For example, although face-to-face interaction has decreased for a substantial majority, feelings of being connected with employers and co-workers have not changed significantly. It is even conceivable that increased CMC is the primary factor responsible for sustaining feelings of being connected among co-workers and employers. Two-thirds reported no change in the amount of collaboration with others.

On another plane, most teleworkers reported fewer interruptions and increased productivity as advantages of teleworking. CMC enables teleworking day or night, thus redefining traditional notions of the 'working day.' Providing increased control and flexibility, CMC allows teleworkers to make all of their time 'productive,' in the sense that both employers' needs *and* teleworkers' personal responsibilities are facilitated.

Individuation and Social Solidarity

For Durkheim, organic solidarity represented a new social order. Today, by utilizing CMC and spending greater amounts of time physically alone, traditional organic solidarity is being challenged. Changes in how we interact, and with whom, are threatening to change the nature of organic solidarity, and consequently, the social order. What might we expect as a result of these changes?

Although one-quarter of my respondents expressed concern that teleworking brings about feelings of loneliness, fully one-half disagreed that this was true. And although the most frequently mentioned disadvantage of teleworking was decreased interaction and face-to-face contact, most respondents also indicated that teleworking provides them with more time to develop closer relationships with their friends, neighbours and family. Even if Wellman (1996: 232) is correct in his assertion that

teleworkers' "more individualistic behavior means the weakening of the solidarity that comes from working in large groups," nevertheless respondents are spending an increased amount of time interacting in their communities and with their families. Although the solidarity among co-workers may be reduced with the adoption of teleworking, the solidarity with family and community would appear to increase.

Implications

Discussion of computer-mediated communication and individuation and social solidarity highlights the dilemma I raised earlier. On the one hand, even though most of my respondents were not connected to the Internet, and therefore were not able to experience the full effects of contemporary CMC, many nevertheless did identify various technical advantages of CMC: greater control over how they conduct their work (89%); fewer interruptions (56%); and greater productivity and use of time (56%). Most also reported that their hours of work had increased now that they were teleworking (61%). Consequently, it would appear that CMC facilitates the efficient and productive accomplishment of work.

However, on the other hand, even though most of my respondents indicated that they now spend more time with their families (83%), the single most mentioned disadvantage of teleworking was decreased interaction and face-to-face contact with co-workers (72%). Moreover, the majority reported decreases in both face-to-face interaction (78%) and socializing (61%) with their colleagues. Consequently, it would also appear that the introduction of CMC is disruptive in terms of existing social relationships.

Although most respondents stated that they enjoyed teleworking more than working in a traditional office (83%), and indicated that they would like to telework for

their entire careers (67%), it is important to acknowledge the potential severe social dislocations that a comprehensive introduction of CMC could produce. And to the extent that the decision to telework is not voluntary, but forced upon people, the consequences could be catastrophic. Simply because we are technologically capable of changing the workplace structure, and because it yields technical efficiencies, does not always mean that it is sociologically beneficial. Hence, we need to pay particular attention to the social ramifications of CMC in terms of both individuation and social solidarity.

Conclusion

Having provided a brief glimpse into how information technologies are affecting the lives of teleworkers, I have hopefully afforded others a better vantage point from which to evaluate the pros and cons of teleworking. As this research has attempted to show, not only does working from home impact the lives of teleworkers; it may also affect the lives of fellow workers, families, friends and neighbours. The sociological impacts of teleworking are just beginning to be discovered.

Using computers to communicate with individuals and groups both near and far means that the size of our global village is constantly changing and becoming increasingly easier to navigate. In December 1996, estimates reported over 96 million people on the Internet (Netree Internet Statistics, 1996:1). Twelve months later, this estimate has doubled to over 200 million (Netree Internet Statistics, 1997:1). In the introduction I stated that work, communication and interaction have the potential to undergo significant changes as we enter the 21st Century. Having completed my exploratory research into the sociological impacts of information technologies, I am convinced that these changes have already begun.

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APPENDIX A

Initial Contact Introduction

Exploring the Sociological Impacts of Teleworking

Hello,

My name is Robert Buren and I'm a graduate student at the University of Victoria, Canada. I am conducting research exploring the impacts of teleworking and hope that you may provide me with the name and e-mail address of the individual in charge of telework administration.

Thank you very much for your help!
Rob Buren

rcburen@uvic.ca
http://kafka.uvic.ca/~rburen/home.html

APPENDIX B

LETTER OF INTRODUCTION TO MANAGERS

Exploring the Sociological Impacts of Teleworking

Dear (Manager):

I am a graduate student in sociology at the University of Victoria, currently conducting research on teleworking and information technology. This project explores how teleworkers evaluate working from home via computer-mediated communication (i.e. e-mail, teleconferencing, chat-lines), as well as behaviour and attitudes stemming from telework. As the number of individuals conducting telework increases by millions each year, it is crucial that we explore the social impacts that accompany this change in the organization of work, home, and communication.

I am contacting you with the hope of locating teleworkers for an on-line questionnaire. Isolating the impacts that working location has on teleworkers (the traditional workplace versus home), I am seeking the participation of teleworkers who satisfy ALL of the following criteria:

- Prior immediate experience working full-time in a traditional workplace (e.g. an office building).
- Now conduct at least 20% of full-time work from home via the Internet.
- Working for the same employer in both work settings.
- Work in Canada or the United States

If your corporation employs teleworkers who meet ALL of these criteria, I would greatly appreciate the opportunity to request their participation via e-mail, or have you provide my request and web site address to them (http://kafka.uvic.ca/~rburen/intro.htm). The entire questionnaire should take approximately 10 minutes to complete and respondents will be entered into a draw for a prize.

In compensation for your time and assistance, upon completion of my thesis I can provide a summary of teleworkers' combined responses. If you so choose, I can also compare and contrast the responses of your teleworkers to those of other participating companies. This two page report will focus on any general trends that arise from my investigation of teleworkers.

All information will be kept strictly confidential and used for research purposes only. No names

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APPENDIX B continued

LETTER OF INTRODUCTION TO MANAGERS

of individuals or other identifying information will be revealed in the research report or in any other communications in the course of this study. I will be the only person with access to teleworkers' responses and will ensure that all data collected remain secured.

In passing my request onto teleworking employees, please ensure that any communication among teleworkers employed by your corporation and myself will not be monitored or breached in any way. Only through ensuring that confidentiality is maintained, and that teleworkers' decision to participate will have no effect upon their employment or advancement, can I hope to collect honest and reliable information. Without teleworker participants, there will be no research.

As this research is not sponsored, my success in gathering a sample of teleworkers depends on my ability to establish contacts. Your assistance in helping me locate teleworkers, or providing the necessary information so that teleworkers can locate me is crucial. Please help me.

If you know of any other corporations that have a teleworking program, the forwarding of this letter to the appropriate person would be wonderful.

Thank you in anticipation of your time and assistance.

Sincerely,

Robert C. Buren

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976-6A Humboldt Street, Victoria, B.C.,
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APPENDIX C

E-mail Letter of Introduction to Teleworkers

Exploring the Impacts of Teleworking

Hello,

My name is Robert Buren and I'm a graduate student at the University of Victoria, Canada. I am conducting research exploring the impacts of teleworking and hope that you may have 10 minutes to complete my on-line questionnaire. All persons completing the questionnaire will be entered into a draw for a $25 cash prize (Can).

To access my questionnaire, please direct your WWW browser to
http://kafka.uvic.ca/~rburen/telework.htm.
If you know other teleworkers and could forward this e-mail to them, your help would be greatly appreciated.

Thank you for your time and assistance.
Robert Buren.

APPENDIX D

LETTER OF INTRODUCTION TO TELEWORKERS

QUESTIONNAIRE COVER LETTER

Exploring the Sociological Impacts of Teleworking

Dear Teleworker,

Thank you for showing an interest in my teleworking research. As the numbers engaging in telework increase by the millions each year, it is important that we explore the social impacts that information technology has on teleworkers and their family and friends. This is my goal.

The questionnaire on this web site is part of my Masters Thesis being completed at the University of Victoria, Canada. To explore the impacts of teleworking, I require individuals who meet EACH of the following criteria:

- Prior to teleworking, you worked full-time in a traditional workplace setting (eg an office).
- You now conduct at least 20% of your full-time work for the same employer from home via the Internet.
- You work in Canada or the United States.

If ALL of these conditions fit you, please help me by filling out my on-line questionnaire. Confidentiality is assured. Your responses will be kept strictly confidential and at no point in the research will you be identified. In conducting my analysis, I will combine all responses together.

If you would like to print a hard copy of the questionnaire on your PC for mailing, rather than submit your responses on-line, a formatted questionnaire for hand written responses is available. As this research is independent of any sponsorship by individuals or corporations, choosing whether or not to complete the questionnaire will have no effect on your employment status or advancement. However, in the event that at least nine other teleworkers from your company complete the questionnaire, for the purposes of comparing teleworking programs, the general combined responses from you and your fellow workers may be provided to your employer.

All participation is voluntary and you may stop at any point in the questionnaire. Once leaving or submitting the questionnaire, you will be unable to return to it. If you wish to complete a second questionnaire in full, your fully completed questionnaire will replace any partial data collected. At any time during the next two months you may request to have your data removed from this study. The questionnaire will take approximately 10 minutes to complete.

Results from this questionnaire will be posted on this web site during November or December 1997. Those

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APPENDIX D continued

LETTER OF INTRODUCTION TO TELEWORKERS

requesting notification will be contacted via e-mail when the thesis is completed and posted. If you have any questions, suggestions or concerns, please contact me at rcburen@uvic.ca, or at the addresses and phone numbers provided below.

Your participation is greatly appreciated.
Thank you for your time and assistance.

Go to the *On-line Questionnaire*
Go to the *Mail-In Questionnaire*

If you know any other teleworkers who meet my sampling criteria, please forward my web site address and research objectives to them. Thanks again.

Sincerely,

Robert C. Buren

Principal Investigator: Robert C. Buren
976-6A Humboldt Street, Victoria, B.C.,
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APPENDIX E

QUESTIONNAIRE

Telework Compared to Traditional Work

INTRODUCTION

By comparing teleworking to work in the traditional workplace, my goal is to learn more about how the Internet affects social relations on and off the job.

The Traditional Workplace refers to an office or common work space outside the home.

Telework refers to work conducted at home via the Internet for an employer.

SECTION I

The following questions provide background information about your working history. Please answer by clicking the box ☒ that best applies to you or by typing a response in the space provided.

1. Does your current job description fit the definition and conditions for telework stated in my letter?

☐ Yes -- Please continue answering the questionnaire

☐ No -- Please do not complete this questionnaire.

2. How much of your current job do you now do teleworking?

☐ 20% - 40% (1 or 2 days out of 5)

☐ 40% - 80% (3 to 4 days out of 5)

☐ 80% - 100%. I consider myself a full-time teleworker

3. How many months have you been a teleworker?

☐ Number of months

4. Who is your present employer?

5. What is your official job title?

6. Please provide a brief description of your job -- your duties and responsibilities on a daily basis.

Text Box

7. Was the decision to become a teleworker

☐ Voluntary

☐ Not Voluntary

8. How did you become a teleworker; what factors or incentives were responsible?

9. Before you began teleworking, how many people in your own department or work unit did you normally work with on a daily basis?

☐ Number of people

10. On average, how many hours per week are you actually on-line for the purposes of conducting work (i.e. using the Internet)?

☐ Number of hours

SECTION II

These questions compare your present teleworking experience to your past experience working in the Traditional Workplace. Please indicate whether you have experienced an *Increase, Decrease,* if your situation has *remained the same,* or if the question is unanswerable -- you *don't know / not applicable.*

NOW THAT YOU ARE TELEWORKING...	(drop down menus)
11. Face-to-face interaction with co-workers has	PLEASE CHOOSE ONE ↓
12. Communication with other teleworkers has	PLEASE CHOOSE ONE ↓
13. Working collaboratively with others has	PLEASE CHOOSE ONE ↓
14. Socializing with co-workers outside the workplace has	PLEASE CHOOSE ONE ↓
15. Total number of hours worked per week has	PLEASE CHOOSE ONE ↓
16. Time spent with your family has	PLEASE CHOOSE ONE ↓
17. Time spent with your friends &/or neighbours has	PLEASE CHOOSE ONE ↓
18. Difficulty completing your work because of interruptions has	PLEASE CHOOSE ONE ↓

SECTION III

Listed below are statements that describe people's experiences of teleworking compared to working in the traditional workplace. Would you please *indicate whether you Strongly Disagree, Disagree, Neither agree nor disagree, Agree or Strongly Agree with each of these statements* as far as you are concerned.

19. I enjoy teleworking more than working in a traditional workplace
PLEASE CHOOSE ONE ↓

20. I would like to telework for my entire career PLEASE CHOOSE ONE ↓

21. Teleworking gives me more control over how I conduct my work
PLEASE CHOOSE ONE ↓

22. Because I telework, I often feel lonely PLEASE CHOOSE ONE ↓

23. I feel closer to my family now that I am teleworking PLEASE CHOOSE ONE ↓

24. I feel more connected to my friends and/or neighbours now that I'm teleworking
PLEASE CHOOSE ONE ↓

25. I feel more connected to my co-workers now that I'm teleworking
PLEASE CHOOSE ONE ↓

26. I feel more connected to my employer now that I'm teleworking
PLEASE CHOOSE ONE ↓

27. Through teleworking, my professional community of associates has grown dramatically
PLEASE CHOOSE ONE ↓

SECTION IV

Finally, I would like to find out about you. Answering these questions will provide me with important information to differentiate you from other teleworkers. Please remember that all information will remain confidential; nobody will be identified from the given answers.

28. How many people are usually at home when you are teleworking?

☐ Number

29. How many are children?

☐ Number of children

☐ None

30. What is your marital status?

☐ Single (including Divorced or Widowed)

☐ Married or Cohabiting

31. What is the highest level of education you have completed?

☐ High School

☐ Some Post-secondary training

☐ University Degree

☐ Post-graduate degree

32. What is your age?

☐ Years

33. What is your gender?

☐ Male

☐ Female

34. Finally, as you see it, what are the main advantages and disadvantages of teleworking compared to working in a traditional workplace?

Advantages of Telework

Text Box

35. Disadvantages of Telework

Text Box

This completes the questionnaire. If you know other teleworkers who would be interested in my project, please tell them to visit my web site. *Thank you very much for your participation!*

36. If you would you like to be contacted when this research has been completed and the results posted, please provide your e-mail address.

_____ E-mail

Thank you very much for your participation!

VITA

Surname: Buren

Given Names: Robert Christopher

Place of Birth: London, Ontario, Canada

Educational Institutions Attended:

University of Victoria 1995-1997

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Ontario Scholar's Award, 1989

Publications:

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Author 

Robert Christopher Buren
January 15, 1998