LIVING THE WIRED LIFE IN THE WIRED SUBURB:

NETVILLE, GLOCALIZATION AND CIVIL SOCIETY

by

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ABSTRACT

Living the Wired Life in the Wired Suburb: Netville, Glocalization and Civil Society

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This dissertation addresses the question, what will be the fate of community and social relations as a result of the growth of new home-based information and communication technologies? How have social networks, social capital and community involvement been affected by the rise of personal computers, the Internet and computer mediated communication (CMC)? Will the Internet reconnect the disaffiliated, or will CMC only contribute to a further disengagement of American community life? Survey and ethnographic data from a long-term study of "Netville," a wired suburb near Toronto, are used to investigate the effects of advanced communication technology on social relationships. Netville was one of the first residential developments in the world to be built from the ground up with a broadband high-speed local computer network. Netville provided a unique opportunity to observe the effects of advanced information and communication technology on people's daily interactions with family, friends and neighbours. The "wired" residents of Netville are compared with a similar group of non-wired residents who lived in the same neighbourhood, but who were never connected to the local computer network. Greater involvement with friends, family and neighbours is linked to use of CMC. Internet use is associated with high levels of in-person and telephone contact, the exchange of support, the growth of personal network and increased community involvement.

TO THE TWO BIGGEST SUPPORTERS ANYONE COULD HAVE:

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Since the mid-1850s, scholars have debated how technological innovation affects community (Durkheim [1893] 1964; Tönnies [1887] 1957). The debate continues as a combination of Internet use and home computing increasingly moves activities, once almost exclusively ascribed to the public realm, into the private home. It is increasingly possible to socialize, shop, work, learn and participate in leisure activities, all from within the refuge of the private residence. Computer-mediated communication allows for greater connectivity to resources and information, but simultaneously it may disconnect people from members of their social networks and reduce public participation. What will be the fate of community and social relations as a result of the growth of computer-mediated communication?

Critics argue that new technologies, such as the Internet, contribute to an incomplete lifestyle that withdraws people from in-person contact and disconnects us from our families, friends and communities (Stoll 1995; Kraut, Lundmark, Patterson, Kiesler, Mukopadhyay and Scherlis 1998; Nie and Erbring 2000; Nie forthcoming). On the opposite side of the debate, technological utopians suggest that the widespread introduction of the Internet, and its corresponding connectivity, can only serve to benefit the individual and society. Primarily anecdotal evidence emphasizes the ability of computer networks to connect people in strong, supportive relationships that blindly extend beyond characteristics of ethnicity, religion or national origins.

This dissertation addresses the question of what effect home computing and Internet use have on community relations. Will people become privatized in their homes and cut off from

their social networks as a result of new communication and information technologies? Through a series of hypotheses, this dissertation argues that computer-mediated communication encourages the growth of social capital, in the form of community involvement and in the expansion and strengthening of social networks.

Whether home computing and Internet use contribute to a loss of community, or a dramatic increase in social involvement, the ideal setting to view the effects of home computing and Internet use on community would be a neighbourhood equipped with the most advanced technology available. Following in the tradition of research pioneered by urbanists such as Herbert Gans (1962; 1967) and S. D. Clark (1966), this study provides an in-depth examination of life in a new urban form, the wired suburb.

Netville was one of the first residential developments in the world to be built from the ground up with a broadband high-speed local network. Moving to Netville meant more than purchasing a new home, it meant access to the most advanced communication and information services available. Netville's local computer network reliably delivered network access at 10 Mbps, data transfer speeds 300 times faster than conventional dial-up Internet access and 10 times faster than what is available through most commercial cable and Digital Subscriber Line (DSL) services. Netville residents had access to services that included: high-speed Internet access (including electronic mail and Web surfing), a videophone, an online jukebox, online health services, local discussion forums and a series of online entertainment and educational applications. The consortium of companies providing this technology intended to connect all of Netville's households to the local computer network, but unforseen organizational problems ultimately left 45 of Netville's 109 homes unconnected.

Data about community involvement and local and distant social networks were collected through a cross-sectional survey administered to a sample of wired and non-wired Netville residents. The existence of a local, demographically similar, group of non-wired residents provided a natural comparison group. In addition, survey data were re-enforced through the use of ethnography and participant observation. In early 1997, shortly after the construction of the first homes, I began attending and participating in local community events (barbecues, meetings, etc.). In October 1997 I moved to Netville where I conducted an ethnographic study for nearly two years. The opportunity to live and work amongst Netville residents provided an in-depth understanding of what life was like in a wired neighbourhood.

Netville provided a unique opportunity to observe the effects of advanced information and communication technology on people's daily interactions with family, friends and neighbours. For the first time, a significant number of homes equipped with a futuristic form of high-speed Internet technology were built from the ground up and concentrated in a new residential community. If, as critics suggest, home computing and Internet use damage social relations and contribute to a loss of community, the evidence should be visible in Netville.

The first chapter establishes the general organization of the dissertation. Despite the "breathless presentism" of current discourse about the colonizing of cyberspace (reviewed in Wellman and Gulia 1999), scholarly debate about the nature of community arises out of earlier concerns regarding the transition from agrarian to urbanized industrial societies. This chapter reviews the literature about community sociology, and relates the current debate on the effects of the Internet on social relations back to historical concerns for a loss of community. Just as early community theorists worried about the effects of a complex division of labour, urbanization

and industrialization on community, Internet researchers are concerned about the effects of computer-mediated communication on community. This chapter stresses the perspective that the Internet should not be privileged as a distinct social system, but that online relationships are intertwined with relationships maintained through other means of social contact. The social network approach, embraced by the Netville study, differentiates itself from related studies of how the Internet affects community.

The second chapter focuses on the research setting and on the methods used in this study. Methodological procedures related to the survey and ethnography are explored. The technology available to residents, and the role of the consortium that provided these services, are described in detail. To address issues of self-selection and generalizability, wired and non-wired Netville residents are compared and contrasted to the general Canadian population.

The third chapter focuses on social contact and the exchange of support with social network members outside the neighbourhood setting. Within the perspective that online social contact should not be privileged, in relation to other means of social contact, I test a set of hypotheses to determine how social contact and the exchange of support are affected by access to computer-mediated communication.

The fourth chapter focuses on neighbourhood social networks and the impact of Netville's high-speed network on local social capital. The role of the local neighbourhood e-mail list is explored in relation to the formation of early social ties. Wired and non-wired residents are contrasted in testing hypotheses related to tie formation, the density of neighbourhood ties, the spatial distribution of neighbourhood ties and differences in local communication patterns: in-person, on the phone and by e-mail. Use of the local neighbourhood e-mail list in the

exchange of informal support and local surveillance is discussed. The chapter's focus is on highlighting the potential for computer-mediated communication to affect very local social relations.

The next chapter looks in more detail at qualitative examples of the effect that access to Netville's high-speed local network had an on neighbourhood social capital. Particular attention is given to the process and result of residents' attempts to mobilize against the local housing developer in dealing with perceived housing deficiencies, and against the consortium providing Netville's technology, when it was announced that the technology trial would be coming to an end and services would be withdrawn.

The final chapter is introduced with a summary of findings from the analysis of how living in a wired neighbourhood effects community. Findings are related back to existing Internet and community research, theorizing that the growth of home-based information and communication technologies could lead to a *glocalization* of community relations. Glocalization is described as the growth of social capital, locally and with ties at a distance, as a result of computer-mediated communication. The rise of glocalization may bring about a return to the civil society argued to be in decline in the Western world.

CHAPTER 1

THEORETICAL FRAMEWORK

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1.0 Introduction

With the publication of the now famous *New Yorker* cartoon "On the Internet, Nobody Knows You're a Dog" (Steiner 1993) the Internet stepped widely into the public consciousness. Technologies that until recently were bound by size and cost to the locations of commerce, industry and education, have become widely accessible in the home. At the turn of the century, over half of all Canadian and American households own a home computer, and the majority of those have in-home Internet access; rates similar to what can be found across Western Europe, Australia and in parts of Asia (Marron 2000; Pricewaterhouse Coopers 2000; United States Department of Commerce 2000). The availability of personal computers and computer-mediated communication (CMC) has opened up the opportunity for individuals to have almost instantaneous access to resources and people located around the world. This access has ignited a debate into the nature of community and the effects of cyberspace on social relations.

Arguments related to the effects of new communication and information technologies on community can generally be divided into two opposing camps. Critics argue that the Internet and related technologies contribute to an incomplete lifestyle, which they see as a consequence of turning away from the full range of in-person contacts believed to be a part of our daily lives (Stoll 1995). The growth of home-based communication and information technologies has the potential to isolate people in their homes and reduce the opportunity, or even the need, for public participation (Graham and Marvin 1996; Putnam 2000). On the other side of the debate,

technological utopians argue that the Internet has formed a whole new form of community, the "virtual community," where relationships extend online and around the world without regard to gender, race or geography (Rheingold 1993). The debate into how new technologies affect community is treated as if this was the first time anyone had wondered how large-scale societal change affects community and social relations.

Scholarly debate about the nature of community did not originate with the introduction of new computer technologies, but arose out of earlier concerns about the transition from agrarian to urban industrial societies (for example Durkheim [1893] 1964; Tönnies [1887] 1957). Over the past century, pundits have argued community to be lost, saved and even liberated in the industrial city (Wellman 1979; 1999). The effect of new communication and information technologies on community is only the latest chapter in this ongoing debate.

1.1 The Community Question

1.1.1 Early Community Theory - The 19th Century

As the turn of this century marks the beginning of a discourse about the effect of computer-mediated communication on community, the publication of Emile Durkheim's doctoral dissertation *The Division of Labour in Society* (1893), at the turn of the last century, marked the beginning of a debate about the implications of a complex division of labour, industrialism and urbanization on community. The problem, originating from Durkheim's discussion, was a fear of a loss of community in terms of its values and support structure, as a direct result of a complex division of labour.

Durkheim used the term "mechanical solidarity" to define the homogeneous, pre-industrial society that existed prior to the industrial revolution. Mechanical solidarity according to Durkheim is the solidarity that develops out of common beliefs and sentiments within a group (Durkheim [1893] 1964: 129). Mechanical solidarity is a communal or social solidarity that brings people together based on similarity in their daily labour and the proximity of their daily lives ([1893] 1964: 105). A society exhibiting mechanical solidarity is likely to provide mutual aid and support, as well as to severely protect the values of the community (as recognized in Durkheim's discussion of repressive law). It is the communal and protective nature of mechanical solidarity that has lead it to be held up as a model of what the ideal civil society should encompass.

Durkheim believed that under a complex division of labour, mechanical solidarity declines, replaced by a second form of solidarity, "organic solidarity." Organic solidarity is not

a communal solidarity, which unites based on common values or shared understanding; it is the solidarity of society's specialized parts working together as one. Organic solidarity favours impersonal bureaucratic control over informal support, and individualistic freedom over community control.

Durkheim was not alone in thinking about the supportive, tightly-bound nature of agrarian communities, or in wondering about changes in the nature of supportive community bonds. Ferdinand Tönnies (1887) identified what he termed "gemeinschaft" relations (which literally translates as "community"). Gemeinschaft relations include characteristics of neighbourliness, informal social control, and a community focus over that of the individual. Like Durkheim, Tönnies feared that community was in decline, but instead of associating this transformation with a complex division of labour, Tönnies associated it with the rise of capitalism. Tönnies identified the polar opposite of gemeinschaft as "gesellschaft" relations, described as a direct result of the transformation away from a folk-type society to a capitalistic society. Gesellschaft relations are characteristically formal, impersonal and individualistic in their nature.

1.1.2 Urbanization - Early 20th Century

Early in the 20th century, Durkheim's (1893) concern for a complex division of labour, and Tönnies (1887) concern for the loss of a folk-type society, were replaced with a new concern for the fate of community as a result of urbanization. Within this extension of the community question, Louis Wirth (1938) described city and rural life as polar opposites. Urbanites were

characterized by a blasé attitude, their interpersonal relations were impersonal, superficial and transitory. In the urban setting "bonds of kinship, neighbourliness, and sentiments arising out of living together for generations under a common folk tradition" were said to be "absent or, at best, relatively weak in an aggregate" (Wirth 1938: 11). Stanley Milgram (1970) described a "tendency of urban dwellers to deal with one another in highly segmented, functional terms," an "acceptance of noninvolvement, impersonality, and aloofness in urban life," and "blasé attitudes toward deviant or bizarre behaviour, and selectivity in responding to human demands" (Milgram 1970: 1465). Pundits agreed that if urban residents did not have some form of psychoses, then at minimum the urban environment was itself responsible for the atrophy of community and traditional ways of life.

The cumulation of the positions held by Durkheim (1893), Tönnies (1887), Wirth (1938), Milgram (1970) and others, focusing on the malfunction of community relations, has been referred to as the "Community Lost" perspective (Wellman 1979). This perspective remained the dominant vision of contemporary community life until the second half of the 20th century.

The Lost argument's focus on social disorganization was an unsatisfying conclusion for those who continued to observe supportive social relations in the urban environment. The "Community Saved" argument, which argues that social solidarities, neighbourliness and civic involvement continue to flourish in the urban setting, is a counter argument to the Lost perspective (Wellman 1979). The Saved argument recognizes that urban residents continue to have a need for social support and control. Through empirical research, primarily ethnographic analysis, urban sociologists recognized the importance of neighbourhoods and workplaces in the formation and maintenance of intimate, supportive, stable relationships in the urban environment

(see Anderson 1978; Whyte 1943; S. D. Clark 1966; Gans 1962; 1967; and Jacobs 1961). While recognizing that in the modern urban environment social relationships do not exist in the tight-knit, self-contained solitary structures idealized by Durkheim (1893) and Tönnies (1887), the Saved position identifies the existence of narrowly based supportive solitary groups that successfully provide companionship, aid and support.

The Community Saved perspective rebutted the Lost argument by recognizing and empirically demonstrating that supportive relationships continued to exist in the urban environment. Still, in identifying the existence of supportive social relations, researchers failed to consider completely the concerns of early community theorists, that a complex division of labour and the move to a modern urban industrial society had in some way affected community. The focus of the Saved perspective on solitary relations in very specific localities – neighbourhoods and workplaces – ignored the existence of weaker social ties, non-clustered ties and ties to those at a distance.

1.1.3 Social Network Analysis

Even though supportive social relations continue to exist in the neighbourhoods and workplaces of the modern urban environment, they are not of the folk-type community idealized by Tönnies (1887). Cities are extremely heterogeneous, residents are highly mobile, and people regularly come in contact with diverse others in a variety of social settings. The development of public transportation, the automobile, the telephone and other transportation and communication technologies, has facilitated the formation and maintenance of social relationships at a distance.

These technological changes have contributed to a decentralization of social relations (Park, Burgess and McKenzie 1925; Hoyt 1939; Harris and Ullman 1945; Hawley 1986). Indeed, most people usually have more friends outside their neighbourhood than within it (Wellman 1979). The "Community Liberated" argument explores the extent to which supportive social ties exist between individuals regardless of locality. This opens up the possibility that ties vary in strength, are physically dispersed, extend across multiple foci and are less dense in their structure than identified in previous models. Rather than looking at community in terms of groups, social relations clustered together based on a shared neighbourhood, workplace or other organizational factor, community is defined as a network of social relations.

In his "subcultural theory", Fischer (1975) explains why, in the urban environment, social relations tend to be more physically dispersed. Fischer suggests that the most significant aspect of urbanism is its ability to attract diverse people from a variety of backgrounds. People who live in cities have an almost endless array of interests and values. Individuals with access to a large population seek out others who have interests that are similar to their own, interests that it may have been impossible to explore under the repressive nature of mechanical solidarity (Durkheim 1893). The urban setting frees people from "the pettiness and prejudices" of life in a small rural settlement (Simmel 1950). Subcultural theory highlights the importance of social ties formed through shared interest and mutual identification, rather than specifically on shared location. This does not exclude the idea that similar people are likely to live in and participate in "natural areas," as suggested by Park (1925), but it does suggest that similarity of interest is more important in forming relations than similarity of setting.

Based on the premise that networks of sociability and support are the basis of community, and not localities or groups, archival analysis of pre-industrial and early industrial settlements

suggests that early theorists over-idealized the locally bound, solitary structure of traditional "folk-type" communities (Tilly 1988). Residents of pre-industrial settlements were often quite mobile with far-reaching social ties (La Roy Ladurie 1975). Often the young would go off to work in the city, or a daughter would work as a maid to a local master. Some would travel as artisans and soldiers, and others were involved in frequent interactions with them. Women would marry outside of both their geographic location and their social class. Regular relations existed between far-flung settlements, social classes, and between rural and urban homesteads (Wellman 1988: 85-86; Wellman 1999: 11-12). These contacts formed important ties with extended alliances, kin and relations, all of which were external to local settlements. The ideal community – the dense, local, supportive community, feared lost by early theorists – may never have truly existed.

Communities are clearly networks and are not neatly organized into little neighbourhood boxes. When one defines communities as sets of informal ties of sociability, support and identity, they are rarely neighbourhood solidarities or even densely-knit groups of kin and friends. Communities consist of far-flung kinship, workplace, interest group and neighbourhood ties that together form a social network that provides aid, support, social control and links to multiple milieus. Looking for community in one place at one time (be it in neighbourhoods or in cyberspace) is an inadequate means of revealing supportive community relations. By focusing the investigation on location, and not on the networks of an individual's ties, community research has produced results that are inherently local. This realization has lead to the acceptance of social network analysis as the preferred source for methods and theory in the examination of community relations (Wellman 1999).

1.1.4 Lost Again: Contemporary Fears for the Loss of Community

The scholarly movement away from the Community Lost perspective and towards a recognition that communities are networks and not localized groups, has not been mirrored in popular American culture. The image persists that community and social relations are damaged by a complex division of labour, and by life in the urban environment.

American politicians have a long history of echoing fears about a loss of neighbourliness and social contact in the city. Perhaps the most famous is U.S. President Lyndon Johnson's "Great Society" speech:

> The catalogue of ills is long: there is the decay of the centres and the despoiling of the suburbs. There is not enough housing for our people or transportation for our traffic. Open land is vanishing and old landmarks are violated. Worst of all, expansion is eroding the precious and time-honoured values of community with neighbours and communion with nature. The loss of these values breeds loneliness and boredom and indifference. (Johnson 1964)

The mass media similarly confirms that we are socially isolated, lack neighbourliness and fail to form supportive intimate friendships as we must have in the past:

> Many Americans wake up as I do, in small apartments in big cities, confused about what's next, what to do, where to go, how to be. We talk to our acquaintances about the weather, sports or the week's most sensational news item, not because we're especially interested but because that's all we think we have in common. It's a lonely, frightened and insecure time. . . . I watch my neighbours go off in the morning to jobs they don't seem especially happy about. I stand in line for coffee at the corner café with people I see every day but barely speak to. . . . Thus far the distinguishing feature of our 21st Century is that we are on our own. . . . One-to-one human contact is gone and with it eventually goes community. (Ventura 1994)

Recent Hollywood blockbusters, such as *American Beauty* (1999), *Pleasantville* (1998) and *Blast from the Past* (1999) popularize *Leave it to Beaver* myths of American life in the 1950s and 60s, further advancing the public perspective that contemporary urban communities are a source of isolation, non-involvement and antisocial behaviour. As inaccurate as it is to portray American life in the 1950s as an ideal, or contemporary neighbourhoods as the source of all our social ills, there may be some support for the notion that neighbourhood *social capital*, community involvement and neighbourliness in general have declined in the last few decades.

1.1.5 Social Capital, Home-Centredness and Privatization

The term *social capital* has been widely used in recent political, social and economic discourse (for a comprehensive review see Woolock 1998; and Borgatti 1998). Yet *social capital* has two distinct but intertwined meanings in relation to the community question. The first has its origins within the social network perspective, *network social capital*, which focuses on the supportive and instrumental resources present within social networks (Granovetter 1974; Coleman 1988; Wellman and Wortley 1990; Bourdieu and Wacquant 1992; Burt 1992). This definition recognizes that access to diverse social ties of different strengths provides access to a broad range of supportive resources. The second definition, *bonding social capital*, broadly encompasses norms of trust and measures of collective action and group cohesion that are reminiscent of Tönnies' (1887) idea of gemeinschaft relations (Jacobs 1961; Putnam 1995; 2000). The two usages are complementary, not competitive, indeed there is some overlap. Both definitions are based on a common concern for a loss of community. Bonding social capital embraces the value of densely-knit, broadly supportive, solitary community, while network social capital embraces

the loosely-knit, liberated community of the social network perspective. To facilitate understanding and to provide a common frame of reference, this dissertation addresses social capital from the perspective of what I have termed network social capital.[1]

Robert Putnam (2000) suggests that over the last third of the 20th century there has been a significant decline in America's social capital. Putnam provides evidence to suggest that recent generations are far less involved in both formal and informal public life than Americans were less than a half century ago. People are spending less time with friends, relatives and neighbours, they are more cynical and less trusting, and they are less likely to be involved in clubs and organizations. While this decline in social capital occurs too early to be associated with the rise of home computing or the Internet, Putnam addresses numerous possible causes, including: suburbanization, globalization, changing family structures, and financial and temporal pressures. Largely excluding these factors, Putnam concludes that the two biggest contributions to a reduction in social capital have been *generational change*, the replacement of a heavily involved "long civic generation" by their less involved children and grandchildren, and the growth of *television*. Putnam suggests that television has contributed to the privatization of social and leisure activities within the home (2000: 223). Time devoted to watching television has come at the expense of participation in other activities, primarily those that take place outside of the home (2000: 238). Indeed, other studies have shown that community has become privatized, with network members socializing in small groups in private homes rather than large groups in public spaces (Wellman 1992; 1999: 31-32). The fear of many pundits is that the growth of

[1] While social capital is often used in a positive context, it is important to recognize that it is not inherently positive. High levels of bonding social capital can exclude outsiders and repressively restrict and isolate insiders (Simmel 1950; Portes and Landolt 1996). Network social capital can provide access to deviant communities and resources that can be used to harm oneself and others (Putnam 2000: 21-22).

computer-mediated communication may exasperate the trend toward home-centredness and privatization, undermining our connections to one another and our communities.

New home-centred communication technologies could enable people to participate in previously public activities including work, shopping, socializing and leisure, directly from the sanctity of the private residence.

> As families get smaller, new technologies allow the home to emerge as a centre for communications, receiving information and entertainment, obtaining goods and services, and even linking in with workplaces and employment. Advances in telecommunications, and, more particularly, the way they are being socially shaped and marketed to be individualized services to households, can be seen directly to support this shift toward home-centredness. (Graham and Marvin 1996: 207).

If individuals are divested of public participation and limited to small-scale domestic interaction with close friends and family, exposure to diverse social ties will be reduced. Limiting interaction to tightly-knit similar others may increase the formation of highly homogeneous communities, but could also reduce tie formation with those who could expand social capital (Granovetter 1974; Feld 1982; Burt 1992). While densely-knit, domestically based community may contribute to within-group bonding, the privatization of community may inhibit the formation of social capital through access to other diverse milieus including neighbourhoods, workplaces and social clubs.

1.2 Internet and Community: The Utopian/Dystopian Debate

Much of the current debate about the effects of new technology on community can be divided into a heaven-or-hell dichotomy, a utopian/dystopian debate that has largely ignored the lessons of the community question. Pundits base their analysis on location, looking into cyberspace and hailing the creation of a whole new form of community, the "virtual community," or looking at traditional neighbourhoods and family groups and predicting their ultimate demise. Instead of examining the effects of computer-mediated communication on the network of people's social relations, communities are again treated as groups, to be lost or saved.

Technological dystopians have taken on the Community Lost perspective, suggesting that new technologies, such as the Internet, contribute to an incomplete lifestyle. New communication technologies are said to withdraw people from in-person contact, disconnecting us from our families, friends and communities. As Paul Saffo, Director of the *Institute for the Future* remarks in an interview with *CNN*:

> Another danger of a technologically bound culture is a fraying of the bonds that bind us. Whether it's a cellphone glued to the ear or enough Web sites and newsgroups to satisfy every possible taste and interest, we see less and less opportunity for shared experience as we each pigeon-hole ourselves into separate worlds of interests. Do we care, or have the time to know our neighbours anymore? There seems to be less and less of that kind of *Leave it to Beaver* interaction. (Nelson 1997)

In an information society where work, leisure and social ties are all maintained from the *smart house,* people could completely reject the need for social relationships based on physical location (Graham and Marvin 1996: 231). Those who fear that people will choose to abandon in-person contact for cyber interaction regard electronic communication as an "instantaneous and

illusory contact that creates a sense of intimacy without the emotional investment that leads to close friendships" (Stoll 1995: 24).

On the opposite side of the debate, technological utopians have found community in cyberspace. The Community Saved argument has also been recreated within the framework of the debate over how the Internet will affect community. Largely anecdotal evidence emphasizes the ability of computer networks to connect people across time and space in strong supportive relationships, blindly extending beyond characteristics of ethnicity, religion or national origin. Community has been saved with the introduction of a whole new form of community, the "virtual community" (Rheingold 1993). As with the original Community Saved argument, peering into cyberspace and ignoring the network of social relations that extended to other social settings, fails to consider the crosscutting nature of community, including the many ways and the many places people interact.

Arguments pertaining to the social implications of new communication technology tend to focus on either the complete destruction of community, or the creation of completely new forms of community. The emphasis on framing community as lost or saved has ignored more moderate and mixed perspectives that could result from incorporating a social network perspective. Computer-mediated communication (CMC) is simply a new form of communication with the potential to facilitate social contact with network members. The potential for CMC to open up new contacts, and its impact on existing ties and existing means of communication, has yet to be thoroughly explored through empirical analysis.

1.3 Recent Survey Research

In the past few years a number of studies have been published that go beyond the limitations of the utopian/dystopian debate. These studies involve an empirical analysis of how Internet use affects community. This body of research includes the work of Robert Kraut et al. (1998) in the "Homenet Study," Norman Nie and Lurz Erbring's study *Internet and Society* (2000), the *Pew Internet and American Life Project* (Rainie 2000; Howard, Rainie and Jones forthcoming), and the UCLA study *Surveying the Digital Future* (Cole 2000). While concluding with mixed results, these studies improve on the broad theoretical predictions of early pundits in their use of systematic empirical research. While a good start, this research has been limited by its exclusive reliance on survey research, the use of new and inexperienced Internet and computer users, and for the most part, the continued treatment of computer-mediated communication (CMC) as a distinct social system, separate from the many means of communication used in maintaining contact with network members.

1.3.1 Homenet Study

The work of Kraut et al. (1998) is the best evidence to date in support of the dystopian position. In exchange for agreeing to be interviewed, 93 households in eight Pittsburgh, Pennsylvania neighbourhoods were provided with a free computer, telephone line and dial-up Internet access. Participants were selected based on common participation in a school or neighbourhood group. Only those households where no one had previous in-home Internet or computer experience were invited to participate. Participants were interviewed twice, once before they received access to the Internet, and a second time 52 or 104 weeks later.

Kraut et al. (1998) concluded that home-based Internet use is similar to television in displacing time previously spent on more social activities. “Greater use of the Internet was associated with declines in participants’ communication with family members in the household, declines in the size of their social circles, and increases in their depression and loneliness.” Contrary to utopian predictions that the Internet would expand ties at a distance, Kraut concludes that the size of both distant and local social networks decreases with Internet use. Kraut et al. also found a negative, but not statistically significant relationship, between Internet use and social support.

Despite the fact that Kraut et al. (1998) offers one of the most complete analysis available on the effects of in-home computer and communication technology on social relations, a number of methodological issues limit the reliability of their results. When participants were asked to report on the size of their social networks, they were given a definition that may have limited their response to include only those network members with whom they communicated in person or face-to-face (Kraut et al. 1998). Limiting the analysis to communication with network members outside of cyberspace neglects the possibility that CMC could substitute for other means of social contact. It is impossible to determine if the size of peoples’ social networks decreased as a result of Internet use, or if the use of CMC allowed them to shift the maintenance of social ties to a new communication medium. Alternatively, the Internet may even allow people to re-invest time spent on in-person contact to maintain a greater number of network members online, as was the case with the adoption of the telephone (Fischer 1992).

The inability to incorporate a natural research setting with a diverse sample of Internet and computer users reduces the generalizability of the Homenet study (Kraut et al. 1998). The

selection of a sample with no previous Internet and home-computer experience leaves open the alternative explanation, that the observed effect of Internet use on social networks, depression and loneliness, was the result of being a new Internet and home computer user, and not directly the result of Internet use. Without an initial measure of participants' expectations for the technology, it cannot be determined if observed changes in social involvement and psychological well-being were a result of Internet use, or a failure to meet pre-use expectations. Reduced household communication and a decline in the size of social networks may have been the result of time displacement in participants' attempts to please researchers, by devoting time to learning the technologies they had been given, in as much as it may have been a direct result of Internet use. The frustration involved in learning to use the Internet and a new home computer, particularly if it did not meet with expectations, may have increased stress, affected family communication and encouraged increased levels of isolation and depression. The results of the Homenet study may not be replicated in a natural setting, or with a diverse sample of Internet users.

1.3.2 Stanford Internet Study

In a survey of 4,113 people in 2,689 households, Norman Nie and Lurz Erbring (2000) provide evidence to support the results of Kraut et al (1998), concluding that "the more hours people use the Internet, the less time they spend in contact with real human beings" (O'Toole 2000). Based on the 49.5 per cent of participants (2,035 people) with Internet access in Nie and Erbring's sample, those who spent more time online were more likely to report "decreased" time spent attending social events and seeing friends and relatives. According to Nie, "the Internet

could be the ultimate isolating technology that further reduces our participation in communities even more than did automobiles and television before it" (O'Toole 2000).

Despite the significance of Nie and Erbring's (2000) results, their conclusions over-generalize from the findings. The number of participants in Nie and Erbring's (2000) study who report a "decrease" in community involvement and in time spent with friends and family, does increase with Internet use. However, the overall proportion of participants who report any change in time spent in social events, or with friends and family, as a result of Internet use is actually very small:

- 5 per cent of participants report a decrease in time spent at social events, while a near equal proportion, 4 per cent, report an increase,
- 9 per cent have experienced a decrease in time spent with family, while 6 per cent report an increase,
- 9 per cent report a drop in time spent with friends, and 4 per cent report an increase.

Nie and Erbring (2000) do not report on the relationship between Internet use and those who experienced an "increase" in time spent with friends and family and in social events. Their analysis is one-sided and leaves open the possibility that while a small proportion of the population experienced a drop in social contact as a result of Internet use, a similarly small proportion of users may have experienced an increase in social contact of a similar or greater magnitude. It cannot be concluded from this study that a relationship exists between Internet use and involvement with friends, family or social events.

More convincing than the relationship Nie and Erbring (2000) report between Internet use and community involvement is the relationship they find between Internet use and time spent

on the phone with friends and relatives. Over 17 per cent of participants report a drop in phone contact as a result of Internet use (only 3 per cent report an increase), with the proportion increasing to 27 per cent for those who spend more than 10 hours online per week. While demonstrating with reasonable certainty that a relationship exists between phone contact and Internet use, Nie and Erbring (2000) do not consider the possibility that CMC may substitute for some or all of the observed loss in phone communication. Nie and Erbring's (2000) conclusions privilege the Internet as a distinct social system and attribute no value to online social contact. Any reported drop in time spent on the phone, as well as any drop in overall time spent in-person with network members, may be explained by the use of CMC as a substitute for other means of social contact. Indeed, 90 per cent of participants from Nie and Erbring's (2000) study used e-mail, 10 per cent used chat rooms to communicate with family members, 12 per cent used chat rooms to communicate with friends that they had before going online, and 16 per cent reported using chat rooms to communicate with new friends they had met online. Additionally, Nie and Erbring (2000) do not explore the possibility that friendships formed online are not limited to cyberspace, but expand to other means of social contact, including the phone and in-person visits (Rheingold 1993; Katz, Rice and Aspden forthcoming).

1.3.3 The Pew and UCLA Internet Studies

In contrast to the conclusions of Kraut et al. (1998) and Nie and Erbring (2000), two recent surveys by Rainie (2000) and Cole (2000) provide evidence that Internet use strengthens community. A survey of 3,533 adults by the *Pew Internet and American Life Project* (Rainie 2000) found that the Internet helps family and friends keep in contact (Howard, Rainie and Jones

forthcoming). Rainie (2000) embraces the notion that CMC should be considered along with other forms of communication in measuring social contact. Of the 1,690 participants in the Pew survey that e-mail friends and relatives, 60 per cent reported that it had increased their frequency of social contact, and only 2 per cent reported a drop in communication since they began using e-mail (Rainie 2000: 20). Additionally, the longer participants had been online, the more likely they were to feel that the Internet had improved their social relations, and that they had a significant network of friends and relatives to turn to when they need help (Rainie 2000: 21). As has also been noted by Boneva, Kraut, and Frohlich forthcoming, this was particularly true for women. Fifty-seven per cent of women reported that e-mail use helped their relationships with friends and family compared to only 44 per cent of men (Rainie 2000: 18).

The *UCLA Internet Report* similarly accepts the notion that computer-mediated communication is just another means of communication to be used in the maintenance of social contact (Cole 2000). Surveying 2,096 households, Cole found that Internet use marginally increased the number of people with whom Internet users regularly kept in social contact. In testing the hypothesis that new social ties formed online extend to other milieus and other means of communication, Cole found that 12.4 per cent of Internet users reported meeting someone online whom they later met in-person (averaging 5.6 new friendships that had broadened to include in-person social contact). An additional 26.2 per cent of Internet users reported making new friends online, whom they had never met in-person (12.9 new friends on average) (2000:34).

Rainie (2000) and Cole (2000) provide initial evidence to support the perspective that when computer-mediated communication is treated as any other means of communication, it serves to aid the expansion and maintenance of social networks. Still, both studies suggest that

there may be negative consequences for Internet use as much as it encourages the privatization of community. Rainie (2000) found that while the introduction of CMC increased the overall volume of communication amongst family members, it also served as a substitute for having to "talk" to relatives (2000: 23).[2] Similarly, Cole found that, on average, Internet users spend 3.8 hours less per week socializing with household members (2000: 35). Cole also found that at the neighbourhood level, social capital may be damaged by Internet use. On average, Internet users could only recognize 8.9 of their neighbours by name, compared to 10.0 for non-users (2000: 35).

1.3.4 Looking to the Future

Recent survey research on the effects of Internet use on community has been mixed in its findings. While no one research design is best, each presenting their own opportunities, problems and challenges, existing survey research has a number of limitations. The selection of a sample with no prior Internet experience in the Homenet study (Kraut et al. 1998) allowed for powerful longitudinal analysis, but affects the generalizability of results. Privileging the Internet as a separate social system, attributing no value to online interaction, or failing to consider computer-mediated communication as a substitute for existing means of communication ignores the many different ways people maintain their social networks and the ability of CMC to be used in providing aid and support (Nie and Erbring 2000; Haythornthwaite and Wellman 1998). While recent surveys by Rainie (2000) and Cole (2000) are more reliable in their use of a diverse

[2] Rainie (2000) does not clarify if this reduction in "talking" is in-person or over the phone.

sample of Internet users, and while they recognize that social contact through CMC should not be considered in insolation from other means of communication, they are limited in their reliance on survey research and can only generalize to the experiences of today's Internet users.

Just as it would have been impossible for early urban researchers to have gained an accurate picture of suburbanization by surveying the first handful of homes to live outside the urban core, it is impossible to gain an accurate picture of how home-based Internet use will affect community by surveying its use today. The adoption and evolution of home-based Internet technology is still in its infancy. Generalizing from existing survey research to how this technology will ultimately affect community is analogous to studying how television would affect society when it was still in its infancy, with 5-inch screens, black-and-white images and six hours of programming a day.

At the current rate of rapid technological change, an accurate picture of how home-based Internet and computing technology will affect community can only be achieved by looking into the future of technological use. The trend in home-based Internet technology is toward broadband high-speed Internet access. In the future, home-based computers and always-on high-speed Internet access will be as ubiquitous as the television or telephone are today.[3] Always-on high-speed Internet access has an additional advantage over dial-up access in that the use of CMC does not tie up the phone line and inhibit social contact by one means or the other. This is not the case with dial-up access, which inherently limits the connectivity of CMC by limiting the use of the Internet to those periods when the phone is not in use, or when someone is not

[3] "Always-on" Internet access refers to a property of most high-speed Internet services that allows users to be connected to the Internet whenever the computer is turned on, without performing any special tasks, manually starting any additional programs, or "dialing up" to the Internet.

expecting a call. The phone is similarly limited in its use to those times when the computer is not connected to the Internet. Conflict over the phone line as a result of Internet use may not only reduce the opportunity for social contact, but be responsible for significant household conflict.[4]

[4] Netville residents were particularly concerned about new household conflict and stress as a result of having to "dial-up" to the Internet when high-speed Internet access was removed from participants' homes at the end of the technology trial.

1.4 Glocalization, Social Capital and Community Involvement

An investigation into the effects on community of new information and communication technology should be framed within the historical sociological debate surrounding the community question. Central to understanding the impact of new technologies on community is a recognition that people belong to networks, not groups. Communities are networks of supportive relations, composed of social ties of varying strength, extending across boundaries and into multiple social settings. I have defined as social capital the aid, information and companionship that people have access to and draw from members of their social networks. Access to social capital is dependent on the ability to form, maintain and control access to diverse social ties of various strengths (Granovetter 1973; Burt 1992; Wellman and Wortley 1990). The formation and maintenance of these ties is not limited to in-person contact, but includes social contact through a variety of communication mediums (e.g., postal mail, phone and computer-mediated communication). The substitution of one means of social contact for another does not necessarily equate with the atrophication of social contact in general, but may represent a more efficient or successful means of forming, controlling or maintaining access to network members and in turn social capital.

Within the framework of the social network perspective this dissertation addresses the question of what effect home computing and Internet use have on community relations. I argue that greater home-centredness does not necessarily mean less interpersonal or public interaction. Arguments pertaining to the social implications of new communication technology have focused on either the complete destruction of community, or the creation of completely new forms of community. Moderate and more mixed perspectives of this debate have been ignored. The

development of computer-supported social networks holds the prospect of enhancing both non-local (global) and very local communities. The connectivity of computer-mediated communication provides access to people located at a distance, but at the same time the location of the technology in the home facilitates access to local relationships. It is conceivable that by spending more time in the home, people will become more familiar with those in their local neighbourhood.

If new communication technology can expand and increase access to members of our social networks, both at a distance as well as with those close at hand, it potentially increases access to social capital. Barry Wellman and I have termed the combination of global and local connectivity that may be facilitated by computer-mediated communication as "glocalization."[5] If these new technologies can increase communication with network members or can increase the size or diversity of social networks then computer-mediated communication has the potential to reverse the decline in social capital that Putnam (2000) reports as having taken place over the last quarter century.

The ideal research setting to investigate the effects of home computing and Internet use on social relations, would be a residential development equipped with the most advanced technology available. The nearly ubiquitous nature of the technology available in this research setting would serve as a window into the not-so-distant future of home-based Internet use. A

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[5] The term "glocalization" was independently created by Barry Wellman and myself for use in this context. However, the term appears independently in a number of academic articles dated from the mid 1990s. These articles describe various social, economic and political processes related to the local impacts of global phenomenon (for example Robertson 1995; Swyngedouw 1997; and Brenner 1999). The 1991 edition of *The Oxford Dictionary of New Words* associates "glocalization" with the Japanese term "dochakuka" (derived from *dochaka* "living on one's own land"), originally the agricultural principle of adapting one's farming techniques to local conditions, but also adopted in Japanese business for "global localization," a global outlook adapted to local conditions (Tulloch 1991: 134).

natural research setting, combined with a variety of research methods, would further increase the reliability and validity of the study. The following chapter introduces the wired neighbourhood of "Netville," a new residential development equipped with a series of advanced information and communication technologies as part of its design.

CHAPTER 2

WELCOME TO NETVILLE

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2.0 Introduction

"Netville" is a newly-built suburban neighbourhood of 109 detached, closely-spaced, single-family homes in an outer suburb of Toronto. In its appearance Netville is identical to nearly every other residential development in the Greater Toronto Area. The only visible artifact distinguishing Netville from other neighbourhoods is a chuckwagon located at its entrance that reads across its canvas, "Canada's First Interactive New Home Community – Welcome Pioneers" (Figure 2.1). Netville was one of the few developments in North America where all homes were equipped from the start with a series of advanced communication and information technologies supplied across a broadband high-speed local network. The network and its services were supplied and operated free of charge by a not-for-profit consortium of private and public companies called "Magenta."[1]

Netville provided a unique opportunity to observe the effect of advanced information and communication technology on people's daily interactions with family, friends and neighbours. For the first time, a significant number of households equipped with the future of high-speed Internet technology were built from the ground up and concentrated in a new residential community. The goal of this research was to determine the effect of living in a highly wired

[1] Both "Netville" and the "Magenta Consortium" are pseudonyms adopted to protect the identity and privacy of the residents of the wired suburb.

Figure 2.1 Chuckwagon located a the entrance to Netville. Canvas reads "Canada's First Interactive New Home Community – Welcome Pioneers."

suburban neighbourhood on social networks, social capital, community involvement and the ideals of a civil society.

This chapter outlines the history of the Netville project, including a description of Netville and its high-speed computer network, and the methodological approach undertaken as part of this study. The chapter concludes with a comparison of wired and non-wired Netville residents and with a discussion of issues related to self-selection and generalizability.

2.1 Netville

Netville is located in one of Toronto's outer suburban communities and is in an area of rapid population growth and home construction. The town in which Netville was built has a population of less than 100,000. The town has a large shopping mall and two major department stores. There are a handful of new car dealerships, numerous hotels, two movie theatres, a Chapters bookstore and a Starbucks.[2] As with any suburb, there are an endless number of donut shops and fast-food restaurants. The downtown core consists of a single main street with a bingo hall, a hardware shop, an antique market, an ice cream parlour and a coffee house. In 1966, S. D. Clark ventured into a neighbourhood of the same suburb in his analysis of life in the new blossoming suburbs of Toronto. Now, as it was then, the town consists largely of single-family homes.

Commute times from Netville to Toronto's downtown core range from 45 minutes, during off hours, to more than 90 minutes during rush hour. Homes range in size from 1,700-2,600 sq. ft., were typically built on 40' lots and ranged in price from $195,000-$255,000 (CDN$). The typical Netville house has three bedrooms and a study and cost about $228,000 in 1997, 7 per cent less than the average price for a new home in the same area,[3] or 13 per cent less than the fourth-quarter median for the Metropolitan Toronto new-home market (Canada Mortgage and Housing Corporation 1997: 8). Figure 2.2 is an example of a typical Netville home.

The Netville development consisted of 109 single family homes and a new public elementary school. A detailed view of the Netville site plan can be found in Figure 2.3. Of the

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[2] *Chapters* is similar to other big bookstores in the United States, such as *Borders* or *Barnes & Noble*.

[3] Based on unpublished information provided by the Canada Mortgage and Housing Corporation 1999.

Figure 2.2 A typical single family home in Netville.

109 homes that comprised Netville, 64 were connected to the local network and had access to the network for up to two years (depending on when they moved in). The remaining 45 households were never connected to the network. At the time residents purchased their homes, sales representatives promised that they would have the opportunity to participate in the technology trial and that the Magenta Consortium would contact them shortly after their move.[4] Magenta never clarified why some Netville homes were connected and others were not. The two most likely causes were the Consortium's limited access to resources for completing home installations, and miscommunications with the housing developer in identifying homes that had been occupied. While it was unfortunate that not every household in Netville could be connected to the local network, the presence of an internal group of non-wired homes provided a natural comparison group for studying the effects of living in a wired neighbourhood.

[4] This was demonstrated in early 1997 when I visited the Netville sales office with a female assistant who posed as my fiancee. We explored the show room as potential buyers and were given a demonstration of the features that would be available in our home if we decided to purchase.

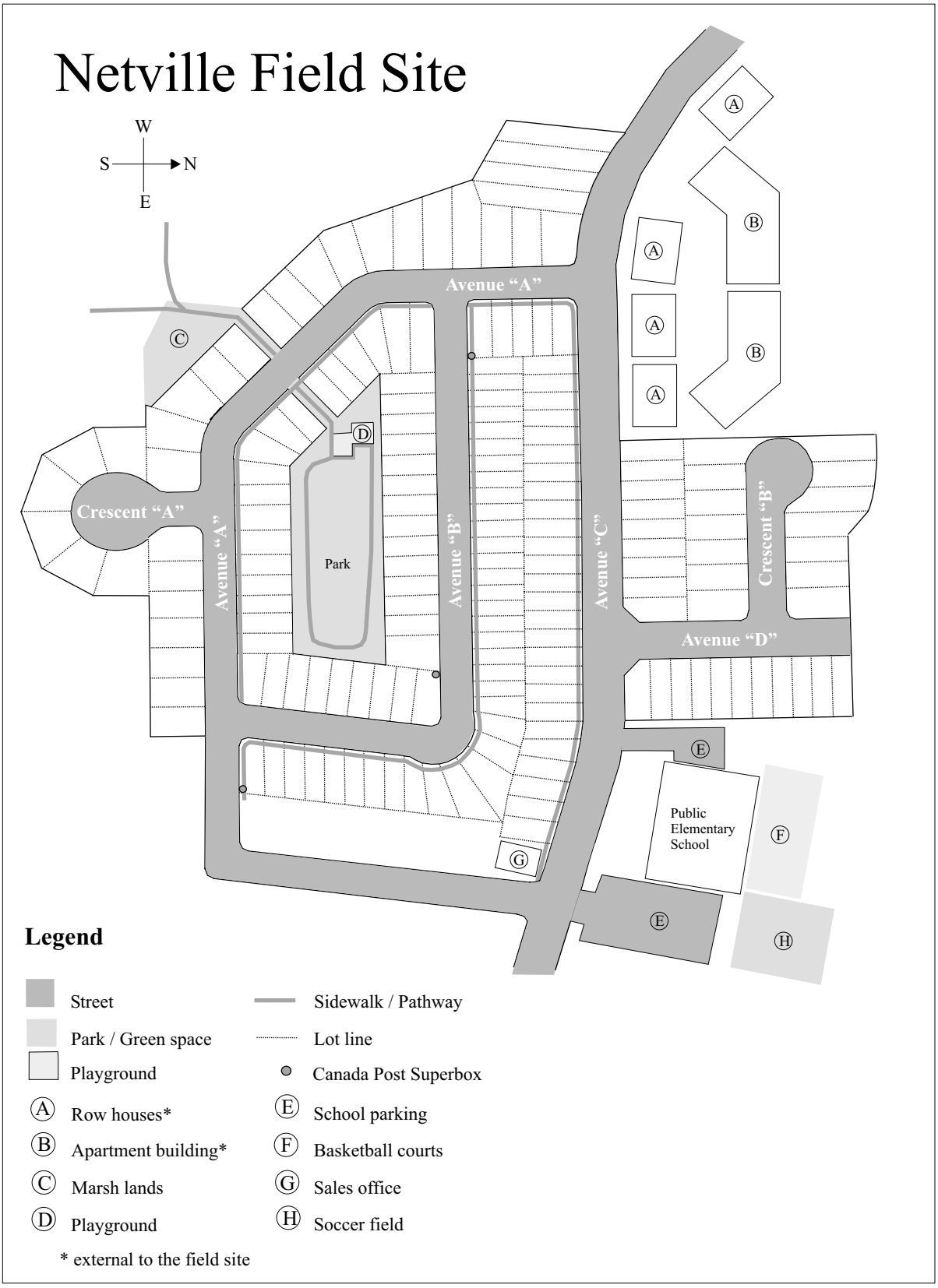

Figure 2.3 Site plan of the Netville field site.

2.1.1 The High-Speed Local Network

The technical description of Netville's local network is a "dual hybrid fibre coax network with an ATM (asynchronous transfer mode) backbone." Delivering synchronous network access at 10 Mbps, Netville's network was more than 300 times faster than conventional dial-up service and 10 times faster than what is available through most residential cable-modem and digital-subscriber line (DSL) services.[5] Unlike other Internet services, which are typically delivered through household telephone or TV cable lines, Netville's high-speed network was delivered into the home through an independent system. A coaxal cable was brought into the home where it was connected to a personal computer connection unit (PCCU) located in the basement. The PCCU connected five computer ports within each home to the local network.[6] As with DSL and cable-modem service, Netville's high-speed network was always on. As long as a household computer was turned on and physically wired to the network, access to the network was continuously available. It was never necessary to disconnect from the network or to "dial-up" for Internet access.

Netville's local network offered more than basic Internet access. For two years beginning in December, 1996, when the first homes were occupied and until January, 1999, residents had access to the following services:

- High-speed Internet access (including electronic mail and Web surfing)
- Computer-desktop videophone for use between local residents
- An on-line jukebox with access to more than 1,000 music CD titles

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[5] Based on dial-up speeds of 33,000 bps and synchronous DSL service at 1 Mbps.

[6] Homeowners could purchase additional computer ports for a minimal charge.

- Real-time online access to various heath-care practitioners
- Online access to a library of educational and entertainment-oriented CD-ROMs
- Access to online neighbourhood discussion forums
- Display phones with access to:
    - weather reports
    - home shopping
    - news reports
    - automated banking
- 24-hour 7-day-a-week technical support

In return for this free, very high-speed access to the information highway, the residents of Netville agreed to be studied by the corporate and non-profit members of the Magenta Consortium. This agreement was only lightly enforced and often forgotten by the residents. No resident was ever denied service for refusing to participate, and no data were ever collected without the residents' knowledge.

2.1.2 The Magenta Consortium

Magenta was initially conceived as a research partnership of more than 70 organizations including: computer manufactures, software makers, media corporations, telephone and TV cable providers, market research firms, local and federal governments and a number of universities. However, corporate and government participation in Magenta atrophied in the project's first year as organizations became unwilling or unable to provide funding and resources to support the

project. In practice, fewer than a handful of organizations ever took an active role in the research and development of Netville. The most active organizations were (a) the major telecommunications partner, whose primary interest was developing technical requirements for the deployment of broadband high-speed residential networks, and (b) two companies focusing on software development that were interested in developing new broadband products. Under the direction of Prof. Barry Wellman, the research presented in this dissertation was one of the principal academic projects undertaken in Netville.

Prof. Wellman and I maintained a separate identity from Magenta as researchers who were independent from the experiment's plans and who would respect residents' privacy and confidentiality. To gain access to Magenta's key organizers and to allow for our participation in the formal meetings of Magenta's research committee, our research project paid a membership fee of $1,000 to join the consortium in 1997. Formal membership allowed us to co-ordinate our research activities with those of the consortium. Most importantly it provided access to participants' contact information and enabled us to attend a series of focus groups organized by the consortium. Although it was not necessary to renew our formal membership in Magenta after 1997, we were in frequent communication with Magenta and the major partnering telecommunication company in order to co-ordinate our activities with those of the consortium.

As technology developed and fashions changed, Magenta's major telecommunications partner, which was responsible for maintaining the local network, decided that ATM technology was not the future of residential Internet services. They, like other telecommunication companies, have opted for asynchronous digital subscriber line (ADSL) technology. Since the telecommunication company viewed Netville as a site for technical rather than social research,

they terminated the field trial early in 1999, to the dismay of the residents who had grown to love the system and assumed it would be there indefinitely. A complete discussion of Netville residents' reaction to the removal of their local network will be presented in Chapter 5. With the end of the local network came the end of Magenta, which ceased to exist in early 1999.

2.2 Research Design

The objective of this study was to investigate the effect of Internet use on people's social networks, social capital and community involvement. Instead of attempting to locate a large random sample of Internet users from the 28 per cent of Canadians who had Internet accounts from home at the time of this study (Ekos 1998), Netville provided easy access to a dense cluster of highly wired Internet users. This had the advantage of both accessibility and a natural setting that facilitated the direct observation of neighbourhood interaction and group dynamics. While survey research was the primary method used, data triangulation through the use of a variety of research methods, including ethnographic observation, and the monitoring of an online community forum (neighbourhood e-mail list), helped increase the validity and reliability of this study.

2.2.1 Ethnographic Observation

Netville's small compact area made it feasible and desirable to live in the research setting. In April, 1997, I began participating in local activities through attendance at community barbecues and informal social gatherings. In October, 1997, I expanded my involvement to a full ethnography by moving into a basement apartment for a stay that lasted until August, 1999. Magenta's major telecommunications partner installed a network connection in my basement apartment that was independent of the network connection available to those living in the rest of the house. From my apartment I had access to the same information and communication technologies available to other "wired" Netville residents.

For two years I worked from home, participated in online activities, attended all possible local meetings (formal and informal), and walked the neighbourhood chatting and observing. I made every attempt to share in the life of Netville, making friends and carrying out the daily obligations of life expected of any other resident of the community. The intent was to complete a community ethnography modelled on that of Herbert Gans (1967) in the New Jersey suburb of Levittown. However, the relatively small size of Netville (109 homes), and the fact that Netville had been built within the boarders of an established suburb, limited the possibility of observing residents as a group once they had escaped the geographic confines of the neighbourhood. Residents had no need to establish new churches, new schools, and for the most part, new voluntary organizations, because these amenities already existed as part of the larger suburban community. As a result, the scope of the ethnography is more limited than what has been accomplished in the past by other urban ethnographers (see Gans 1962; 1967; Anderson 1978; Whyte 1943).

The ethnography was secondary to the survey as a method of data collection. Ethnographic observations were used to inform the design of survey questions and as a method to verify and expand on more quantitative findings. At times the ability to live as a participant observer, physically present in Netville, provided first-hand access to information that would have been difficult to collect through surveys, or would have gone unreported, unobserved and unquestioned during surveys or in the online forum. However, the most beneficial aspect of the ethnography was the trust established with the residents of Netville. As suggested by Barker and Wright (1954: 18), living within the field site was important not only for observation, but it encouraged trust in the research process, increased familiarity with the researchers, and demonstrated a respect in the community as a place to live. Visibility and credibility in Netville

were vital in convincing many residents to take the time from their busy lives to respond to the survey. As we will see later, my relationship to community participants became especially important when the field trial ended. Although most residents eventually became angry at both Magenta and their major telecommunication partner, my research was able to continue because I was viewed as a fellow Netville resident who shared the same loss of high-speed service.

From my first meeting with Netville residents I identified myself to all residents I encountered as a student and researcher interested in Netville. While initially the novelty of my presence was met with some surprise, for not every suburban neighbourhood has a sociologist living in the basement, over time most residents accepted me as just another community resident. By the time I moved into Netville, those living there had already become accustomed to the extra attention brought on by living in "Canada's first wired neighbourhood." During the first six months of initial home construction, the community received considerable media attention, both positive and negative, with some residents interviewed repeatedly by local media. However, as with the novelty of my presence, the novelty of Netville quickly wore off and neighbourhood life returned to what would be expected of any new residential development.

I established early my role as a non-participant within the community setting. My participation in community meetings and events was limited to general conversation and casual observation. I learned to resist both my own urges to participate further and the encouragement of residents to organize events and plan activities. Although welcomed to attend community events, my age (younger than most homeowners) and family status (single, no children), inhibited my full participation. This was a mixed blessing. While there was less expectation for me to actively participate, there was often a need for me to explain my presence and restate my

role as a researcher, particularly when attending events organized for younger children and their parents. My presence was rarely questioned when I attended more general community activities, and those organized for adults that allowed me to assume a role that was more consistent with my stage in the life cycle. While it was appropriate and somewhat expected for me to participate in community activities with the men of Netville, going for a drink at the local pub, going mountain biking, etc., it would have been highly inappropriate to engage in similar activities with the married women of Netville. Although it never appeared to be a major issue with the residents, my interaction with the women of Netville was limited to formal interviews and group settings.

While Netville residents generally treated me as any other resident, they occasionally assigned me other roles. Residents with grievances, or ideas for new services, would on occasion ask me to sit in on discussions between themselves and members of the Consortium. Although it was never openly stated, this was done with the mistaken hope that I had some influence in the Consortium's decision-making process. Residents also assumed that I had an inside knowledge of Magenta's plans and intentions, although I rarely did. Members of the Magenta Consortium similarly expected that I would share my inside knowledge of the activities and intentions of Netville residents. Out of ethical concerns and out of fear that I would damage the trust I had established with residents, I avoided sharing my inside knowledge of Netville with Consortium members.

I monitored Netville's neighbourhood e-mail discussion list as an extension of my ethnographic participation. All Netville residents participating in the field trial were automatically subscribed to this community e-mail list. By sending one e-mail to the list's e-mail

address, the message was automatically distributed to all other neighbourhood residents. The list was publicly available to Netville residents and messages were easily recorded without interfering with residents' activities. As a resident I was also a list contributor; I once sought information about a local gym, and once provided information about a computer program that a number of residents had asked about. Since the list was publicly available, there were few privacy issues beyond protecting the identity of participants when quoting from the lists. At no time were *private* e-mail messages, such as those between Netville residents and their friends and family outside of Netville, ever recorded. The list provided information about community issues, the organization of community activities, and local networks of aid and support.

2.2.2 Initial Survey Plans

Surveying began in April 1998 with a pre-move survey of Netville residents who had purchased homes, but had not yet moved into the community. At this time Magenta intended to connect all households moving into Netville to the local computer network and projected that the Netville project would continue for at least two more years. The initial plan was to conduct a two-group pre-test post-test survey of wired Netville residents and a comparison group of non-wired residents in a similar conventionally wired neighbourhood.

While face-to-face interviewing was the preferred interview method when the Netville survey was in the design stage, there were no funds available to pay for personal or even phone-based interviewing. Additionally, as the only available interviewer, I was concerned about how participants would react to a survey that was collected by a researcher who was also

collecting ethnographic data as a fellow resident. Would I be able to fit in and be accepted as a resident of Netville while simultaneously conducting personal interviews with the same population? Herbert Gans[7] warned me of an impending conflict from his experience in studying Levittown. He described the difficulties he experienced interviewing residents who identified with him as a fellow resident and not as a trained interviewer (personal communication: 14 July 1997). Suspecting that the residents of Netville would react negatively, or conceal information, and to save on interviewing and data entry costs, computerized self-administered interviewing (CSAI) was adopted as the primary interviewing method.

In 1996 the Magenta Consortium conducted a pre-move survey of those who were early purchasers of homes in Netville. Data from this survey confirmed that most of those who were moving into Netville had access to a personal computer (PC) that would allow them to complete a pre-move survey on a PC or over the Internet (see Table 2.1). We reasoned that we could use Netville's high-speed network to conduct post-move surveys over the Internet. Prospective movers and members of the control group who had a personal computer, but no Web access, would be sent a self-booting DOS-based floppy disk that took a participant through the survey (disk-by-mail surveying). Those who had neither Web access, nor a personal computer, would be lent a laptop to be used for completing the disk-by-mail survey (obsolete laptops were bought at low cost).

The survey was to be administered to all household members 18 years of age or older during both a pre-move and post-move interview. The pre-move survey was to be administered approximately three months prior to moving into Netville, and the post-move survey

[7] Author of the famous community ethnographies *The Urban Villagers* (1962) and *The Levettowners* (1967).

approximately one year after living in the community. An adapted version of the pre-move survey was to be administered to all existing Netville residents who had moved into Netville before they could be contacted for a pre-move survey. Unfortunately, a number of major events, including extensive delays in home construction and the premature end of the technology trial, forced changes to the original survey design.

2.2.3 Changes to the Survey Methods

Soon after the pre-move survey was deployed, it became obvious that things were going slower than planned. Early in the summer of 1998, tradesmen responsible for building homes in Netville went on strike as a result of a province-wide labour dispute. The strike, combined with construction problems and planning issues, delayed home construction by six months or more. People expecting to move into their new homes were repeatedly given new dates for occupancy, and these new dates were frequently subject to further delay. As many people had vacated their old homes, they were forced to find alternative housing in the interim, often with relatives. These complications made it difficult to locate potential participants for a pre-move interview. When participants could be contacted, they were often hostile toward the developer and refused to participate. For some, their difficult interim living arrangements did not give them time to participate. Others cancelled their move to Netville because of the delays.[8]

In September, 1998, difficulties in obtaining names and completing surveys prompted the move away from a pre-test/post-test survey design to a cross-sectional survey of people

[8] In January, 2000, during a followup analysis I found that less than half of those who originally signed contracts to purchase homes had moved into Netville.

already living in Netville. The discovery that a number of homes were not connected to the local high-speed network made comparative analysis possible and the loss of longitudinal information somewhat more palatable. The existence of an internal group of non-connected households provided a natural comparison group, and negated the point of surveying a similar non-wired community as a control sample. The survey was modified for use with people already living in Netville, and interviewing continued.

In the fall of 1998, in the midst of the second round of interviews, the partnering telecommunication company began suggesting to the other Magenta partners that it might withdraw from the field trial and discontinue supplying Netville with access to the high-speed local network. This was publicly confirmed at the end of October, 1998. Not only would free service stop soon, but any possibility of a pay-per-use service delivered over the network would end as arrangements were made to remove the network's essential hardware from residents' homes (the PCCU and some accessible wiring).

When the end of the experiment was publicly announced, Netville residents quickly mobilized, using their networked connectivity in an attempt to force the continuation of the field trial (explored in detail in Chapter 5). The community uprising necessitated that surveying be temporarily suspended as a result of strong community feelings and a fear that these feelings would contaminate survey results. In part, this was also a self-preservation strategy to dissociate our research from the ending of the trial. By the time interviewing commenced in late November, 1998, funding to hire personal interviewers was available, and all remaining interviews were done face-to-face using computer-assisted personal interviewing (CAPI).

The end of the technology trial in January, 1999 did not mean that Netville residents became technological have-nots. The majority immediately purchased access to commercially available high-speed cable modem service. Residents were also allowed to continue using their existing e-mail addresses and were able to replicate on their own some of the services that they had been receiving from Magenta. This allowed surveying to continue into early 1999, without serious concern that the withdrawal of Magenta's network would have an impact on survey results.

In an ideal situation it would be appropriate to collect survey data at least twice, pre-and post-move. Given the potential complications of doing research in a setting with many factors beyond the immediate control of the research team, it was only possible to complete one wave of surveys over so short a period of time. In the end it was not a complete loss. Interviews were completed with a cross-section of residents, including a small number of people who intended to move into Netville, and those who had lived in the community for up to two years and had access to the high-speed network for a period ranging from zero to two years.

2.2.4 Sampling Strategy and Procedures

Initially all household members 18 years of age and older were asked to participate in the Netville survey. Following the decision by the Magenta Consortium to end the technology trial, which greatly reduced the time we had available before residents lost their wired connectivity, this procedure was modified to seeking the participation of one adult from each Netville household. Selection of either the male or female head of the household was randomly assigned

whenever possible, but was often based less on random selection than on the availability of respondents to meet with interviewers, or to take the time to complete a Web survey. Very few households refused to participate in the survey. Netville consisted of many commuting suburbanites, mainly dual-career, child-rearing families, and this meant that potential survey participants were extremely busy. They were often exhausted when they had some leisure time and were in no mood to complete a lengthy survey.

The focus of the analysis on participants' social ties introduced possible sampling bias as a result of the inability to incorporate a true random sampling method. Residents with fewer local social ties may be less active and less committed and therefore less likely to cooperate with a study of their local associations. On the other hand, non-respondents may have been especially social, with additional time constraints as a result of their participation in numerous social activities, reducing their availability for participation. While there is no method to verify that such a bias exists or does not exist in the survey data, based on my observations I do not believe that these factors did anything but balance each other out, with non-respondents being more similar than dissimilar to participants. This similarity was particularly true in terms of age and family status where those who were interviewed appeared very similar to those who were not.

Of the 109 homes in Netville, surveys were conducted with 52 participants living in 46 homes connected to the local network and 21 participants from 21 homes not connected to the local network, a response rate of 62 per cent of Netville households. Interruptions in the interviewing process and a low completion rate on computerized self-administered interviews reduced the usable data to the survey results from between 44 and 56 participants.

2.2.5 Asking the Questions

The Netville survey collected information about geographic perception, personal and neighbourhood networks, work, experience with technology, time-use and basic demographics. This dissertation focuses exclusively on how living in a wired neighbourhood impacts social networks, social capital and community involvement. The following discussion is limited to those survey questions that specifically address these issues. A complete list of survey questions can be found in Appendix A.

Information about neighbourhood social ties was collected through the use of a whole network questionnaire. The whole network approach can be best described as viewing a social network "much as aliens might view the earth's people: hovering above and observing the relationships linking all members of the population." (Wellman 1999: 18). In this case the population was defined as all adults living in Netville. Using local voter registration records, a reverse telephone directory, records provided by Magenta, and an online telephone directory[9] the names and addresses of all adult Netville residents were collected. To avoid defining the boundaries of Netville simply as they were defined by the developer, the list of Netville names was expanded to include adults living in homes that were adjacent to the development, primarily those living in a separate development of townhouses located across the street from Netville (see Figure 2.3). Participants were presented with a list of 271 names with corresponding home addresses and a version of the map presented in Figure 2.3. Participants were then asked the following series of eight questions:

[9] Canada411 – http://canada411.sympatico.ca/

1. The following is a list of people who live in your area. Please take the time to look over the complete list and select as many of the following people as you recognize by name.
2. From those people you recognized from your area, please select those whom you talk to on what you consider to be a regular basis?
3. From those people you recognized from your area, please select those whom you have invited into *your home* in the last six months?
4. From those people you recognized from your area, please select those who have invited you into *their home* in the last six months?
5. From those people you recognized from your area, please select those whom you have contacted using e-mail *not counting* messages sent to the Netville community e-mail list.
6. In the last month how many times have you contacted [*name*] using e-mail?
7. From those people you recognized from your area, please select those whom you have called on the phone.
8. In the last month how many times have you called [*name*] on the phone?

The presentation of the whole network survey did not vary between CSAI and personal interviewing. In both cases participants were presented the question, followed by the list of names and were asked to scroll down the computer screen highlighting those names that applied. Reaction to this type of question was positive. Participants reported that they found it easy to scroll through the lists, almost all seemed to enjoy the exercise, and many reported how interesting they found the opportunity to see just whom they recognized and how often they were in contact.

To collect data about residents' social ties external to the immediate neighbourhood' participants were asked a series of 18 questions:

1. Compared to a year *before* you moved into Netville would you say that you have the same, more or less *social contact*
2. Compared to a year *before* you moved into Netville would you say that you *give* more or less help or assistance
3. Compared to a year *before* you moved into Netville would you say that you *receive* more or less help or assistance

for each of:

- *relatives* who live less than 30 miles (50 kilometres) away (but outside of the neighbourhood)
- *friends* who live less than 30 miles (50 kilometres) away (but outside of the neighbourhood)
- *relatives* who live between 30 miles (50 kilometres) and 300 miles (500 kilometres) away
- *friends* who live between 30 miles (50 kilometres) and 300 miles (500 kilometres) away
- *relatives* who live more than 300 miles (500 kilometres) away
- *friends* who live more than 300 miles (500 kilometres) away

Participants who replied "more" or "less" were prompted to clarify their answer with "a lot less," "a little less," "a lot more," or "a little more."

Questions about external social ties were met with mixed success. Most participants found the question set repetitive. In personal interviewing, interviewers often had to reassure participants that they would be moving onto the next series of questions very shortly. The positioning of the question set early in the CSAI surveys helped insure a high completion rate for this question set, but did not overly fatigue participants and affect the quality of answers to subsequent questions.

2.3 Generalizability and Self-Selection

Netville was a unique field site and an ideal location to conduct a study about the effects of new technology on people's daily lives. Today, almost no one is wired in the way that the residents of Netville experienced. The wiring of new residential developments with local networks offering high-speed Internet access and other broadband services has only now become a growing trend (for example see CityPlace in Toronto, Centennial in Indianapolis, Heritage in Texas, Playa Vista in California, Renton and Issaquah Highlands near Seattle, and Kenniswijk in Eindhoven, The Netherlands). While home computing and home Internet access continue to increase in popularity, access is far from universal. Recent reports suggest that 57 per cent of Canadians have a home computer and 48 per cent have a home Internet connection (Marron 2000; PricewaterhouseCoopers 2000). DSL and cable-modem Internet connections, currently the most comparable Internet service to what was available in Netville (although approximately only one-tenth the speed), is used by 22 per cent of Canadians with home Internet access.[10] Canadian home computer ownership and in-home Internet access is slightly ahead of the United States where 51 per cent of homes have a computer, 42 per cent of homes have Internet access, and 11 per cent of home Internet users have high-speed Internet access (United States Department of Commerce 2000).

As advanced as Netville was in terms of its high-speed local network, the residents of Netville were not unique in comparison to other middle-class suburban Canadians. Most Netville residents were married with children, had dual incomes and were employed in the service industry. To provide an accurate description of those who purchased homes in Netville, data

[10] While DSL and cable-modem Internet services are "always-on", and are currently the fastest commercially available services, they are still significantly slower than what was available in Netville.

collected by the Magenta Consortium as part of a mail-back questionnaire is used here along with data collected from the cross-sectional survey collected by Hampton and Wellman. In late 1996, the Magenta Consortium surveyed the first 81 households who purchased a home in Netville. The Magenta survey provides detailed information about future Netville residents at the time they purchased their homes, information not available from the cross-sectional survey analyzed in the remainder of this dissertation.[11]

Those who purchased homes in Netville were diverse in age and ethnicity, but largely homogeneous in marital and family status. Most were married (90%), and most had children living at home (61%) at the time they moved in. A baby boom ensued in the months after residents moved in, which quickly increased the proportion of Netville households with young children. Residents ranged from 25-68 years of age. Of new home purchasers, 56.8 per cent were 25-35 years old, 25.9 per cent 35-45, 8.7 per cent 45-55 and 8.6 per cent over the age of 55. On average new Netville residents were younger than established residents of the suburb in which Netville was built, but the age distribution is consistent with previous studies of new suburban home owners who tend to be over represented by younger families (Gans 1967; S. D. Clark 1966). With the exception of a small cohort of older residents, the age distribution of new Netville residents was surprisingly consistent with the observations of S. D. Clark in his 1966 study of a new neighbourhood in the same suburban area.

[11] New home purchasers were given two surveys by Magenta, an individual questionnaire to be completed by all adults and a household questionnaire to be completed for each home (response rate=54%). Because of missing information, which could be used to individually identify Netville residents, Magenta's survey of early home buyers can only be reported in the aggregate and cannot be combined with data collected in the cross-sectional survey collected by Hampton and Wellman.

The Toronto area has an extraordinarily diverse ethnic mix, and has been designated by the United Nations as the world's "most ethnically diverse city" (City of Toronto 2001). Eighty per cent of the residents of the Toronto Census Metropolitan Area (CMA) in 1996 identified themselves as having an ethnic origin other than "British" or "Canadian" ethnicity;[12] one-third of residents are visible minorities (Statistics Canada 1996).[13] Toronto also differs from many large cities in that ethnic groups are widely decentralized in suburban areas (Michelson 1998). The suburb encompassing Netville is slightly less diverse than the Toronto CMA. Ten per cent of residents are visible minorities and two-thirds have an ethnic origin other than British or Canadian (Statistics Canada 1996). Although we did not collect survey data about the ethnic origin of Netville residents, ethnographic observations suggest that residents were representative of the ethnic diversity in the larger suburb. Ninety per cent of those moving into Netville reported that English was the primary language used at home.

Nearly all adults moving into Netville were employed full-time (88 per cent), with a small number (7 per cent) working part-time and even fewer doing unpaid work at home (5 per cent). Residents were primarily employed in mid-range service industry occupations, such as accountant, teacher and police officer. The close proximity of Netville to a plant manufacturing automobile parts attracted a number of people working there (15 per cent of Netville residents had an occupation related to the auto industry). One-third of residents were employed in manufacturing or construction industries, with the remaining two-thirds employed in the service sector. Twenty-three per cent of residents reported that their occupation was connected to the computer, telecommunications or engineering industries.

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[12] Identified a single ethnic origin of Canadian or from the British Isles.

[13] "Visible minorities" include all persons who are non-Caucasian in race or non-white in colour.

Table 2.1 Comparison of Netville residents to Canadians and high-income Canadians.

	Netville[a]	Canada[c]	Canada High Income[d]
Mean Household Income	$81,000	$41,000	>$80,000
Mean Individual Income	$47,000[b]	$26,000	$54,000
% Completed a University Degree	48.1[b]	21.4	47.6
% Own a Home Computer	77.3	37.5	74.1
% Own a Television	100	98.3	99.5
% Subscribe to Cable Television	97.7	69.5	84.0
% Subscribe to "Pay TV" Service	15.9	17.8	25.9
% Own a VCR	100	81.4	93.9

[a] Unless specified, from Magenta survey of first movers (household survey), one survey completed for each household. N=41

[b] From Magenta survey of first movers (individual level), one survey completed by each adult. N=81

[c] From the National Electronic Media Use Survey (NEMUS) conducted by Statistics Canada between March 6th and April 4th, 1996. Approximately 50% English, and 50% French-speaking respondents 18 years of age and older. N=1,931

[d] NEMUS participants with a household income greater than $80,000 per year. N=212

Table 2.1 is a comparison of those who purchased homes in Netville to the general Canadian population in terms of socioeconomic status and ownership of various technology products. At the time residents purchased their home in Netville, on average their household income was almost twice the national average, with individual incomes more than one and three-quarters the national average. Those purchasing homes in Netville were more than twice as likely to have a university degree and to own a home computer. While television ownership is practically universal in Canada, those purchasing homes in Netville were still more likely to subscribe to cable television and to own a VCR. Given the high socioeconomic status of those purchasing homes in Netville, it is somewhat surprising that residents were less likely than

Table 2.2 Adoption of new high-tech items by Netville residents (N=77).

	Per cent	Cumulative Per cent
First to buy new high-tech items that come to market	13.0	13.0
Usually wait a bit before buying a new high-tech item	36.4	49.4
Usually wait until a high-tech item is well established	37.7	87.1
Usually one of the last to buy new high-tech items	13.0	100.0

Canadians in general to subscribe to additional "Pay TV" or "Movie Channel" services. This may indicate that Netville residents are not "big spenders" when it comes to technology services, or that they have less preference for passive media products.

While the socioeconomic status and technology ownership of those purchasing homes in Netville was higher than Canadians on average, it was similar to other Canadians with similar household incomes. Compared to other Canadian households with incomes above $80,000, those purchasing homes in Netville had lower individual incomes, were comparable in educational attainment and in their likelihood of owning a home computer (Table 2.2). In 1996 there were few statistics available about the number of Canadians with home Internet access. The 45 per cent of those purchasing homes in Netville with home Internet access were well above the national average of 28 per cent (Ekos 1998), but again were likely comparable to others of high income and high educational attainment.

Table 2.3 Top five reasons for purchasing a home in Netville (N=38).

Reason	% of Respondents Indicating a Reason by Rank					
	Most Important	2nd	3ed	4th	5th	Not a Factor
Affordability	34.21	21.05	26.32	7.89	7.89	2.63
Location	23.68	28.95	21.05	7.89	2.63	15.79
Liked interior home design	18.42	18.42	26.32	18.42	7.89	10.53
Information services	**7.89**	**7.89**	**5.26**	**36.84**	**26.32**	**15.79**
Wanted a larger home	5.26	7.89	13.16	5.26	15.79	52.63
Closer to work	5.26	2.63	0.00	2.63	2.63	86.84
Wanted a smaller home	2.63	2.63	0.00	0.00	0.00	94.74
Wanted a larger backyard	2.63	0.00	0.00	5.26	2.63	89.47
Wanted a new home	0.00	5.26	2.63	5.26	5.26	81.58
Liked exterior home design	0.00	2.63	2.63	10.53	23.68	60.53
Facilities for a home office	0.00	2.63	2.63	0.00	5.26	89.47

To confirm that Netville residents were not self-selected in terms of their adoption of new technology products, those purchasing homes in Netville were asked to describe their purchasing behaviour. As reported in Table 2.2, only 13 per cent of those purchasing homes in Netville felt that they were "always the first to buy any new high-tech item that comes on the market." The remaining 87 per cent of Netville new home purchasers felt they were likely to wait until new high-tech products were well proven, with more than 50 per cent waiting until the product was firmly established before purchasing. The availability of free, leading-edge technology was not the primary item attracting residents to Netville. Affordability, location and interior design were all listed as more important factors in purchasing decisions than the availability of new technology services (Table 2.3). The majority ranked Netville's information services as the

fourth or fifth factor in their purchasing decision, with more than 15 per cent reporting that it did not even factor into their decision when purchasing a home in Netville. The reasons given for purchasing a home in Netville are consistent with the reasons given by other suburbanites, notably suburban movers in Levittown (Gans 1967) and S. D. Clark's (1966) study of suburban Toronto.

When interviewed, those who felt that information services were an important factor in their purchasing decision principally reported being more interested in the technology as a means to give their children an advantage than for their own use. This observation is consistent with existing literature emphasizing the role of life-cycle changes, such as age and family composition, in relocation decisions (Rossi 1955). Previous evidence also suggests that the selection of a suburban housing location is based primarily on considerations related to children (Michelson 1977: 141).

In summary, those who purchased homes in Netville were of higher socioeconomic status and were greater consumers of technology products and services than Canadians on average. Yet Netville residents are not that different from other middle class Canadians who typically have higher than average incomes and education, and are more likely to have access to new technology products and services. Those who purchased homes in Netville were not self-selected in terms of technology. They did not consist primarily of those who are early adopters of new high-tech products, nor did most base their decision to purchase a home in Netville on the availability of high-tech services. Still, by definition this is a study of the "technology haves" – those with access to the most advanced information and communication technology available. In a society where the digital-divide between the "haves" and the "have-nots" is so pervasive,

those of higher socioeconomic status tend to have the best access (Dickinson and Ellison 2000). While it is important to recognize these limitations to the generalizability of this study, it is also important to recognize that rates of home computer ownership, home Internet access, always-on high-speed Internet access and the trend of building highly wired residential developments are all increasing. Netville represents a model of future connectivity in Canada and the rest of the Western world.

2.3.1 Comparing Wired and Non-Wired Netville Samples

When the Netville project began, there was no expectation that 40 per cent of households would ultimately not be connected to the local high-speed network. All Netville residents had the same expectation of being connected to the local high-speed network; who was and was not connected appeared to be random. Those who did not have access to the local network did not have any in-home Internet access. Non-wired residents were reluctant to pay for dial-up Internet access when they expected to be connected at any time to the free high-speed Internet connection they had been promised.

Table 2.4 provides a basic demographic comparison between wired and non-wired residents. On average, wired residents tend to have one additional year of education and tend to be almost three and a half years older than non-wired residents who were interviewed as part of the cross-sectional survey. The proportion of male and female residents interviewed is nearly equal across both samples. Wired and non-wired residents were interviewed after living in Netville for similar periods of time. At the time they were interviewed, wired residents had, on

Table 2.4 Comparison of Wired and Non-Wired Netville Samples.

	Wired (N=36)	Non-Wired (N=20)	Total (N=56)
Mean Years of Education [a]	15.94	14.95	15.47
Mean Age	37.31	33.91	36.10
Proportion Female	0.36	0.40	0.38
Mean Length of Residence	1.45	1.40	1.42

[a] For education N = 34 "wired" cases

average, lived in Netville for two and a half weeks longer than non-wired residents. An analysis of variance (ANOVA) indicates that there is no statistically significant difference[14] between wired and non-wired residents on the mean scores presented in Table 2.4. To confirm that education, age, gender and length of residence do not explain differences between wired and non-wired groups better than their wired status, these variables will be controlled in each step of the analysis through the use of multiple regression.

[14] At the 0.05 level or better.

2.4 Conclusion

The special nature of doing research in the midst of a technological experiment has presented a number of methodological issues. The fitful nature of housing starts meant that completions and move-ins were much slower and less organized than good experimental design would have dictated. The special circumstances and socioeconomic homogeneity of Netville means that we cannot generalize to the current Internet experiences of the bulk of residential Internet users with their much slower, less feature-laden, and higher-cost connections. High-speed broadband residential settlements, where the majority of homes have access to the Internet, cannot be considered the current norm. Yet the number of online users continues to grow, as does the number of housing developments featuring high-speed residential networks. It is likely that similar settings will grow in popularity over the next decade and possibly become the norm for new residential development. This study provides a glimpse into the future that will become increasingly relevant as home-based computer and Internet use matures and becomes increasingly ubiquitous.

CHAPTER 3

COMPUTER NETWORKS AS SUPPORT NETWORKS

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3.0 Introduction

When motivated to establish contact with members of your social network, and in absence of any personal limitations, such as physical disability, cultural norms, economic means and political or caste boundaries, the ability to establish social contact is limited only by the ability to overcome time and space. Social contact by any means – in-person, through the mail, over the telephone, etc., – can be defined as the ability to direct communication at another person or persons in time and space.

For in-person contact, financial and temporal costs increase with physical distance. As the distance between actors increases, so does the amount of time consumed in travel and the necessity of using more costly means of transportation: car, train, plane, etc. In-person meetings require the additional investment of resources in coordinating actors to insure that all involved are present in the same place at the same time. It is simply easier and less costly to establish in-person contact with network members who are more physically accessible. Proximity facilitates in-person social contact (Wellman 1996; Wellman and Wortley 1990: 568; Wellman and Tindall 1993).

Near universal adaptation of the telephone has alleviated many of the costs associated with distant social contact. The telephone removes the investment of time that would normally be expended in travel. Financial costs are reduced through the substitution of long-distance

phone calls for expensive long-distance travel. Still, as with in-person contact, the greater the distance between social ties, the greater the financial resources necessary to establish contact. Long-distance toll charges inhibit contact with distant social ties. As an example, in the United States in the five years following the deregulation of the long-distance telephone industry in 1984, when long-distance phone calls became significantly less expensive, the average number of monthly phone calls to friends and relatives more than 150 kilometres (100 miles) away increased by more than 30 per cent (Putnam 2000: 167). While telephone communication reduces financial and temporal costs to social contact, it has not removed all costs to distant contact.

Computer-mediated communication (CMC) introduces a new means of communication that is well suited for interaction with friends and relatives at a distance. While the cost of social contact via the telephone increases with physical distance, the cost of social contact with CMC does not vary with distance, but is generally free with access to a personal computer and the Internet. The cost of purchasing a home computer is not directly tied to the desire or need to maintain contact with network members. For most people the decision to purchase a home computer is based on the desire to expand work or educational opportunities (Ekos 1998). As a result, the ability to use CMC as a form of social contact is largely a byproduct of a financial investment in other activities.

Like the telephone, computer-mediated communication provides temporal freedom. Not only is it unnecessary to travel in order to engage in social contact, but with e-mail it is not essential for social actors to be present near the means of communication for social contact to take place. Like the traditional paper letter, e-mail is asynchronous. It can be composed without

the immediate participation of the receiving party. It is possible to send an e-mail message at 2:00 a.m., have it read by social network members at 9:00 a.m., and have network members reply at a later time. Unlike traditional paper mail, transmission is instantaneous, and it does not require a stamp or manual delivery to a postal box. The ability of new communication technologies to communicate at great distances with reduced temporal and financial costs should facilitate contact with very distance social ties.

Those with free, high-speed, always-on Internet access, such as what was available to Netville residents, are ideally situated to experience increased social contact with network members as a result of computer-mediated communication.[1] People with more social contact tend to be happier and healthier (Cohen and Wills 1985; Gove and Geerken 1977). Social contact is a measure of social capital in that it provides companionship, increases the strength of social ties, and provides a mutual awareness of resources (Wellman & Wortley 1990). This chapter tests the hypothesis that:

a) Living in a wired neighbourhood with access to free high-speed, always-on Internet access increases social contact with network members, and in addition,

b) Those ties located at the greatest distance will experience the greatest increase in contact as a result of access to these technologies.

Previous studies have demonstrated that CMC can be used for the exchange of non-instrumental support, such as companionship and emotional aid (Haythornthwaite and Wellman 1998). In this way CMC is similar to the telephone in its ability to facilitate the exchange of social support regardless of physical distance. However, unlike the linear

[1] This study is limited by the conventional wiring of Netville residents' non-neighbourhood social ties.

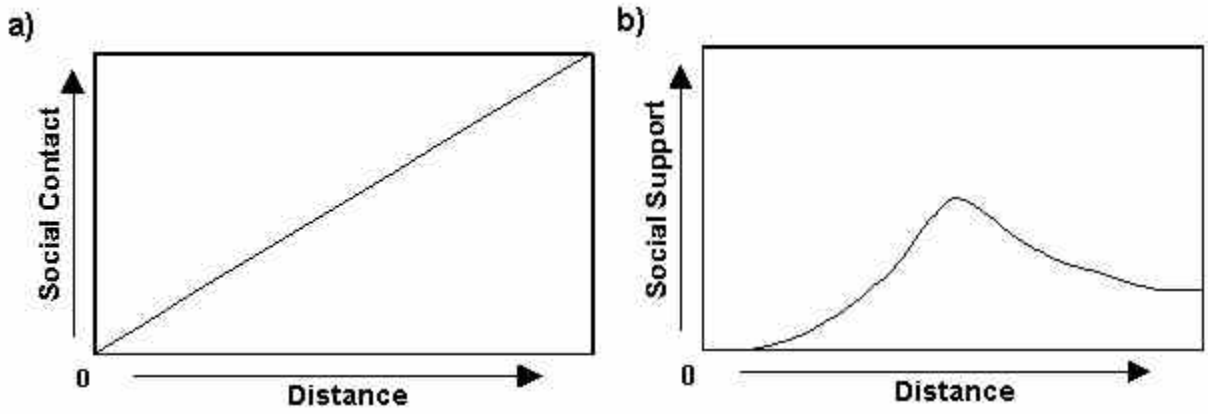

Figure 3.1 Hypothesized change in contact and support exchanged as distance to network members increases.

relationship between distance and change in social contact (Figure 3.1a), access to CMC is hypothesized to have a more complex nonlinear effect on the exchange of support as distance to network members increases (Figure 3.1b).

Instrumental aid, such as the lending and giving of household items and child care, relies more on physical access and is more appropriate for exchange with network members within close proximity (Wellman and Wortley 1990: 569). For ties in close proximity, the introduction of CMC may help facilitate the delivery of aid, but is likely limited to supplementing existing means of communication. At best, CMC should contribute to a modest increase in support exchanged with ties in close proximity.[2]

Social ties who are the most physically distant are also unlikely to experience a significant increase in the exchange of support as a result of CMC. Regardless of the method of communication, the distance between network members makes the provision of instrumental aid difficult without in-person contact. Non-instrumental support that does not require in-person

[2] Note that neighbourhood ties are an exception and are treated as a special case of social contact and the exchange of support in Chapters 4 and 5.

contact, including the provision of financial aid, companionship and emotional support, are the only forms of support likely to benefit from CMC when ties are at a great distance. Overall the introduction of CMC as a new means of communication will only have a modest effect on the exchange of support with the most distant network members.

Mid-range ties, located somewhere between the most distant network members and those in closest proximity are likely to experience the greatest increase in the exchange of support as a result of CMC. Network members within this mid-range can provide non-instrumental aid, aid that is not reliant on in-person contact, and with coordination and additional effort, facilitated by CMC, some forms of instrumental aid that are more reliant on proximity. Network members at this mid-range distance previously may have faced barriers to participating in the exchange of instrumental support resulting from a failure to successfully coordinate the provision of aid or communicate the availability of resources. CMC should facilitate coordination with mid-range ties, increase awareness of mutual resources and increase the amount and breadth of support exchanged. The following hypothesis will be tested:

c) Living in a wired neighbourhood with access to a free, high-speed, always-on Internet connection increases overall levels of support exchanged with network members, in particular,

d) Social ties at a mid-range distance (50-500 km) will experience the greatest increase in the exchange of support.

3.0.1 Plan of Analysis

This chapter deals with non-local social ties and whether living in Netville affected social contact and the exchange of support with distant social network members. A discussion of local neighbourhood ties and the effects of living in a wired neighbourhood on local networks will be addressed in Chapters 4 and 5.

For the purpose of this analysis, social ties are defined as *friends and relatives* living beyond the immediate neighbourhood. While recognizing that different types of social ties (friends, relatives, etc.) and ties of different strengths are likely to provide different types of aid and support, this analysis is limited in its focus to an overall measure of change and does not include an analysis of specific types of ties or forms of support (Granovetter 1973; Wellman and Wortley 1990).

Data for this analysis comes from 18 questions about change in support and contact with network members living at distances of less than 50 km, 50-500 km, and greater than 500 km. These questions are described in detail in Chapter 2, section 2.2.5. The 18 questions were combined into four *social contact* scales and four *exchange of support* scales. Each scale documents change in contact or support as reported by Netville residents with friends and family in comparison to one year before their move. Since each scale has been constructed from a series of ordinal variables, these scales are not true continuous variables. As a result, line graphs of these scales have multiple data "peaks" rather than smooth continuous curves or distinct categories.

Table 3.1 Social Contact and Support Exchanged Scales with Cronbach's Alpha.

Scale	Alpha
Change in *social contact* with *all* non-neighbourhood social ties	0.7
Change in *social contact* with non-neighbourhood ties *within 50 km*	0.5
Change in *social contact* with ties *between 50-500 km*	0.7
Change in *social contact* with ties *more than 500 km*	0.7
Change in *support exchanged* with *all* non-neighbourhood ties	0.9
Change in *support exchanged* with non-neighbourhood ties *within 50 km*	0.8
Change in *support exchanged* with ties *between 50-500 km*	0.9
Change in *support exchanged* with ties *more than 500 km*	0.8

Cronbach's alpha, a measure of internal consistency amongst scale items, is used as a measure of scale reliability and is reported in Table 3.1. All scales except one have an alpha equal to or above 0.7. The exception, the scale for change in contact with non-neighbourhood network members living within 50 km, is retained because the two variables that comprise the scale correlate at 0.32, significant at the 0.05 level (2-tailed), validating the underlying consideration in scale construction that participants respond consistently across scale constructs.

Some caution should be taken in the interpretation of this data, taking into account that participants were not asked to indicate if they had ties at the specified distances both pre-and post-move. Participants who responded that they did not have social ties at a given distance were coded as having the "same" level of contact or support pre-and post-move. Participants may have experienced no change in contact as a result of not having ties at the specified distance or may have reported change as a result of not having network members at the specified distance either pre-move or post-move. However, there is no indication that this limitation in the data should significantly affect the results as they are presented here.

To test the hypothesis that living in Netville with access to the local high-speed network increases contact and support exchanged with social network members, the distribution and mean scores for wired and non-wired participants will be compared for each scale. This analysis will be repeated for the combined scale of change in social contact regardless of distance and for each of the three ranges of network members living at less than 50 km, 50-500 km and more than 500 km. To control for factors other than *wired status* that may contribute to any observed difference between wired and non-wired participants, ordinary least squares (OLS) regression will be conducted at each stage of the analysis. Social contact and support scales will be introduced as dependent variables in a regression that includes the independent variables of *wired status* (connected or not connected to Netville's high-speed network) and control variables for *gender*, *age*, years of *education* and *length of residence* (the length of time participants had lived in Netville at the time they were interviewed). The rationale for including each of the control variables is as follows:

a) *Gender* – women may be more likely than men to experience a change in social contact or support as a result of their role in maintaining the majority of household ties (Wellman 1992; Wright 1989).

b) *Age* – may contribute to network stability and reduce the likelihood of experiencing change in social contact or support.

c) *Education* – contributes to greater social and financial capital, which may help in the maintenance of social contact and support networks.

d) *Length of residence* – moving may create instability in communication with social ties; length of residence is included to control for the possibility that recent movers may report a drop in social contact and support in comparison to those who have had time to settle into their new home.

The distribution of the variable for years of *education* is negatively skewed, with most Netville residents having completed a university degree or at least some post-secondary education. *Age* and *residence* have slight positive skews and small tails. Normality was not significantly improved through the use of transformations. The distribution of the social contact and support scales becomes increasingly sharp-peaked and small-tailed, as distance to network members increases. The small number of cases at the tail of the distributions for contact and support scales contributes further to problems of heteroscedasticity. While OLS regression is robust in the assumption of equal variance, some caution should be taken in the interpretation of these results. To insure proper specification, the final regression model presented includes only those variables that, when entered, result in a significant increase in the explained variance (R^2).

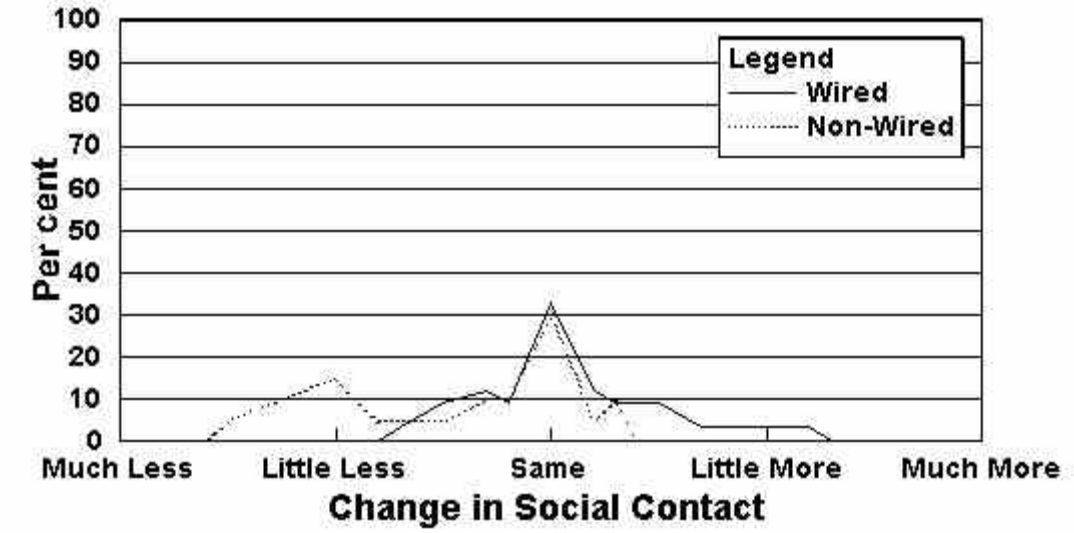

Figure 3.2 Change in social contact with all non-neighbourhood ties.

3.1 Social Contact

This section tests this chapter's first hypothesis that living in a wired neighbourhood with free, high-speed, always-on Internet access increases social contact with network members. Network members are defined as friends and relatives located at any distance beyond Netville itself. Change in social contact with non-neighbourhood ties is measured as a scale constructed from six variables reporting change in social contact with friends and family.

Compared to one year before moving to Netville, 40.7 per cent of Netville residents reported a drop, 31.5 per cent report no change, and 27.8 per cent reported an increase in social contact compared to one year before their move. The individual distributions for wired and non-wired participants in Figure 3.2 highlight the greater proportion of non-wired residents who reported a drop in social contact. Overall 67.6 per cent of wired residents reported that their overall level of social contact either increased or remained the same, this compares with only 45.0 per cent of non-wired residents.

Table 3.2 Comparison of wired and non-wired residents by mean change in contact with social ties at various distances (kilometres).[ab]

	All		Less Than 50		Between 50-500		Greater Than 500	
	Non Wired	Wired	Non Wired	Wired	Non Wired	Wired	Non Wired	Wired
Mean	-0.33$^{.004}$	0.03$^{.004}$	-0.28$^{.434}$	-0.13$^{.434}$	-0.43$^{.008}$	0.03$^{.008}$	-0.30$^{.004}$	0.19$^{.004}$
SD	0.51	0.38	0.73	0.58	0.61	0.56	0.73	0.46
Min	-1.50	-0.67	-2.0 0	-1.50	-1.50	1.00	-2.00	-0.50
Max	0.33	1.17	1.00	1.00	0.50	1.50	1.00	2.00

Note: Numbers in superscript are p-values (ANOVA).
[a] Scale for mean score ranges from -2 "lot less" to +2 "lot more."
[B] N= 34 wired, 20 Non-Wired.

Table 3.2 compares the mean change in social contact for wired and non-wired residents. A score of -2 corresponds to a mean of "much less," +2 indicates "much more" and a zero corresponds to no change in social contact. As hypothesized, on average, wired residents reported significantly more social contact than non-wired residents, but not exactly as predicted. Non-wired residents were expected to experience little change in contact with network members as a result of living in Netville. Wired residents were expected to experience an overall increase in contact in comparison to their pre-Netville experience. Yet, on average, non-wired residents experienced a drop in contact and wired residents reported almost no change in social contact compared to a year before their move.

To control for factors other than wired status that may have contributed to the difference between wired and non-wired residents in terms of change in social contact, an analysis using ordinary least squares (OLS) regression is presented. The independent variable of wired status

Table 3.3 Coefficients from the regression of change in social contact on wired status and other independent variables at various distances (kilometres) (N=54).

Control Variables	All	Less Than 50	Between 50-500	Greater Than 500
Wired[a]	$0.25^{.045}$ (0.26)	—	$0.45^{.008}$ (0.36)	$0.40^{.015}$ (0.32)
Female[b]	—	—	—	—
Education	$0.06^{.046}$ (0.26)	$0.10^{.018}$ (0.32)	—	—
Age	$0.02^{.051}$ (0.25)	—	—	$0.03^{.019}$ (0.30)
Residence	—	—	—	—
Intercept	$-1.73^{.002}$	$-1.74^{.009}$	$-0.43^{.002}$	$-1.16^{.003}$
R^2	$0.26^{.002}$	$0.10^{.018}$	$0.13^{.008}$	$0.24^{.001}$

Note: Numbers in superscript are p-values. Numbers in parentheses are standardized coefficients (β). Only those variables that significantly improved on the explained variance (R^2) are included in the final model.
[a] Dummy variable for wired status, reference category is wired – access to the high-speed network.
[b] Dummy variable for gender, reference category is female.

is included in the regression along with control variables for *gender*, *age*, years of *education* and *length of residence.*

Wired status, years of education and age significantly improve on the regression model for change in contact at *all distances*. Examining the standardized regression coefficients (β) in Table 3.3, wired status, education, and age contribute equally in their effect on the dependent variable for change in all social contact. Change in contact with all non-neighbourhood ties increases 0.3 standard deviation units with each standard deviation increase in age, education or wired-status. Being connected to Netville's local high-speed network is equally as important as education and age in predicting change in social contact. Being connected to the local network has the same effect as four years of education or nearly 13 years of age in boosting social contact.

The regression coefficient for the intercept is statistically significant and negative for the dependent variable for change in contact with all non-neighbourhood network members. Holding all other factors constant, Netville residents experienced a drop in social contact as a result of their move. Amongst younger homeowners with fewer years of formal education, wired status was particularly important in helping maintain social contact at pre-move levels. Older and more educated residents experienced an increase in contact as a result of being connected to Netville's local network.

Moving to a new suburban neighbourhood had a negative effect on the ability of Netville residents to maintain contact with members of their social networks. This is consistent with the observations of S. D. Clark (1966) and Herbert Gans (1967) who observed a similar loss of social contact amongst new suburban dwellers. Access to computer-mediated communication through Netville's local high-speed network helped reverse this trend for wired residents. Netville residents who were connected to the local high-speed computer network did not experience the same loss of social contact as did non-wired residents. Relative to non-wired residents, being wired increases contact with social network members and supports the hypothesis that being wired increases overall levels of social contact.

3.1.1 Social Contact - Non-Neighbourhood Ties Less Than 50 Kilometres Away

The following analysis tests the hypothesis that ties located at the farthest distance experience the greatest increase in contact as a result of access to free, high-speed, always-on, Internet service. To test this hypothesis, a separate analysis will be conducted for each of

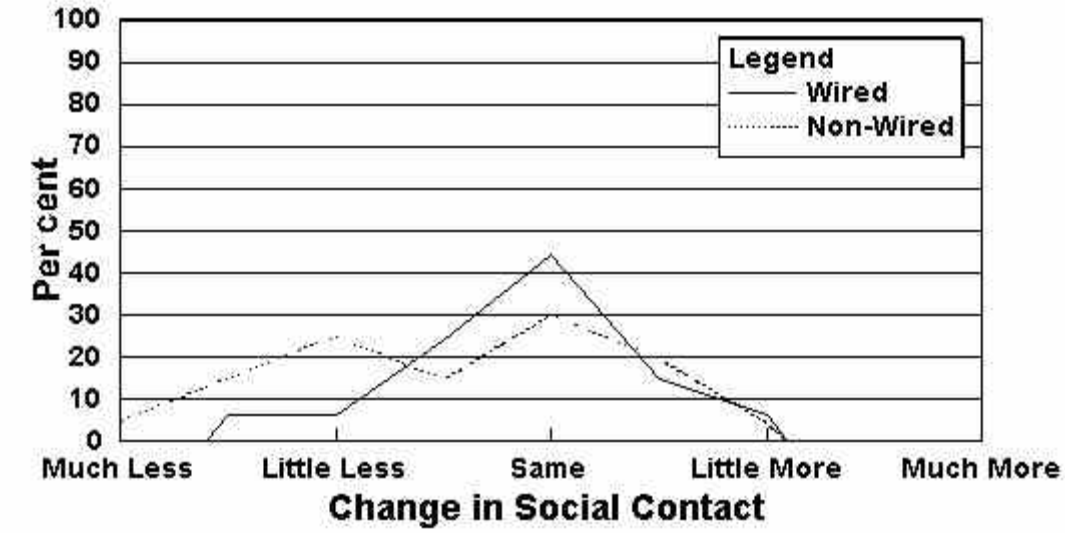

Figure 3.3 Change in social contact with non-neighbourhood ties within 50 km.

non-neighbourhood ties less than 50 km away, ties *50-500 km* away and ties *more than 500 km* away. To support this hypothesis, wired residents should experience increased social contact relative to non-wired residents that increases linearly with distance.

The first part of this analysis looks at social network members living outside of the immediate neighbourhood but within 50 kilometres. At this distance, more conventional and established methods of communication, such as telephone and in-person meetings are expected to dominate, and there should be little change in social contact as a result of access to Netville's high-speed local network. Change in social contact with those less than 50 km away is measured as a scale constructed from the two survey variables reporting change in contact with friends and relatives at this distance.

Compared to one year before moving to Netville 38.9 per cent of residents reported a drop, 38.9 per cent reported no change and 22.2 per cent reported an increase in social contact with non-neighbourhood ties within 50 km. At this distance, 65 per cent of wired and 55 per cent

of non-wired residents reported either no change or a small increase in contact with nearby ties (Figure 3.3). As is evident from the bi-model distribution of the scale for non-wired participants, a greater percentage of those without access to Netville's high-speed network responded near the extreme of "much less" social contact.

A comparison of mean scores for change in social contact with non-neighbourhood ties within 50 km can be found in Table 3.2. On average, both wired and non-wired residents experienced a slight drop in social contact with ties at this distance. Non-wired residents reported a greater drop in contact than wired residents, but an analysis of variance (ANOVA) does not identify a significant difference between wired and non-wired residents in terms of their mean change in social contact. Access to Netville's high-speed network does not appear to have played a significant role in improving social contact with non-neighbourhood ties within 50 km.

Controlling for *gender*, *age*, *education* and *length of residence* does not reveal any effect of wired status on social contact with non-neighbourhood ties living within 50 km (Table 3.3). The only significant regression model, based on this analysis, includes years of education as the independent variable. No other variable significantly improved on the regression model. As in the previous analysis, holding other factors constant, Netville residents experienced a drop in contact with network members as a result of their move. Those with at least some graduate school (17 years of education) were able to maintain contact at pre-move levels, but all other residents experienced a drop in social contact with non-neighbourhood ties living within 50 km in comparison to a year before their move.

Moving to Netville and accessing its high-speed local network did not appreciably change the amount of social contact with non-neighbourhood network members living within 50 km.

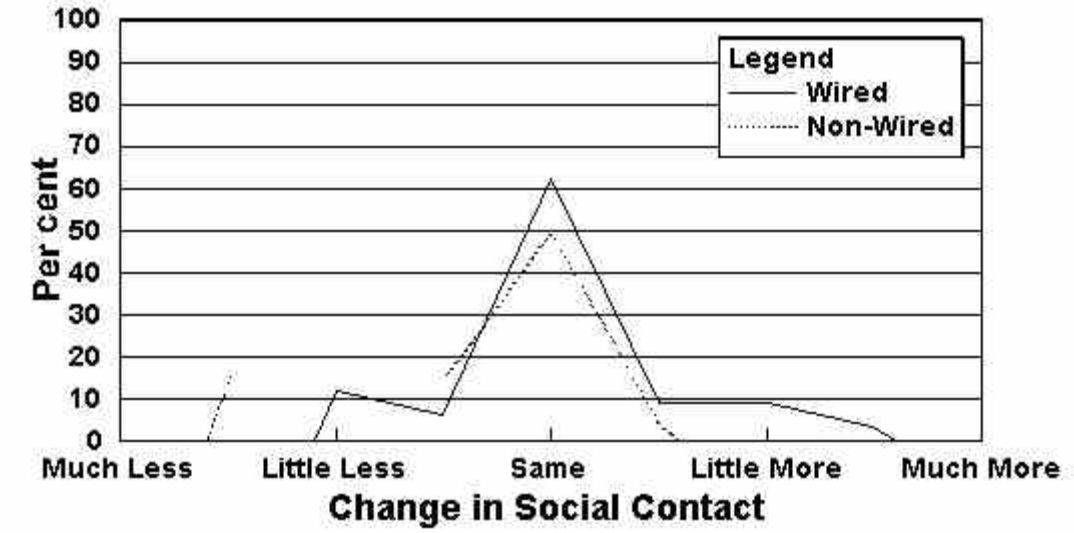

Figure 3.4 Change in social contact with mid-range ties (50-500 km).

The result of this analysis provides initial support for the hypothesis that ties located at the greatest distance experience the greatest increase in social contact as a result of access to free, high-speed, always-on Internet service.

3.1.2 Social Contact - Mid-range Ties 50-500 Kilometres Away

Unlike non-neighbourhood ties located within 50 km mid-range ties located 50-500 km away should exhibit some evidence of improved social contact as a result of computer-mediated communication. The range of 50-500 km represents a distance where conventional means of communication, such as telephone and in-person contact, become increasingly costly. The availability of CMC may serve as an adequate and less costly means of communication that improves contact with ties at this distance.

The scale for change in social contact with ties 50-500 km away was constructed from two variables reporting change in contact with friends and relatives at this distance. The majority (57.4 per cent) of Netville residents experienced no change in the level of contact with ties at this distance. A decrease in contact was reported by 27.8 per cent of participants, and only 14.8 per cent reported an increase. However, the individual distributions in Figures 3.4 reveal major differences between wired and non-wired residents. The distribution for wired residents is more balanced: the majority 61.8 per cent reported no change, 17.6 per cent reported a decrease and 20.6 per cent reported an increase in social contact. The distribution for non-wired residents dramatically tails-off toward a decrease in social contact: 50 per cent reported no change and 45 per cent reported some level of lost contact.

As shown in Table 3.2, wired Netville residents on average reported improved social contact relative to non-wired residents. Compared to non-wired residents, who on average reported a drop in contact, wired residents reported no change in social contact with network members 50-500 km away. To verify that the observed difference between wired and non-wired residents cannot be explained by *gender*, *age*, *education* or *length of residence,* the results of an OLS regression are reported in Table 3.3.

Wired status is the only variable that significantly improves the regression model for change in contact with ties 50-500 km away. Gender, age, education and length of residence do not explain the difference between wired and non-wired residents in terms of social contact with mid-range ties. As with the previous analysis, the negative value of the intercept suggests that when other factors are controlled for, Netville residents experienced a drop in contact with mid-range network members as a result of their move. Those with access to Netville's high-speed network were able to counter this trend and maintain contact at pre-move levels.

Unlike social contact with network members within 50 km, where there was no effect of wired status, wired residents demonstrated a marginally better ability to maintain contact with ties in the 50-500 km range than non-wired residents. While wired Netville residents did not experience anything more than a very minor increase in contact relative to their pre-move experience, their level of contact improved on the experiences of non-wired residents. As hypothesized, access to free, high-speed, always-on Internet service increased contact with ties at the distance of 50-500 km.

3.1.3 Social Contact - Ties More than 500 Kilometres Away

As with ties located 50-500 km away, social contact by conventional means (i.e., telephone, in-person meetings) with network members more than 500 km away is increasingly expensive. To support the hypothesis that access to Netville's local network was most significant in increasing contact with distant social ties, wired residents should have reported their greatest increase in contact relative to non-wired residents for social ties at this distance.

Change in social contact with ties more than 500 km away is measured as a scale constructed from two variables reporting change in contact with friends and relatives at that distance. The distribution of the social contact scale at 500+ km follows the trend of the previous two analyses that as distance to network members increases, so does the proportion of participants indicating no change in social contact. The majority of participants, 66.7 per cent, reported the same level of contact with their most distant network members, while 14.8 per cent reported a decrease in contact and 18.5 per cent reported an increase in contact. Amongst wired

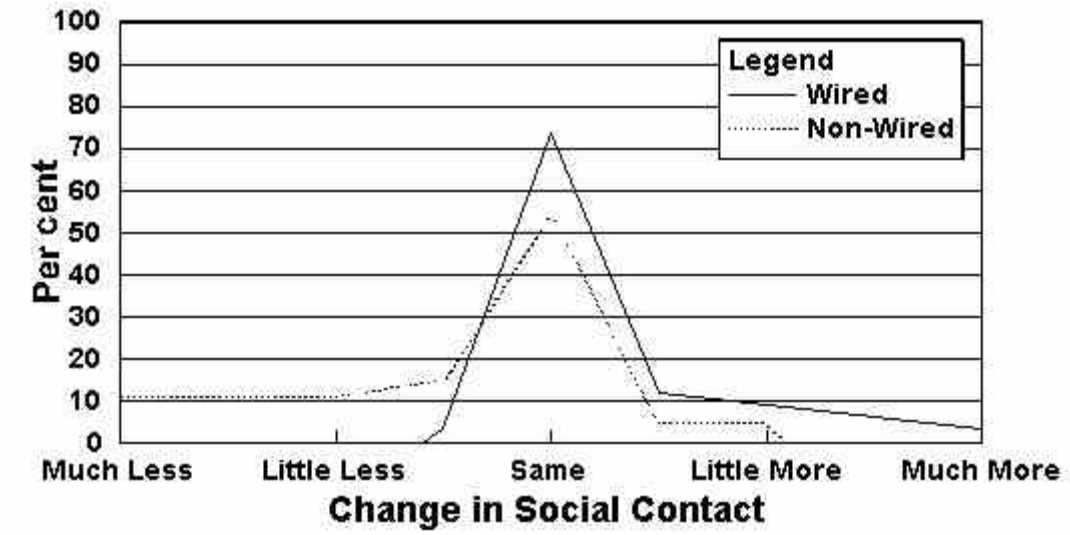

Figure 3.5 Change in social contact with distant ties (500+ km).

residents, only one participant reported a decrease in social contact while 73.5 per cent reported no change and 11.8 per cent reported an increase (Figure 3.5). As with the previous analysis, the distribution for non-wired residents tends to tail off toward less social support: 35 per cent reported some decrease and 55 per cent reported no change (Figure 3.5).

The mean scores in Table 3.2 confirm that, on average, wired residents reported an increase, and non-wired residents a decrease, in social contact with network members more than 500 km away. Keeping in mind that the modal score across all Netville residents was a report of "no change," this is the only time when wired residents averaged an increase in social contact in comparison to a year before their move. To verify that being wired does increases social contact with the most distant network members, I conducted an OLS regression including control variables for *gender*, *age*, *education* and *length of residence*.

Wired status and age are the only variables that significantly improve on the regression model predicting change in contact with ties more than 500 km away (Table 3.3). Examining the

standardized coefficients, wired status and age have a similar magnitude of effect on the dependent variable. For every one standard deviation unit increase in age or wired status there is a 0.3 standard deviation unit increase in contact with ties more than 500 km away. Wired status has the equivalent effect on social contact at this distance of 13 years of age. As has consistently been found, controlling for other factors, moving to Netville resulted in a drop in social contact. Those over the age of 38 and non-wired, and those over the age of 25 and wired, were able to maintain contact with distant network members at pre-move levels.

Netville residents with access to the high-speed local network experienced increased social contact relative to non-wired residents. Amongst older wired Netville residents there was an overall increase in social contact with network members more than 500 km away.

3.1.4 Comparing Social Contact Across Distances

On average, wired Netville residents experienced increased social contact with network members as distance increased. For ties outside of Netville but within 50 km, all Netville residents experienced a drop in contact. While the drop in contact experienced by wired residents at this distance was not as great as it was for non-wired residents, it was not a statistically significant improvement. At 50-500 km away, wired residents maintained contact at pre-move levels, significantly better than the drop in contact experienced by non-wired residents. Wired residents' ties at distances greater than 500 km were the only ties to experience an absolute increase in contact over pre-move levels. Non-wired residents experienced a drop in contact with ties at all distances. Despite the fact that wired residents improved on pre-move levels of contact with ties

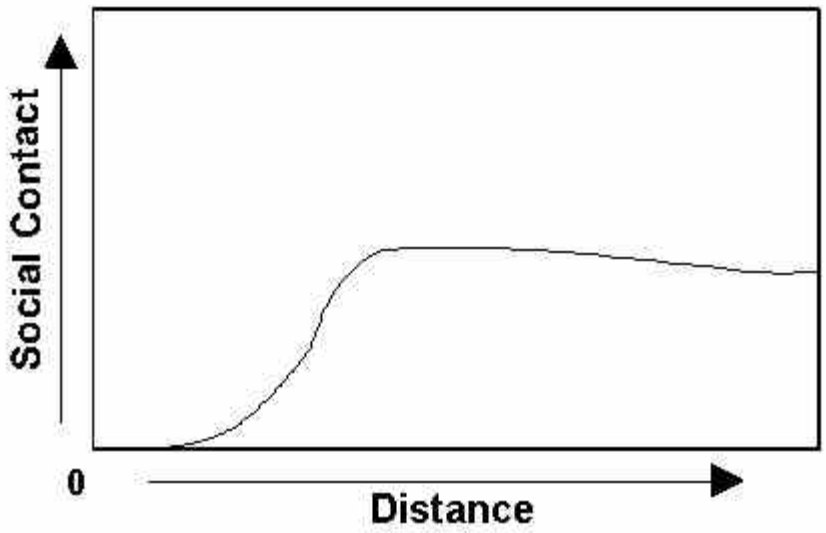

Figure 3.6 Change in social contact as distance to network members increases.

at greater than 500 km, it is inaccurate to conclude that access to Netville's free, high-speed, always-on Internet service had the greatest impact on contact with the most distant social ties.

The effect of wired status on social contact is partially concealed by the confirmation of S. D. Clark's (1966) and Herbert Gans' (1967) findings that moving to a new suburban neighbourhood has a negative effect on the ability of movers to maintain social contact with network members. A comparison of the unstandardized regression coefficients for wired status confirms that living in Netville with access to the high-speed network had the greatest impact on contact with ties located within the mid-range of 50-550 km. The effect of wired status, 0.45 standardized units at 50-500 km, drops to 0.40 units for network members at more than 500 km. While the difference between the coefficients for wired status at the two distances is not large, it supports the conclusion that the effect on social contacts of being wired levels out at distances beyond 50-500 km, or may even begin to drop. The relationship between computer-mediated communication, social contact and distance to network members is closer to what is illustrated in Figure 3.6 than what was hypothesized in Figure 3.1a. A possible explanation as to why

computer-mediated communication has a greater effect on contact with mid-range ties may relate to the types of support that are likely to be exchanged with ties at this distance. If contact encourages the exchanges of support and vice-versa, and CMC is better suited to aid in supportive exchange with mid-range ties, this may account for the greater impact of Netville's local network on contact with ties 50-500 km away. Frequent contact and the provision of tangible support reinforce each other (Homans 1961; Wellman and Wortley 1990). Change in the exchange of support with social ties as a result of access to Netville's local computer network is the focus of the following section.

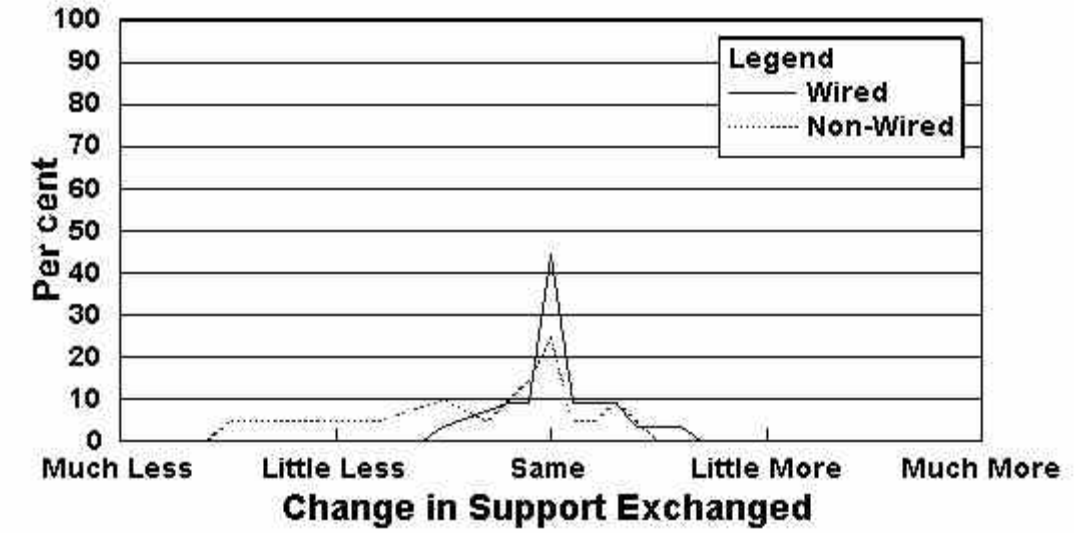

Figure 3.7 Change in support exchanged with all non-neighbourhood ties.

3.2 Exchange of Support

This analysis tests the hypothesis that living in a wired neighbourhood with access to free, high-speed, always-on Internet access increases the overall amount of support exchanged with social network members. Change in support with network members outside of the immediate neighbourhood is measured as a scale of 12 variables reporting change in support given and received from friends and relatives.

The scale for change in all social support outside of Netville is nearly equally distributed between those who experienced a drop in support (31.5 per cent), those who experienced no change (37.0 per cent), and those who reported an increase in support (31.5 per cent). Comparing the scale distributions for wired and non-wired residents (Figure 3.7), non-wired residents tended to respond closer to the extreme of "much less" support. Fully 79 per cent of wired Netville residents reported the same or more support after moving, compared to only 50 per cent of non-wired residents.

Table 3.4 Comparison of wired and non-wired residents by mean change in support exchanged with social ties at various distances (kilometres).[ab]

	All		Less Than 50		Between 50-500		Greater Than 500	
	Non Wired	Wired	Non Wired	Wired	Non Wired	Wired	Non Wired	Wired
Mean	-0.24$^{.004}$	0.05$^{.004}$	0.03$^{.647}$	0.10$^{.647}$	-0.51$^{.000}$	0.04$^{.000}$	-0.24$^{.014}$	0.01$^{.014}$
SD	0.50	0.20	0.72	0.41	0.64	0.21	0.52	0.19
Min	-1.50	-0.50	-1.50	-1.00	-2.00	-0.50	-1.50	-0.50
Max	0.33	0.58	1.00	1.00	0.25	0.75	0.50	1.00

Note: Numbers in superscript are p-values (ANOVA).
[a] Scale for mean score ranges from -2 "lot less" to +2 "lot more."
[b] N= 34 wired, 20 Non-Wired.

Table 3.4 confirms that there is a statistically significant difference between the mean score for wired and non-wired residents in terms of change in total support with all non-neighbourhood social network members. As with social contact, on average, non-wired residents reported a moderate drop in support, while wired residents were able to maintain support slightly above pre-move levels.

Table 3.5 examines *gender*, *age*, *education* and *length of residence* to see if they explain differences in support exchanged better than wired status does. The only variable to explain the difference in support is wired status. When controlling for other factors, those who moved into Netville experienced an overall decrease in support exchanged with network members across all distances. Living in Netville and being connected to the local high-speed network reversed this trend for wired residents and even generated a very minor increase in the amount of support exchanged in comparison to a year before their move.

Table 3.5 Coefficients from the regression of change in support exchanged on wired status and other independent variables at various distances (kilometres) (N=54).

Control Variables	All	Less Than 50	Between 50-500	Greater Than 500
Wired[a]	$0.29^{.004}$ (0.39)	—	$0.55^{.000}$ (0.54)	$0.25^{.014}$ (0.33)
Female[b]	—	—	—	—
Education	—	—	—	—
Age	—	—	—	—
Residence	—	—	—	—
Intercept	$-0.24^{.002}$	—	$-0.51^{.000}$	$-0.24^{.004}$
R^2	$0.15^{.004}$	—	$0.29^{.000}$	$0.11^{.014}$

Note: Numbers in superscript are p-values. Numbers in parentheses are standardized coefficients (β). Only those variables that significantly improved on the explained variance (R^2) are included in the final model.
[a] Dummy variable for wired status, reference category is wired – access to the high-speed network.
[b] Dummy variable for gender, reference category is female.

The data supports the hypothesis that living wired with access to free, high-speed, always-on Internet access increases the amount of support exchanged with social network members. However, the magnitude of this increase over pre-move levels is negligible. Being wired allowed Netville residents to maintain support at pre-move levels, where non-wired residents experienced a drop in support after their move. The following analysis expands on this conclusion by testing the hypothesis that the relationship between change in support and distance is non-linear. As described in Section 3.0, network members at the mid-range distance of 50-500 km are ideally situated to experience the greatest increase in the exchange of support as a result of being wired. To test this hypothesis a separate analysis will be conducted for each of three

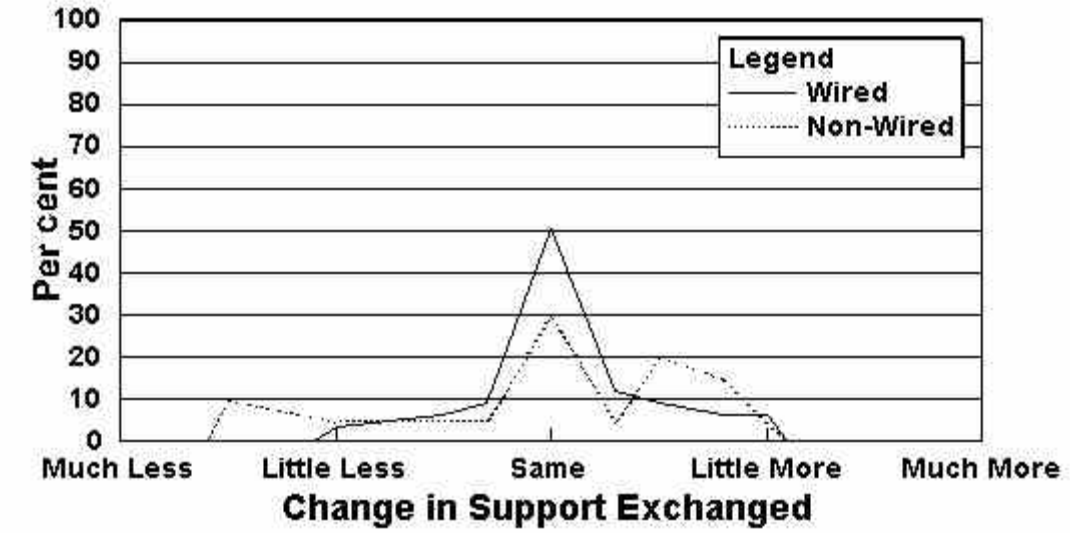

Figure 3.8 Change in support exchanged with non-neighbourhood ties within 50 km.

distances: non-neighbourhood ties *less than 50 km* away, network members *50-500 km* away and network members living *more than 500 km* away.

3.2.1 Exchange of Support - Non-Neighbourhood Ties Less Than 50 Kilometres Away

As hypothesized, there is no expectation that having access to Netville's high-speed network will have an appreciable effect on social support exchanged with non-neighbourhood network members living within closest proximity. Network members within easy physical access are already well positioned for the exchange of both instrumental and non-instrumental support. Access to new methods of communication, through high-speed Internet access, is unlikely to affect existing levels of supportive exchange.

The scale for change in support with non-neighbourhood ties within 50 km has been constructed from four variables reporting change in the amount of support given and received

from friends and relatives at this distance. The distribution of this scale reveals that 42.6 per cent of participants reported the modal value of no change, 20.4 per cent reported a decrease and 37.0 per cent reported some increase in the exchange of support. While the modal value for both wired and non-wired remains at "no change," a greater percentage of wired residents reported the same or an increase in support than non-wired participants (Figure 3.8). Of wired Netville residents, 82.4 per cent reported the same or more support after moving as compared to 75.0 per cent of non-wired residents.

Comparing the mean change in support exchanged with non-neighbourhood ties within 50 km reveals that, on average non-wired residents' reported almost no change in social support, where as wired residents' reported a slight, although not statistically different, increase compared to a year before their move (Table 3.4). To verify that being wired does not significantly affect support exchanged at this distance, the results of an OLS regression controlling for *gender*, *age*, *education* and *length of residence* is reported in Table 3.5.

Regression analysis confirms that wired status does not predict change in the exchange of social support with ties outside of Netville but less than 50 km away (Table 3.5). The introduction of age, gender, education and length of residence also failed to improve on the regression model. As hypothesized, both wired and non-wired residents experienced little to no change in the amount of support exchanged with network members at this distance.

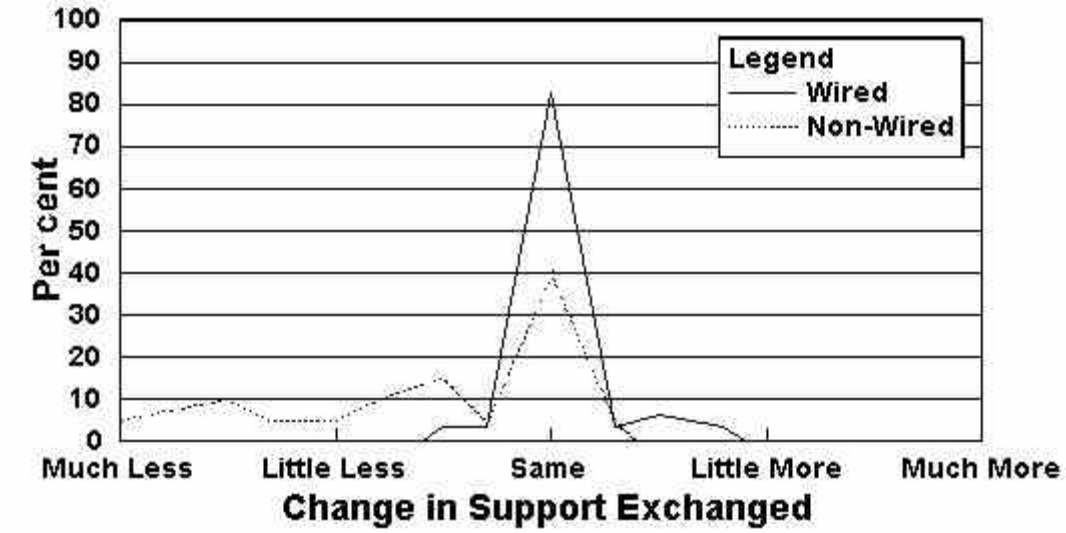

Figure 3.9 Change in support exchanged with mid-range ties (50-500 km).

3.2.2 Exchange of Support - Mid-range Ties 50-500 Kilometres Away

Social ties 50-500 km away are hypothesized to experience the greatest increase in support exchanged as a result of access to a free, high-speed, always-on Internet connection. The scale for change in support exchange with network members at this distance has been constructed from four variables reporting change in the amount of support given and received from friends and relatives 50-500 km away.

The majority of Netville residents (66.7 per cent) reported no change in the amount of support exchanged with mid-range (50-500 km) social ties. A decrease in support was reported by 24.1 per cent, and only 9.3 per cent reported some increase compared to a year before their move. An examination of the individual distributions for wired and non-wired participants (Figure 3.9) reveals that wired residents reported almost universally that their support had not changed at this distance (82.4 per cent), and only 5.9 per cent of participants indicated a decrease, while 11.8 per cent reported an increase. This compares to non-wired participants of

whom only 40 per cent reported no change and the majority (55 per cent) reported a drop in support with mid-range ties.

On average wired residents reported no change in the amount of support exchanged with mid-range ties compared to a year before their move (Table 3.4). On the other hand, non-wired residents averaged a moderate drop in the amount of support exchanged. The difference between the mean scores for wired and non-wired residents is highly significant at better than the 0.001 level.

Table 3.5 reports the results of an OLS regression that includes control variables for *gender*, *age*, *education* and *length of residence*. Being wired is the only variable in this model that improves on the explained variance. As was the case with social contact, moving also inhibited the exchange of support with mid-range ties. Netville residents connected to the local high-speed network were able to overcome barriers to the exchange of support introduced as a result of moving. Relative to non-wired residents, wired residents demonstrated a significant increase in the exchange of support as a result of access to free, high-speed, always-on Internet service.

3.2.3 Exchange of Support - Ties More than 500 Kilometres Away

The most distant social ties, those more than 500 km away, are not hypothesized to show a significant increase in the exchange of support as a result of access to computer-mediated communication. The lack of physical access to the most distant network members makes them ill-suited for the exchange of instrumental forms of aid. Access to new methods of

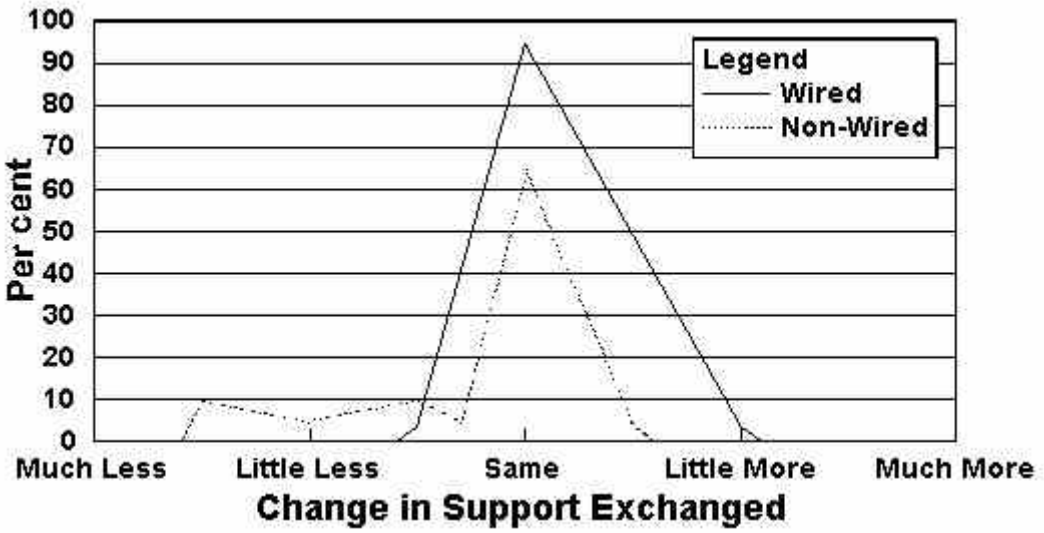

Figure 3.10 Change in support exchanged with distant social ties (500+ km).

communication, provided through high-speed Internet access, may at best allow for a minor increase in the exchange of non-instrumental support.

The scale for change in support with network members more than 500 km away is based on four variables reporting change in support given and received from friends and relatives at this distance. More than ever, the distribution of the support scale has small tails, and shows that 83. 3 per cent of Netville residents reported no change, 13.0 per cent reported a decrease, and only 3.7 per cent reported an increase in support with ties more than 500 km away. Again there are major differences between the distribution of scores for wired and non-wired residents (Figure 3.10). Almost all wired residents (97.1 per cent) reported no change or an increase in the amount of support exchange. This compares with only 70.0 per cent of non-wired residents who reported no change or an increase in support. Fully 30.0 per cent of non-wired residents experienced a drop in support with their most distant social ties compared to only 2.9 per cent of wired residents.

On average, wired Netville residents experienced increased support with distant social ties (500+ km) relative to their non-wired counterparts (Table 3.4). As with the previous analysis of social support, wired residents, on average, experienced support at levels consistent with their pre-move experience, while non-wired residents experienced minor drops in support.

Regression analysis with an extremely light-tailed dependent variable, as is the scale for change in support at more than 500 km, violates the assumption of equal variance (homoscedasticity). As a result, the OLS regression reported in Table 3.5 for ties at 500+ km should be interpreted with caution. Still, wired status is the only variable to significantly improve on the regression model predicting change in social support with distant social ties. Moving to Netville continues to have a negative effect on the exchange of support. Being connected to Netville's high-speed network allowed residents to maintain support at pre-move levels. Relative to non-wired residents, wired residents experienced a modest increase in contact with their most distant social ties.

3.2.4 Comparing the Exchange of Support Across Distances

As hypothesized, social ties at the mid-range distance of 50-500 km experienced the greatest increase in the exchange of support as a result of access to free, high-speed, always-on Internet access. As described in Figure 3.1b, wired Netville residents experienced no change in the exchange of support with non-neighbourhood ties within 50 km and only a minor increase in support with ties more than 500 km away. Although the total change in support was marginal, being connected to Netville's high-speed network had more than twice the effect on support with

network members at the 50-500 km range as it did with those at more than 500 km.[3] While this is a study of new suburban movers, there is no reason to believe that the overall pattern of how wired connectivity affects the exchange of support would change if this study had been conducted in an established residential community.

3.3 Conclusion

Moving to Netville, a new suburban neighbourhood, reduced contact and support with friends and relatives. The move to a new home and neighbourhood can be both exhilarating and stressful. Former neighbours are no longer at hand, and with the move to an outer suburb, distance may play a role in reducing contact and the exchange of support with network members (Gans 1967; Clark 1966). Social capital, access to instrumental and supportive resources provided through contact with network members, decreases as a result of moving to a new suburb. Yet Netville residents with access to a free, high-speed, always-on computer network were more successful than the non-wired in maintaining contact and exchanging support with friends and relatives.

Relative to the non-wired, wired residents demonstrated increased contact and support as a result of CMC. The change in contact and support experienced by Netville's wired residents was nonlinear as distance to network members increased. Access to Netville's local computer network played no role in changing the amount of contact or support exchanged with friends and family outside of Netville but within 50 km. Beyond 50 km but within 500 km, wired Netville

[3] Based on a comparison of unstandardized regression coefficients.

residents were able to maintain contact and support at pre-move levels, while the non-wired could not. Beyond 500 km, the effect of Netville's local computer network on social contact levelled off, while the effect on support decreased to half of what it was for ties at 50-500 km. There was no indication at any distance that those with access to Netville's high-speed computer network experienced any drop in contact or support as a result of CMC. If this study was to be replicated in an established residential community, where the effect of moving could be removed, we would expect contact and support to increase beyond pre-existing levels with non-neighbourhood ties living beyond 50 km.

My own experience in maintaining contact and exchanging support with friends and family outside of Netville was not very different from what other residents reported. As a graduate student with limited financial resources, I found commuting and communicating the relatively short distance of 50 km to Toronto an ongoing challenge. To call Toronto from Netville meant incurring long distance telephone charges or a monthly fee of $30 for unlimited regional calling. Travelling to Toronto by public transit was nearly impossible, with only a handful of painfully slow commuter trains and buses running daily. Transportation by private automobile was equally a challenge. Timed correctly to avoid rush hour, it was possible to travel by car from Netville to downtown Toronto (where the University of Toronto and my office were located) in just under 45 minutes. If travel was attempted during rush hour, or if there was a traffic accident or road construction, one-way travel times easily exceeded two hours. After only a few months, I found it necessary to trade in my existing car for a new vehicle so that I had adequate speed, heat and air-conditioning to tolerate the commute. Even then I avoided travelling to the city any more than two days a week. The price and accessibility of computer-mediated communication (CMC) provided through Netville's local network encouraged me to adopt CMC

as the principal means by which I maintained contact with members of my social network living in Toronto and beyond.

It is not that the Internet is special in its ability to maintain social ties. Rather, the Internet is another means of communication used along with existing media. When distance makes in-person or telephone communication difficult, computer-mediated communication has the potential to fill the gap. Friction of time and space has traditionally limited social contact with the most distant members of our social networks. Where contact can facilitate the exchange of support, CMC mediates the effect of distance, increasing supportive exchanges with those who were previously just out of reach. Despite the Internet's ability to connect people across distance, its potential to connect people at the local neighbourhood level may be more significant. The topic of local social ties will be explored in the following two chapters.

CHAPTER 4

NEIGHBOURHOOD SOCIAL CAPITAL

CHAPTER 4

NEIGHBOURHOOD SOCIAL CAPITAL

4.0 Introduction

The lessons of the community question have shown that although strong supportive social relations continue to exist in the urban setting, they generally are not neighbourhood based. On average, most North Americans have few strong ties at the neighbourhood level (Wellman 1979; Fischer 1982; Putnam 2000). Personal communities consist of networks of far-flung kinship, workplace and interest group relations, and not place-based communities of geography (Wellman 1999). While there is no reason to suspect that these relations provide less support or companionship than what might be available from social ties in the neighbourhood setting (Wellman 1999; Fischer 1982), the formation of local social capital has a number of advantages.

Social ties that are physically accessible are well suited for the provision of instrumental aid and support, such as lending and giving household items, help with household repairs, and aid in dealing with organizations (Wellman and Wortley 1990). "Neighbourhood social capital" has been highlighted by Jane Jacobs (1961) as important for increasing neighbourhood safety, improving the flow of information amongst neighbourhood residents, and aiding neighbourhood collective action. Robert Putnam points to the role of social capital in increasing housing values and in preventing neighbourhood decline (2000: 323). Youth in neighbourhoods where they can draw on social capital are more successful in finding job contacts outside of their neighbourhood, and avoiding social problems including, drugs, crime and teen pregnancy (Putnam 1993; 2000).

Social capital at the neighbourhood level has been shown to increase neighbourhood safety and to reduce crime (Sampson and Groves 1989; Sampson, Raudenbush and Earls 1997). Other studies suggest a positive relationship between social capital and health (Lynch and Kaplan 1997; Kawachi, Kennedy and Glass 1999; Wilkinson 1996; 1999; Veenstra 2001). In general, neighbourhoods with high social capital are safer, better informed, higher in social trust and better equipped to deal with local issues.

Fischer (1975; 1982) argues that the existence of diverse subcultures in the urban environment allows people to place similarity of interest over similarity of setting in selecting social ties. While this does not exclude the possibility that neighbourhoods can be a source of social relations (Park 1925), it is presumed that urban residents are more likely to find social ties who are more compatible at a distance and in other social circles. Indeed, those in less urban areas with less physical access to other people know more neighbours than those in more urban areas with access to a larger population (Fischer 1982: 102). Other factors, such as home ownership, competing time commitments, and neighbourhood involvement also influence social tie formation at the neighbourhood level (Fischer 1982). Indeed, there are also places where people simply do not want to communicate with those around them (Banfield 1967). However, as Putnam (2000) emphasizes, the amount of neighbourhood socializing and the strength of neighbourhood social ties in general have decreased since the 1950s (Putnam 2000: 105-106).

This chapter addresses the question of whether or not living in a neighbourhood with a high-speed computer network increases social capital at the local level (neighbourhood social capital). I argue that just as computer-mediated communication can be used to increase social

contact and the exchange of support with distant social ties (see Chapter 3), the location of this technology in the home facilitates the formation of social capital at the local level.[4]

The availability of a large, diverse urban population with subcultures matching every interest (Fischer 1975) is only part of the explanation as to why people tend to develop few strong neighbourhood ties. *Access* is equally as important as social similarity in determining the likelihood of tie formation. Homophily has as much to do with a preference to associate with similar others, as it does with a tendency for people to meet others while participating in activities that tend to attract homogeneous sets of people (Feld 1982). As described by Gans in his study of suburban Levittown, "if neighbours are compatible . . . they may not look elsewhere for companionship" (1967: 154-155). If people are given the opportunity to interact and exchange information in the local setting, they will be more likely to form local social ties of all strengths.

The expectation that improved opportunities for local interaction lead to increased neighbourhood involvement is supported by research on neighbourhood common spaces. Research into urban design has shown that the provision of neighbourhood common spaces increases local social capital through tie formation, stronger local ties, and higher levels of community involvement (Brunson, Kuo, and Sullivan 1996). Similarly, "New Urbanism" and "neo-traditional" planning advocates the use of neighbourhood common spaces, front porches and other design factors to encourage surveillance, community participation and a sense of territoriality (Atlas 1999). Instead of arguing environmental determinism, I suggest that it is the

[4] This of course assumes that local residents don't have a conscious aversion to developing ties at the local level.

opportunity for local social interaction that is ultimately responsible for increased social capital, in the form of local tie formation and increased public participation. If opportunities for interaction can be provided through computer-mediated communication, it should provide a similar increase in neighbourhood social capital.

It could be argued that proximity in itself should encourage the formation of local social ties. While neighbourhood residents are physically close, they are not always accessible. Despite neighbours' physical proximity, there are few opportunities for social interaction. Unlike many other foci of activity, neighbourhoods lack institutional opportunities for social contact. Local institutions that do exist to promote local interaction (cafés, bars, community organizations, etc.) are in decline (Putnam 2000; Oldenburg [1989] 1999), and are in many cases absent from the suburban setting (Jacobs 1961). Workplaces, places of worship, associations and other formal interest groups have built-in mechanisms, in terms of meetings, common goals and common interests that promote social contact and tie formation. Although the prevalence of built-in mechanisms varies by location and design (Jacobs 1961), many neighbourhoods lack these same opportunities. As a result, it is simply easier to gather information on the suitability of others for tie formation in social circles that are not neighbourhood based. In addition, urban neighbourhoods have built-in psychological, temporal and spatial barriers to social contact. Unlike the traditional workplace and other associations that often have fixed meeting times and places, social contact in the neighbourhood setting is less planned and lacks established methods of communication. Temporal restraints limit in-person contact to those times when both neighbours are at home, generally the weekends, the early evening, and in the hours between arriving home from work and preparing for bed. This is further complicated in suburbia where

commuting reduces the number of available hours for neighbourhood socializing. The growth of the unstandardized work week, and the increasing ability to access services during non-traditional hours, reduces the ability of neighbours to predict when other neighbours are home and available to accept visitors. Spatial barriers and issues of territoriality can further inhibit social contact (Newman 1973). Psychological barriers, including a fear of embarrassment, a fear of giving offence, and a general fear of imposing on neighbours' commitments can also inhibit neighbouring (Jacobs 1961: 62; Oldenburg [1989] 1999). In a typical residential community new movers often form a number of local social ties shortly after moving in (Gans 1967), but as time progresses they look beyond neighbourhood borders to other social circles for the provision of resources and social support (Fischer 1982: 99). For neighbours to come together and act collectively often requires highly motivated individuals to knock on the doors of near strangers to generate support for individual causes.

The introduction of a high-speed local computer network in the residential setting could reverse the trend of neighbourhood non-involvement. Use of computer-mediated communication might improve the flow of information and serve to expand local social networks, generating high levels of social capital, reducing the cost and increasing the speed of community involvement. In a wired neighbourhood, residents may not have to rely on what information can be gained through chance encounters to gather information on the suitability of neighbours for friendship formation. Neighbourhood ties may no longer be limited to those households in immediate visual contact (as observed by Gans 1968) but could be more widely spread throughout the community.

In a wired neighbourhood, where there is widespread access to computer-mediated communication, I hypothesize that wired residents will adopt computer-mediated communication for use at the local level. The use of computer-mediated communication should serve as a new means of social contact to bridge existing barriers to social interaction and tie formation at the local level. Specifically, I will test the following hypotheses:

a) Living in a wired neighbourhood will encourage participation in the public realm.

b) Compared to non-wired residents, those connected to the local computer network will have a greater number of local social ties of various tie strengths.

c) Wired residents will have a denser network of local social relations than non-wired residents.

d) Computer-mediated communication will supplement existing means of communication and not replace them. Those with access to computer-mediated communication at the local level will have higher levels of contact with local ties through other means of communication (i.e., the telephone).

e) Access to Netville's high-speed network will increase the number of active local social ties – those ties' participants are in regular contact through any form of communication.

f) In a wired neighbourhood stronger social ties will form in close proximity to the home, while weaker social ties will form at a greater distance than with non-wired residents.

4.0.1 Plan of Analysis

The starting point for this analysis is the formation of early social ties within Netville, beginning with the early settlement of the development. My aim is to compare the situation within Netville

to a typical new suburban housing development, focusing on how the local computer network helped residents overcome physical and psychological barriers to the formation of social ties during early settlement. The analysis then compares wired and non-wired Netville residents, testing the hypotheses that wired residents had more local social ties and belong to a more densely connected local network. Focusing on how neighbourhood social ties were formed and maintained, this analysis also examines whether, as predicted, access to information through the local computer network increased the volume of communication between wired residents – not only online but in-person and over the phone. This extends into a comparison of the number of active local social ties maintained by wired and non-wired residents. Drawing on the observations of Gans (1967) in the suburb of Levittown, the spatial distribution of wired and non-wired residents' social ties are compared. The chapter concludes with a discussion of how the local computer network and levels of local social capital affected neighbourhood surveillance and participation in the public realm.

Data for this analysis consist of data collected as part of a whole network questionnaire as described in Chapter 2, and ethnographic observation. In addition to analysis of variance (ANOVA) comparing wired and non-wired residents, ordinary least squares (OLS) regression is used to control for factors other than *wired status* that may contribute to any observed difference between wired and non-wired participants. As described in Chapter 3, variables for *gender*, *age*, years of *education* and *length of residence* (the length of time participants had lived in Netville at the time they were interviewed) are used as explanatory variables in the regression analyses. The rationale for including each control variable is as follows:

a) *Gender* – women traditionally take on greater responsibility for the maintenance of household social ties (Wellman 1992; Wright 1989).

b) *Age* – contributes to higher levels of social capital which may facilitate the formation of local social ties.

c) *Education* – contributes to greater social and financial capital which may facilitate the formation of local ties.

d) *Length of residence* – previous studies suggest that tie formation and neighbouring are affected by length of residence (Gans 1967; Clark 1966; Fischer 1982). Suburban movers potentially develop a large number of generally weak social ties during early settlement (Gans 1967; Fischer 1982), but replace them with a much smaller number of strong ties as time increases (Clark 1966; Fischer 1982).

In calculating the density of Netville residents' social ties, it was necessary to generate a square symmetrical network. A square network removes from the analyses those Netville residents who did not complete the whole network survey but who may have been selected as social ties by those who did complete a survey. The removal of those network members and their ties has the potential to bias the calculation of network density. The use of a symmetrical network assumes that if a participant selects another resident as a social tie, they should also be selected by that resident as a corresponding tie. This potentially corrects for respondent error by including social contacts that took place, but were not recalled during the interview by one member of the dyad. Simultaneously, it includes social ties that did not exist, but were falsely identified on the survey by one member of the dyad. It would be difficult to control or correct for any bias that may have resulted from these factors, although there is no expectation that any significant bias exists.

Figure 4.0 Early in-person social contact was discouraged by the physical environment.

4.1 Early Settlement

During the early stages of home construction, Netville's physical environment resembled that of most new residential developments. The first homes to be occupied were not built within easy access of each other, but were dispersed widely throughout the development. Streets were not paved nor were lawns planted, soil conditions were such that it was common for vehicles and construction equipment to sink into unpaved driveways to the point of immobility.[1] To walk around the neighbourhood meant incurring at least a moderate dry-cleaning bill (see Figure 4.0). This is not unusual. S. D. Clark (1966) made similar observations of the physical environment nearly a half century earlier in studying a new suburban development neighbouring onto Netville.

[1] There are unverified neighbourhood reports of a helicopter being called in to remove sunken bulldozers.

During early settlement, the condition of the physical environment surrounding Netville was less than conducive to the formation of local social ties. Yet, consistent with observations from previous studies of new suburban neighbourhoods, there was persistent need for access to local information and support (Gans 1967; Clark 1966).

Almost all of Netville's early residents needed to obtain information about local services, such as a good dry cleaner, a reliable babysitter, or a trustworthy repair shop. When interviewed, residents expressed a need to identify playmates for young children and to find neighbours willing to lend household items. The "wired" status of Netville also prompted an interest in locating those who were willing and able to provide informal computer support. As is generally the case when people move to a new neighbourhood (Gans 1967), Netville residents began forming local ties to help meet these and other needs. In Netville, I hypothesize that the local computer network would have provided a new and alternative means of communication that would further facilitate tie formation during this early settlement period. This is exactly what happened!

4.1.1 The Neighbourhood E-mail List

The primary purpose of the local high-speed network, as it was initially conceived by the Magenta Consortium, was not social connectivity, but access to information. As depicted on bulletin boards located at the entrance to Netville and on displays in the developer's showroom, the primary advantage of living in a wired neighbourhood was access to information (see Figure 4.1). With the exception of the video phone, the Netville network itself actually provided few

Figure 4.1 Bulletin board highlighting the educational "smart" advantage to living in a wired neighbourhood.

opportunities to interact online.[2] Residents were limited to high-speed Internet access and a small number of education oriented CD-ROMs. Although the network was geared toward information gathering rather than interpersonal communication, the residents of Netville soon recognized the potential for the computer network to build local social ties. As early as my first visit to Netville, I observed residents approaching Magenta representatives, who were in the community installing equipment, asking for the e-mail addresses of other residents.

In July 1997, Magenta established NET-L, a neighbourhood e-mail list that allowed Netville residents to send a message to one e-mail address and have it automatically distributed

[2] The video phone was rarely used with the exception of demonstrations for friends and relatives and the occasional use by local children.

to every household connection on the local computer network.[3] NET-L became one of the earliest opportunities for neighbourhood interaction. Within the first few months, the list was used by residents as a means to exchange introductions, organize barbecues and parties, search for missing pets, exchange information on local services, share information related to the local town government, and to help children locate potential friends or seek help with their homework. Through online introductions, often consisting of little more than a name, address and occupation, residents were able to find others at the local level who shared common interests and experiences. Discussions on NET-L were generally focused on five activities:

- The exchange of instrumental and emotional support
- Communicating information about local activities (i.e., town meetings, parties, changes in the garbage pickup schedule)
- Discussing local events
- Introductions by new residents
- Announcements made by Magenta on the availability of new software and electronic services.

No resident ever sent a message to NET-L with the obvious intention of offending or muting the voice of another resident (as is the case on many e-mail and Usenet lists where there is frequent *flaming* among participants.)[4]

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[3] The Magenta Consortium was initially reluctant to establish NET-L. They felt residents would be uninterested in a "low-bandwidth" technology given that they had access to a high-speed broadband network. However, after some persuasion from residents, and myself, Magenta established NET-L as a temporary means for residents to communicate online until a more colourful broadband application could be developed.

[4] "Flaming" is an openly hostile e-mail communication, the equivalent of online cursing.

As hypothesized, wired residents of Netville adapted the high-speed network for local use. The network provided a new means of communication that was successfully used to overcome psychological, temporal and spatial barriers to social contact. In addition, the use of computer-mediated communication was successful in overcoming physical barriers that made in-person contact difficult in a new suburban development.

4.2 Local Social Ties

The following section test the hypotheses that:

a) Compared to non-wired residents, those connected to the local computer network had more local social ties of various tie strengths.

b) Wired residents had a denser network of local social relations than non-wired residents.

NET-L provided wired Netville residents with specific cultural capital in terms of knowledge of local events, local services and the opinions and activities of other residents. The cultural capital gained through NET-L served as a bridge between Netville residents. Residents who casually met on the street or at the corner mailbox, instantly had something in common and something to share in terms of the latest community information. Just as the topic of "the weather" can serve as a common conversational reference between near strangers, topics from NET-L filled this role in Netville. The local nature of the list helped to personalize first encounters with a sense of shared interest, common concern and sense of community. Residents commonly recalled how initial in-person introductions increased in intimacy as residents equated the facial presence of an individual to their e-mail address, or how they signed their NET-L messages. NET-L may have been particularly important in the development of local social ties for those residents without children or household pets (both of which tend to attract children and their parents). It served as a substitute to the traditional extension of social ties between neighbourhood children and their parents (Gans 1967).

Table 4.0 presents the mean number of Netville residents that participants "recognized by name," "talked with on a regular basis," and "visited in the past six months" (i.e., invited into their home or invited into the home of a neighbour). Wired Netville residents, those connected

Table 4.0. Comparing mean number of local ties of wired and non-wired residents.[a]

		Mean	Std Dev
Recognized by name	Wired	$25.2^{.000}$	18.8
	Non-Wired	$8.4^{.000}$	4.6
Talked to on a regular basis	Wired	$6.4^{.061}$	7.2
	Non-Wired	$3.2^{.061}$	2.9
Visited in the past six months	Wired	$4.8^{.147}$	4.5
	Non-Wired	$3.2^{.147}$	3.1

Note: Numbers in superscript are p-values (ANOVA).
[a] N= 36 Wired, 20 Non-Wired.

to the local computer network, recognize three times as many, talk with twice as many, and visited 50 per cent more of their neighbours compared to their non-wired counterparts.

Each of the three tie types, *recognition*, *talking* and *visiting*, represents a progression in tie strength. As suggested by Granovetter (1973), tie strength is not necessarily a meaningful indicator of the utility or value of a tie. Weaker social ties are a form of social capital because they may be more capable of providing access to information and resources potentially unavailable from stronger social networks (1974; 1982). Weak ties can serve as bridges to networks of relations that have access to information and resources unavailable through stronger, more densely knit social ties. In the Netville example, name recognition implies that a person knows enough about an individual to exchange greetings and to potentially share information and resources. It is a measure of social capital. Stronger social ties, between those that residents *talk* or *visit* with, are also associated with social capital, although of a slightly different form, in that

Table 4.1 Coefficients from the regression of number of local ties on wired status and other independent variables (N=56).

Control Variables	Recognized	Talked With	Visited
Wired[a]	$14.54^{.001}$ (0.41)	$3.21^{.061}$ (0.25)	—
Female[b]	—	—	—
Education	—	—	—
Age	$0.67^{.019}$ (0.29)	—	—
Residence	—	—	$2.18^{.042}$ (0.27)
Intercept	$-14.38^{.155}$	$3.15^{.023}$	$1.12^{.484}$
R^2	$0.30^{.000}$	$0.06^{.061}$	$0.27^{.042}$

Note: Numbers in superscript are p-values. Numbers in parentheses are standardized coefficients (β). Only those variables that significantly improved on the explained variance (R^2) are included in the final model.
[a] Dummy variable for wired status, reference category is wired – access to the high-speed network.
[b] Dummy variable for gender, reference category is female.

they are more likely to provide broader support, emotional aid and companionship (Wellman and Wortley 1990: 566). Taken together and viewed in the context of the local setting, a large social network of both strong and weak ties is an indicator of high neighbourhood social capital.

A regression analysis was performed to explore the contributions of *gender*, *education*, *age* and *length of residence* on the number of local ties (Table 4.1). Only age and wired status were associated with the number of Netville residents recognized by name. Being connected to Netville's high-speed network increased the number of local residents recognized by slightly more than 14 people. Access to the local computer network was equivalent to being nearly 22 years old in the effect it had on increasing the number of local residents that participants recognized. However, age did not significantly predict the number of neighbours Netville

residents talked with on a regular basis. Wired status was the only variable to improve on this regression model. On average, all Netville residents talked with 3.15 neighbours on a regular basis. Access to the local network increased this number by an additional 3.21, for a total of 6.36 ties. However, wired status was not significantly associated with the number of neighbourhood residents participants had visited within the past six months: Length of residence is. At the time Netville residents were interviewed, they had lived in Netville for up to two years. Each year of residence was associated with an increase in the number of neighbours visited by 2.18 ties.

As hypothesized, those with access to the high-speed local network had significantly more ties in Netville. This was true for those ties participants recognized by name and talked with, but not those they visited. The greater number of local ties recognized and talked with on a regular basis suggests that Netville residents connected to the local network had higher social capital than those not connected to the network. As the following comments from two Netville residents posting messages to NET-L indicate, wired residents were very aware of the local computer network's impact on neighbourhood social capital.

> I have walked around the neighbourhood a lot lately and I have noticed a few things. I have noticed neighbours talking to each other like they have been friends for a long time. I have noticed a closeness that you don't see in many communities (Netville Resident, Message to NET-L 1998).

> I would love to see us have a continuation of the closeness that many of us have with each other, even on a very superficial level. Do not lose it, we know each other on a first-name basis (Netville Resident, Message to NET-L 1998).

The finding that being wired does not increase the number of neighbours visited is consistent with observations made by Gans (1967) in the new suburban settlement of Levittown. Gans reported that Levittowners increased visiting and general neighbouring as time progressed (1967: 262). While improved access to local residents through computer-mediated communication may be important in increasing neighbour recognition and the number of

neighbours residents talk to on a regular basis, it may not be sufficient to allow for the formation of stronger social ties. Even with access to local others for tie formation, people may still choose to establish their strongest social ties with those who are more homogeneous and in other social circles.

4.2.1 Network Density

Based on a matrix consisting of the 56 Netville residents who completed the entire network portion of the survey, there is the potential for up to 1,540 local social ties of varying strengths (Wasserman and Faust 1994: 101). Based on *recognition,* there are 233 social ties within the Netville sample. The overall network density, or proportion of social ties present in the sample, is 0.151 (1994: 101). Dividing the sample into two subgraphs, one consisting exclusively of wired residents and the other of non-wired residents, the densities of each subgraph are 0.286 and 0.068 respectfully (1994: 102). Table 4.2 compares the overall and subgraph densities of *recognition*, *talking* and *visiting* ties. Non-wired Netville residents are less than one-quarter as interconnected in terms of recognition, less than one-third as connected in terms of talking, and roughly only two-thirds as connected in terms of visiting in comparison to wired residents. In addition, wired and non-wired residents are not socially isolated from each other. Looking at each of *recognition*, *talking* and *visiting,* the connectivity between non-wired and wired residents is similar to the level of connectivity observed in the non-wired subgraphs. This suggests that not only did computer-mediated communication play a strong role in building social networks between wired households, but that it did not inhibit the formation of social ties between wired and non-wired homes. Ethnographic evidence suggests that wired residents may have felt

Table 4.2. Number and density of local social ties within sample (N=56).

		Max Possible	Actually Observed	Density
Recognized by name	Total	1540	233	0.151
	Within Wired[a]	630	180	0.286
	Within Non-Wired[b]	190	13	0.068
	Between Wired/Non-Wired[c]	720	40	0.056
Talked to on a regular basis	Total	1540	79	0.051
	Within Wired[a]	630	54	0.086
	Within Non-Wired[b]	190	5	0.026
	Between Wired/Non-Wired[c]	720	20	0.028
Visited in the past six months	Total	1540	55	0.036
	Within Wired[a]	630	38	0.060
	Within Non-Wired[b]	190	7	0.037
	Between Wired/Non-Wired[c]	720	10	0.014

[a] Consists of ties within the subgraph for wired residents.
[b] Consists of ties within the subgraph for non-wired residents.
[c] Consists of ties between the two subgraphs for wired and non-wired residents.

compelled to initiate contact with non-wired residents in order to pass on community information from NET-L. For the benefit of non-wired residents, wired residents would often print a paper copy of NET-L postings related to local events and post them on neighbourhood "Superboxes" (post office boxes) (see Figure 4.2).[5]

A calculation of the network density of social ties within Netville confirms the hypothesis that there was greater connectivity amongst wired residents than non-wired residents. As a

[5] Canada Post "Superboxes" are both mailboxes for outgoing mail and personal boxes for incoming mail. Canada Post no longer delivers mail door-to-door in new residential subdivisions, instead a small number of homes share a single Superbox. There were three Superboxes in Netville.

Figure 4.2 A message from NET-L posted on one of the local Canada Post "Superboxes" (post office boxes).

measure of group cohesion, the density of social relations indicates greater social capital amongst wired residents than between non-wired residents. Members of social networks that are of a higher density may also be more successful in obtaining information from other network members, which serves to increase individual social capital. Indeed, personal information broadcast by Netville residents over the local computer network was instrumental in the formation of local social ties. The sharing of information online allowed residents with access to the local network to more easily identify others who shared common characteristics. In Netville, wired residents did not have to rely on physical accessibility, and what information could be gained through chance encounters (mowing the lawn, gardening, etc.) to learn about the suitability of neighbours for friendship formation. Use of computer-mediated communication in Netville facilitated recognition, individual introductions and the sharing of personal information.

4.3 Local Communication Patterns

This section examines the amount of communication between Netville residents using a variety of communication technologies and tests the hypothesis that computer-mediated communication is a supplement to existing means of communication and not a replacement. In other words contact leads to contact. Specifically, those with access to computer-mediated communication experience higher levels of contact with local ties. This hypothesis runs counter to existing research suggesting that, as people spend more time on the Internet, they spend less time communicating through other means (Nie and Erbring 2000), but is congruent with the findings of Wellman, Quan, Witte, and Hampton forthcoming, that online contact adds on to in-person and phone contact.

4.3.1 Volume of Communication

Table 4.3 focuses on the volume of communication between Netville residents. In addition to talking with more of their neighbours (Tables 4.0 and 4.1), wired Netville residents made four times as many local phone calls as their non-wired counterparts. The average Netville resident with access to the local computer network made 22.3 local phone calls in the month prior to being interviewed, as compared with an average of 5.6 phone calls for non-wired residents. Wired residents further reinforced their total volume of local communication with 4.1 personal e-mail messages per month, for an average total volume of 26.4 local communications.[6] Comparing the wired and non-wired in terms of their total volume of monthly communication, wired residents made 4.7 times as many local communications by phone and e-mail.

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[6] The focus of this analysis is on *personal communication*. E-mail sent to the local discussion list NET-L was public e-mail targeted at all wired Netville residents and is excluded from this analysis. Table 4.4 excludes the average 17.3 e-mails sent to NET-L each month (based on the number of e-mails sent to NET-L between the list's conception on July 22, 1997 and the official end of the Netville trial on December 31, 1998).

Table 4.3. Comparing the mean values for wired and non-wired residents' monthly volume of local communication (within Netville).

		Phone	E-mail[a]	Total
Recognized by name	Wired	$22.3^{.063}$ (37.7)	4.1^{b} (7.5)	$26.4^{.025}$ (38.5)
	Non-Wired	$5.6^{.063}$ (10.6)	—	$5.6^{.025}$ (10.6)
Talked on a regular basis	Wired	$20.7^{.061}$ (37.8)	2.6^{b} (5.7)	$23.3^{.034}$ (38.4)
	Non-Wired	$4.1^{.061}$ (8.2)	—	$4.1^{.034}$ (8.2)
Visited in past six months	Wired	$20.9^{.083}$ (37.5)	2.4^{b} (5.6)	$23.3^{.050}$ (38.2)
	Non-Wired	$5.4^{.083}$ (10.6)	—	$5.4^{.050}$ (10.6)

Note: Numbers in superscript are p-values (ANOVA). Numbers in parentheses are standard deviations.
[a] does not include e-mail messages sent to Net-L, the neighbourhood e-mail discussion list.
[b] ANOVA not performed, no variation from zero for non-wired.
N = 22 Wired, 20 Non-Wired.

Focusing on those local ties residents talked with on a regular basis, wired residents were more active local communicators in comparison to non-wired residents (Table 4.3). Wired residents made 5.0 times as many local phone calls as those without access to the local computer network. Wired residents also sent an average of 2.6 e-mail messages per month to those they talked with on a regular basis. In total, wired residents communicated 5.7 times more by phone and e-mail with those Netville residents they talked with on a regular basis than did non-wired residents.

With those they visited, wired Netville residents averaged nearly four times as many telephone calls as non-wired residents (Table 4.3). However, the difference between the mean

scores for the wired and non-wired is not as statistically significant as it was for those they recognized and talked with. With the addition of an average 2.4 communications by e-mail, wired residents averaged 4.3 times as many communications as the non-wired. Based on mean scores, wired residents averaged significantly higher volumes of local communication, by phone and in total, with local residents of all tie strengths in comparison to non-wired residents.

Regression analysis, controlling for *gender*, *education*, *age* and *length of residence,* shows that access to the local computer network was responsible for increasing the total volume of local communication (Table 4.4). Looking at communication figures with those residents recognized by name, length of residence and wired status were both significant in predicting the volume of phone communication (for theoretical reasons we would expect the level of statistical significance ($p<.1$) to improve with a larger sample size). Access to the local computer network had the same effect on the volume of local phone calls as having lived in Netville for nearly one year, increasing the volume of calls by slightly more than 13 per month. However, length of residence did not predict the total volume of communication, which included personal e-mail messages. Wired status was the only variable to predict the total volume of communication with local residents. Access to the local network increased the volume of communication with local ties by nearly 21 monthly communications.

The regression model for those ties whom residents talked with on a regular basis is very similar to the regression model for ties recognized by name (Table 4.4). Residence and wired status predict the volume of phone communication. Being connected to the local network had the same effect as having lived in Netville for just under one year and increased the number of local phone calls by roughly 13. Access to the local network was the only variable that predicts the total volume of communication amongst those talked to on a regular basis. Access to the

Table 4.4 Coefficients from the regression of volume of communication (phone and total) on wired status and other independent variables (N=42).

Control Variables	Recognized		Talked With		Visited	
	Phone	Total[c]	Phone	Total[c]	Phone	Total[c]
Wired[a]	13.42$^{.129}$ (0.23)	20.81$^{.025}$ (0.35)	13.40$^{.126}$ (0.24)	19.27$^{.034}$ (0.33)	—	17.87$^{.050}$ (0.30)
Female[b]	—	—	—	—	—	—
Education	—	—	—	—	—	—
Age	—	—	—	—	—	—
Residence	15.42$^{.069}$ (0.28)	—	15.28$^{.069}$ (0.28)	—	17.40$^{.040}$ (0.32)	—
Intercept	-16.01$^{.228}$	5.55$^{.394}$	-17.31$^{.189}$	4.05$^{.527}$	-12.78$^{.334}$	5.40$^{.404}$
R^2	0.16$^{.034}$	0.12$^{.025}$	0.16$^{.033}$	0.11$^{.034}$	0.10$^{.040}$	0.09$^{.050}$

Note: Numbers in superscript are p-values. Numbers in parentheses are standardized coefficients (β). Only those variables that significantly improved on the explained variance (R^2) are included in the final model.
[a] Dummy variable for wired status, reference category is wired (access to the high-speed network).
[b] Dummy variable for gender, reference category is female.
[c] Total includes both phone and e-mail communication excluding e-mail messages sent to the neighbourhood discussion forum Net-L.

local computer network increased the total volume of communication with those talked to on a regular basis by nearly 20 contacts.

Amongst those local ties Netville residents visited, access to Netville's computer network did not predict the volume of phone communication. Length of residence was the only variable that predicts the volume of phone communication with those residents visited. The longer you lived in Netville the greater your volume of phone communication. Those who lived in Netville for two years averaged 17.4 more calls each month to those they visited, than those who had been in Netville for only a year. With the added e-mail communication available to wired residents,

length of residence once again disappeared as an explanatory variable when predicting the total volume of communication. Access to the local computer network was the only variable to improve on the regression model for total communication with those local ties residents visited. Access to the local network increased the total volume of communication by 17.9 contacts with those neighbours Netville residents visited.

Regression analyses confirms that access to the local computer network contributed to an increased volume of communication with ties in the local area. The total volume of communication increased as a result of access to the local computer network for local social ties of all strengths: those recognized, talked to, and visited with. Even if computer-mediated communication was treated as a lesser form of communication rather than as a different form of communication, those with access to the local computer network still experienced increased communication by telephone with those local residents they recognized and talked to. The volume of phone communication with residents visited remained unchanged as a result of access to the local network. The significance of length of residence in predicting the volume of phone communication with local ties was expected, consistent with previously cited observations of new suburban movers that have pointed to increased communication (visiting in particular) over time (Gans 1967: 262).

Table 4.5 Active social ties maintained by type of communication (last month).[a]

		Recognized		Talked With		Visited	
		Wired	Non-Wired	Wired	Non-Wired	Wired	Non-Wired
Phone	Mean	4.1[.142]	2.4[.142]	3.3[.065]	1.6[.065]	3.2[.282]	2.1[.282]
	% of ties[c]	16.3	29.8	51.6	50.0	66.7	65.6
E-mail[b]	Mean	4.0[f]	—	2.0[f]	—	1.8[f]	—
	% of ties[c]	15.9	—	31.3	—	37.5	—
Both	Mean	1.5[f]	—	1.1[f]	—	1.1[f]	—
	% overlap[d]	22.7	—	26.2	—	28.2	—
Total	Mean[e]	6.6[.016]	2.4[.016]	4.2[.009]	1.6[.009]	3.9[.094]	2.1[.094]
	% of ties[c]	26.2	29.8	65.6	50.0	81.3	65.6

Note: Numbers in superscript are p-values (ANOVA).
[a] N= 42 (Wired N=22, Non-Wired N=20).
[b] Does not include e-mail messages sent to Net-L (the neighbourhood e-mail discussion list).
[c] Percentage of total network ties from Table 4.0.
[d] Percentage of active ties contacted by both phone and e-mail.
[e] Total includes contact by phone plus contact by e-mail minus overlap (Total = Phone + E-mail - Both).
[f] ANOVA not performed, no variation from zero for non-wired.

4.3.2 Mode of Communication

This analysis tests the hypothesis that access to Netville's local high-speed network increased the number of active local social ties. This hypothesis is based on the theory that access to new asynchronous forms of communication, such as e-mail, will allow for greater temporal flexibility in maintaining social ties. To overcome local barriers to social contact, asynchronous communication, which does not require the simultaneous participation of all parties involved in a communication, should allow for greater coordination in arranging social contact (i.e., arranging to be home for a phone call) and can also serve as a method of social contact in itself.

Table 4.6 Coefficients from the regression of communication with ties (by phone and in total) on wired status and other independent variables (N=42).

Control Variables	Recognized		Talked With		Visited	
	Phone	Total[c]	Phone	Total[c]	Phone	Total[c]
Wired[a]	—	$4.19^{.016}$ (0.37)	$1.77^{.065}$ (0.29)	$2.68^{.009}$ (0.40)	—	—
Female[b]	—	—	—	—	—	—
Education	—	—	—	—	—	—
Age	—	—	—	—	—	—
Residence	—	—	—	—	—	—
Intercept	—	$2.40^{.053}$	$1.55^{.027}$	$1.55^{.033}$	—	—
R^2	—	$0.14^{.016}$	$0.08^{.065}$	$0.16^{.009}$	—	—

Note: Numbers in superscript are p-values. Numbers in parentheses are standardized coefficients (β). Only those variables that significantly improved on the explained variance (R^2) are included in the final model.
[a] Dummy variable for wired status, reference category is wired (access to the high-speed network).
[b] Dummy variable for gender, reference category is female.
[c] Total includes contact by either phone or e-mail communication excluding e-mail messages sent to the neighbourhood discussion forum Net-L.

Table 4.5 documents the number and percentage of social network members phoned and e-mailed within Netville in the month prior to being interviewed. In comparison to non-wired residents, wired residents communicated by phone with more than one and a half times as many local residents (those they recognized by name). The proportion of active network members contacted by phone was lower for wired than non-wired residents. However, this is a result of the larger size of wired residents' recognition networks (Table 4.0). When e-mail communication is combined with phone use, wired residents actively communicated with more than two and a half times as many social ties and a nearly equal proportion of network members, even though wired residents had significantly more local social ties. Regression analysis with *wired status,*

gender, *education*, *age* and *length of residence* as explanatory variables confirms that wired status is the only variable significantly associated with the total number of active local social ties (Table 4.6).

Amongst those ties residents talked with on a regular basis, wired and non-wired residents used the telephone to communicate with a near equal proportion of network members (Table 4.5). Compared to non-wired residents, those with access to the local network communicated by phone with twice as many of those ties with whom they talked on a regular basis. With little overlap between those they e-mailed and those they phoned (a mean of 1.1 ties), wired residents actively communicated by phone and e-mail with 65 per cent of those ties they talked with on a regular basis: 2.6 times as many ties as non-wired residents. Regression analysis confirms that access to the local network was the only variable that predicts communication by phone, and communication in total, with those network members Netville residents talked with on a regular basis (Table 4.6).

Amongst ties Netville residents had visited, there is no significant difference between the mean number of ties phoned by wired and non-wired residents (Table 4.5). Both wired and non-wired residents actively communicated by phone with a large proportion of those ties they had visited. The use of e-mail by wired residents on average increased the number of active ties amongst those visited by only 0.7 social ties. Considering e-mail and phone use together, wired residents had 1.9 times as many active ties amongst those they visited. Regression analysis confirms that being wired did not impact on the number of ties Netville residents communicated with by phone or in total amongst those they had visited (Table 4.6).

For both wired and non-wired residents, the telephone was used almost exclusively to communicate with stronger social ties (those visited or talked with) (Table 4.6). On average, both wired and non-wired residents phoned less than one social tie who was recognized by name, but was not visited or talked to on a regular basis. Wired residents also had very little overlap in communication by phone and e-mail. While the proportion of ties contacted by both phone and e-mail increased with tie strength, e-mail was more likely to be used as the sole means of communication with weaker social ties (those recognized but not visited or talked with regularly). Wired residents on average contacted two and a half "recognition" ties by e-mail alone, as compared to less than one tie for both "talked with" and "visited." This suggests that e-mail is used primarily as a method to reinforce contact amongst stronger social ties, but also as a means of providing at least basic contact amongst a few weaker ties. Access to the local network increases communication with weaker neighbourhood relations, providing access to a wider and potentially more diverse social network, while simultaneously re-enforcing social contact amongst stronger social ties.

Use of the local computer network to share information may have been one factor that encouraged wired residents to contact more local social ties more often. Wired residents who sent questions or asked for support through NET-L, generally reported receiving a limited online response, but many more responses "over the fence" and over the phone. Personal information voluntarily shared online (through NET-L) may also have increased awareness of others suitable for tie formation or likely to possess access to specific resources, when previously it would have been necessary to access ties outside of the local area.

As hypothesized, access to Netville's local computer network increased the number of active social ties in the local area. Contrary to the results of Nie and Erbring (2000), there is no indication that use of computer-mediated communication inhibited or replaced the use of existing means of communication. The combination of e-mail and phone communication allowed wired residents to communicate with a larger number of neighbourhood residents. This lends support to the theory that computer-mediated communication successfully removes barriers to local social contact.

4.4 Spatial Distribution of Social Ties

During the early settlement of Levittown, Gans (1967; 1968) recognized the significance of propinquity in the formation of local social ties. Visual accessibility was identified as key in allowing neighbourhood residents to identify those who could potentially share household items, provide support, and form long-term friendships. In a traditional suburban community, those who are most viable, and in turn most physically accessible, are generally those who live in homes that extend no more than 3-4 from your own (Gans 1967: 156; 1968: 154). Local social ties rarely extend around corners or down the block. The limited range of local ties has the effect of limiting residents' familiarity with others in the community, even if they live as close as the other side of the block. In turn, this generates low levels of community solidarity, limits neighbourhood surveillance, and reduces attachment to the broader neighbourhood. However, in a wired neighbourhood, where it is easier to gather information on other residents and to identify compatible social ties regardless of physical accessibility, does propinquity still play a role in the formation of local social ties?

I hypothesize that propinquity continues to play a role in the formation of local ties, but only amongst stronger ties. In a wired suburb where access to information about neighbourhood residents is easier to acquire than in a traditional neighbourhood, through electronic discussion forums etc., it should be easier to identify compatible social ties regardless of their physical accessibility. Similarly, instead of leaning over the fence to find support and resources, in a wired neighbourhood it may be easier to send a message over the community discussion list (and indeed this was a common occurrence on NET-L). However, I argue that people have a particular need to maintain social ties with neighbours who are in closest proximity. Indeed, Gans noted

that Levittowners were particularly concerned with maintaining good social relations with those who lived very close by (1967: 156). Proximity still breeds access. Mending a common fence, shovelling the snow off sidewalks together, being in neighbouring yards at the same time, and other opportunities for contact breed through proximity. This additional accessibility is still significant, and promotes the exchange of resources and information that makes people more likely to visit and talk with immediate neighbours on a regular basis. Computer-mediated communication amongst local residents should serve to heighten the opportunity for contact amongst immediate neighbours, bridging barriers to social contact and providing opportunities for communication where none may have existed before. In a wired neighbourhood, where wired residents form more social relations of all tie strengths, stronger social ties should tend to form in close proximity. I also hypothesize that increased familiarity with local social ties facilitated through the local computer network will serve to increase the range of tie formation amongst weaker social ties.

Table 4.7 outlines the mean range between wired and non-wired residents and the homes of those social ties they *recognized*, *talked to* and *visited* within Netville. The distance between Netville homes was calculated in lots as the geodesic distance between households, or the shortest walking distance between any two homes.[7] The path between any two homes was restricted to what could be reached by following neighbourhood sidewalks or roads, with the exception of houses facing or backing onto each other which were considered to be immediate neighbours. The range of social ties was calculated as the distance of the shortest path between a participant's home and the home of the local social tie living farthest away.

[7] One lot was defined as the land occupied by a single home.

Table 4.7 Mean range (num. of lots) of local social ties for wired and non-wired residents.[a]

		Mean	Std Dev	N
Recognized by name	Wired	$18.7^{.031}$	10.5	36
	Non-Wired	$12.9^{.031}$	7.1	20
Talked to on a regular basis	Wired	$9.9^{.365}$	9.7	36
	Non-Wired	$7.6^{.365}$	8.1	20
Visited in the past six months	Wired	$8.0^{.419}$	8.9	36
	Non-Wired	$6.1^{.419}$	7.8	20

Note: Numbers in superscript are p-values (ANOVA).
[a] N= 36 Wired, 20 Non-Wired

Wired residents on average could recognize other Netville residents by name 18.7 houses away from their own. This compares to non-wired residents who typically could not recognize residents farther than 12.9 houses away. Regression analysis in Table 4.8 confirms that both being wired and older is associated with the range of Netville residents' recognized ties. Access to the local network is equivalent to roughly one year of age, suggesting that in terms of familiarity with local residents, being older had a greater effect on the range of local ties than did access to the local network.

For both wired and non-wired residents, stronger social ties, such as those talked to and visited with, tend to be located much closer to home than weaker ties (Table 4.7). On average, wired residents' stronger ties extended two houses farther than the ties of non-wired residents. However, this difference is not statistically significant and is likely related to the fact that wired residents had many more strong ties in the same short distance surrounding their home. Regression analysis confirms that neither *gender*, *education*, *age*, *length of residence*, nor being wired predicts the range of Netville residents' talking and visiting networks (Table 4.8).

Table 4.8 Coefficients from the regression of range of neighbouring on wired status and other independent variables (N=54).

Control Variables	Recognized	Talked With	Visited
Wired[a]	$4.39^{.095}$ (0.22)	—	—
Female[b]	—	—	—
Education	—	—	—
Age	$4.21^{.017}$ (0.32)	—	—
Residence	—	—	—
Intercept	$-1.39^{.821}$	—	—
R^2	$0.18^{.006}$	—	—

Note: Numbers in superscript are p-values. Numbers in parentheses are standardized coefficients (β). Only those variables that significantly improved on the explained variance (R^2) are included in the final model.
[a] Dummy variable for wired status, reference category is wired (access to the high-speed network).
[b] Dummy variable for gender, reference category is female.

As expressed in this message sent to NET-L, access to a local high-speed computer network had mixed effects on the range of Netville residents' local social ties.

> If this had been a regular subdivision no doubt I would know my neighbours but I would not know those of you around the corner and down the road. (Netville Resident, Message to NET-L 1998).

As hypothesized, in Netville, propinquity remained important in determining distance to stronger neighbourhood ties while being wired increased the range of weaker ties. Those who were older and wired had local social networks of weak ties that extended a greater distance than those of the young and non-wired. Still, being wired was equivalent to only one year of age in predicting distance to weaker ties, highlighting the relatively small effect that access to Netville's computer network had in increasing the geographic range of ties. It is probably also incorrect to

define those ties that are most spatially dispersed from the homes of Netville residents to be "weak," as described by Granovetter (1973).

To establish a broader understanding of the spatial distribution of social ties of various strengths, Figure 4.3 diagrams a spatial model for the distribution of neighbourhood social ties within Netville for a typical wired and non-wired home based on a combination of ethnographic observations and data from Tables 4.0 and 4.7. Households identified as *weak ties* are those described by Granovetter (1973) and represent neighbourhood residents known well enough to exchange greetings, to provide occasional companionship, and to exchange minor resources. *Strong ties* are supportive ties that can be relied on to provide major resources, emotional support, aid and companionship. A *knowing tie* is a previously unexplored concept in social network analysis and represents those ties that are of less strength than Granovetter's (1973) weak ties, but are still significant and present. A knowing tie consists of a social relation largely inactive in terms of companionship or the exchange of resources, but whom a person is aware of and has some specific knowledge of some aspect of their persona or personal characteristics. An example of this personal knowledge includes information that was frequently revealed on NET-L such as occupation, hobbies and personal history, but also includes information gained through observation and casual interaction. Knowing ties are those people Jacobs (1961) described as being on "sidewalk terms" or those Milgram (1977) describes as "familiar strangers." Knowing ties are a form of social capital and can be conceptualized as a reserve army of social ties. When in search of resources or when faced with a crisis people can more easily activate knowing ties, they are more familiar with their resources, and they are more likely to provide assistance than would randomly-chosen people. In Netville, knowing ties were the most prevalent and spatially dispersed form of social ties.

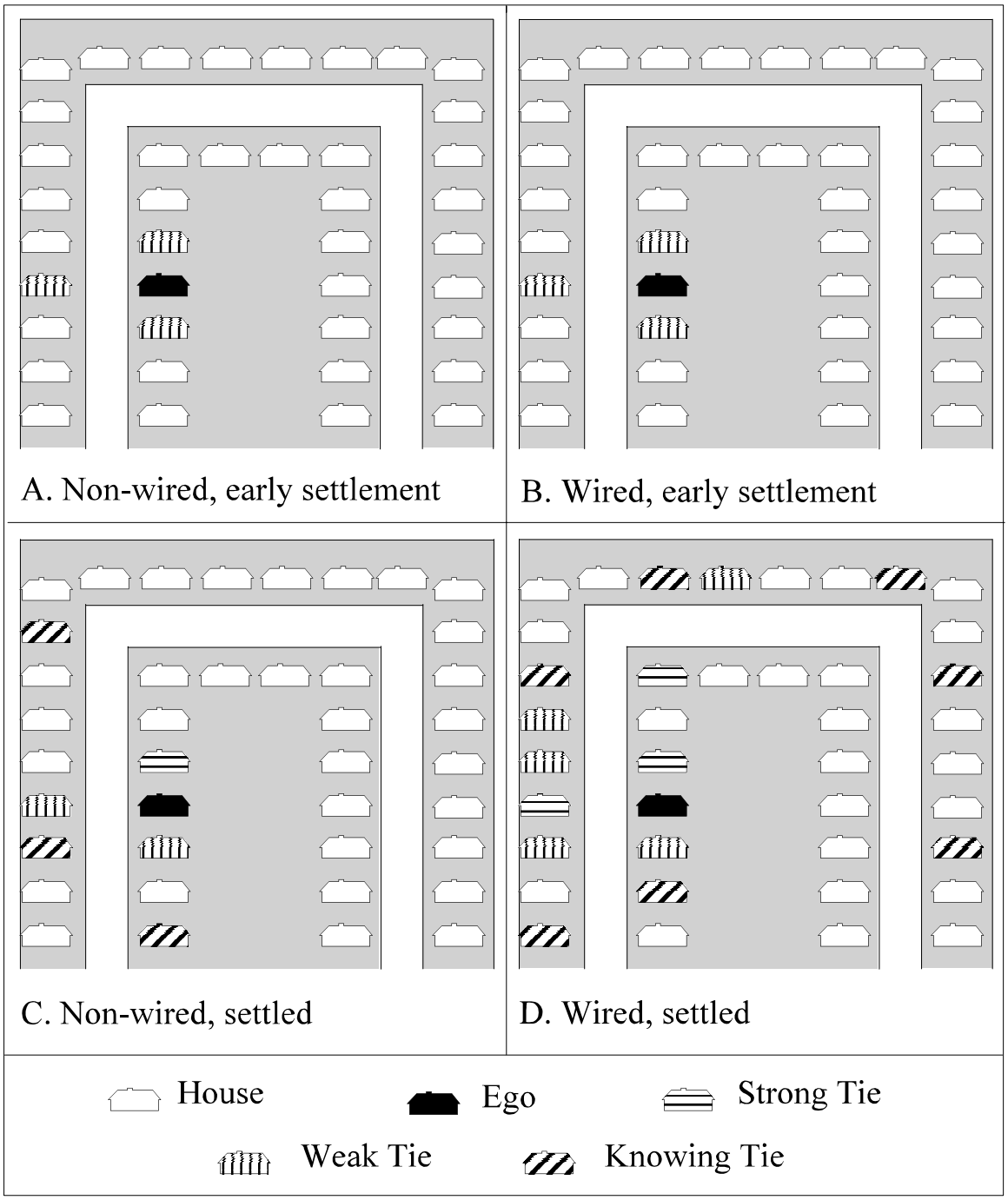

Figure 4.3 Typification of the spatial distribution of social ties comparing wired and non-wired residents at two time periods.

Figures 4.3a and b depict the early formation of social ties shortly after moving into Netville. As described by Gans (1967; 1968), and observed in Netville, those residents who were most visually accessible were also most accessible for early social contact and tie formation. Based on the infancy of these relations, the strength of early social ties was relatively weak. At this time, wired and non-wired residents have virtually indistinguishable in terms of local social ties.

Figures 4.3c and d depict the same hypothetical households as in Figures 4.3a and b after settling into Netville (as little as three months later). In the case of non-wired residents, they established social ties with those they could visually access. Stronger social ties developed out of compatibility with the limited number of accessible local ties that were in immediate proximity. Wired residents, who had access to additional information on neighbourhood residents through the local computer network, formed a greater number of local social ties of all strengths. Day-to-day visual and physical access facilitated the exchange of e-mail addresses, and encouraged communication and the formation of stronger social ties with those in close proximity. Casual conversations between wired neighbours in immediate proximity were more likely to grow in strength as a result of conversations based on NET-L discussions (see Section 4.1), than conversations between non-wired residents who lacked any shared experience beyond living in the same neighbourhood. Knowing ties were formed throughout the neighbourhood, regardless of the parties' physical location, based on an ability to access information volunteered by local residents who were participating in online forums.

4.5 Surveillance and the Public Realm

A common theme in the literature about computer-mediated communication has been a concern for increasing privatization and home-centredness as a result of new home-based communication technologies (Putnam 2000; Nie and Erbring 2000; Graham and Marvin 1996). I have argued that because new home-based communication technologies are centred in the home, they may also lead to increased local interaction. The previous analyses, which showed that access to Netville's local computer network increased the number of local social ties and communication amongst those ties, is only one part of this argument. As briefly discussed at the beginning of this chapter, local residents used NET-L to increase participation in the public realm by organizing local parties and barbecues. The organization of local events is only one example of how residents used the local network to promote public participation. In addition, Netville had high levels of neighbourhood surveillance and informal social controls, characteristic of a neighbourhood of high social capital.

Living in Netville for two years, I frequently walked and drove the streets of Netville and neighbouring housing developments. Within the first year, I began to notice a trend within Netville that did not extend across town or even to the homes of other housing developments bordering onto Netville. Despite the fact that most homes within Netville were built with spacious patios attached at the rear of the home (see Figure 4.4), the majority of residents had moved a park bench, or a set of plastic chairs, to the corner of their driveway or front steps (see Figure 4.5). While this trend started with wired Netville residents, its popularity quickly spread throughout the neighbourhood. This happened even though the architecture and planning of Netville was not inspired by New Urbanism or neo-traditional planning, which advocates public participation and community surveillance through the use of front porches, the positioning of

Figure 4.4 Rear patio common in Netville.

Figure 4.5 Plastic chairs on the front steps of Netville homes.

garages at the back of the home, and the movement of homes closer to the front sidewalk (see Seaside, Florida; Celebration, Florida; Middleton Hills, Wisconsin; and McKenzie Town in Calgary, Alberta) (Moule and Polyzoides 1994; Calthrope 1993). The space available on the front steps of Netville homes was only a few square metres; it was poorly sheltered from the sun; and when chairs were added, they often blocked physical access through the front doorway. Residents of similar nearby developments almost universally chose to sit in their backyards and scarce few had arranged seating at the front of their homes. So why did Netville residents choose to sit in the cramped space available on their front steps?

When residents were approached, the universal responses as to why they had positioned chairs at the front of the house was that: by positioning themselves on the front step, they were able to exchange quick greetings with neighbours passing on the street; they could see what was happening in the community; if they had children, they were able to keep a watchful eye on their activities. The ability of the local computer network to expand the number and spatial distribution of neighbourhood social ties encouraged residents to sit in the front of their homes where social interaction and surveillance were possible. Interaction and surveillance from the front step further increased familiarity with other residents. Perhaps as a result of this familiarity, I was much more likely to find people walking the streets of Netville than in neighbouring developments.

The residents of Netville had their "eyes upon the street" (Jacobs 1961: 35). NET-L became an extension of those eyes, allowing residents to very easily and quickly share information on what they had observed from their "stoops." As an example of informal community control, when a car belonging to a local resident was observed driving at excessive

speeds on a neighbourhood street, a concerned resident posted a message to NET-L asking that whoever was driving the car slow down out of consideration for the safety of neighbourhood children. Within a day, all cars moving throughout the neighbourhood had slowed in speed.

On at least two occasions, Netville residents used NET-L to discuss a series of burglaries that were taking place in the community. Residents would identify themselves as those who had been robbed, police officers living in Netville would describe how they responded to the call, witnesses of the evening's events would step forward to help, and future plans for crime prevention would be discussed. On one occasion when a "suspicious van" was observed in the neighbourhood, a series of e-mail exchanges took place, as various witnesses described having observed the van at different times and on different occasions. Ultimately, it was identified as "safe," belonging to a relative of a neighbourhood resident.

Sometimes what was not said online was as important as what was said. When a suspicious fire burned down a house one week before its new occupants were scheduled to take possession, conspicuously, nothing related to the fire was ever discussed online. Over the following days, when I approached residents on the street, they each recounted a similar story surrounding the house fire, revealing a network of community information that existed externally to the online forum. When asked, residents also wondered why the fire was never discussed online. In my view discussing the fire, or the misfortune of those who were to move in, would have crossed an invisible line between the provision of support and community gossip. Since the owners of the burnt-out home were not yet community residents, they were not members of the local e-mail list and could not benefit from online offers of support. Netville's e-mail list went a long way in meeting expectations for increasing local support, putting eyes on the street and increasing local interaction, but it also avoided the sometimes repressive nature of local gossip.

4.6 Conclusion

This chapter addressed the effect of living in a new residential neighbourhood equipped with a high-speed computer network on local social networks and neighbourhood social capital. Netville's local computer network was successful in increasing interaction amongst local residents in both the public and private realms. Netville residents connected to the local computer network were more involved in the community, and they had larger and more active local networks. With access to information about local others, volunteered through the use of the local computer network, neighbourhood residents develop extensive and dispersed local social networks. In comparison to non-wired residents, they formed a greater number of local social ties and had higher volumes of communication. Wired residents' local social ties were not just maintained online, but were multistranded. They were maintained online, over the phone and in-person. The local computer network aided in neighbourhood surveillance and facilitated public gatherings.

Evidence from this analysis supports the theory that access encourages tie formation. Homophily alone does not account for why social ties tend to form with those who are physically distant from the neighbourhood setting. Through the use of a local computer network, wired residents were able to overcome physical and psychological barriers to the formation of local social ties. Computer-mediated communication encouraged the growth of social capital at the local level. Still, Netville residents had to improvise to facilitate surveillance and street level interaction, with the addition of chairs on their cramped front steps. Surveillance might have been further enhanced if computers within Netville homes had been positioned to face windows at the front of the home, instead of what was typical, facing a wall in a spare bedroom or den at the side of the home. Similarly, interaction and surveillance might have been further improved if the design of Netville had incorporated aspects of New Urbanism.

Interest expressed by early Netville residents in using the local computer network as a tool for social interaction, and not merely as a medium to access information on the World Wide Web, may have been the seed that was ultimately responsible for the subsequent growth of Netville's neighbourhood social capital. If residents had not been given access to NET-L shortly after moving into Netville, it is unclear if they would have formed as many neighbourhood ties or if they would have been as locally involved. If they had lacked a forum for initial introductions, which helped build shared experience and exchange support, residents may have met their need for companionship and support with ties outside of the local area.

If a neighbourhood e-mail list had been introduced into an established neighbourhood, it is unclear if residents would have been as motivated to expand their local networks as they did in Netville. The fact that Netville was a new residential development likely facilitated use of the local e-mail list (NET-L).[8] In an existing neighbourhood, residents are not in the same state of flux. They have established neighbourhood ties, and don't have the same difficulty in maintaining contact with friends and family as do recent suburban movers (See Chapter 3 of this dissertation; Gans 1967; Clark 1966). If residents found compatible neighbours through an online forum, I am uncertain if the investment of additional resources, necessary to build tie strength, would be forthcoming if residents had structurally similar others in their existing social networks. In established neighbourhoods, neighbourhood e-mail lists would likely have more immediate success in expanded the number of weak and knowing ties. Stronger ties would likely form over time as existing network members were replaced through attrition.

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[8] Netville received much publicity. The publicity and the intrinsic sense of being involved in a unique experiment may have made some residents susceptible to the "Hawthorne effect," where people self-consciously modifying their behavior on account of being studied. Ethnographic experiences suggest that only a small number of residents were affected in this way, and that within the first few months of moving, the novelty of being involved in an experiment quickly faded.

CHAPTER 5

COLLECTIVE ACTION IN A WIRED SUBURB

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5.0 Introduction

This chapter looks at collective action within Netville. It tests the hypothesis that the introduction of computer-mediated communication at the local level supports community organizing and collective action; that neighbourhoods with access to a local computer network are better equipped to address community concerns.

Social networks, social capital and community involvement are inherently interrelated (Putnam 2000; Diani 1997; Jasper and Poulsen 1995; Tindall 1994; Gould 1991; 1993). They form a "recursive triad" where each factor serves as both the source and the result of the others. Social networks provide "network social capital," a form of social capital which provides access to people and resources (Granovetter 1974). Where social networks are sparse or nonexistent, social capital and community involvement remain low (Bourdieu and Wacquant 1992; Jacobs 1961). The composition and maintenance of social networks helps build social capital (Granovetter 1974; Burt 1992), which in turn becomes a resource for community involvement (Jasper and Poulsen 1995). Formal and informal community involvement has similarly been defined as a form of social capital (Putnam 2000), what I have described as "bonding social capital." Successful community involvement, and more specifically collective action, depends on coordination, communication and access to resources (i.e., social capital) gained through individual and organizational networks (Putnam 1995: 67; Diani 1997). Community involvement

creates social capital by extending social networks and cultivating new roles and experiences (Putnam 2000: 153; Diani 1997). Social networks, social capital and community involvement are indeed intertwined and interrelated. Growth of one factor stimulates growth in the remaining two. Damage inflicted on existing social networks – a reduction in social capital, or a lack of community involvement or the failure of collective action – can inhibit or damage other factors in the triad.

A local computer network should serve to reduce the cost and increase the speed of community mobilization. As explored in Chapter 3, computer-mediated communication offers temporal and spatial freedom for interpersonal communication. People are free to communicate at any time and place regardless of the physical location, and without the immediate involvement of other social participants. In reaction to a perceived threat or problem, or when faced with an emergency, the residents of most communities would have to knock on the doors of near strangers to build support for collective action. In a wired neighbourhood, computer-mediated communication should overcome this barrier and reduce the costs of mobilization in terms of time and coordination. High levels of social capital, in the form of large and active local social networks, should facilitate mobilization (Granovetter 1973). Computer-mediated communication should also serve to increase the openness and visibility of participation in collective action. Increased visibility should encourage participation by allowing participants to witness the individual commitment and contribution of others. However, when active participation in collective action begins to drop and individual commitments are no longer visible, computer-mediated communication will also work to further reduce active participation.

Based on ethnographic observations, this chapter recounts the experiences of Netville residents regarding their use of the local computer network to act and work collectively. Two examples will be explored in detail:

a) Mobilization against the local housing developer as a result of perceived housing deficiencies.

b) Residents' reaction to the Magenta Consortium's decision to end the technology trial, stop providing access to the high-speed local computer network, and to remove the technology from people's homes.

5.1 The Developer

The unconnected nature of most contemporary residential communities makes the organization of grassroots protest at the neighbourhood level particularly difficult. Despite these organizational challenges, new suburban developments are often the source of small-scale protest, generally in reaction to problems experienced by residents with their new homes and property (Clark 1966). In interviews, the property developer responsible for construction in Netville said that in all residential developments in which he has been involved, and all that he is aware of, a small number of residents, dissatisfied with the quality of their homes, organize collectively. In his experience, 5 per cent of new home owners will go door-to-door to gather support for some level of small-scale collective action ranging from petitions, through letter-writing campaigns, to picketing. He believes that these "rabble rousers" generally attract no more than 20 per cent of home owners. Based on their common experiences, housing developers expect some level of local protest. What was unexpected in Netville were the size and speed of residents' efforts to organize and act collectively.

The housing problems experienced by Netville residents were routine for most new residential developments: the speed at which roads were paved and grass planted, minor housing deficiencies, frozen pipes in the winter, and faulty air conditioners in the summer. Within the first nine months that homes had been occupied, Netville residents had begun an organized campaign to pressure the developer into addressing their problems and concerns. Wired Netville residents used NET-L to discuss their housing problems, organize in-person meetings, discuss strategy aimed at pressuring the developer, and to send representatives to town planning meetings.

Netville's local computer network not only altered how residents communicated with each other (see Chapter 4) but how they could communicate with the developer. In addition to being able to fax and phone the developer's office, they were able to bypass secretaries and assistants by using e-mail to contact him directly. Although e-mail sent to the developer often consisted of a traditional letter and list of complaints (copied to NET-L), on at least one occasion it also consisted of an organized *flooding* campaign by residents who submitted one e-mail message for each of their potentially dozens of individual complaints.[1] Residents used e-mail as a tool to both organize collectively and to express their hostility toward and impatience with the developer, while waiting for their concerns to be addressed by forces often perceived to be outside of their control.

Not all of Netville's residents were interested in taking an adversarial position with the developer. This split in opinion led a small number of residents, acting independently of each other, to try and win favour with the developer by feeding him information about the activities of other residents. These insiders would forward e-mail messages from NET-L that publicly complained about the developer or made efforts at organizing some level of protest.[2] In hopes of improving their relationship with the developer, some residents would also forward him e-mail messages such as "the joke of the day."[3] Protesting residents were unaware of communication "leaks" that sprang from their NET-L discussions. Most would have been very surprised to learn that other community members had been reporting on their online activities.

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[1] "Flooding" is used to describe an activity whereby multiple copies of an e-mail message are sent to another user.

[2] In follow-up interviews, the developer claimed he actively discouraged residents from forwarding messages from NET-L, which he perceived as a private communication between residents.

[3] See http://www.joke-of-the-day.com/

At the same time, as much as the developer was aware that NET-L leaked in his favour, he was surprised to find that NET-L discussions also leaked to powerful outsiders that could serve as advocates for Netville residents. On a visit to the office of the semi-governmental organization mandated to police housing quality, the developer was surprised to see copies of the same NET-L discussions he had received circulating throughout the office.

Being in a wired neighbourhood allowed residents to organize extremely quickly, and the overall number of residents involved was likely greater than would be anticipated in a traditional neighbourhood. The speed at which residents organized was unexpected by the developer, and it pressured him into addressing customer concerns with more resources and with greater speed than he initially anticipated. Town officials were also surprised by the success of wired residents' demands for improved customer service. They noted that the developer had moved a customer service trailer into the neighbourhood; a service that no other development had received in recent memory. Residents also achieved unusual success in preventing the developer from receiving approval from the town to begin work on a second housing development, even though this was a process perceived as bureaucratic and involving little more than a rubber stamp. In making their argument to town council and planning officials, residents argued that the developer had neither completed sufficient work in Netville, nor provided sufficient resources to address housing deficiencies to warrant approval of his expansion.

In a followup interview with the developer, he denied that the size of the residential protest in Netville was greater than his typical experience in new residential developments. Despite my observation that more than 50 per cent of Netville households were involved in active protest, he maintained that less than 20 per cent of residents were actually involved, but

he did concede that e-mail had allowed residents to organize with greater efficiency than he had expected. The developer also stated that, based on his experiences in Netville, he would never build another wired neighbourhood. The developer associated this decision with a poor housing market, even though housing sales were up on average in Canada at the time, and the town surrounding Netville had been identified as one of the top areas of housing growth in the country. The developer also pointed to the lack of value that home purchasers placed on new home-based technologies in comparison to general housing affordability (see Table 2.3).

Netville's local computer network was important in helping local residents mobilize against the developer. Residents were also more successful in attaining their goals of improved customer service than the residents of neighbouring housing developments. Even though the housing developer denied it, I find it reasonable to assume that the ability of Netville residents to act collectively contributed to the developer's decision to stop building wired neighbourhoods. There is also some indication that the success of the action against the housing developer contributed to the end of the technology trial and the ultimate removal of the technology from the neighbourhood.

5.2 Grieving for a Lost Network

In early October 1998, the director of the Magenta Consortium e-mailed a message to NET-L announcing that the trial would be terminated and that the consortium would no longer be providing Netville residents with access to the local computer network. The decision to end the trial was based largely on the partnering telecommunication company's decision to change its focus away from the ATM (asynchronous transfer mode) technology being tested in Netville to the now commercially available ADSL (asynchronous digital-subscriber line) technology. Other factors that were incorporated into the consortium's decision included the pending expiration of a government licence to provide broadband Internet service free of charge within Netville, and ongoing costs associated with operating the network. The residents themselves may also have played an unwitting role in the trial's demise as a result of their organizational success against the developer. Resources spent dealing with housing concerns may have reduced available resources to continue building new homes in the community. There was dissatisfaction amongst key consortium members about the lack of progress in new home construction and the corresponding lack of new residents being connected to the local computer network. In early 1997, consortium members expected that there would be close to 400 households connected to the local network. With the number of connected homes at less than 100 in late 1998 there was disappointment in the consortium's inability to reach what was considered a significant mass of users.

The announcement that Magenta would no longer be providing access to the local computer network and its corresponding services was met with hostility and disappointment on the part of residents. The majority felt that the consortium had promised to operate the network

free of charge for a four-year period beginning when they purchased their homes. For those residents, the termination of the technology trial was two to three years premature. Although there is no comparison to the complete loss of a home, the feelings of grief expressed by Netville residents were similar to those described by Marc Fried in "Grieving for a Lost Home."

> These are manifest in the feelings of painful loss, the continued longing, the general depressive town, frequent symptoms of psychological or social or somatic distress, the active work required in adapting to the altered situation, the sense of helplessness, the occasional expression of both direct and displaced anger, and tendencies to idealize the lost place (Fried 1966: 359).

A community meeting organized by Magenta to address residents' questions, was attended by roughly 50 residents from 60 per cent of wired homes, and served as a forum for residents to express their grief and to sow the seeds for Netville's second major attempt at collective action.[4] The majority of residents felt that Magenta had served as a "white knight," making life in Netville more tolerable given the problems they had experienced with the developer. A small number of residents who were visibly more hostile felt they had been openly deceived about the duration of the trial. Their anger was fuelled by an ad in the previous month's issue of a local housing magazine that continued to advertise Netville as a "five-year trial of unique communication technologies, at no extra charge to residents." A number of residents told me privately that they were not as much upset about the trial being cancelled as they were embarrassed by having to tell friends and relatives of the trial's end. Having purchased homes in Netville, for slightly less than the average price of a new home in the same area,[5] free access

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[4] I could identify only one Netville resident from a non-wired home in attendance at the community meeting. Either the loss of the network was of little concern for non-wired residents, despite the expectation reinforced at the time they purchased their homes that they would be connected, or non-wired residents were so significantly disconnected from wired residents that they were unaware a meeting was taking place.

[5] Based on unpublished information provided by the Canada Mortgage and Housing Corporation, 1999.

to the high-speed local network was a point of pride. Having to admit to skeptical friends and relatives that they would not have access to the local computer network for as long as expected was not something they were looking forward to.

At the end of the community meeting, approximately two-thirds of those in attendance remained behind to discuss their situation. Residents were equally split in their opinion about how to proceed. The two groups moved chairs in the meeting hall into two separate circles. The first group immediately agreed on the framing of Magenta as a consortium of large for-profit corporations that had *deliberately* deceived and exploited the community. The second group approached those members of Magenta who were in attendance at the meeting and expressed a desire to cooperate on finding a solution, framing Magenta as a nonprofit group that had failed to communicate with residents and had broken a number of informal agreements. Those who were less openly hostile, and generally uninterested in an open conflict with Magenta, hoped to cooperate with Magenta to find a last-minute solution that would save the local network. The other group, more openly hostile, was interested in plotting a public relations strategy that would generate public pressure to force Magenta into restoring services. The primary difference between these two groups was not the ultimate goal of restitution but the extent to which residents were willing to paint Magenta as a corporate villain who had exploited their community.

In the four weeks that followed the community meeting, NET-L became the front line in the conflict between local residents and Magenta. In that month, nearly 100 messages were sent to NET-L compared to 260 in the previous 16 months. The content of these messages fell into four categories:

- A generally hostile dialogue between Netville residents and representatives from Magenta.
- Informal progress reports and exchanges between residents about the progress of negotiations being conducted on the community's behalf with service providers that could potentially replace Magenta with a fee-based service.
- A discussion about how to keep "community" alive in Netville without the local computer network.
- Offers of support and requests for help about unrelated issues.

With the exception of the developer, representatives from Magenta had always been able to access NET-L.[6] In the past Magenta had used this access as a gateway to provide periodic software updates and to announce new services. Never had a resident used NET-L to open a public dialogue with Magenta. In the weeks that followed the community meeting, NET-L became a public forum for the exchange of messages between Netville residents and representatives from Magenta. As at the community meeting, the response on NET-L was divided between those inclined toward an open conflict and those interested in cooperation.

Regardless of whether residents took cooperative or conflict approaches with Magenta, their opinions on NET-L were almost always followed by a second message of support from another resident. Although not an organized strategy, this was successful in creating the appearance, for both Magenta and between residents, that there was near universal condemnation of Magenta and support for local action against the Consortium. Occasionally when a NET-L

[6] Despite the fact that the developer was formally a member of Magenta, there was very little day-to-day contact between the two organizations. Representatives from Magenta with access to NET-L did not forward messages from the community to the developer.

message was directed at Magenta, and a representative was delayed in his response, another resident would send a taunting message to NET-L in hopes of provoking a response.

On only one occasion did a Netville resident publicly break with the broad framing of Magenta as villain. This resident highlighted the fact that, after all, they had received free high-speed Internet service and that the computer network had its virtues in how it had brought the community together. Other residents responded to NET-L with positive reinforcement, about how wonderful it was to live in such a close-knit community, and with more negative comments about how the corporate powers behind Magenta would walk all over those who were not willing to take a stand. This was one of only two times a Netville resident had publicly disagreed with another on NET-L.[7] Still, even at this point of potential conflict, residents responded to each other, at least publicly on NET-L, with what can only be described as "neighbourly" responses, focusing on how great it was to live in Netville, how they could all freely express their opinions and avoid attacking any one individual. At no time was there any of what can be described as "flaming" activity.

The fact that there was no flaming on NET-L is significant. Flaming is a common characteristic of computer-mediated communication (CMC) and it appears in all types of online forums (Rheingold 1993; Kiesler, Siegel, and McGuire 1984; Kollock and Smith 1999). One of the distinguishing features of CMC is its ability to promote anonymity (Kiesler et al 1994). It has been suggested that this anonymity allows those engaged in CMC to feel less empathy, less guilt, and less concern for how they treat others (Kiesler 1986). There was no anonymity on NET-L, as residents could directly associate an e-mail message with its author also living in Netville. The

[7] The other time involved a dispute over whom would be appointed as a community representative at town planning meetings.

fact that participants were neighbours and not just physically close was also likely significant in maintaining a norm of online neighbourliness (as opposed to the use of CMC in the workplace). As I have already noted, Gans (1967) identified something similar in Levittown where residents were particularly concerned with maintaining good social relations with those who lived within close proximity.

The "cooperative" side of Netville's response to Magenta included offers from residents to try and run the network as a co-op, offers from companies employing residents to take over some minor network services, and various efforts to convince Magenta's major telecommunications partner to continue with the trial. With the exception of one resident, whom Magenta provided with a copy of all e-mail addresses subscribed to NET-L so that the community e-mail list could be replicated following the termination of the trial, all cooperative attempts at trying to preserve the network failed. The primary reason for these failures was the unwillingness of the major telecommunications partner to continue its involvement with Netville by providing access to the network fibre located in the ground surrounding residents' homes.

Those residents who approached Magenta with open conflict based their strategy on three things:

- Contact with local media sources, aimed at applying public pressure on Magenta and the telecommunications partner.
- Attempts at intimidation by threatening Magenta and the telecommunications partner with a lawsuit for breach of contract.
- Negotiations with a rival telecommunications provider to provide high-speed Internet service at a reduced rate.

The local print and television media were interested in talking to residents about their experience in Netville and with the Magenta Consortium. This interest was in part a result of Magenta's success in generating wide, and generally positive media coverage, when the Netville project first began. However, in the residents' pursuit of media attention, they had not considered that they could not control the media's framing of their conflict with Magenta.

The first media coverage residents received was a front-page story in the biweekly local town newspaper. To the surprise of residents, the story had been broadened beyond the end of the technology trial to include residents' experiences with the housing developer. The developer was included as a result of residents framing Magenta as a corporate villain that had taken advantage of the community but only as the latest corporate villain, reflecting back on their problems with the developer. The article included quotes from residents, such as "knock on wood that the house doesn't fall down," and "we thought we had bought our dream home, but it has become the worst nightmare we've ever had." This successfully portrayed residents as victims, but introduced the unforseen cost of potentially damaging property values.

Residents quoted in the local paper recognized that their comments could be damaging to the neighbourhood and not just Magenta. Almost as soon as the local paper hit Netville doorsteps, those residents quoted in the article sent a series of apologetic messages to NET-L. While the content of those messages was penitent, it also deferred blame back on the media for "quoting them out of context" and using "off-the-cuff comments." In addition to the apologetic nature of those messages, there was an attempt at pre-empting other residents from using NET-L to criticize their actions by being their own harshest critic. Yet any fear residents had over public ridicule or flaming was likely overestimated.

In the past, disagreements on NET-L had been governed by a norm of neighbourliness that prevented anyone from responding too critically. A latent fear over the potential for flaming or open criticism, combined with the very norm of neighbourliness that likely would have prevented such an attack, almost necessitated a pre-emptive "neighbourly" response from those who were quoted in the article. The response from other residents was limited to a single e-mail message from someone wishing the paper had contacted them instead. All residents were now aware that other residents felt it necessary to pre-empt criticism on NET-L even though no such public criticism had ever occurred. The ability of those who were quoted to broadcast their repentance over NET-L may have been one of the biggest factors in containing any further action by Netville residents and limiting the success of further attempts at forcing restitution from Magenta. This is one example where the visibility and openness of computer-mediated communication may have inhibited further collective action.

Following the publication of the article in the local paper, additional media sources began to contact local residents, but despite these additional contacts, there was no further media coverage. Media attempts at convincing residents to speak about their experiences in Netville failed. The likely reasons for this media blackout included a fear of damaging property values, and the fear of having to face angry neighbours on NET-L. This had the positive implication for Magenta of not having to face any further public scrutiny.

By the end of the fourth week, residents had grown tired of conversations related to the end of the technology trial dominating NET-L. A number of residents had even sent messages to the discussion list expressing how they had begun to dread checking their e-mail. Magenta had not wavered from its position. It still refused to continue the technology trial, and residents had

exhausted new sources of information to use in confronting the Consortium. The result was a sharp decline in the number of postings to NET-L. All those who I spoke with individually and privately remained willing to contribute to the collective good of trying to force Magenta into providing restitution. However, most of the action against Magenta had taken place online and residents were now witnessing a sharp decrease in the frequency of Magenta-related postings. There was new uncertainty over whether individual contributions would be wasted. Seeing other Netville residents contribute to NET-L may have been the strongest force in motivating others to contribute. The same visibility, when there were few new postings, contributed to the rapid decline in individual participation. If the number of postings had not declined, it likely would have been embarrassing for individuals to withdraw from the project while others had the visible courage to continue with the action.

By the end of 1998, there was no further public discussion within Netville about continuing action against Magenta. Privately, almost everyone remained dissatisfied with the outcome. The rival telecommunications company, that many had hoped would offer them a deal on high-speed Internet access, offered only token discounts on installation fees.[8] Fearing long download times and new household conflict over telephone lines, the majority of residents opted to subscribe to this service.[9] Magenta and the telecommunications partner did concede to give residents a free dial-up modem and six months of dial-up Internet service until ADSL technology was available in the area. Most residents rejected this offer as token in comparison to the

[8] "High-speed" cable modem service is still considerably slower than Netville's network. Sales representatives were bewildered when they received only grumbles when pitching cable-modem service to those who had just lost a much faster service.

[9] This had an added advantage in that it allowed us to continue interviewing Netville households with high-speed Internet access once the trial had formally ended.

broadband local network, but ultimately accepted the free modem and the added benefit of being able to continue using their existing e-mail address, regardless of how they chose to access the Internet.

5.3 Conclusion

The experience of Netville residents in the use of computer-mediated communication to organize collectively demonstrates some of the many ways that the Internet affects the process of collective action. The Internet reduces the cost and increases the speed of community organization. Computer-mediated communication makes communication with network members instantaneous and inexpensive in terms of both time and resources. Members have the flexibility to participate actively at a time and in a place that is individually convenient. Online forums provide a visibility to participation that can encourage individual contributions, support the appearance of group solidarity and prevent the loss of individual involvement. Yet, visibility is a double-edged sword: just as participation increases as network members witness the investment of others, individual commitment can quickly decline when network visibility creates the perception that others are no longer investing.

Access to a local computer network combined with Netville's high level of local social capital supported community organizing and collective action. The residents of Netville were better equipped to address community concerns than they would have been without the local network. Granovetter (1973), in his pioneering work on the strength of weak ties, speculates that network fragmentation in Gans's neighbourhood of *The Urban Villagers* (1962), a result of a few bridging ties (a form of social capital), was responsible for the inability of local residents to mobilize collectively against urban renewal (Granovetter 1973: 1373-1376). The greater number of local social ties of wired Netville residents, particularly weak social ties, which are more likely to be bridging (1973: 1364), may have been the key to organizing collectively. Information flow was improved not only through the broadcast feature of the neighbourhood e-mail list (NET-L), but through the increased density of the local social network.

While computer-mediated communication did encourage home-centredness, in the sense that participation in at least some aspect of Netville's collective action was done individually at home in front of a computer, it did not replace previously existing public activities. Instead Netville's computer network encouraged community involvement in a situation where it otherwise may have been difficult to mobilize. While the recursive relationship between social networks, social capital and community involvement suggests that local networks and local social capital were important in the process of collective action, the ability of residents to mobilize was also important in local tie formation and the growth of additional social capital.

Two years after the conclusion of the Netville trial, use of NET-L has significantly decreased. Originally I was concerned that the failure of residents' collective action against Magenta had damaged local networks and neighbourhood social capital to the point that the desire for community involvement had been completely diminished. However, I no longer believe this to be true. With the departure of Magenta and the resolution of housing concerns, there are few new local concerns. Online invitations to local parties and social gatherings have all but disappeared, but residents seem as socially active as ever with local friends. The likely explanation is that residents have settled to the point that their local networks are relatively stable. They know whom they like and dislike and are more selective about with whom they socialize. This is consistent with S. D. Clark (1966) who observed that as time progressed the residents of new neighbourhoods had a tendency to avoid establishing new local social ties as they become more settled (1966: 158). It will be interesting to see if NET-L will again come alive and became the source of local community action if the residents of Netville are presented with a problem of local concern.

CHAPTER 6: CONCLUSION

GLOCALIZATION, SOCIAL CAPITAL AND COMMUNITY INVOLVEMENT

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GLOCALIZATION, SOCIAL CAPITAL AND COMMUNITY INVOLVEMENT

6.0 Summary of the Results

This dissertation has addressed the question: "What will be the fate of community and social relations as a result of the growth of computer-mediated communication (CMC)?". I have hypothesized that not only does CMC not damage social relations, it increases social contact, the exchange of support, the size of social networks, and the level of community involvement. In addressing these hypotheses, I have taken the perspective that people belong to networks and not groups. Previous studies looking only in localities or at groups have ignored the multitude of social relations that extend across boundaries and through multiple social settings. Only by recognizing that people have social ties of various strengths in multiple foci can a clear picture be formed of the effects of new communication technologies on social relations. Similarly, to maintain supportive communities, people rely on multiple methods of communication. CMC and "face-to-face" communication are only two possible forms of social contact. The Internet should not be privileged as a distinct social system, for online relationships are intertwined with social ties maintained through other means of social contact. Ignoring the potential for CMC to facilitate companionship and the exchange of support fails to examine the multistranded nature of social ties.

In addition to the use of a social network perspective, this study is unique in its use of multiple research methods and a natural research setting. Previous studies about the effect of

CMC on social relations have relied exclusively on survey research (Kraut et al. 1998; Nie and Erbring 2000; Rainie 2000; Cole 2000). This study incorporates both survey and ethnographic data. Instead of searching for a sample of Internet users from the general population (Rainie 2000; Cole 2000), or limiting the analysis to new or inexperienced Internet users (Kraut et al. 1998; Nie and Erbring 2000), this study focuses on a natural research setting. Netville consisted of a population of Internet users with access to a series of advanced information and communication technologies and a comparable non-wired group without in-home Internet access. The broadband, high-speed, always-on Internet service within Netville provided a glimpse into the future of home-based Internet access. Instead of predicting the effects of CMC on community, based on contemporary levels of sparse, low-speed connectivity, Netville provided a natural research setting of high-speed, near ubiquitous in-home Internet connectivity. Examining the use of high-speed, always-on Internet access had the additional advantage of removing any conflict between telephone and Internet use, which may have contributed to household conflict or inhibited social contact by phone or computer when the other was in use. Additionally, any concern that the higher educational and financial status of Internet users is responsible for higher levels of social capital can be discounted based on the ability to compare a sample of similar wired and non-wired Netville residents in the same social setting (Nie forthcoming).

Pundits have generally framed arguments pertaining to the effect of new communication technology on community as an "either/or" debate (Wellman and Gulia 1999). Computer-mediated communication will either lead to the complete destruction of community, or the creation of completely new forms of community. Critics have argued that new home-based information and communication technologies will disconnect us from our friends, families and

communities (Stoll 1995; Kraut et al 1998; Nie and Erbring 2000; Nie forthcoming), that the growth of new home-based communication and information technologies has the potential to isolate people in their homes and reduce public participation (Graham and Marvin 1996; Putnam 2000). Meanwhile, utopians have argued that the availability of CMC will promote the formation of virtual communities that will diminish the importance of place and allow people to participate in communities of interest that extend around the globe (Rheingold 1993). The emphasis on community as *lost* or *saved* has ignored more moderate and mixed perspectives. The findings of the Netville study suggest that CMC is simply a new form of communication that helps bridge existing barriers to social contact and the provision of support. Contrary to fears that living in a neighbourhood of *smart homes* where work, leisure and social ties can all be maintained online, would lead people to become increasingly privatized, the results from this analysis suggest that new home-based communication technologies do much the opposite.

Relative to non-wired Netville residents, wired residents experienced increased social contact with distant members of their social networks as a result of access to CMC. Although the overall increase in contact was small, there was no indication that the available technology damaged contact with distant ties. This is counter to the results of Kraut et al. (1998), who suggest that distant social networks decrease in size with Internet use, and the results of Nie and Erbring (2000), who suggest that levels of social contact with friends and family drops with Internet use. The trend, observed by Gans (1967) and Clark (1966), of new suburban residents experiencing a drop in contact with social ties as a result of a move, was reversed by those residents of a new suburban neighbourhood with access to CMC. Wired Netville residents did not experience the same loss in social contact with distant network members as did non-wired residents as a result of their move. Yet, contrary to utopian predictions that CMC would be most

beneficial in increasing contact with distant social ties, this was not the case in Netville. Wired residents experienced the greatest increase in social contact, although modest, with those who were 50-500 km away, a slightly smaller increase in contact with ties at an even greater distance and no change in contact with non-neighbourhood ties within 50 km. This supports the hypothesis that not only does CMC not inhibit social contact, but that it actually increases social contact with those at a distance.

As with contact, Netville residents with access to the local computer network experienced an increase in the exchange of support with distant members of their social networks. Relative to non-wired residents, those with Internet access experienced no change in the exchange of support with social ties within 50 km, and only a modest increase in support with ties living beyond 500 km. The greatest increase in support, although still a small increase, was with those ties within the 50-500 km range. This finding contrasts with the findings of Kraut et al. (1998), who found a negative, although not statistically significant relationship, between Internet use and social support. In addition, it supports the hypothesis that CMC facilitates the exchange of support with distant network members.

Contrary to the view that the Internet is specifically a global technology, some of the most interesting findings from this study relate to how access to CMC affects social relations at the local level. Specifically, that the use of CMC encourages public participation, the growth of local social networks, the connectivity of local social ties, and the spatial dispersion of local networks. Where Cole (2000) found that Internet use reduces neighbour recognition and may encourage the privatization of community (2000: 35), the opposite appears to be true in the situation where there is widespread access to CMC. Rather than isolating people in their homes, CMC

encourages visiting, surveillance, neighbour recognition, and the maintenance of local social ties. Contrary to the findings of Nie and Erbring (2000), but consistent with the findings of Wellman et al. forthcoming, there is no indication that Internet use inhibits or substitutes for other forms of social contact, in-person or over the phone. Contact leads to contact, CMC encourages additional social contact through multiple means of communication: online, in-person and over the phone. These results lend support to the notion that the widespread growth of CMC, and specifically residential computer networks, will encourage the growth of local social capital.

The residents of Netville also used CMC for collective action. Reversing the trend observed by Putnam (2000) of neighbourhood noninvolvement, the local computer network reduced the cost and increased the speed of the mobilization process. The recursive relationship between social networks, social capital and community involvement facilitated communication and organization amongst Netville residents. Spatial, temporal and social barriers to community organizing were overcome through the use of CMC. It was literally no longer necessary for residents to travel door-to-door to raise awareness and generate support for collective action. The visibility and openness of CMC allowed residents to view the individual commitment of other participants, which prevented the loss of individual involvement while serving to increased individual contributions and the appearance of group solidarity. At the same time, the visibility gained through the use of CMC ultimately contributed to the rapid decline of Netville's collective action. Still, the residents of Netville were better equipped to address community concerns than they would have been without the local computer network. As the local network encouraged the growth of local social ties and the formation of collective action, community involvement contributed further to the growth of local social capital.

When social relations are examined in terms of networks and not groups, and when the Internet is not treated as its own unique social system, we find that computer-mediated communication supports the growth of social networks, social capital and community well-being. The evidence from Netville provides no indication that people will reject the need for social relationships based on physical location. Counter to arguments suggesting that new information and communication technologies withdraw people from in-person contact and disconnect us from our families, friends and communities, the evidence from this study suggests that the fate of community and social relations as a result of CMC will not be one of increased privatization and home-centredness. People may be "bowling alone" rather than in leagues (Putnam 2000), but as this study has shown, people don't "surf" alone and this may go a long way to replace the social capital Americans have lost over the last quarter century.

6.1 Glocalization

The findings of this dissertation raise questions about "either/or" debates. The Internet does not necessarily isolate people in their homes, increase the privatization of community, or lead to the formation of new communities without regard for distance. Instead, the Internet builds social capital, both at a distance and potentially very locally.

The ability of computer-mediated communication (CMC) to connect network members living far away was demonstrated in Chapter 3. Contrary to any expectation that CMC would be blind to distance and lead to new-found global connectivity, it was those community members who were just out of reach (50-500 km) who experienced the greatest increase in social contact as a result of CMC. The use of CMC is directly tied to social capital and the ability of new communication technologies to facilitate access to community members who are well positioned to provide access to social support. While those with access to CMC do experience a minor increase in the exchange of support with their most distant community relations (those more than 500 km away), it was only half the increase in support experienced with those 50-500 km away. While the Internet has the potential to be a global communication technology, it is most successful at building community with social relations who previously were just distant enough to be physically in accessible.

As a communication medium, CMC may ultimately be very similar to the telephone. As successful as the telephone is in facilitating social contact with distant social ties, it has been shown to be of most frequent use with those within 5 miles (8 km) of the home (Mayer 1977; Putnam 2000: 168). CMC demonstrated a similar capacity for local connectivity within Netville. CMC has the additional ability to act not only as a means for one-to-one social contact, but as

a broadcast medium, as in the case of community discussion forums and e-mail lists. When CMC is used as a broadcast medium, it facilitates the exchange of information and resources. Locally, CMC serves as a bridge between network members, providing access to information and resources while increasing connectivity and community solidarity.

It is the dual role of CMC in facilitating the formation of social capital with network members who are at a distance and with those who are extremely local that Barry Wellman and I have termed "glocalization." The Internet literally allows people to "think globally and act locally." As this dissertation has argued, a connected society is more than a populace joined through wires and computers. It is a society whose people are connected to each other. As new information and communication technologies expand our wired connectivity, it may also reverse the trend toward decreasing social capital (Putnam 2000) and serve to reconnect the residents of our urban and suburban neighbourhoods (Jacobs 1961).

While Netville was certainly a unique situation in its widespread availability of high-speed, always-on Internet access, I suspect that the impact of this wired connectivity is already being felt by those with all types of Internet connectivity. The impact that computer-mediated communication has on distant social ties is probably most common. More local impacts, as observed in Netville, are on the horizon, as always-on, in-home Internet access, and the tools for local connectivity becomes increasingly widespread.

6.2 Future Directions

I have concluded that computer-mediated communication (CMC) increases social capital with network members both at a distance and very locally. The observations of this dissertation are based on findings from a highly-wired broadband neighbourhood representing the future of home-based Internet connectivity. The wired connectivity within Netville was greater than what can generally be found elsewhere. As a result, the general population of the Western world has a little way to go, and the population of much of the rest the world has a considerable way to go, before it reaches the level of wired connectivity present within Netville. This does not mean that existing modes of CMC and existing levels of Internet access are not already having some impact on communities and social relations. There is no reason to suspect that the high-speed Internet access present within Netville was somehow unique in its effect on *distant* social ties in comparison to conventional forms of Internet access that are more widely available. However, the case for the impact of CMC on *local* social relations is less clear.

Few neighbourhoods have access to the advanced information and communication technologies that were present within Netville. Yet it is important to note the irony of Netville's wired connectivity. Despite the fact that Netville residents lived in a "broadband" neighbourhood, they rarely used the videophone and other broadband applications for social contact. Netville residents primarily relied on the ultimate in low-bandwidth methods of online communication: e-mail. As discussed at the end of Chapter 4, the fact the Netville was a new residential community likely played some role in the success of the local computer network in building local social capital. If this study was to be replicated in an existing residential community, very different results may well be uncovered. However, I suspect that it is not the

broadband connectivity of CMC or newness of a residential development that is important in the formation of local social capital. Instead I would suggest that the two most important factors are:

a) Knowing those around you have access to CMC and possessing the means to contact them

b) Building local broadcast mediums for sharing information and resources.

As a result, I suspect that the effects of CMC on local social capital will become more apparent as new communication technologies become increasingly ubiquitous. Those individuals and neighbourhoods who take steps to increase local awareness of CMC as an alternative means of communication will be the first to have increased local social capital as a result. While there are some corporate initiatives to associate e-mail addresses with residential addresses, such as the listing of e-mail addresses along with telephone numbers in the local telephone listings (and presumably reverse telephone books), neighbourhood residents can also take the initiative to broadcast their e-mail addresses to those around them. It would be interesting to see what would happen if the residents of a neighbourhood decided to post their e-mail addresses on their fences or garages.[1] Ultimately, it is just a matter of time, as new home-based information and communication technologies grow in popularity and accessibility, until we have further evidence of how CMC encourages the "glocalization" of community.

[1] An idea that was suggested by a resident of Netville at a community barbecue, but was never adopted.

APPENDIX A

Phase 2.0
November, 1998

University of Toronto

Netville Project

Personal Interview Survey

Centre for Urban and Community Studies
University of Toronto
455 Spadina Avenue
Toronto, Ontario, Canada M5S 2G8

Note on the Paper Version of this Survey

This survey was administered using Computer Assisted Interviewing (CAI) and was presented to respondents by trained interviewers. The paper version of this survey is as close a copy of the CAI version as possible.

Where appropriate the survey software inserts names, activities, and other information, into the text of questions. Italicized instructions accompanying questions are replaced by the appropriate information when using the survey software. Similarly, skips are invisible to respondents, they are presented only with those questions that apply to their situation.

Where checkboxes are preceded by numbers or letters enclosed in square brackets represent the coding of the variable.

Example 1.

ZZ2 Please select from the following list whether you are male or female:

[01] ☐ Male
[02] ☐ Female

In example 1 the variable ZZ2 would be assigned the value "01" if male , "02" if female.

Example 2.

ZZ3 Please check all appropriate boxes that correspond to your relationship status:

[D12] ☐ Single *Goto A6*
[D13] ☒ Married/Common-law
[D14] ☒ Separated *Goto A6*
[D15] ☐ Divorced *Goto A6*
[D16] ☐ Widowed *Goto A6*

In example 2 it is possible to select more than one category - i.e., a person could be married and separated. In these cases sub-variables exist for each option which are assigned the value "1" if they were selected and "0" if not (in this example D12 would equal 0, D13 would equal 1, D14 would equal 1, D15 would equal 0, and D16 would equal 0).

INTRODUCTION

(To be read to respondent)
Since many people have never been in an interview exactly like this, let me read you a paragraph that tells a little bit about how it works:

Instructions:

This study is confidential. Personal information, such as your name, will be removed from all results to make it impossible for any individual to be recognized within the study.

It's important for me to get exact details on every question, even on those which may seem unimportant to you. I am going to read you a set of questions exactly as they are worded so that everyone in the community is answering the same questions. The questions you will be presented are in a variety of formats, some asking for a simple yes or no answer, and others asking for a more detailed response. In some cases, you'll be asked to answer in your own words. For those questions, I will have to write down your answers word for word. If at any time during the interview you are not clear about what is wanted, be sure to ask me.

Are there any questions before we begin?

To start things off I am going to ask you a series of questions about when you first moved to Netville. Answers to this section will provide insight into why people moved to this community.

SECTION A - MOVING

F1 What was the date you moved into Netville?

F2 If this was not the original closing date for your home what date did you first plan to move?

B16 How many years do you expect to live in Netville?

F3 Thinking back to when you decided to purchase your home. What was the single most important reason for moving to Netville?

(To be read to respondent)

One of the main focuses for this survey are relationships with family, friends, and neighbours. The following section will touch on this subject and build a basic understanding of how your relationships have changed as a result of moving to Netville.

The following question is repeated, with [item] replaced with one of the following:

- Neighbours
- Relatives who live less than 30 miles (50 kilometers) away
- Friends who live less than 30 miles (50 kilometers) away
- Workmates who live less than 30 miles (50 kilometers) away
- Relatives who live between 30 miles (50 kilometers) and 300 miles (500 kilometers) away
- Friends who live between 30 miles (50 kilometers) and 300 miles (500 kilometers) away
- Workmates who live between 30 miles (50 kilometers) and 300 miles (500 kilometers) away
- Relatives who live more than 300 miles (500 kilometers) away
- Friends who live more than 300 miles (500 kilometers) away
- Workmates who live more than 300 miles (500 kilometers) away

BB3 Using the following scale, compared to a year BEFORE you moved into Netville would you say that you have more or less contact with: *[item]*

[01] □ A lot more
[02] □ A little more
[03] □ About the same
[04] □ A little less
[05] □ A lot less
[06] □ Not Applicable

The following question is repeated, with [item] replaced with one of the following:

- Neighbours
- Relatives who live less than 30 miles (50 kilometers) away
- Friends who live less than 30 miles (50 kilometers) away
- Workmates who live less than 30 miles (50 kilometers) away
- Relatives who live between 30 miles (50 kilometers) and 300 miles (500 kilometers) away
- Friends who live between 30 miles (50 kilometers) and 300 miles (500 kilometers) away
- Workmates who live between 30 miles (50 kilometers) and 300 miles (500 kilometers) away
- Relatives who live more than 300 miles (500 kilometers) away
- Friends who live more than 300 miles (500 kilometers) away
- Workmates who live more than 300 miles (500 kilometers) away

BB4 Using the following scale, compared to a year BEFORE you moved into Netville would you say that you GIVE more or less help or assistance (for example, with childcare, jobs around the house, running errands) to: *[item]*

[01] □ A lot more
[02] □ A little more
[03] □ About the same
[04] □ A little less
[05] □ A lot less
[06] □ Not Applicable

The following question is repeated, with [item] replaced with one of the following:

- Neighbours
- Relatives who live less than 30 miles (50 kilometers) away
- Friends who live less than 30 miles (50 kilometers) away
- Workmates who live less than 30 miles (50 kilometers) away
- Relatives who live between 30 miles (50 kilometers) and 300 miles (500 kilometers) away
- Friends who live between 30 miles (50 kilometers) and 300 miles (500 kilometers) away
- Workmates who live between 30 miles (50 kilometers) and 300 miles (500 kilometers) away
- Relatives who live more than 300 miles (500 kilometers) away
- Friends who live more than 300 miles (500 kilometers) away
- Workmates who live more than 300 miles (500 kilometers) away

BB5 Using the following scale, compared to a year BEFORE you moved into Netville would you say that you RECEIVE more or less help or assistance (for example, with childcare, jobs around the house, running errands) from: *[item]*

[01] ☐ A lot more
[02] ☐ A little more
[03] ☐ About the same
[04] ☐ A little less
[05] ☐ A lot less
[06] ☐ Not Applicable

F1500 Since moving to Netville have your relationships with neighbours, friends, and relatives changed? If so how?

SECTION B - USE OF INFORMATION AND TECHNOLOGY

(To be read to respondent)

The second focus of this survey is use of information and technology. In this next section you will be asked about your basic experience with computers and other technology. Answers will be used to build a profile of how technology is used in this community so that it can be compared with other populations.

F11 Were you ever connected to the Magenta Network?

[01] ☐ Yes
[02] ☐ No

If F11 equals 1, goto F13

F12 We understand that there were many reasons why you may not have been connected to the Magenta Network, why were you not connected?

If F11 equals 2, goto D23

F13 On what date were you connected to the Magenta Network?

KNH1 Thinking back to the time when you were connected to the Network what was the SINGLE MOST important computer and communication feature in your new home and why?

D23 Today, what is the SINGLE MOST important computer and communication feature in your new home and why?

F4 Thinking back to when you decided to purchase your home what computer and communication feature did you expect to be the most important?

D24 What other computer and communication features do you consider important?

If F11 equals 2, goto NEW2

NEW40 What Internet service do you use now that the Magenta trial has ended?

NEW41 Why did you decide to go with that service? *(If they are not on a new service, ask:* Why are you not subscribing to a new service?*)*

T20c When you were connected to the Magenta Network did you belong to any other Internet service provider such as CompuServ, Prodigy, or America On-Line?

[01] ☐ Yes
[02] ☐ No

T49 Have you ever used the VID.IO (video) phone on the Magenta Network?
[01] ☐ Yes
[02] ☐ No

If T49 equals 1, goto F1200

NEW60 Is the reason you have never used the VID.IO (video) phone that it was unavailable to you?
[01] ☐ Yes
[02] ☐ No

F1200 For what reasons do you use the VID.IO Phone?

NEW2 When did your household first subscribe to, or begin using the Internet from home?

If F11 equals 1, goto T22

T20 Do you belong to a service such as CompuServ, Prodigy, America On-Line, Sympatico, or any other Internet service provider?
[01] ☐ Yes
[02] ☐ No

If T20 equals 2, goto T22

T21 Which Internet Service Provider do you belong to?

F17 Why do you subscribe to this service?

T22 Which statement best describes you?
[01] ☐ Have never seen the Internet
[02] ☐ Have seen the Internet
[03] ☐ Have used the Internet
[04] ☐ Regularly use the Internet

If T22 equals 1 or 2, goto T14

NEW1 When would you say you personally first used the internet?

T14 How many personal computers do you have at home *(NOTE: Please enter your response as a number, for example in the format of "1" and not "one".)*?

If T14 equals 0, goto Label 2

T39 How many hours did you use a computer at home in the past 7 days?

If T39 equals 0, goto Label 2

T43b Of the *[time]* hours you spent on a home computer in the past 7 days how many hours did you spend using e-mail? *(Replace [time] with the number entered in T39*)

T47b Of the *[time]* hours you spent on a home computer in the past 7 days how many hours did you use the Internet (excluding e-mail)? *(Replace [time] with the number entered in T39)*

F20b How many of the *[time]* hours you spent on a home computer in the past 7 days were for paid work you do from home *(NOTE: Please enter your response as a number, for example in the format of "1" and not "one".)*? *(Replace [time] with the number entered in T39)*

✻ Label 1 ✻

If F20b equals 0, goto Label 2

F22b How many of the *[time]* hours that you spent using e-mail at home in the past 7 days were for paid work you do from home *(NOTE: Please enter your response as a number, for example in the format of "1" and not "one".)*? *(Replace [time] with the number entered in T43b)*

F24b How many of the *[time]* hours that you spent using the Internet (excluding e-mail) at home in the past 7 days were for paid work you do from home *(NOTE: Please enter your response as a number, for example in the format of "1" and not "one".)*? *(Replace [time] with the number entered in T47b)*

✻ Label 2 ✻

If F11 equals 2, goto Label 3

KNH2 If at all, has the number of hours you spend on your home computer, on the Internet, or on e-mail, been affected by losing access to the Magenta Network? If so how?

✻ Label 3 ✻

If T39 equals 0, goto Label 4

NEW24 In the last 7 days, for what purpose did you use your home computer?

NEW25 In the last 7 days which of the following goals were you trying to accomplish using your home computer:

[01] ☐ Writing a document
[02] ☐ Communicating with people
[03] ☐ Getting information
[04] ☐ Playing a game
[05] ☐ Doing class work
[06] ☐ Doing paid employment
[07] ☐ Doing household chores
[08] ☐ Setting up the computer
[09] ☐ Learning to use the computer
[10] ☐ Shopping
[11] ☐ Entertainment
[12] ☐ Spending time with spouse
[13] ☐ Spending time with other household members
[14] ☐ Spending time with other relatives
[15] ☐ Spending time with neighbours
[16] ☐ Spending time with co-workers/classmates
[17] ☐ Spending time with other friends
[18] ☐ Other *GOTO NEW26*

NEW26 What "other" goal were you trying to accomplish?

✻ ***Label 4*** ✻

If F11 equals 2, goto NEW30

KNH3 Has your ability to accomplish any of the goals you use your home computer for been affected by losing access to the Magenta Network? If so how?

NEW30 Please indicate on the following scale where you feel the value of using the internet to gather information is compared to using the Internet to communicate with others. The middle of the scale indicates an even balance, the far left indicates a stronger value for gathering information, and the far right indicates a stronger value for communicating with others. *(NOTE: Record from 0 through 100, far left = 0, far right = 100, mid = 50).*

0----------50----------100

Gathering information Communicating with others

NEW27 When you used the home computer last, who were you with?

[01] ☐ Alone
[02] ☐ Spouse
[03] ☐ Other household members
[04] ☐ Other relatives
[05] ☐ Neighbours
[06] ☐ Co-workers/classmates
[07] ☐ Other friends
[08] ☐ Have never used the home computer
[09] ☐ Other *GOTO NEW28*

NEW28 What "other" person were you with?

NEW29 Were you on the Internet or using e-mail the last time you used the computer?

T25 If any how many e-mail messages do you send in an average month? *(NOTE: Please enter your response as a number, for example in the format of "1" and not "one". If none please enter "0").*

If T25 equals 0, goto Label 6

F26 People can send e-mail messages to public listserves and formal online groups, privately to one person, or privately to a small number of people. On average how many of the *[number]* e-mail messages you send in a month are addressed PRIVATELY TO JUST ONE PERSON? *Replace [number] with the number entered in T25*

F27 On average how many of the *[number]* e-mail messages you send in a month are addressed PRIVATELY TO BETWEEN 2 AND 5 PERSONS? *Replace [number] with the number entered in T25*

F28 On average how many of the *[number]* e-mail messages you send in a month are addressed PRIVATELY TO 6 OR MORE PERSONS (please do not include listserves and other formal online groups such as the Netville e-mail distribution list)? *Replace [number] with the number entered in T25*

F29 On average how many of the *[number]* e-mail messages you send in a month are addressed PUBLICLY TO A LISTSERVE OR OTHER FORMAL ONLINE GROUP (for example the Netville e-mail distribution list)? *IF NONE PLEASE ENTER "0". (Please enter your response as a number, for example in the format of "1" and not "one".) Replace [number] with the number entered in T25*

If F29 equals 0, goto Label 5

F30 Excluding those messages you send to listserves or other formal online groups how many of the approximately *[number]* e-mail messages that you send each month are to people located in NETVILLE (if an e-mail is addressed to more than one person include it if at least one person is located in NETVILLE)? *Replace [number] with the number entered in T25*

F31 Excluding those messages you send to listserves or other formal online groups how many of the approximately *[number]* e-mail messages that you send each month are to people located in MAPLE (if an e-mail is addressed to more than one person include it if at least one person is located in MAPLE)? *Replace [number] with the number entered in T25*

F32 Excluding those messages you send to listserves or other formal online groups how many of the approximately *[number]* e-mail messages that you send each month are to people located in the GREATER TORONTO AREA (if an e-mail is addressed to more than one person include it if at least one person is located in the GREATER TORONTO AREA)? *Replace [number] with the number entered in T25*

F33 Excluding those messages you send to listserves or other formal online groups how many of the approximately *[number]* e-mail messages that you send each month are to people located in ONTARIO (if an e-mail is addressed to more than one person include it if at least one person is located in ONTARIO)? *Replace [number] with the number entered in T25*

F34 Excluding those messages you send to listserves or other formal online groups how many of the approximately *[number]* e-mail messages that you send each month are to people located in CANADA (if an e-mail is addressed to more than one person include it if at least one person is located in CANADA)? *Replace [number] with the number entered in T25*

F35 Excluding those messages you send to listserves or other formal online groups how many of the approximately *[number]* e-mail messages that you send each month are to people located in the UNITED STATES (if an e-mail is addressed to more than one person include it if at least one person is located in the UNITED STATES)? *Replace [number] with the number entered in T25*

F36 Excluding those messages you send to listserves or other formal online groups how many of the approximately *[number]* e-mail messages that you send each month are to people located OUTSIDE CANADA AND THE UNITED STATES (if an e-mail is addressed to more than one person include it if at least one person is located OUTSIDE CANADA AND THE UNITED STATES)? *Replace [number] with the number entered in T25*

Goto Label 6

✻ Label 5 ✻

F30 In total how many of the approximately *[number]* e-mail messages that you send each month are to people located in NETVILLE (if an e-mail is addressed to more than one person include it if at least one person is located in NETVILLE)? *Replace [number] with the number entered in T25*

F31 In total how many of the approximately *[number]* e-mail messages that you send each month are to people located in MAPLE (if an e-mail is addressed to more than one person include it if at least one person is located in MAPLE)? *Replace [number] with the number entered in T25*

F32 In total how many of the approximately *[number]* e-mail messages that you send each month are to people located in the GREATER TORONTO AREA (if an e-mail is addressed to more than one person include it if at least one person is located in the GREATER TORONTO AREA)? *Replace [number] with the number entered in T25*

F33 In total how many of the approximately *[number]* e-mail messages that you send each month are to people located in ONTARIO (if an e-mail is addressed to more than one person include it if at least one person is located in ONTARIO)? *Replace [number] with the number entered in T25*

F34 In total how many of the approximately *[number]* e-mail messages that you send each month are to people located in CANADA (if an e-mail is addressed to more than one person include it if at least one person is located in CANADA)? *Replace [number] with the number entered in T25*

F35 In total how many of the approximately *[number]* e-mail messages that you send each month are to people located in the UNITED STATES (if an e-mail is addressed to more than one person include it if at least one person is located in the UNITED STATES)? *Replace [number] with the number entered in T25*

F36 In total how many of the approximately *[number]* e-mail messages that you send each month are to people located OUTSIDE CANADA AND THE UNITED STATES (if an e-mail is addressed to more than one person include it if at least one person is located OUTSIDE CANADA AND THE UNITED STATES)? *Replace [number] with the number entered in T25*

If F36 equals 0, goto Label 6

NEW13 Where are those people located?

✻ Label 6 ✻

If F11 equals 0, goto T26

KNH4 Has the number of e-mails you send in total, or to specific people, been affected by losing access to the Magenta Network? If so how?

T26 If any how many e-mail messages do you receive in an average month? (NOTE: Please enter your response as a number, for example in the format of "1" and not "one".) IF NONE PLEASE ENTER "0".

If T26 equals 0, goto Label 8

F129 On average how many of the *[number]* e-mail messages you receive in a month are addressed PUBLICLY TO A LISTSERVE OR OTHER FORMAL ONLINE GROUP (for example the Netville e-mail distribution list)? *(NOTE: Please enter your response as a number, for example in the format of "1" and not "one". If none please enter "0".) Replace [number] with the number entered in T26*

If F129 equals 0, goto Label 7

F130 Excluding those messages you receive from listserves or other formal online groups how many of the approximately *[number]* e-mail messages that you receive each month are from people located in NETVILLE? *Replace [number] with the number entered in T26*

F131 Excluding those messages you receive from listserves or other formal online groups how many of the approximately *[number]* e-mail messages that you receive each month are from people located in MAPLE? *Replace [number] with the number entered in T26*

F132 Excluding those messages you receive from listserves or other formal online groups how many of the approximately *[number]* e-mail messages that you receive each month are from people located in the GREATER TORONTO AREA? *Replace [number] with the number entered in T26*

F133 Excluding those messages you receive from listserves or other formal online groups how many of the approximately *[number]* e-mail messages that you receive each month are from people located in ONTARIO? *Replace [number] with the number entered in T26*

F134 Excluding those messages you receive from listserves or other formal online groups how many of the approximately *[number]* e-mail messages that you receive each month are from people located in CANADA? *Replace [number] with the number entered in T26*

F135 Excluding those messages you receive from listserves or other formal online groups how many of the approximately *[number]* e-mail messages that you receive each month are from people located in the UNITED STATES? *Replace [number] with the number entered in T26*

F136 Excluding those messages you receive from listserves or other formal online groups how many of the approximately *[number]* e-mail messages that you receive each month are from people located OUTSIDE OF CANADA AND THE UNITED STATES? *Replace [number] with the number entered in T26*

Goto Label 7.5

✻ Label 7 ✻

F130 In total how many of the approximately *[number]* e-mail messages that you receive each month are from people located in NETVILLE? *Replace [number] with the number entered in T26*

F131 In total how many of the approximately *[number]* e-mail messages that you receive each month are from people located in MAPLE? *Replace [number] with the number entered in T26*

F132 In total how many of the approximately *[number]* e-mail messages that you receive each month are from people located in the GREATER TORONTO AREA? *Replace [number] with the number entered in T26*

F133 In total how many of the approximately *[number]* e-mail messages that you receive each month are from people located in ONTARIO? *Replace [number] with the number entered in T26*

F134 In total how many of the approximately *[number]* e-mail messages that you receive each month are from people located in CANADA? *Replace [number] with the number entered in T26*

F135 In total how many of the approximately *[number]* e-mail messages that you receive each month are from people located in the UNITED STATES? *Replace [number] with the number entered in T26*

F136 In total how many of the approximately *[number]* e-mail messages that you receive each month are from people located OUTSIDE OF CANADA AND THE UNITED STATES? *Replace [number] with the number entered in T26*

✻ *Label 7.5* ✻

If F136 equals 0, goto Label 8

NEW14 Where are those people located?

✻ *Label 8* ✻

If F11 equals 0, goto Label 9

KNH5 Has the total number of e-mails you receive, or e-mails from specific people, been affected by losing access to the Magenta Network? If so how?

✻ *Label 9* ✻

(To be read to respondent)

Let's take a break from questions related to technology to get some basic demographic information. This section will provide the building blocks for the study. Answers will be used to compare the residents of Netville with other populations.

SECTION C - DEMOGRAPHIC INFORMATION

ZZ3 Please indicate, from the following list, ALL of the following options that corresponds to your relationship status. Are you:

[D12] ☐ Single *Goto A6*
[D13] ☐ Married/Common-law
[D14] ☐ Separated *Goto A6*
[D15] ☐ Divorced *Goto A6*
[D16] ☐ Widowed *Goto A6*

A1 What is your partners' (spouses') name (please ONLY enter their FIRST name and LAST initial)?

A2 Is your partner (spouse) male or female?

[01] ☐ Male
[02] ☐ Female

A3 What is *[spouse]*'s birth date?

A4 Does *[spouse]* currently live with you?

[01] ☐ Yes *Goto A6*
[02] ☐ No

A4_0b Since your move to Netville has *[spouse]* EVER lived in your home?

[01] ☐ Yes
[02] ☐ No

A6 How many children do you have? (Please enter your response as a number, for example in the format of "1" and not "one". If there are no children please enter "0").

If A6 equals 0, goto ZZ5

ZZ4 Please list each of your children's names (please only enter their FIRST name and LAST initial):

For each child's name entered in ZZ4, ask the following three questions. Replace [child] with the child's name.

DD1 Is *[child]* male or female?
[01] ☐ Male
[02] ☐ Female

DD2 What is *[child]*'s date of birth?

DD3 Is *[child]* currently living with you?
[01] ☐ Yes
[02] ☐ No

For this next question, replace num with the numerical position of the child (i.e., if he was entered first, # equals 0; if he was entered second, # equals 1)

DD3_#Since your move to Netville has *[child]* EVER lived in your home?

ZZ5 Does anyone else live with you?
[01] ☐ Yes
[02] ☐ No

If ZZ5 equals 2, go to Label 8.5

DD5 Please list their name(s) (please only enter their FIRST name and LAST initial)

For each person's name entered in DD5, ask the following questions. Replace [name] *with the person's name.*

DD6 Is *[name]* male or female?
[01] ☐ Male
[02] ☐ Female

DD7 What is *[name]*'s date of birth?

DD8 What is *[name]*'s relationship to you if any?

✻ ***Label 8.5*** ✻

(To be read to respondent)

Now that I have some basic information on your household composition the next section returns to questions of how the use of technology may affect relations with family and friends. Answers will provide an understanding of how living in a wired community influences your life.

SECTION D - TECHNOLOGY AND SOCIAL RELATIONS

F39b In which room of your house does *[person]* use the computer most often (NOTE: If this person does not currently live with the respondent enter "NA" for Not Applicable)? *Replace [person] with the name of a person who resides with the respondent, or his children, or his partner.*

NEW32 How many hours a month does *[person]* use a home computer? (NOTE: If this person does not currently live with the respondent enter "NA" for Not Applicable) *Replace [person] with the name of a person who resides with the respondent, or his children, or his partner.*

T98b How many hours a month does *[person]* use the Internet? (NOTE: If unknown please enter "9999", if this person does not currently live with the respondent enter "NA" for Not Applicable). *Replace [person] with the name of a person who resides with the respondent, or his children, or his partner.*

NEW31 If any, how many hours a month do you spend with *[person]* using the computer together? And how many of these hours are spent on the Internet? (NOTE: Separate numbers with a ":") (If this person does not currently live with the respondent enter "NA" for Not Applicable) *Replace [person] with the name of a person who resides with the respondent, or his children, or his partner.*

If F11 equals2, goto Label 10

KNH6 Has the time you spend together with household members on the computer, or on the Internet, been affected by losing access to the Magenta Network? If so how?

✻ Label 10 ✻

If T14 equals 0, goto NEW5

T35 Who usually solves computer problems in your house?

NEW5 Would you say that your use of e-mail and the Internet has affected your household relationships? If so how?

NEW6 How about your relationship with other relatives, have these relationships been affected by your use of e-mail and the Internet?

NEW4 Would you say that your use of e-mail and the Internet has affected your relationships with friends? If so how?

If F11 equals 2, goto NEW15

KNH9 Has your relationship with household members, relatives, friends, or neighbours been affected by the loss of the Magenta Network? If so how?

NEW15 In what ways has your use of e-mail and the Internet affected the time you spend on household activities? For example housework, childcare, and meal preparation?

NEW16 In what ways has your use of e-mail and the Internet affected the time you spend involved in leisure activities? For example watching TV, reading, playing games, or going to the movies?

NEW17 In what ways has your use of e-mail and the Internet affected the time you spend on community activities? For example attending community meetings, joining community associations, or participating in local events?

If F11 equals 2, goto T3

KNH10 Has the loss of the Magenta Network affected the time you spend on household activities, leisure activities, or community activities? If so how?

T3 In a typical week how many hours do you watch TV?

If T22 is less than or equal to 2, goto F1700

T90 Which of the following best describes how the hours you spend using the Internet has affected the time you would normally spend watching TV?

[01] □ Watching much more TV
[02] □ Watching somewhat more TV
[03] □ Watching somewhat less TV
[04] □ Watching much less TV
[05] □ No difference
[99] □ Don't know

F1700 Do you feel “a lot more,” “a little more,” “about the same,” “a little less,” or “a lot less” involved with Netville than the place where you previously lived?

[03] □ A lot more
[02] □ A little more
[01] □ About the same
[04] □ A little less
[05] □ A lot less

If F1700 equals 1, goto F6000

F1900 Why do you think this is?

F6000 Do you feel “a lot more,” “a little more,” “about the same,” “a little less,” or “a lot less” involved with household members in Netville than in the place where you previously lived?

[03] □ A lot more
[02] □ A little more
[01] □ About the same
[04] □ A little less
[05] □ A lot less

If F6000 equals 1, goto Label 11

F6100 Why do you think this is?

Label 11

C10 (NOTE: Give respondent Card “B”) Please rank the following items in the order of the geographic area that you would say you identify with the most. (ADMIN ONLY: Where “1" is the geographic area they identify with the most).

[C11] □ Your local neighbourhood
[C12] □ District within your town or city
[C13] □ Town or city where you live
[C14] □ The region that includes your city or town (for example Metro Toronto, York Region, Greater Toronto Area)
[C15] □ Province
[C16] □ Canada
[C17] □ North America
[C18] □ The world as a whole

(To be read to respondent)

The next section deals with participation in different group and community activities. Answers will provide an understanding into how participation in community activities is affected by use of technology.

SECTION E - VOLUNTARY ACTIVITIES

Repeat question "V_#" for each of the following:

- Fraternal Groups
- Service Clubs/groups
- Veterans' Groups
- Political Groups
- Labour Unions
- Sports Groups
- Youth Groups
- School Service Groups
- Hobby or Garden Clubs
- Political Groups
- School Fraternities or Sororities
- Nationality or Ethnic Groups
- Literary Art Discussion or Study Groups
- Professional or Academic Societies
- Church Affiliated Groups
- Computer Club
- Social Advocacy Groups Such as Those Concerned with Issues like Poverty, Racial Problems, the Environment, Taxes, or Crime
- Residents' Group/community Organization
- Any Other Groups

V_# (NOTE: Give respondent card "C") Please select as many of the following categories that correspond to how you participate in *[group]*.

[V_#_1] ☐ Not at all
[V_#_2] ☐ Am a member
[V_#_3] ☐ Hold a leadership position
[V_#_4] ☐ Contribute money
[V_#_5] ☐ Attend meetings
[V_#_6] ☐ Contact government officials
[V_#_7] ☐ On electronic listserve or e-mail group
[V_#_8] ☐ Use other Internet technology to participate

F44 Since its creation Netville has had a number of community events. Please select as many of the following Netville activities that you were aware of:

Block party with the live band in May 1997
☐ Barbeque at the Police Association in June, 1997
☐ Cyber Soiree in September, 1997
☐ Park Party in July, 1998

F45 Please select as many of the following activities that you participated in:
- ☐ Block party with the live band in May 1997
- ☐ Barbeque at the Police Association in June, 1997
- ☐ Cyber Soiree in September, 1997
- ☐ Park Party in July, 1998

F46 Please select as many of the following Netville activities that you helped organize:
- ☐ Block party with the live band in May 1997
- ☐ Barbeque at the Police Association in June, 1997
- ☐ Cyber Soiree in September, 1997
- ☐ Park Party in July, 1998

F47 The Magenta Ontario Consortium has provided a number of opportunities to meet with Magenta and other community residents. Please select as many of the following activities that you participated in:
- ☐ Introduction to Magenta at York University - Shortly before or after you moved in
- ☐ In home orientation on the Magenta Network
- ☐ Focus Group at Maple Public Library in July 1997
- ☐ Idea Lab with Bell Canada at the Best Western Voyageur Place Hotel in November 1997
- ☐ Focus Group at Netville Elementary School in June 1998
- ☐ Idea Lab with Bell Canada at Netville Elementary School in June 1998
- ☐ Magenta meeting at the Police Association in October 1998

(To be read to respondent)

The next two questions are fairly open and relate to how you use your time in a typical day.

LTU1 In what ways has your life in a typical WEEKDAY changed since moving to Netville?

LTU2 In what ways has your WEEKEND life changed since moving to Netville?

(To be read to respondent)

This next section deals with work. Answers will be used to build an understanding of how the use of technology can influence how people work, and how people's work can be influenced by technology.

SECTION F - WORK

H1 Last week what was your main activity? If you were sick or had a short-term illness please indicate your usual major activity.

[01] ☐ Working at job or business *Goto H3*
[02] ☐ Vacation from paid work *Goto H3*
[03] ☐ Looking for work *Goto H3*
[04] ☐ Going to school
[05] ☐ Keeping house *Goto H3*
[06] ☐ Retired *Goto H3*
[07] ☐ Maternity/paternity leave *Goto H3*
[08] ☐ Long term illness *Goto H3*
[09] ☐ Other *Goto H3*

H2 Were you studying full-time or part-time?

[01] ☐ Full-time
[02] ☐ Part-time

H3 Did you have a job or were you self-employed at any time last week?

[01] ☐ Yes *Goto H8*
[02] ☐ No

H4 Did you have a job or were you self-employed at any time during the past 12 months?

[01] ☐ Yes
[02] ☐ No *Goto J1*

H8 Thinking of your MAIN job for whom do you work? (Name of business, government department or agency, or person.)

H9 What kind of business, industry or service is your MAIN job? (Give full description: e.g., federal government, canning industry, forestry services.)

H10 What kind of work were you doing for your MAIN job? (Give full description: e.g., office clerk, factory worker, forestry technician.)

H11 In your MAIN job, what was your most important activity or duty? (Give full description: e.g., filing documents, drying vegetables, forestry examiner.)

H5 In total how many hours a week do you usually work at your main job?

H6 Are you self-employed in your main job?

[01] ☐ Yes
[02] ☐ No *Goto H12*

H7 How many employees do you have (if you are the only employee please enter “0")?

H12 Which of the following best describes the hours you usually work at your MAIN job?

[01] ☐ A regular daytime schedule or shift? *Goto H13*
[02] ☐ A regular evening shift? *Goto H13*
[03] ☐ A regular night shift? *Goto H13*
[04] ☐ A rotating shift? (one that changes periodically from days to evening to/or nights) *Goto H13*
[05] ☐ A split shift? *Goto H13*
[06] ☐ Other

HH1 What best describes the hours you work for your main job?

H13 What is the main reason that you work this schedule?

[01] ☐ Earn more money *Goto H14*
[02] ☐ Care for children *Goto H14*
[03] ☐ Care for other family members *Goto H14*
[04] ☐ Allow time for school *Goto H14*
[05] ☐ Requirements of the job/no choice *Goto H14*
[06] ☐ Other

HH2 Please describe why you work this schedule?

H14 Do you have a flexible schedule that allows you to choose the time you begin and end your work day?

[01] ☐ Yes
[02] ☐ No

H17 Please list the nearest intersection of your office or each of the offices that you use as a part of your MAIN job. If you have a mobile office please list the type of transportation (i.e., car, trailer, train,). If you frequently work out of other companies offices (e.g., as an accounting, or sales person) state this as Aroving offices. If you work from home, excluding overtime, please include this as an office by indicating “home”.

The following questions are repeated for each location given in H17. Replace [location] *by a location in H17*

H19 Last week, as part of your MAIN job, how many hours did you spend at your *[location]* office?

NEW9 If HOME is listed as an office: Is your HOME office your main office?

NEW11 If HOME is listed as an office: What are some of the ADVANTAGES to working from home?

NEW12 If HOME is listed as an office: What are some of the DISADVANTAGES to working from home?

H20 How many jobs (including your main job) did you have last week? (Please enter your response as a number, for example in the format of "1" and not "one".)

If H20 equals 1, Goto NEW10

F82 How many of your jobs (including your main job) are you self-employed in?

H24 Thinking of your SECOND job for whom do you work? (Name of business, government department or agency, or person.)

H25 What kind of business, industry or service is your SECOND job? (Give full description: e.g., federal government, canning industry, forestry services.)

H26 What kind of work were you doing for your SECOND job? (Give full description: e.g., office clerk, factory worker, forestry technician.)

H27 In your SECOND job, what was your most important activity or duty? (Give full description: e.g., filing documents, drying vegetables, forestry examiner.)

HH5 In total how many hours a week do you usually work at this job?

HH6 Are you self-employed in your SECOND job?
[01] □ Yes
[02] □ No *Goto HH17*

HH7 How many employees do you have (If you are the only employee please enter "0")?

HH17 Please list the nearest intersection of your office or each of the offices that you use as a part of your SECOND job. If you have a mobile office please list the type of transportation (i.e., car, trailer, train,). If you frequently work out of other companies offices (e.g., as an accounting, or sales person) state this as Aroving offices.@ If you work from home, excluding overtime, please include this as an office by indicating "home"

The following questions are repeated for each location given in HH17. Replace [location] *by a location in HH17*

HH19 Last week, as part of your SECOND job, how many hours did you spend at your [location] office?

NNEW9 If HOME is listed as an office: Is your HOME office your main office for your SECOND job?

NNEW11 If HOME is listed as an office: What are some of the ADVANTAGES to working from home?

NNEW12 If HOME is listed as an office: What are some of the DISADVANTAGES to working from home?

NEW10 In what ways do you use your computer, or computer networks, to get your work done?

If F11 equals 2, goto Label 12

KNH7 Has losing access to the Magenta Network affected the way you use a computer, or computer networks, to get your work done? If so how?

(To be read to respondent)

This next section returns to the central focus of this survey, relationships. For the following questions you will be presented with a list of people who live in your neighbourhood. I will ask if you recognize their names and how often you participate in various social activities. Answers to these questions will be used to understand how technology may influence who you know in your neighbourhood.

SECTION F - LOCAL SOCIAL NETWORK

F7 The following is a list of people who live in your area. Please take the time to look over the complete list and select as many of the following people whom you recognize by name (we have included a map of Netville in the package we mailed you that may help you as a reference). If you do not recognize any of these people please select the "no one" option): *A list of all residents in the Netville community is presented.*

F8 From those people you recognized from your area please select those whom you talk to on what you would consider to be a regular bases? *A list of all people selected in question F7 is presented.*

F9 From those people you recognized from your area please select those whom you have invited into YOUR HOME in the last six months? *A list of all people selected in question F7 is presented.*

F10 From those people you recognized from your area please select those whom you have invited you into THEIR HOME in the last six months? *A list of all people selected in question F7 is presented.*

If T49 equals 2, goto NEW18

F25 From those people you recognized from your area please select those whom you have contacted using the VID.IO phone: *A list of all people selected in question F7 is presented.*

BB2 Since moving into Netville how many times have you contacted *[name]* using the VID.IO phone (NOTE: You do not have to reread this question for each person, simply list the person) *This question is repeated for all names entered in F25, each time replacing [name] with a name from the list.*

NEW18 From those people you recognized from your area please select those whom you have contacted using e-mail NOT COUNTING messages sent to the Netville community e-mail list: *A list of all people selected in question F7 is presented.*

NEW19 In the last month how many times have you contacted *[name]* using e-mail (NOTE: You do not have to reread this question for each person, simply list the person)? *This question is repeated for all names entered in F7, each time replacing [name] with a name from the list.*

NEW20 From those people you recognized from your area please select those whom you have called on the phone: *A list of all people selected in question F7 is presented.*

NEW21 In the last month how many times have you called *[name]* on the phone (NOTE: You do not have to reread this question for each person, simply list the person)? *This question is repeated for all names entered in F7, each time replacing [name] with a name from the list.*

If F11 equals 2, goto X1

KNH8 Has losing access to the Magenta Network changed the way you keep in touch, or who you keep in touch with, in Netville? If so how?

X1 Some people have a particular place that they can go to and find their friends when they want to -- it might be a park, club, coffee shop, a restaurant, an Internet chat group, or some other kind of place. Do you have any place like this where you and your friends tend to see each other?
[01] □ Yes
[02] □ No

If X1 equals, goto Label 13

XX1 What is the name or title of this place?

X2 What is the nearest city intersection for *[place]*. (NOTE: If it is an on-line space such as a virtual community, or chat group, please enter the Internet address or information on how they participate). *[place] is replaced with the name entered in XX1.*

X3 How many months have you been going to *[place]*? (NOTE: if less than half a month please enter "0". If less than one whole month, but more than half a month, please enter "1". If you prefer to enter the number of years please indicate with the word YEARS following the number. *[place] is replaced with the name entered in XX1.*

X4B Looking at the computer, which of the people on this list do you usually encounter while at "$$XX1$$"? *A list of all names entered in F7 is presented. [place] is replaced with the name entered in XX1.*

✻ Label 13 ✻

(To be read to respondent)
Thank you. I will now turn the computer back towards me and continue with the last few questions of this survey. These last questions will tell me just a little more about you.

SECTION G - EDUCATION

J1 What is the highest level of education that you have attained?

[01] ☐ No Schooling
[02] ☐ Some Elementary school
[03] ☐ Elementary School diploma
[04] ☐ Some High School
[05] ☐ High School diploma
[06] ☐ Some trade, technical or vocational school, or business college
[07] ☐ Some community college, CEGEP or nursing school
[08] ☐ Some university
[09] ☐ Diploma or certificate from trade, technical or vocational school, or business college
[10] ☐ Diploma or certificate from community college, CEGEP or nursing school
[11] ☐ Bachelor or undergraduate degree, or teacher's college (e.g. B.A., B.Sc., B.A.Sc., LL.B.)
[12] ☐ Masters (M.A., M.Sc., M.Ed.)
[13] ☐ Doctorate (PhD, D.Sc., D.Ed.)
[14] ☐ Other *Goto J2*

J2 What best describes the highest level of education that you have attained?

NEW42 To conclude, now that we have had a chance to review your experiences in Netville, and your experience with the technology that you have available, if it were possible what new services or applications would you like to see?

ZZ1 What is your date of birth

ZZ2 ADMIN ONLY: Is the respondent male or female?

[01] ☐ Male
[02] ☐ Female

(Message to interviewer)

ADMIN NOTE: PART A ends here. After a few admin. questions the survey will end. You must restart the survey and select "Part B" after entering the respondents ID to continue.

If computer restarted, proceed to Label 14

ADMINISTRATIVE QUESTIONS TO SURVEY PART 'A'

ADMIN1 ADMIN ONLY: What time did the survey start?

ADMIN2 ADMIN ONLY: What time did the survey end?

ADMIN3 ADMIN ONLY: Respondent was:
[01] □ Cooperative
[02] □ Indifferent
[03] □ Uncooperative

ADMIN4 ADMIN ONLY: Please describe the setting for the interview (living room, kitchen, table, chairs, people present):

ADMIN5 ADMIN ONLY: Comments on the interview (comments made by the respondent, any problems, distractions, potential errors):

SECTION H - INTERNET USE

✻ ***Label 14*** ✻

DATE ADMIN ONLY: What is today's date?

(To be read to respondent)

In this section we are interested in a few final details about how you may use the Internet to participate in group activities while online. Answers will provide further detail into how people use the Internet and how it influences relationship with friends and family.

S11 Have you ever used listserves, other e-mail distribution lists, Usenet, Internet conferencing systems (such as ICQ and Powwow), MUDs, MOOs, MUSHs, graphical chats or worlds, multiuser Internet games, or Internet Relay Chat (IRC)?

[01] ☐ Yes
[02] ☐ No

If S11 equals 2, goto Label 15

KNH11 Has your use of listserves, other e-mail distribution lists, Usenet, Internet conferencing systems (such as ICQ and Powwow), MUDs, MOOs, MUSHs, graphical chats or worlds, multiuser Internet games, or Internet Relay Chat (IRC)been affected by losing access to the Magenta Network? If so how?

S1 (NOTE: Give respondent Card "D") From the following list please select any Internet technologies that you have used:

[S1_1] ☐ E-mail lists/listserves
[S1_2] ☐ Usenet
[S1_3] ☐ Internet conferencing systems (such as ICQ and Powwow)
[S1_4] ☐ MUDs, MOOs, or MUSHs
[S1_5] ☐ Graphical chats or worlds
[S1_6] ☐ Multiuser Internet games
[S1_7] ☐ Internet Relay Chat (IRC)

✻ ***Label 15*** ✻

If S1_1 equals 0, goto Label 16

S2_1 Please list the NAME of each E-MAIL LISTS/LISTSERVE that you have used in the last month and please remember that this information will be kept strictly confidential:

✻ ***Label 16*** ✻

If S1_2 equals 0, goto Label 17

S2_2 Please list the NAME of each USENET GROUP that you have used in the last month and please remember that this information will be kept strictly confidential:

Label 17

If S1_3 equals 0, goto Label 18

S2_3 Please list the NAME of each INTERNET CONFERENCING SYSTEM (SUCH AS ICQ AND POWWOW) that you have used in the last month and please remember that this information will be kept strictly confidential:

Label 18

If S1_4 equals 0, goto Label 19

S2_4 Please list the NAME of each MUD, MOO, OR MUSH that you have used in the last month and please remember that this information will be kept strictly confidential:

Label 19

If S1_5 equals 0, goto Label 20

S2_5 Please list the NAME of each GRAPHICAL CHAT OR WORLD that you have used in the last month and please remember that this information will be kept strictly confidential:

Label 20

If S1_6 equals 0, goto Label 21

S2_6 Please list the NAME of each MULTIUSER INTERNET GAME that you have used in the last month and please remember that this information will be kept strictly confidential:

Label 21

If S1_7 equals 0, goto Label 22

S2_7 Please list the NAME of each INTERNET RELAY CHAT (IRC) CHANNEL that you have used in the last month and please remember that this information will be kept strictly confidential:

Label 22

If S11 equals 2, goto Label 23

S4 (NOTE: Give respondent Card "E") Please select as many of the following categories that correspond to how you participate in *[item]*: *(This question is repeated for all listserves, other e-mail distribution lists, Usenet, Internet conferencing systems (such as ICQ and Powwow), MUDs, MOOs, MUSHs, graphical chats or worlds, multiuser Internet games, and Internet Relay Chat (IRC) channels inputted)*

[S4_1] □ Am a member
[S4_2] □ Hold a leadership position
[S4_3] □ Contribute money
[S4_4] □ Attend meetings
[S4_5] □ Contact government officials

F42 In your impression, from the following list, where do people who participate in *[item]* primarily live? *(This question is repeated for all listserves, other e-mail distribution lists, Usenet, Internet conferencing systems (such as ICQ and Powwow), MUDs, MOOs, MUSHs, graphical chats or worlds, multiuser Internet games, and Internet Relay Chat (IRC) channels inputted)*

[F42_1] □ Netville
[F42_2] □ Maple
[F42_3] □ Ontario
[F42_4] □ Canada
[F42_5] □ United States
[F42_6] □ Outside of Canada and the United States

S5 In the last 7 days how many hours have you spent involved in *[item]*? *(This question is repeated for all listserves, other e-mail distribution lists, Usenet, Internet conferencing systems (such as ICQ and Powwow), MUDs, MOOs, MUSHs, graphical chats or worlds, multiuser Internet games, and Internet Relay Chat (IRC) channels inputted)*

S6 Looking at the computer, please select any of the following people who are involved in *[item]* with you. *(This question is repeated for all listserves, other e-mail distribution lists, Usenet, Internet conferencing systems (such as ICQ and Powwow), MUDs, MOOs, MUSHs, graphical chats or worlds, multiuser Internet games, and Internet Relay Chat (IRC) channels inputted) (The respondent is presented with a list of all people selected in F7)*

✻ Label 22 ✻

(To be read to respondent)

This next section is the first of the three remaining parts of this survey.

For this first section you will be asked to list those people whom you could rely on for various things. When I ask for the names of people you need only provide a first name and last initial so that I can tell people apart. Please remember that the information you provide in this next section will be kept strictly confidential, and at no time will we contact any of the people you will be asked to list. Answers will be used to build an understanding of what people provide different types of aid and support, and if this is influenced by living in a wired community.

SECTION I - PERSONAL NETWORK

(A note for the interviewer)

ADMIN ONLY: To further reduce any problems that you may have while completing this section please be sure to enter a first name and last initial (for example John D) and not a persons title (for example, "my boss," or "the in-laws"). Please remember to only enter ONE name per line.

N1 From time to time, most people discuss important matters with other people. Who are the people with whom you discuss matters important to you? (NOTE: Please remember to ONLY use a persons first name and last initial in the answer. If you do not have a name to enter please leave the screen blank and continue on to the next question).

N2 When you feel just a bit down or depressed who do you turn to when you want to talk about it? (NOTE: Please remember to ONLY use a persons first name and last initial in the answer. If you do not have a name to enter please leave the screen blank and continue on to the next question).

N4 If you needed to borrow a large sum of money, say $1000, who would you ask for help? (NOTE: Please remember to ONLY use a persons first name and last initial in the answer. If you do not have a name to enter please leave the screen blank and continue on to the next question).

N6 When people go out of town for a while, they sometimes ask someone to take care of their home for them -- for example, to water the plants, pick up the mail, feed a pet, or just check on things. Who would you ask to take care of your home if you went out of town? (NOTE: Please remember to ONLY use a persons first name and last initial in the answer. If you do not have a name to enter please leave the screen blank and continue on to the next question).

N8 Who from outside of your home has recently helped you with tasks around the home, such as painting, moving furniture, cooking, cleaning, or major or minor repairs? (NOTE: Please remember to ONLY use a persons first name and last initial in the answer. If you do not have a name to enter please leave the screen blank and continue on to the next question).

N10 Who has recently helped you with significant, unpaid, child care? (NOTE: Please remember to ONLY use a persons first name and last initial in the answer. If you do not have a name to enter please leave the screen blank and continue on to the next question).

N12 Who are the people who you know best living inside your current neighbourhood? (NOTE: Please remember to ONLY use a persons first name and last initial in the answer. If you do not have a name to enter please leave the screen blank and continue on to the next question).

N13 Who are the people you realy enjoy socializing with? (NOTE: Please remember to ONLY use a persons first name and last initial in the answer. Instead of entering nobody or none please just leave the screen blank and continue on to the next question).

N14 Please list anyone you use the Internet or e-mail to communicate with who you feel especially close to? (NOTE: Please remember to ONLY use a persons first name and last initial in the answer. If you do not have a name to enter please leave the screen blank and continue on to the next question).

N15 Please list anyone who is especially close to you who you have not listed in one of the previous questions? (NOTE: Please remember to ONLY use a persons first name and last initial in the answer. If you do not have a name to enter please leave the screen blank and continue on to the next question).

N16 Please list anyone currently living in Netville who you knew BEFORE moving into the neighbourhood: (NOTE: Please remember to ONLY use a persons first name and last initial in the answer. If you do not have a name to enter please leave the screen blank and continue on to the next question).

N17 Who would you go to outside your home for help using the INTERNET? (NOTE: Please remember to ONLY use a persons first name and last initial in the answer. If you do not have a name to enter please leave the screen blank and continue on to the next question).

N18 Who would you go to outside of your home for help with your COMPUTER? (NOTE: Please remember to ONLY use a persons first name and last initial in the answer. NOTE: If you do not have a name to enter please leave the screen blank and continue on to the next question).

(To be read to respondent)

The second section will ask for demographic information on the people you just listed, and information on how you communicate with each individual. Answers will be used to build an understanding of how communication is influenced by different factors in a persons life.

If you wish this may be a good time to take a short break as the following questions may be repetitive at times. When you are ready we will continue.

SECTION J - PERSONAL NETWORK: DEMOGRAPHICS

The following questions are repeated for all names entered in Section I. [person] is replaced with one name from that list.

SN1 What best describes *[person]*'s relationship to you? (For example, spouse, sister, son, neighbour, etc)

SN2 Is *[person]* male or female?
[01] ☐ Male
[02] ☐ Female

SN3 How old is *[person]* (NOTE: if unknown please leave blank to continue)?

SN4 Please indicate, from the following list, ALL of the following options that corresponds to *[person]*'s relationship status: (NOTE: if unknown please leave blank to continue):
[DD12] ☐ Single
[DD13] ☐ Married/Common-law
[DD14] ☐ Separated
[DD15] ☐ Divorced
[DD16] ☐ Widowed

SN6 What is *[person]*'s occupation (NOTE: if unknown please leave blank to continue)

SN7 How or where did you first meet *[person]*?

SN8 What is the nearest intersection to *[person]*'s home (NOTE: if they live outside of the Greater Toronto Area what is the name of the city or town)?

F5 Does *[person]* currently live in Netville?
[01] ☐ Yes
[02] ☐ No

SN9 How many months have you known *[person]*? (NOTE: if less than half a month please enter "0". If less than one whole month, but more than half a month, please enter "1". If you prefer to enter the number of years please indicate with the word YEARS following the number~

SN11 Does *[person]* have access to the Internet?
[01] ☐ Yes
[02] ☐ No
[03] ☐ DK

SN12 In the last 3 months how many times have you communicated FACE-TO-FACE with *[person]*? In the case of prolonged exchanges such as when you live with the individual consider one day as one communication.

SN13 In the last 3 months how many times have you communicated by PHONE with *[person]*?

SN14 In the last 3 months how many times have you communicated by POSTAL MAIL with *[person]*?

SN15 In the last 3 months how many times have you communicated by FAX with *[person]*?

SN16 In the last 3 months how many times have you communicated by E-MAIL with *[person]*?

F6 In the last 3 months how many times have you communicated by VIDEO PHONE (or VID.IO) with *[person]*?

SN17 In the last 3 months how many times have you communicated using the INTERNET OTHER THAN E-MAIL OR VIDEO PHONE with *[person]* (for example in a chat room, on ICQ, or in a MUD)?

SN18 In the last 3 months how many times have you communicated with *[person]* by any OTHER means than those just mentioned?

SECTION K - PERSONAL NETWORK: DENSITY

(To be read to respondent)

This last section will look at how interrelated different people are in your life. Answers will provide insight into how close groups of people are and how this is influenced by technology and different forms of communication. For the next few questions I am going to ask that you look at the computer screen.

BB1 These are the people that you've listed. Please select those people that you know *[person]* has a significant realionship with: (For example: they're friends, or relatives who keep in touch, or in frequent contact, or feel close to each other, or help each other out). Please select this person's own name as well. *This question is repeated for all names entered in Section I. [person] is replaced with one name from all the names entered in that section.*

N19 From the following list of people in your life please select those people you feel close to (if you do not feel close to any of these people please select the "no one" option): *A list of all people entered in Section I is presented.*

N20 From this list of people whom you feel close to please rank them in terms of most to least close where "1" is the person you feel closest to (if you selected the "no one" option rank this as "1"): *A list of all people selected in N19 is presented.*

(Note to interviewer)

ADMIN NOTE: PART B ends here. After a few admin. questions the survey will end.

SECTION L - ADMINISTRATIVE QUESTIONS

ADMIN6 ADMIN ONLY: What time did the survey start?

ADMIN7 ADMIN ONLY: What time did the survey end?

ADMIN8 ADMIN ONLY: Respondent was:
[01] ☐ Cooperative
[02] ☐ Indifferent
[03] ☐ Uncooperative

ADMIN9 ADMIN ONLY: Please describe the setting for the interview (living room, kitchen, table, chairs, people present):

ADMIN10 ADMIN ONLY: Comments on the interview (comments made by the respondent, any problems, distractions, potential errors):

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