# Neighboring in Netville:
## How the Internet Supports Community and Social Capital in a Wired Suburb[1]

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*What is the Internet doing to local community? Analysts have debated about whether the Internet is weakening community by leading people away from meaningful in-person contact; transforming community by creating new forms of community online; or enhancing community by adding a new means of connecting with existing relationships. They have been especially concerned that the globe-spanning capabilities of the Internet would limit local involvements. Survey and ethnographic data from a "wired suburb" near Toronto shows that high-speed, always-on access to the Internet, coupled with a local online discussion group, transforms and enhances neighboring. The Internet especially supports increased contact with weaker ties. In comparison to non-wired residents of the same suburb, more neighbors are known and chatted with, and they are more geographically dispersed around the suburb. Not only did the Internet support neighboring, it also facilitated discussion and mobilization around local issues.*

## THE INTERNET QUESTION

What is the Internet – the backbone of the global village – doing to local community? Howard Rheingold's *The Virtual Community* (1993) ported over the concept of "community without propinquity" (Webber 1963) to the Internet and ignited an already simmering debate on the effects of new information and communication technologies (ICTs) on society.[2] To many, the ability of the Internet to leap instantly across continents opened up the possibility that

[2] We use the term "Internet" to refer to email, web browsing, instant messaging and other networked computer technologies. At times, to make the point that we are talking about a broad range of such technologies, we also use the term "ICTs" (information and communication technologies).

community would fragment into new virtual realities of shared interest that negated the necessity, even the desirability, of shared corporeal existence. The deterministic fears of cyber theorists were matched only by the earlier fears of the Chicago School of Sociology, that a heterogeneous urban environment would be characteristic of an "absence of intimate personal acquaintanceship" and would result in "the segmentation of human relations" into those that were "largely anonymous, superficial, and transitory" (Wirth 1938: 1). The global reach of the Internet has been argued to free people from the restraints of place, but has it made place irrelevant? Is interaction and participation at the neighborhood level withering as a result of technological change?

The focus on the ability of the Internet to connect people globally has neglected an examination of how the Internet is used locally. Our research uses survey and ethnographic information from a 3-year study to report on how the Internet affects neighborhood community. Having studied an experimental "wired suburb" in exurban Toronto that was equipped with a series of new information and communication technologies, our findings contribute to a longstanding debate about the nature of community and provide a window into the future of how Internet use may affect neighborhood community.

**The Internet Rekindles the Community Question**

Uncertainty about the effects of the Internet has rekindled the Community Question: the century-long debate about how large-scale social changes affect ties with friends, neighbors, kin, and workmates. Ever since Tönnies (1887), pundits feared that some combination of technological change, industrialization, urbanization, and bureaucratization would destroy community. Isolated individuals would face the state and large organizations in a mass society, without intermediate-level communities to give them companionship, support, information, a sense of belonging, and a means of aggregating and articulating their hopes and grievances (Wellman and Leighton 1979 review this debate).

Although different analysts focus on different causes – from industrialization and bureaucratization in the 1800s to television and the Internet today – they all have feared:

1.  *The weakening of private (interpersonal) community:* Reduced social contact with kin, friends, workmates, and neighbors.

2.  *Disengagement from the neighborhood:* Even if community ties continue, people would have less in common and less involvement with those in the same local area.

3.  *The decline of public community:* Fewer gatherings in public places, reduced civic involvement, less involvement in voluntary organizations, and less commitment to community.

After a century of argument and research, the community question seemed relatively settled by the 1980s. Using both survey and ethnographic data, North American scholars generally agreed that "community" has both persevered and changed in industrial and post-industrial societies (Wellman 1999; 2002). Private and parochial life continue to be important, with kin providing a stable core of broadly supportive relations and neighbors providing immediate access to tangible goods and services (Wellman and Wortley 1990). Yet, community is rarely based on local neighboring, densely-knit solidarities, organized groups, or public spaces (Wellman 1999; 2002). Community members are more likely to interact in private spaces (households, phone lines) than in public spaces (street corners, parks, cafes; Wellman 1999; Putnam 2000). People

usually have more friends outside their neighborhoods than within them. Indeed, many people have more ties outside their metropolitan areas than within them.

Communities consist of far-flung kinship, workplace, friendship, interest group, and neighborhood ties that concatenate to form networks providing sociability, aid, support, and social control. Communities are usually not groups, but are social networks that are sparsely-knit, loosely-bounded and far-flung. The typical network community in North America consists of a small number of densely-knit immediate kin and a larger number of sparsely-knit friends, neighbors, workmates, and extended kin. Such networks can furnish opportunity, maneuverability and uncertainty. Opportunity to find resources in a number of social circles; maneuverability to avoid the controlling nature of a single network member or constrictive group; uncertainty because the low density, and porous boundary of any one network makes it harder to identify with than a single solidary group (Hampton and Wellman 2000; Wellman 2002). Neighborly relationships remain important, but as a minority of ties within the overall network community.

### Debating the Internet's Impact on Community

The Internet's explosive growth reopened the Community Question for another generation. People hotly debate the impact of the Internet on community (see Wellman and Haythornthwaite 2002). Indeed, the developments of new information and communication technologies (ICTs) have excited scholars as well as the public, financiers, the media and politicians. To examine these developments is not technological determinism (e.g., Ogburn 1950), for it is clear that technological changes do not *cause* social changes and that people and institutions often take over and re-orient technological developments. Rather, it is an examination of "social affordances": the possibilities that technological changes provide for social relations and social structure (Bradner and Kellogg 1999).

Although there is widespread belief that the Internet has affected community, opinions vary about the novelty, nature and the extent of its effects.

1. Is the Internet severely weakening community, as people replaced in-person relationships with time spent online and out of the public realm?

2. Is the Internet transforming community into online "virtual community", a whole new form of community that allows people to commune online in new agoras that reach across barriers of geography?

3. Or, is the Internet less transforming, adding its communication means on to phones, cars and planes as another way to be in contact with existing community members?

***Does the Internet Weaken Community?*** Commentators about the Internet unsuspectingly echo the fears of previous generations that some technologies would alienate people from community (see the discussions in Marx 1964 and Wellman 1999). They are concerned that "computer networks bring people together in alienation rather than solidarity" (Bad Subjects 1995). They worry that online interactions, brought into the home through the rise of the personal computer, isolate people from the "great good places" of bars, cafes, and local parks (Oldenburg 1989; see also Jacobs 1961) that make up community life. Commentators suggest that the Internet advances the trend of non-communal domestic privatism just like suburbanization, the automobile, the television, and the telephone purportedly had done (see Fischer 1992; Wellman 1999; Putnam 2000; Cairncross 2001; Robinson 2003). New home-

centered communication technologies would enable people to participate directly from their homes in what had been the more public activities of work, shopping, socializing and leisure.

> As families get smaller, new technologies allow the home to emerge as a center 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).

Commentators also asserted that community life on the Internet could never be meaningful or complete because it would lead people away from the full range of in-person contact. Meaningful contact would wither without the full bandwidth provided by in-person, in-the-flesh meetings (for example see Stoll 1995). Yet, while some warned that the Internet never could be fulfilling enough, other negative commentators feared the opposite: The Internet's immersiveness could be so fulfilling as to lure users away from real life community. These dystopians recognized that people have been socializing online, but they warned that such interactions were inadequate simulacra of "real life" community. For instance, Mark Slouka, author of *War of the Worlds: Cyberspace and the Hi-Tech Assault on Reality* (1995), asks:

> Where does the need come from to inhabit these alternate spaces? And the answer I keep coming back to is: to escape the problems and issues of the real world (In Barlow et al. 1995: 43).

Warnings of the Internet's impending destruction of community have rarely been encumbered by evidence. However, the Homenet study of new Internet and computer users in Pittsburgh provided some longitudinal evidence that use of the Internet was associated with slight "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" (Kraut et al. 1998: 1017). Despite the fact that Kraut et al. (1998) offered one of the first and most complete analysis available on the effects of ICTs on social relations, media reports ignored the fact that the Homenet sample dealt only with new users (e.g., Harmon 1998; Jergens 1998). Moreover, survey questions in the study may have limited participants' survey responses to include only those network members with whom they communicated in-person or face-to-face. It was impossible to determine if the size or frequency of communication in the social networks observed by Kraut et al. (1998) decreased as a result of Internet use, or if the use of ICTs allowed people to shift the maintenance of social ties to a new communication medium. The selection of a sample with no previous Internet and home-computer experience also left open the explanation that the observed effect of Internet use on social networks, depression and loneliness was the result of being a new user, and not directly the result of Internet use. Indeed, the Homenet group later found that as experience increased, high use ceased to be associated with alienation, depression, and isolation. Extroverts were especially apt to flourish on line (Kraut et al. 2002).

A panel survey of Internet users interviewed online using WebTV[3] also supported the argument that the Internet damages social relations (Nie and Erbring 2000; Nie, Hillygus, and

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[3] WebTV is a system offered by Microsoft that allows users to access the Internet through a set-top box connected through the television. WebTV lacks many of capabilities of personal computers, it often takes the place of a first computer and is principally used by inexperienced or light Web and email users.

Erbring 2002). Nie, et al's argument assumes that physical face-to-face presence is the essential element in community. Nie and Erbring (2000) found that of Internet users: 5 percent spend less time attending "events", 9 percent spend less time with family, and 9 percent spend less time with friends. Their conclusion is that "the more hours people use the Internet, the less time they spend in contact with real human beings" (Norman Nie quoted in O'Toole 2000). This assertion is based on their finding that high users of the Internet attended fewer community events and had less contact with friends and family. However, Nie and Erbring (2000) do not report on the relationship between Internet use and the 4 percent of participants who reported spending more time at events, the 6 percent who spend more time with family, or the 4 percent who spend more time with friends, although they do show that the great majority reported no change in each of these measures.

More recently, Nie, Hillygus, and Erbring's time-diary study of Internet users (2002) has built on the findings of their initial survey. It finds that time spent on the Internet at home is associated with less face-to-face contact with friends and family, and that time spent on the Internet at work is associated with less face-to-face contact with coworkers. However, their negative findings suggest only a small change in magnitude of contact and may be attributable to the nature of their WebTV respondents as other time-use studies have found that Internet use has no effect or slightly increases contact with friends and family (e.g., Robinson et al. 2002; Qiu, Pudrovska, and Bianchi 2002; Pronovost 2002; Gershuny 2002).

***Does the Internet Transform Community?*** If community has not clearly been lost to the Internet, has community been transformed by the spread of Internet technology? By contrast to the dystopians' warning that the end of community is virtually here, Internet utopians have been enthralled at the community-expanding possibilities of online connectivity. They contend that the Internet has created a whole new form of community, the "virtual community," that frees communities from the constraints of geographical proximity and such social characteristics as race, ethnicity, gender, and socioeconomic status. For example, at the dawn of the Internet, journalist Phil Patton forecast that

> computer-mediated communication . . . will do by way of electronic pathways
> what cement roads were unable to do, namely connect us rather than atomize us,
> put us at the controls of a 'vehicle' and yet not detach us from the rest of the
> world (1986, p. 20).

Such beliefs were broadened during the dot.com boom in the 1990s to blanket assertions of the general transformation of society. Thus, *Wired* magazine editor Kevin Kelly wrote in his widely-read (and sometimes believed) *New Rules for the New Economy* "The New Economy operates in a 'space' rather than a place, and over time more and more economic transactions will migrate to this new space"(1998, p. 94).

These arguments echo the contentions of pre-Internet "Community Liberated" scholars that modern transportation and communications systems have reduced the friction of space, facilitated the rise of non-local communities of interest, and subsequently transformed community (e.g., Webber 1963; Fischer 1975; Hawley 1986; Wellman 1999). Even without knowing about the Internet in 1962, Marshall McLuhan pronounced that people were becoming linked by communication media in a "global village", connected and aware world-wide. Now, *Economist* editor Frances Cairncross calls it "the death of distance" (2001).

Illustrating that one person's Community Lost is another person's Community Liberated, proponents do not lament the loss of face-to-face neighborhood community, but celebrate the transformative, space-liberating power of the Internet, able to connect people across time and space in supportive relationships. They emphasize the democracy and utility of communities based on shared interests and values (e.g., Rheingold 1993).

In support of this transformative argument, the evidence shows that the Internet is a highly social environment. Katz and Rice report that 10 percent of Internet users in 2000 were members of at least one online community (2002: 246). Indeed, the Internet is a compilation of an endless variety of interest based communities that interact through simple text based systems such as email distribution lists and Usenet (Smith 1999); more elaborate text based environments like MUDs (multi-user domains; Cherny 1999; Rheingold 1993); graphical online gaming environments, like Quake, Counter-Strike and the Sims Online; and instant messaging systems such as ICQ, AOL Instant Messenger, and MSN Messenger. However, just as the borders of neighborhoods have been shown not to encompass community, focusing on cyberspace and ignoring the network of social relations that extend to other social settings fails to consider the many ways and the many places in which people interact.

***Does the Internet Enhance Community?*** Both utopians and dystopians have privileged the Internet as a social system removed from the other ways in which people communicate. They have largely treated community as if it were still physically bounded, by geographies of bits rather than by neighborhood streets. Yet, peering into cyberspace and ignoring the network of social relations that extends to other settings fails to consider the crosscutting nature of community, including the many ways and the many places in which people interact. It ignores the multiplicity of communities in which people are embedded, the social as well as geographical dispersion of these communities, and the tendency of these communities to be in sparsely-knit, loosely-bounded networks rather than densely-knit, tightly-bounded groups (Hampton 2002; Wellman 1999, 2002).

Recently, a third set of scholars has contended that the Internet has neither weakened nor transformed community – rather it has enhanced existing relationships. They point out that most online contacts are with the same friends, kin, workmates, and even neighbors that had been in contact before the coming of the wired world. They point out that only a minority of Internet users, such as cyber-gamers, appear to live most of their community lives online (Stald 2003). For the rest, kinship systems stay connected, workmates gossip after hours, friends arrange to go bowling, and neighbors continue to need to borrow cups of sugar. In this view, the Internet provides an additional opportunity to communicate by adding on to, and sometimes replacing, face-to-face and telephone contact. As Haythornthwaite and Wellman (2002) write:

> Extolling the Internet to be such a transforming phenomenon, many analysts forgot to view it in perspective. For example, their breathless enthusiasm for the Internet lead the majority of them to forget that long distance community ties had been flourishing for a generation.... Early studies of media use tended to consider only one medium, in isolation, and often relating to only one social context, rather than looking at use of all media and their multiple deployments.... The [Internet] light that dazzled overhead has become embedded in everyday things. A reality check is now underway about where the Internet fits into the ways in which people behave offline as well as online. We are moving from a world of Internet wizards to a world of ordinary people routinely using the Internet as an embedded

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part of their lives. It is has become clear that the Internet is a very important thing, but not a special thing. (pp. 5-6).

This argument contends that online relationships should not be treated as entities in themselves as if existing social networks and existing means of communication do not exist. Rather, the Internet adds on to existing means of communication, increasing the overall volume of contact by providing new ways to communicate with existing social ties. Although the Internet does contribute to a further reduction in the friction of space, for the most part the effect is a greater number of ties and greater communication within existing foci of activity – existing kinship groups, workmates, clubs, and neighbors. While Internet use has the potential to displace other forms of social contact, for the most part the Internet has supplemented other means of communication rather than displaced them (Quan-Haase and Wellman 2002).

A substantial amount of survey evidence has accumulated in the past few years to support this Community Enhanced argument (for a review see Wellman and Haythornthwaite 2002). Connectivity seems to go to the connected: greater social benefit from the Internet accrues to those already well situated socially. Frequent contact via the Internet is associated with frequent contact via other means, and adding the Internet medium to face-to-face and telephone contact is more likely when the relationship is already strong (Haythornthwaite 2002). Debates as to whether Internet (or even telephone) communication is as "high quality" as in-person interactions are inconclusive. It is likely that the Internet is producing norms of communication that differ from in-person interactions, rather than necessarily being inherently inferior to it.

Questions remain: Do all kinds of ties get enhanced, and enhanced equally? It is plausible to assume that with so much interaction happening on the screen rather than on the pavement, that long-distance ties will be enhanced more than local ones. Thus, we are led back to the same issue of viable neighborhood relationships that the Community Question originally raised more than a century ago.

**The Internet Question Moves Back Into the Neighborhood**

***Neighborhoods and Technologies:*** What will happen to community in neighborhoods in the age of the Internet? Many fear the worst. Two community sociologists argue that "almost by definition, the virtual community in cyberspace has been liberated from confines and constraints of place" (Driskell and Lyon 2002: 381).

A common thread in the weakening vs. transforming debate is that the Internet is affording a decline in neighboring as people get drawn into online interactions. As Paul Saffo, Director of the *Institute for the Future,* remarks:

> 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 neighbors anymore? There seems to be less and less of that kind of *Leave it to Beaver* interaction (quoted in Nelson 1997)

By contrast, we believe that new ICTs such as the Internet afford many types of community, including neighboring. Our expectation – that community in neighborhoods will be enhanced by the Internet – is in contrast to the arguments that the Internet will *weaken* or *transform*

community through isolation in the home or focusing on distant, non-corporal ties maintained online.

As with the Community Question in general, this is not the first time that technological developments have arguably placed neighborhoods at risk. The Internet is just the latest technology that has been fingered as a destroyer of neighborhood community by increasing privatism and increasing the ability of people and communications to speed out of neighborhoods. For more than a century, people feared the telegraph and the railroad would destroy local enterprise and community (Marx 1964; Pred 1973; Tolley 2001), the telephone would lure people away from talking to their neighbors on the front porch (Fischer 1992); the automobile would isolate individuals and households in sealed boxes that whisk them away from neighborly encounters (Jacobs 1961); and airplanes would take them even further from the neighborhood for family visits, leisure and work. Yet, just as the telephone allowed people to reallocate their communication time – from traveling to meet people in person toward telephone chats with more individuals at greater distances (Fischer 1992) – the Internet may also afford greater contact.

If people have a finite amount of time to devote to community ties, we might expect that the more they were engaged in long distance affairs online, the less they would interact with their neighbors (Robinson and Godbey 1997; Coffey and Stipp 1997; Robinson 2003). Robert Putnam (2000) has argued that television (among other factors) has been responsible for the decline in the United States of interpersonal community and civic involvement since the 1960s.[4] Putnam suggests that 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). Moreover, 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). While the decline in social capital observed by Putnam occurs too early to be associated with the rise of home computing or the Internet, it has fueled the fear of many pundits that the growth of the Internet may exacerbate privatism, with time spent in front of the screen undermining connections to one another and to communities.

It is not that people were so local before, for people have been traveling, wandering and finding friends and kin seemingly forever. Yet, until recently, neighborhood and community have been seen as synonymous, with the belief that communities are only found in neighborhoods. Contemporary theories of community accept that community does not have to be local (Fischer 1975, 1982), and in fact most community ties in the developed world are non-local (Wellman 1999). Still, local ties remain important for neighborhoods and individuals. 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). Neighborhood social capital is important for increasing neighborhood safety, improving the flow of information among neighborhood residents, aiding neighborhood collective action (Jacobs 1961), increasing housing values and

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[4] Putnam (2000) conflates interpersonal community and civic involvement into one term, "social capital". For a critique of Putnam's findings, see Fischer (2001). Note that Putnam looks back with nostalgia to the high social capital of the United States in the 1950s, a time when other commentators were concerned at that time about the loss of community (e.g., Stein 1960). We daresay that in almost every generation commentators have thought that community was more vibrant in previous generations.

preventing neighborhood decline (Putnam 2000: 323; see also Sampson and Groves 1989; Sampson, Raudenbush and Earls 1997). In general, neighborhoods with high social capital are safer, better informed, higher in social trust and better equipped to deal with local issues.

*Why so Little Neighboring:* The availability of a large, diverse urban population with subcultures matching every interest is only part of the explanation as to why people tend to develop few neighborhood ties (Hampton 2001; 2002). Access to people is as important as social similarity in affecting the likelihood of forming and maintaining ties. The tendency for people to form social ties with those who are similar is related to a preference to associate with similar others, as well as with the tendency for people to meet others while participating in activities that tend to attract homogeneous sets of people (McPherson, Smith-Lovin and Cook 2001; Feld 1982). Although neighborhood residents are physically close, they are not always accessible. Workplaces, places of worship, associations and other formal interest groups have built-in mechanisms that promote social contact and tie formation in terms of common interests, goals, and meetings. Although the prevalence of built-in mechanisms varies by location and design, many neighborhoods lack these same opportunities.

Unlike other foci of activity, neighborhoods often lack institutional opportunities for social contact. Local institutions that do exist to promote local interaction (such as cafés, bars, and community organizations) are in decline (Putnam 2000; Oldenburg 1989; Wireman 1984), and may be rarer in suburbs than in cities (Jacobs 1961). As a result, it is often easier to gather information on the suitability of others for tie formation in social circles that are not neighborhood-based. In addition, urban neighborhoods can 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 neighborhood setting is less planned and generally lacks established methods of communication, in the absence of broadly-encompassing neighborhood associations or community churches.

Similarly, temporal complexities limit in-person contact to those times when both neighbors are at home and awake, generally the weekends and evenings. Available time is further limited where commuting reduces the number of available hours for socializing. The growth of the unstandardized work week, and the increasing ability to access services during non-traditional hours, reduces the ability of neighbors to predict when other neighbors are home and available to accept visitors. Spatial barriers and issues of territoriality can further inhibit social contact (Newman 1972). Psychological barriers, including a fear of embarrassment, a fear of giving offence, and a general fear of imposing on neighbors' commitments can also inhibit neighboring (Jacobs 1961; Oldenburg 1989).

*The Affordances of the Internet for Neighboring:* Given the problematic importance of neighborhoods in an era of dispersed community ties, how will the advent of the Internet and other ICTs affect local contact? If community is not neighborhood based, why do we expect an increase in the number and frequency of contact among neighborhood social ties as a result of Internet use? The Internet has two comparative advantages over previous communication technologies:

a) Internet communication can be asynchronous, people do not have to be connected simultaneously to communicate effectively.

b)    Computer-mediated communication allows people to engage in both one-to-one conversations and one-to-many broadcasts.

The asynchronous, broadcast ability of computer-mediated communication breaks down barriers to local social contact, providing visibility and opportunity for local interaction. Unlike in-person or telephone conversations (excluding voicemail), email – the Internet's primary means of communication – does not require both parties to be connected and communicating simultaneously. Not only does this afford communication across the continent in different time zones, it affords communication across the street despite different schedules. Moreover, the ability to address messages simultaneously to many people gives computer-mediated communication some characteristics of public space (Mitchell 1996). Like a habitually-frequented hangout, people show up at their email in-boxes and listen in on the happenings of their communities, interjecting when appropriate, but often just observing. Moreover, email messages are transitive. They can be forwarded to others, including them in the loop and fostering gossip networks.

Thus email communicates information, shares emotions, facilitates arrangements, and gives people a sense of inclusion. It is the voyeuristic ability to observe social interactions that is beneficial at the neighborhood level. An email sent out to a list of neighborhood residents allows people to observe certain social cues: where people live, information on their family structure, their opinions, their interests, etc. It is these social cues that can become the basis for neighborhood social ties.[5] We caution that the availability of local Internet connectivity provides affordances for neighboring; it does not determine it.

We argue that if people are given the opportunity of a critical mass to interact and exchange information on the Internet in a local setting, they will be more likely than those not online to form neighborhood ties. This is not unlike New Urbanism and neo-traditional planning advocates who argue that neighborhood common spaces, front porches and other design factors encourage surveillance, community participation and a sense of territoriality (Atlas 1999). However, instead of arguing about environmental determinism or technological determinism, we suggest that it is the opportunity for neighborhood interaction that is ultimately responsible for increased community involvement, in the form of local social ties and increased public participation.

**THE WIRED SUBURB**

**Netville**

Just as it would have been impossible for researchers to have gained an accurate picture of suburbanization by surveying the first handful of homes to live outside the urban core, when we began this project in 1997 it was not possible to gain an accurate picture of how the Internet would effect neighborhoods by looking at a random sample of the roughly 28 percent of Canadians (20 percent of Americans) who had Internet access from home (Ekos 1998; U.S. Department of Commerce 2002). We argue that a critical mass of Internet users must be present to observe the neighborhood effects of Internet use. Moreover, we believe that dial-up access

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[5] There is one difference between in-person and Internet hanging-out. When people hang-out in-person, they can see who else is there (and their social characteristics), whether or not that person is conversing. By contrast, "lurkers" are rarely visible on the Internet.

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inhibits computer-mediated communication by limiting the use of the Internet to those periods when the phone is not in use, or when someone is not expecting a call. The trend in home-based Internet technology is toward broadband, high-speed, always-on Internet access.[6] A more accurate picture of how home-based Internet and computing technology may affect community can be achieved by looking into the future of technological use – at a time when there is more widespread, high-speed, always-on access to Internet. "Netville" provided just such a window into the future.

Netville was a unique field site and an ideal location to conduct a study about the effects of new always-on, high-speed Internet technology on people's daily lives. Unremarkable in appearance, Netville was a newly-built suburban neighborhood of 109 detached, closely-spaced, single-family homes in an outer suburb of Toronto, Canada (Figure 1). Commuting times from Netville to Toronto's downtown core range from 45 minutes, during off hours, to more than 90 minutes during rush hour. Homes ranged in size from 1,700-2,600 sq. ft., were typically built on 40'-wide lots and ranged in price from $195,000-$255,000 (CDN$). The typical Netville house had three bedrooms and a study and cost about CDN$228,000 (US$155,000) in 1997, 7 percent less than the average price for a new home in the same area.[7]

**[FIGURE 1]**

Netville differed from the many similar exurban developments in North America by being one of the few developments in the world where most homes were equipped from the start with a series of advanced information and communication technologies supplied across a broadband high-speed local network. Perfectly ordinary in outward appearance, the technology led Netville's developers to publicly bill it as a "smart community" (Figure 2).

**[FIGURE 2]**

**Netvillers**

North Americans are just starting to experience in 2003 technological connectivity comparable to what the residents of Netville experienced in 1996 when low-speed dial-up modems were the normal way of connecting to the Internet. The residents of Netville were privileged in terms of their access to new ICTs, but in most other ways they were not unlike other middle-class suburbanites. Most Netville residents had university degrees and higher than average household incomes (a mean of CDN$81,000/US$54,000).[8] Almost all were married (90 percent), and most had children living at home (61 percent) at the time they moved in (a baby boom ensued in the months after residents moved in, which quickly increased the proportion of

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[6] "Always-on" Internet access refers to a property of most high-speed Internet services that allows users to be continuously connected to the Internet whenever the computer is turned on, and without conflicting with telephone service to the home. As of June 2003, approximately 36 percent of Internet users had broadband, always-on, Internet access (Nielsen//NetRatings 2003).

[7] The housing price range is roughly equivalent to a US dollar price of $132,000-$175,000, at an approximate 1998 exchange rate of CDN$1 = US68¢ (US$1=CDN$1.47). Average housing prices for the area around Netville are based on unpublished information provided by the Canada Mortgage and Housing Corporation.

[8] To provide an accurate description of those who purchased homes in Netville, data collected by Magenta as part of a mail-back questionnaire (response rate=54 percent) of the first 81 households to move into Netville is used here along with data collected from the cross-sectional survey collected by Hampton and Wellman.

Netville households with young children). Residents ranged from 25 to 68 years of age. Nearly all adults moving into Netville were employed full-time (88 percent), with a small number (7 percent) working part-time and even fewer doing unpaid work at home (5 percent). Residents were primarily employed in mid-range service industry occupations, such as accountant, teacher and police officer. Only twenty-three percent of residents reported that their occupation was part of the computer, telecommunications or engineering industries.[9] Demographically, the residents of Netville are comparable to that proportion of today's American population that is most likely to have home Internet access (U.S. Department of Commerce 2002).

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 in our survey to describe their purchasing behavior. Only 13 percent 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." 36 percent say they "wait a bit before buying a new high-tech item", 38 percent "wait until a high-tech item is well established", and 13 percent say that they are "one of the last to buy new high-tech items". The availability of free, leading-edge technology was not the primary item attracting residents to Netville. When asked to rank factors contributing to their purchasing decision, affordability, location and interior design were all listed as more important factors in purchasing decisions than the availability of new technology services (Table 1). The majority ranked Netville's information services as the fourth or fifth factor in their purchasing decision, with more than 15 percent reporting that it did not even factor into their decision when purchasing a home in Netville. When interviewed, those who felt that information services were an important factor in their purchasing decision principally reported being less interested in the technology for their own use and more as a means to give their children an advantage. This is consistent with other research emphasizing the role of life-cycle changes, such as age and family composition, in relocation decisions (Rossi 1955). Similarly, Michelson's Toronto study (1977) has shown that the selection of a suburban housing location is based primarily on considerations related to children (Michelson 1977: 141).

**[Table 1]**

Netville residents are not that different from other middle-class North Americans who typically have higher than average incomes and education, and are more likely to have access to new technology products and services. Still, by definition this is a study of the "technology haves". While it is important to recognize limitations to the generalizability of this study, it is also important to recognize that rates of home computer ownership, home Internet access, broadband Internet access and the trend of building highly wired residential developments are all

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[9] The Toronto area has an extraordinarily diverse ethnic mix, designated by the United Nations as the world's "most ethnically diverse city" (City of Toronto 2001). Eighty percent 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; one-third of residents are visible minorities ("visible minorities" include all persons who are non-Caucasian in race or non-white in color) (Statistics Canada 1996). 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 percent 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 percent of those moving into Netville reported that English was the primary language used at home.

increasing. Netville represents a model of future connectivity for the majority of North Americans.

**The High-Speed Network**

Netville's high-speed network and ancillary services were supplied and operated free of charge by the not-for-profit "Magenta Consortium" of private and public companies.[10] Magenta was experimenting with the kinds of technology that would support home Internet access and how people would respond to always-on, high-speed use. The experiment ran for two years, beginning in December 1996 when the first homes were occupied, until January 1999 when Magenta stopped supplying high-speed Internet access. Delivering synchronous network access at 10 Mbps, Netville's network was more than 300 times faster than conventional dial-up service (28,000 kbps) and 10 times faster than what is available through most residential cable-modem and digital-subscriber line (DSL) services. 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. The key services that residents had access to were the high-speed, always-on Internet service, and a neighborhood email list (NET-L) to which Magenta subscribed all "wired" residents.[11] In addition, they had access to a computer-desktop videophone, an on-line jukebox with more than 1,000 music CD titles, real-time online access to various heath-care practitioners, online access to a library of educational and entertainment-oriented CD-ROMs, and telephones with graphic displays that provided access to weather reports, home shopping, news reports, and automated banking.

Of the 109 homes that comprised Netville, 64 "wired" homes 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 "non-wired" homes 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 Magenta would contact them shortly after their move.[12] All Netville residents had the same expectation of being connected to the local high-speed network: Who was connected appeared to be random. The two most likely causes, as to why some were connected and others were not, were (1) Magenta's limited access to resources for completing home installations, and (2) miscommunication with the housing developer in identifying homes that had been occupied. 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. On average, wired and non-wired residents were demographically identical (Hampton 2001: 64-65). Thus, the presence of an internal group of

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

[11] The email list (NET-L) allowed residents to send an email to one email address and have it automatically distributed to all other Netville residents subscribed to the list.

[12] This was demonstrated in early 1997 when Hampton visited the Netville sales office with a female assistant who posed as his fiancee. They explored the show room as potential buyers and were given a demonstration of the features that would be available in their home if they decided to purchase.

non-wired homes provided a natural comparison group for studying the effects of living in a wired neighborhood.

Our research project joined the consortium in 1997 to gain access to Magenta's key organizers, to participate in the meetings of Magenta's research committee, and to co-ordinate our research activities with those of the consortium. Most importantly, it provided access to the residents' contact information and enabled us to attend a series of focus groups organized by the consortium. Although we were in frequent communication with Magenta and the major partnering telecommunication company, we were careful to maintain a separate identity as independent researchers who would respect the residents' privacy and confidentiality.

**Surveying**

The project survey was administered through a combination of computer-assisted personal interviewing and computerized self-administered interviewing. Our initial survey design called for a pre-post, longitudinal survey. However, construction problems and a strike in the summer of 1998 by many of the construction tradespeople delayed many move-ins by six months or more. This made participants difficult to locate and often unwilling to participate pre-move. In addition, the premature end of the technology trial (1-2 years earlier than we expected) necessitated a more rapid interview schedule than we originally anticipated. The result was to abandon initial attempts at computerized self-administered interviewing and to turn to using trained interviewers doing computer-assisted personal interviewing. In the end, we completed computer-assisted surveys with a cross-section of residents. These included a small number of people who intended to move into Netville and many of 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.[13]

The data we report here come principally from a whole network questionnaire administered to participants as part of the project survey. 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 all adults living in Netville. Using local voter registration records, a reverse telephone directory, and records provided by Magenta, we collected the names and addresses of all adult residents. Survey participants were presented with a list of 271 names with corresponding home addresses and a map of the community. They were asked to identify those residents they recognized by name, talked to on a regular basis, visited in the last six months, contacted by email, or contacted by phone. 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 percent of the households. Missing data reduced the number of cases reported here to 56 participants. Some care must be taken in interpreting the statistical significance of our results as a result of the small sample size

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[13] A detailed discussion of the survey methods used in the Netville study can be found in Hampton 1999, Hampton and Wellman 2000, and Hampton 2001.

**Participant-Observation**

Our research efforts – the survey and especially ethnographic observation – were aided by Hampton's long term residency in Netville. Netville's compact area made it feasible and desirable to live in the research setting. In April 1997, Hampton began participating in local activities through attendance at community events and informal social gatherings. In October 1997, he expanded his involvement by moving into a basement apartment for a stay that lasted until August 1999. From his apartment Hampton had access to the same information and communication technologies available to other wired Netville residents.

Hampton worked from his home (in the basement of a wired resident's home) for two years, participated in online activities, attended all possible local meetings (formal and informal), and walked the neighborhood chatting and observing. He actively shared in the life of Netville, making friends and carrying out the daily obligations of life expected of any other resident of the community, modeling a community ethnography on Herbert Gans' study (1967) of Levittown, NJ. 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 traveled beyond the geographic confines of the neighborhood. Unlike Levittown, residents in smaller-scale Netville had no need to establish new churches, schools, and voluntary organizations because these amenities already existed as part of the larger suburban community.

The ethnographic portion of this study was secondary to the survey as a means of data collection. Ethnographic observations were used to inform the design of survey questions and as a method to verify and expand on survey findings. Moreover, Hampton's 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. Indeed, the most beneficial aspect of the ethnography was the trust established with the residents of Netville. Living within the field site was important not only for observation, but to encourage trust in the research process, increase familiarity with the researchers, and demonstrate our respect for 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.

Hampton's relationship with community participants became especially important when the field trial ended in January 1999. 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. 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. Although most residents eventually became angry at both Magenta and their major telecommunication partner, our research was able to continue because Hampton was viewed as a fellow Netville resident who shared the same loss of high-speed service.

# NEIGHBORING IN NETVILLE ON AND OFFLINE

## Sizing up Neighborhood Networks

To test the hypothesis that new information and communication technologies facilitate the formation of local social ties, we gave participants a roster of all adult residents living in Netville and asked them to identify those that they "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 neighbor). Instead of asking residents to identify how close they felt to each of their neighbors, we consider *recognized*, *talked to* and *visited*, to represent a progression in tie strength. On average (mean), wired Netville residents – those connected to the local computer network – recognized three times as many, talked with twice as many, and visited 50 percent more of their neighbors in comparison to their non-wired counterparts (Table 2).

### [Table 2]

To control for factors other than *wired status* that may have contributed to any observed difference between wired and non-wired participants, we controlled for a small number of variables recognized in the network literature for their impact on social ties. Given the small sample size, we focused on theoretically interesting variables. We also excluded variables in which there was little variance, such as the presence of children in the home and marital status. *Gender* was included to take into account the tendency for women to take on greater responsibility for the maintenance of household social ties (Wellman 1992; Wright 1989) and to have more close ties with neighbors (Moore 1990: 729). *Age* was included to control for the possibility that interest in forming neighborhood ties varies with stage in the life-cycle (Michelson 1976). *Education* has long been identified as a strong predictor of social capital (Putnam 2000) and *length of residence* has been observed to have a mixed impact on neighborhood ties. Suburban movers have a tendency to develop a large number of local contacts during early settlement (Gans 1967; Fischer 1982), most of whom are replaced by ties in other social settings as time progresses (Clark 1966).

Being "wired" and older are the only variables associated with the number of Netville residents recognized by name (Table 3). Being "wired" – connected to Netville's high-speed network – increased the number of local residents recognized by a mean of 15 people. Access to the local computer network had the same magnitude of an effect on number of local residents recognized as being 22 years older. Why this age effect? Perhaps it is associated with the general tendency for older generations to have more social capital (Putnam 2000). However, age was not significantly associated with the number of neighbors Netville residents talked with on a regular basis.

### [Table 3]

Being wired is the only variable in the regression significantly associated with the number of neighbors talked with, although the association is lower than for recognizing neighbors (Table 3). On average, Netville residents regularly talked with about three neighbors. Being wired increased this number by an additional three. Thus, the regressions for the number of ties recognized and talked with support the hypothesis that access to Netville's computer network was associated with a greater number of neighborhood ties. Evidence of this relationship could be found in comments made by Netville residents on NET-L, the neighborhood email list, to which all were automatically subscribed when their computer network was installed.

> I have walked around the neighborhood a lot lately and I have noticed a few things. I have noticed neighbors 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).

However, it is the length of residence in Netville – and not being wired – that is significantly associated with the number of neighborhood residents that participants had visited within the past six months. 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 neighbors visited by an average of about two ties. This fits with what Gans found in Levittown (1967). Visiting relationships are like barnacles, with strong visiting attachments accumulating over time.

In sum, the relationship between being wired and having larger neighborhood networks is strongest for weak ties – those participants recognized by name – less so for the somewhat stronger relationship of neighbors talked with and not at all true for the stronger tie of neighbors visited. The failure to find a relationship between access to ICTs and strong ties should not take away from the significance of a weak tie finding. Weak ties are important for accessing information and resources, linking groups, and providing social identities (Granovetter 1973; Wellman and Leighton 1979). Moreover, although neighborhoods are the source of many contacts, few of them are socially-close ties (Wellman, Carrington and Hall 1988; Wellman 1996). We have no evidence to suggest – and no reason to believe – that new ICTs make neighbors any more or less attractive as socially-close ties. Not only is there evidence of larger weak tie neighborhood networks among wired residents, but ethnographic observations support the conclusion that the computer network, especially the neighborhood email list, played an important role in building these networks.

**Local Communication Patterns**

The neighborhood email list, NET-L, was one of the first and easiest to use ICTs available to the residents of Netville. It was widely used and facilitated group communication among wired residents. The video phone was rarely used with the exception of demonstrations for friends and relatives and the occasional use by local children. The most frequent uses of NET-L were for: 1) discussion of problems to be of common concern (i.e. problems with home construction), 2) requests for help or advice on small services (i.e. computer help, recommendations for local a doctor, etc), 3) advertising garage sales and locally available crafts and services, 4) invitations to social activities and to participate in community events (e.g. barbeques, block parties), and 5) occasional messages from residents offering such things as job information:

> Hello neighbors: I am asking all of you for help again. I have two vacant positions at work, I am hoping you can pass the message along to your friends and relatives in case you know of anyone looking for work. The location is... It's about a ½ hour drive from here. Position 1: Accounts Receivable Clerk... Position 2: Payroll Administrator... (Netville Resident, Message to NET-L 1998).

Sharing information online allowed residents with access to the local network to identify others who shared common characteristics. This facilitated recognition and introductions to individuals and households. Access to NET-L gave wired Netville residents a way to learn about the suitability of neighbors for friendship formation that was not dependent on physical accessibility, mutual acquaintances, and chance encounters. Residents who met serendipitously on the sidewalk or at the mailbox instantly had something in common. Just as "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 and a sense of community. Residents often recalled how they first encountered people on NET-L and how this fostered recognition when they eventually met in-person. They felt as if they had become familiar with each other already, as they matched the facial presence of each other to their email addresses. Once relationships were established, wired residents kept in contact through private email as well as in-person and by telephone.

Survey participants reviewed the roster of Netville residents, identified those they *recognized*, *talked to* and *visited*, and reported their frequency of communication over the last month with each resident. The data show that the use of email in interpersonal communication does not lead to a decline in local contact by other means of communication (Table 4). This is consistent with our hypothesis that email enhances community – rather than transforming or weakening it. The average wired Netville resident 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 email messages per month, for an average total volume of 26.4 local communications.[14] 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 email. The pattern remains the same when we look at those ties residents talked with on a regular basis and those they visited. Netville residents with access to the local computer network made 4 to 5 times as many phone calls to social ties of all strengths.

**[Table 4]**

The regression model showing the volume of telephone communication for those residents talked with on a regular basis is similar to the regression model for ties recognized by name (Table 5). Length of residence and being wired are associated with the volume of phone communication.[15] Being wired has the same effect as having lived in Netville for just under one year and increased the number of local phone calls by roughly 13. Moreover, being wired is the only variable associated with the overall volume of telecommunication (email combined with phone contact), as length of residence disappears as a significant variable.

**[Table 5]**

By contrast, length of residence in Netville, rather than being wired, is positively associated with the number of neighbors visited within the past six months. Each year of residence is associated with an increase of two ties in the number of neighbors visited.

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[14] The focus of this analysis is on *personal communication.* By contrast, email sent to the local discussion list NET-L was public email targeted at all wired Netville residents and is excluded from this analysis. Table 4 excludes the average total of 17.3 emails posted monthly to NET-L.

[15] We accept p<.1 as significant here, given the small sample size.

In short, physical presence (longer residence in Netville) enhances local in-person and phone contact, while Internet presence (being wired) affects local telecommunications contact (email, phone). Even if computer-mediated communication is considered to be a lesser form of communication – rather than, as we believe, a different form of communication – wired residents still had higher levels than non-wired residents of telephone communication with those in Netville whom they recognized and talked with. The significant association of length of residence with in-person and local phone communication is consistent with earlier research showing that new movers to suburbs increase communication over time (Gans 1967: 262).

**Spatial Distribution of Ties**

During the settlement of suburban Levittown, Herbert Gans (1967; 1968) recognized the importance of proximity for forming and maintaining local ties (also see Festinger, Schachter, and Back 1963). Visual accessibility allowed people to identify potential neighbors who could share household items, provide support, and form long-term friendships. Other research has shown that physical accessibility is important for obtaining social support, with accessible network members providing much services and emergency aid (Wellman 1979; 1999; Wellman and Wortley 1990).

In a traditional suburban community, the most viable relationships are the most physically accessible, generally those who live in homes that are no more than three or four homes distant (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. In turn, this generates low levels of community solidarity, limits neighborhood surveillance, and reduces attachment to the broader neighborhood. If the Internet increases the visibility of neighborhood residents – by creating new online realms of participation, increasing the frequency of communication, and increasing the number of social ties – then the importance of proximity within the neighborhood should decrease because of increased communication with neighbors living further away. Perhaps a limited form of the utopians' dream is true, with physical accessibility losing all relevance within a wired neighborhood. In such a situation, support may be as or more available through an online broadcast for help than a quick trip next door to a neighbor who may not be home to lend a cup of sugar.

To study distance within the neighborhoods, we calculated the distance in lots between Netville homes as the geodesic distance between homes or the shortest walking distance between two homes.[16] The path between any two homes was restricted to what could be reached by following neighborhood sidewalks or roads. However, houses facing or backing onto each other were considered to be immediate neighbors. 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 furthest away.

In general, wired residents ranged more widely in their contacts than non-wired residents. This suggests that the wired residents' Internet use increased the distance at which neighbors were in contact. Table 6 shows the mean range between the homes of residents and those social ties they *recognized*, *talked to* and *visited* within Netville. Wired residents on average recognized other Netville residents by name 18.7 houses (lots) away from their own. This contrasts with non-wired residents who typically could not recognize residents farther than 12.9 houses away.

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

For both wired and non-wired residents, stronger social ties – those talked with and visited with – were located much closer to home than weaker ties.

[Table 6]

Although the distance to those ties with who wired residents talked and visited was on average greater than those of non-wired residents, there is no statistically significant difference between wired and non-wired residents for these ties. When we control for the effect of other variables by using regression analysis, we find that both being wired and being older is significantly associated with the range of Netville residents' recognized ties (Table 7). Being wired 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. As a wired resident noted, access to the local 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 neighbors but I would not know those of you around the corner and down the road. (Netville Resident, Message to NET-L 1998).

[Table 7]

It is not as if the Internet erased all distance barriers within Netville. Proximity was important in determining both wired and non-wired residents' distance to stronger neighborhood visiting ties. However, being wired increased the range of the weaker neighborhood tie of recognizing people. Those who were older and wired had local networks of weak ties that extended a greater distance than those of the young and non-wired. Yet, the effect of being wired in predicting distance to weaker ties was equivalent to only one year of age, highlighting the relatively small effect that access to Netville's computer network had in increasing the geographic range of ties.

Although there were frequent requests on NET-L for help and advice on small services, social support was most accessible from nearby neighbors. Wired residents who sent questions or asked for support through NET-L generally reported receiving a limited online response, but more responses over the fence and over the phone.

It is also likely that people have a special need to maintain strong ties with neighbors who are in closest proximity. Herbert Gans has 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, shoveling the snow off sidewalks together, being in neighboring yards at the same time, and other opportunities for contact breed through proximity. Hence, the high accessibility of living next door remains significant in the Internet age. It promotes the exchange of resources and information that makes people more likely to visit and talk with immediate neighbors on a regular basis.

**Community Participation**

Were the wired residents' higher levels of Internet use and neighboring associated with greater public participation? Did all of Netville's socializing take place in front of computer screens and behind closed doors, or did it break loose into neighborhood public space?

The problem in comparing public participation at the neighborhood level is to identify an appropriate frame of reference. It was not always possible in Netville to differentiate the levels of public neighborhood involvement of wired residents and non-wired residents. Counting the

presence of wired and non-wired residents at smaller public events was possible, but counting at larger gatherings would have required an instant poll of who was wired, which would have interfered with the natural setting and led to uncomfortable conversations. Such a comparison would also have wrongly assumed that wired and non-wired residents had no interaction. In fact, non-wired residents were as likely to recognize and talk with wired residents as they were to recognize and talk with each other (Hampton 2003).

Similarly, comparing public involvement to what social scientists report as typically occurring in suburban neighborhoods, or what could be observed in a demographically similar neighborhood would be unreliable because levels of community involvement vary between neighborhoods according to site specific circumstances: the presence of community organizers, external threats, etc. For that reason we cannot say that acts of public participation in Netville were "x" times more or less frequent than in other neighborhoods. However, ethnographic observations of how the available technology was integrated and used in the everyday life of wired residents leads us to conclude that the Internet did lead to high levels of public participation in Netville.

***Eyes on the Street:*** Over the two years that Hampton lived in Netville, one of his regular rituals was to drive and walk the streets of Netville and neighboring housing developments. In this time Hampton was able to observe a number of ways that Netville residents used public space to facilitate social interaction. Within the first year, he noticed 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 many homes within Netville were built with spacious patios attached at the rear of the home (Figure 3), the majority of residents had moved a park bench, or a set of inexpensive plastic chairs, to the corner of their driveway or front steps (Figure 4). This happened even though the architecture and planning of Netville were not inspired by New Urbanism or neo-traditional planning, which advocates public participation and community surveillance through physical design. The space available on the front steps of Netville homes was only a few square meters, and was poorly sheltered from the sun. When chairs were added, they often blocked access through the front doorway. By contrast, residents of similar nearby developments almost universally chose to sit in their backyards. Scarcely any sat at the front of their homes.

**[Figure 3]**

**[Figure 4]**

Why did Netville residents choose to sit in the cramped front porch space? When residents were approached with this question, their universal response was that by positioning themselves on the front step, they were able to exchange quick greetings with neighbors passing on the street. They could see what was happening in the community, and they were able to keep a watchful eye on their children's activities. The ability of the local computer network to expand the number and spatial distribution of neighborhood 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, Hampton noticed that more people walked the streets of Netville than in neighboring developments.

The trend of adding seating to the front of homes began with wired Netville residents in the late spring of the first year, but the adoption spread throughout the neighborhood by mid-

summer. Wired and non-wired residents did not form two segregated communities. Residents formed social ties across groups and used public space to facilitate interactions. Some wired residents told us that they deliberately initiated contact with non-wired residents to help them feel included and to pass on community information from online discussions. For example, Hampton would occasionally observe wired residents posting paper copies of emails from NET-L related to local events in public spaces, such as on a cluster of neighborhood mail boxes (Figure 5).

**[Figure 5]**

The residents of Netville literally had their "eyes upon the street" (Jacobs 1961: 35). The neighborhood email list (NET-L) became an extension of those eyes, allowing residents to share information easily and quickly about what they had observed from their porches. As an example of the informal community control that could be applied through NET-L, when a car belonging to a local resident was observed driving at excessive speeds on the street in front of Hampton's apartment, a concerned resident posted a message to NET-L asking the driver to slow down out of consideration for the safety of neighborhood children. Following the message, there was a noticeable decrease in the number of faster moving cars.

On at least two occasions, Netville residents used NET-L to discuss a series of burglaries and car prowlings. Residents who had been victims sent out warnings on NET-L, suggesting that other residents take precautions to protect their property and detailing what had been stolen. A resident who was a local police officer regularly reported his involvements to the list, including one occasion when he answered a 911 emergency phone call that reported suspicious activity near a resident's house.

In another situation, residents voiced concerns on NET-L about the teenagers walking aimlessly through their neighborhood at night. One resident even suggested that neighborhood teenagers take primary responsibility for organizing a neighborhood watch. In a third situation, a resident asked his wired neighbors to identify a suspicious vehicle that they had seen in the community the evening of a car burglary. The vehicle was ultimately identified as belonging to a relative of another resident. However, continuing NET-L discussion led another resident to identify a suspicious second vehicle, a purple van with tinted windows:

> I don't know but it was something about the way it was driving that makes me think it had something to do with the car break-ins on Saturday (Netville Resident, Message to NET-L 1998).

*Community Gatherings:* Not all activities that started online, stayed online. As we have argued throughout this paper, the Internet became just another communication tool among the many ways people could interact, and contact in one way often led to contact in another. The asynchronous, immediate, low cost nature of sending messages over an email list, made NET-L the ideal method of organizing residents in situations that otherwise would have required extensive organizational time and energy. Here's a typical account from NET-L of how wired residents used the list to organize community events:

> This is such a great community. I have got a lot of positive feedback about a street party. I called the town, and was told that we have to write a letter to the Director of Corporate Services, stating where, when, why, how. It takes about 2 weeks for them to approve it. The Town will then provide barricades to block off the street.

We cannot have tables or barbecues on the street, to provide access for emergency vehicles. I also have a fax from a party rental place that rents things like jumping castles, sno-kone machines, and anything else that you can imagine... Those of you interested in helping make decisions let me know when a good time to get together with you is, and we'll start planning... if you are walking past [my house], stop by and say hi, and give me some more input. Once again, I am so glad that my family chose this neighborhood to live. It so friendly, and the people are so helpful. I can't wait to meet everyone, and make some lifetime friends (Netville Resident, Message to NET-L 1998).

Residents also used NET-L to organize activities taking place outside of the neighborhood setting: bands, sports teams, and even a bowling league:

For anybody interested there is a Sunday night bowling league at [location] looking for new people to join. It's lots of fun with prizes, playoff's and more. For both ladies and gents. If interested e-mail me back or give me a call at ... (Netville Resident, Message to NET-L 1998).

As Hampton's bowling ball went down the alley, he could not help but wonder if the Internet had provided a way for people to stop "bowling alone", as Putnam (2000) has found literally and metaphorically, and come together again in community leagues.

***Collective Action Against the Developer:*** Computer-mediated communication was especially useful in reducing barriers to collective action. Netville residents used NET-L to organize against the housing developer and ultimately against Magenta (see Hampton 2003 for a fuller description). Despite having housing problems that were routine for a new mid-priced residential development (e.g., the speed at which roads were paved, housing deficiencies, frozen pipes, faulty air conditioners), wired residents used NET-L to discuss housing problems, organize in-person meetings, discuss strategy aimed at pressuring the developer, and send representatives to town planning meetings.

According to Netville's developer,[17] new suburban developments are often the source of small-scale protests in reaction to problems experienced with new homes and property. He told us that in all residential developments in which he has been involved, a small number of residents dissatisfied with the quality of their homes have organized collectively. In his experience, about five percent of new home owners typically go door-to-door in an attempt to gather support for some level of small-scale collective action, such as petitions, letter writing campaigns, and picketing sales offices. In the developer's experience, these "rabble rousers" generally attract less than 20 percent of home owners.

What the developer did not expect was the size and speed of Netville residents' efforts to organize and act collectively. Our observations of attendance at community meetings, participation on NET-L, and interviews with Netville residents found that more than 50 percent

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[17] The "developer" was actually an employee of the firm that did the developing. The firm's senior officers remained in the background and unknown to Netville residents. We stay consistent with the residents' and this employee's depiction of himself as "the developer". Our private discussions with the owners of the development firm revealed that the enthusiasm of a young senior official had led to their participation in the Magenta consortium and wiring of Netville. The son of one of the two owners, he saw this as both an opportunity to sell houses faster and to gain experience in what he believed to be the wired developments of the future.

of households were involved in active protest against the developer. Wired residents invariably started and organized the protests, but they were joined by some non-wired residents as well. These protests not only occurred online, through discussion on NET-L and private emails, but through organized meetings in residents' homes and large-scale community meetings at local schools and community centers.

Netville's developer reported that the residents organized their protests with unprecedented and unexpected speed. He was unprepared for the increased volume of communication with residents – largely through their emailing him. Local town officials were surprised by the success of the demands of wired residents for improved customer service. They noted that these protests happened even though the developer had moved a customer service trailer into the neighborhood – a service that no other development had received in recent memory. Residents also achieved unusual success in preventing the developer from receiving the town government's approval to expand Netville even though this was usually a routine bureaucratic process. Based on their experience in Netville, the developer, and one of the firm's owners each told us that they would never build another wired neighborhood.

***Collective Action To Stay Wired:*** The second large-scale act of collective action in Netville was also its last. In January 1999, Magenta ended the Netville experiment by turning off the broadband network and ripping out the technology from residents' homes. The decision to end the trial was based largely on the partnering telecommunication company's decision to change their focus away from the ATM (asynchronous transfer mode) network technology being tested in Netville to the now commercially available and less expensive DSL broadband technology. Although DSL technology is generally commercially available at 10 percent as fast as ATM, it can run over ordinary telephone wires to the household.

When the director of Magenta emailed a message to NET-L announcing the termination of the trial in early October 1998, the residents responded with hostility and disappointment. As most residents believed that Magenta had promised to operate the network free of charge for a four-year period beginning when they purchased their homes; they were upset at the apparently premature termination of the technology trial. The termination announcement was followed by a widely attended community meeting. In the four weeks following that meeting, NET-L became the front line in the conflict between Magenta and wired residents fighting to preserve their network. Nearly 100 messages were sent to NET-L during those four weeks, as compared to a total of 260 messages during the previous 16 months. Residents used NET-L to organize additional in-person community meetings, exchange information on alternative services, and engage Magenta in a discussion about what could be done to save their broadband network.

Unfortunately, the residents' attempts at mobilizing against Magenta were derailed. For one thing, the large telecommunications company had little need to be responsive to local concerns. For another, when residents attracted media attention to their cause, they came to believe that the resulting furor would lower their property value. As one resident said, headlines and newspaper quotes reading "sponsors pull the plug on [Town's] wired subdivision... I wasn't surprised because everything else had gone wrong with my house'" had greater potential to damage property values than preserve access to their computer network.

Yet the struggle was not totally in vain. Netville residents were able to preserve the two features of their local computer network that they valued the most: relatively high speed Internet connectivity, although at only 10 percent of the speed of the ATM network (by purchasing cable modem service through a competing telecommunications company), and the neighborhood NET-L email list.

## NEIGHBORING IN THE INTERNET AGE

We have addressed the question of what effect new information and communication technologies will have on community – particularly at the neighborhood level. We hypothesized that the Internet is neither weakening nor radically transforming community, but is instead adding-on to existing forms of communication. We have argued that online social ties are *not* a distinct social system, separate and cutoff from existing foci of activity and existing social network members. Rather, the Internet affects community as one form of communication among many, whose use and implications are intertwined. Yet, as we have demonstrated here, the Internet as a method of communication has a number of advantages over previous forms of communication in its ability to facilitate neighborhood based interactions, specifically the asynchronous, broadcast ability of email.

In Netville, Internet use was associated with larger neighborhood networks, neighbor recognition, greater frequency of communication (on and offline), and participation in the public and private realms. The Internet intensified the volume and range of neighborly relations, rather than reducing neighboring or transforming neighboring into an online-only experience.

The Netville experience suggests that when people can use the Internet to communicate at very low cost, neighboring can flourish on line. Wired residents embraced local contact, on and offline. Reversing the trend observed by Putnam (2000) of neighborhood noninvolvement, Netville's local computer network reduced the cost and increased the speed of grass-roots collective action. Spatial, temporal and social barriers to community organizing were overcome through the use of the Internet. Internet use did not inhibit or substitute for other forms of social contact, in-person or over the telephone. Contact led to contact through the interplay between online and offline encounters.

Neighboring in Netville did not flourish at the cost of longer distance ties. We reported in Hampton and Wellman (2002) about the ability of the Internet to bridge barriers that previously inhibited or prevented social contact extends beyond the neighborhood setting. As with other studies of suburban movers (see Gans 1967), we found that among Netville residents, moving reduced contact and the amount of support exchanged with existing pre-move social network members, but only among those without access to the Internet. In contrast to non-wired Netville residents, who averaged a decrease in contact and support exchanged with distant (more than 30 miles away) social ties, wired residents experienced a slight increase in contact and supportive exchange with existing members of their social networks. There was no indication that Internet use damaged contact with non-local social ties. Like the telephone before it, the Internet allowed people to maintain ties as a result of geographic mobility and other barriers to social contact and community involvement.

What of the future? Two aspects of the Netville experiment facilitated the local interactions we observed:

1. The always-on nature of the Netville system enabled neighbors to communicate with each whenever they wanted to – without competing with the demands of existing communication devices like the telephone. In this, Netville was the wave of the future, a future that is becoming widely available in the developed world (Chen and Wellman 2003).

2. The NET-L discussion list, in which all wired residents were enrolled, facilitated asynchronous, quasi-public discussion and organizing among the neighbors. We believe that the availability of this list is one reason why neighboring flourished in Netville but not in an Australian counterpart (Arnold, Gibbs and Wright 2003).[18] Paul Resnick and Vishant Shah (2002) report similar positive results from a study of neighborhood photo directories and email lists. Such lists do not appear to be common in neighborhoods, but they can be easily implemented by local residents, governments, non-governmental organizations, and real estate developers.

One of us, Hampton, is two years into a three year study of four Boston area neighborhoods and the impact that neighborhood lists have on local social networks. Initial evidence from the MIT E-neighbors project suggests that email use in general is associated with more diverse neighborhood social networks and that a neighborhood list can amplify this trend and – consistent with findings from Netville – facilitate civic involvement and public participation.

Utopian proponents of the global village nature of the Internet forget that people interact through atoms and molecules as well as through bits and bytes. People need corporeal, physical connections as well as ethereal, electronic connections. Netville is a harbinger of "glocalization," being simultaneously globally connected and locally involved (Hampton and Wellman 2000).

As beneficial as our findings suggest for the state of social capital in North America, surely those with the best access and skills to take advantage of the technology who will reap the most digital dividends. As computer use spreads, the crucial phenomenon for active participation in the Internet age is moving away from mere access to skilled use. The digital divide continues to decrease in terms of access to new information and communication technologies (U.S. Department of Commerce 2002; Chen and Wellman 2003). Yet, even if low income communities reach a critical mass of users, different skill levels and uses of the technology may mean the trend is less pronounced or does not occur among those who are already the most underprivileged in terms of social, human, and financial capital (Castells 2001; Steyaert 2002). What will the Internet do for community then?

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[18] We thank Michael Arnold and Philippa Wright for providing information about the Australian wired neighborhood, "The Range," beyond what is available in Arnold, Gibbs and Wright (2003).

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**Table 1.** 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 |

**Table 2.** Mean number of Netville residents' neighborhood ties.[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.

**Table 3.** 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 ($\beta$). 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.

**Table 4.** 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 neighborhood e-mail discussion list.
[b] ANOVA not performed, no variation from zero for non-wired.
N = 22 Wired, 20 Non-Wired.

**Table 5** Coefficients from the regression of volume of communication (phone and phone plus email) 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] | $13.42^{.129}$ | $20.81^{.025}$ | $13.40^{.126}$ | $19.27^{.034}$ | — | $17.87^{.050}$ |
| | (0.23) | (0.35) | (0.24) | (0.33) | | (0.30) |
| Female[b] | — | — | — | — | — | — |
| Education | — | — | — | — | — | — |
| Age | — | — | — | — | — | — |
| Residence | $15.42^{.069}$ | — | $15.28^{.069}$ | — | $17.40^{.040}$ | — |
| | (0.28) | | (0.28) | | (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 ($\beta$). 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 neighborhood discussion forum Net-L.


**Table 6** 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

**Table** 7 Coefficients from the regression of range of neighboring 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.

**Figure 1.** A typical single family home in Netville.



**Figure 2.** Welcome to "The Smart Community".

**Figure 3.** Rear patio common in Netville.



**Figure 4.** Plastic chairs on the front steps of Netville homes.

**Figure 5.** An email message from the neighborhood email list (NET-L) posted on a local post office box.