

Grieving for a Lost Network: Collective Action in a Wired Suburb

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Critics have argued that information and communication technologies (ICTs) disconnect people from their social networks and reduce public participation. Research in support of this perspective has been biased by two assumptions. The first is a tendency to privilege the Internet as a social system removed from the other ways people communicate. The second is a tendency to favor broadly supportive strong social ties. Survey and ethnographic observations from Netville, a 2-year community networking experiment, suggest that weak, not strong ties experience growth as a result of ICTs. By examining a unique and underexplored stage in the life cycle of a community networking project, the end of a networking trial, this article demonstrates how ICTs facilitate community participation and collective action (a) by creating large, dense networks of relatively weak social ties and (b) through the use of ICTs as an organizing tool.

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In late 1996, “Netville” became one of the first residential communities in the world to be equipped with a series of new information and communication technologies (ICTs) as part of its design.¹ The neighborhood was built from the ground up with a broadband high-speed computer network supplied and operated free of charge by “Magenta,” a consortium of private and public companies. Residents were given access to services that included high-speed Internet access, a videophone, an online jukebox, online health services, local discussion forums, and a series of entertainment and educational applications.

In its appearance, Netville was identical to nearly every other residential development in the suburban area surrounding Toronto. The only visible artifact that distinguished it from any other suburban neighborhood was a chuckwagon located at its entrance, which read across its canvas, “Canada’s First Interactive New Home Community—Welcome Pioneers.”² Netville was a model for what many envisioned to be the future in residential computer connectivity: a place where work, leisure, and social ties could all be maintained from the “smart home.”

Unlike other community networking projects, which often have the goal of bridging the digital divide (see Pinkett, 2003), Netville was designed with a different purpose. It was a temporary investment by corporate partners interested in testing a series of new ICTs in a middle-class, suburban setting. Netville provided academic researchers the opportunity to look into the future, at how advanced ICTs would affect neighborhood social relations.

COMMUNITY LOST OR SAVED

There is considerable debate about the impact of new ICTs on people’s social networks. Many critics fear that ICTs may simultaneously disconnect people from members of

their social networks and reduce public participation (Kraut et al., 1998; Nie & Erbring, 2000; Nie, 2001). New home-based technologies have been argued to advance the home as a center for services that encourage a shift toward greater home-centeredness and privatization (Graham & Marvin, 1996; Putnam, 2000). This fear is particularly pronounced in discussions of neighborhood involvement. As Paul Saffo, Director of the Institute for the Future, remarked in an interview with CNN:

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

New home-based technologies could destroy social networks of friends, family, and neighbors to the point that people no longer come together, at least not in any meaningful sense, out of cooperation, support, or fellowship.

Research in support of this perspective has been biased by two assumptions. The first is a tendency to privilege the Internet as a social system removed from the other ways people communicate. The study of new ICTs has maintained the frame of "community" as something that is physically bounded, by geographies of bits and bytes, if not by streets and alleyways. Online relationships are treated as entities in themselves, isolated from existing social networks and existing means of communication. Ignoring the cross-cutting nature of community has made it impossible to determine if community involvement has decreased as a result of ICTs, if it has been shifted to a new medium, or if computer-mediated communication (CMC) facilitates community on and offline.

The second assumption in research on the Internet and community has been a tendency to favor broadly supportive strong social ties over more instrumental weak ties. The reality that weak social ties make up the majority of people's social networks (Wellman, 1999), and that North Americans have few strong neighborhood ties has never sunk in (Wellman, 1979; Fischer, 1982). Weak ties are an important source of information and resources (Granovetter, 1973). There is less reason to assume that community networking will have a large influence on the distributed nature of existing, relatively small networks of strong ties than on networks of weak ties, which are more numerous and less intimate but still have supportive qualities.

This article argues that in a neighborhood with advanced ICTs, weak, not strong ties experience growth as a result of CMC. In addition, by examining a unique and underexplored stage in the lifecycle of a community networking project, the end of a networking trial, this article demon-

strates how ICTs facilitate collective action (a) by creating large, dense networks of relatively weak social ties and (b) through the use of computer-mediated communication as an organizing tool. Observations from two acts of collective action—end of a networking trial and protest against a housing developer—highlight the importance of recognizing the multiplicity of social ties and the role of on and offline interactions in facilitating community involvement.

WELCOME TO NETVILLE

Netville was a unique field site and an ideal location to conduct a study about the effects of new technology on people's daily lives. Today, almost no one is wired in the way that the residents of Netville experienced. Yet despite the computer connectivity, Netville was similar to most middle-class suburban communities.

Located in one of Toronto's outer suburbs, Netville was in an area of rapid population growth and home construction. Commute times from Netville to Toronto's downtown core ranged from 45 minutes, during off hours, to more than 90 minutes during rush hour. Homes ranged in size from 1700 to 2600 square feet, were typically built on 40-foot lots, and ranged in price from \$195,000 to \$255,000 (CDN\$). The typical Netville house had three bedrooms and a study and cost \$228,000 in 1997, 7% less than the average price for a new home in the same area,³ or 13% less than the median for the Metropolitan Toronto new-home market (Canada Mortgage and Housing Corporation, 1997, p. 8).

The technical description of Netville's local computer network was a "dual hybrid fibre coax network with an ATM (asynchronous transfer mode) backbone." Delivering synchronous network access at 10 Mbps, Netville's network was more than 300 times faster than conventional dial-up service and 10 times faster than what is still 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, the Internet was continuously available. It was never necessary to disconnect from the network or to "dial up" for Internet access.

The Netville development consisted of 109 single-family homes and a new public elementary school. Of the 109 homes that comprised Netville, 64 were connected to the local network and had access to the network for up to 2 years (depending on when people moved in). The remaining 45 households were never connected to the network. At the time residents purchased their homes, sales representatives promised everyone that they would have the opportunity to participate in the technology trial and that Magenta would contact them to set up the network shortly after their move.⁴ Magenta never clarified why

some Netville homes were connected and others were not. The two most likely causes were the consortium's limited access to resources for completing home installations, and miscommunications with the housing developer in identifying homes that had been occupied. While it was unfortunate that not every household in Netville could be connected to the local network, the presence of an internal group of nonwired homes provided a natural comparison group for studying the effects of living in a wired neighborhood.

The residents of Netville varied from beginner to expert in their degree of computer and Internet experience. Those who purchased homes in Netville were diverse in age and ethnicity, but largely homogeneous in marital and family status. Most were married (90%), and most had children living at home (61%) at the time they moved in. Residents ranged from 25 to 68 years of age. Nearly all adults moving into Netville were employed full-time (88%), with a small number working part-time (7%) and even fewer doing unpaid work at home (5%). Residents were primarily employed in midrange service industry occupations, such as accountant, teacher, and police officer, and were not overrepresented by people in the computer and technology industries. While the socioeconomic status and technology ownership of those purchasing homes in Netville was higher than Canadians on average, it was similar to other Canadians with similar household incomes (Hampton, 2001, p. 60). A comparison of wired and nonwired residents in terms of family status, average age, years of education, and length of residence in Netville found no statistically significant differences between the two groups (p. 65).

DATA AND METHODS

Barry Wellman and I began our research on the Netville project in the spring of 1997 and concluded the field work in the summer of 1999. To gain access to Magenta's key organizers and to allow for our participation in the formal meetings of Magenta's research committee, our research project paid a membership fee of \$1000 to join the consortium in 1997. Formal membership allowed us to coordinate our research activities with those of the consortium. Most importantly, it provided access to participants' contact information and enabled us to attend a series of focus groups organized by the consortium. Although it was not necessary to renew our formal membership in Magenta after 1997, we were in frequent communication with Magenta and the major partnering telecommunication company. Wellman and I were careful to maintain a separate identity from Magenta as researchers who were independent from the experiment's plans.

In October 1997 I made my home within Netville, where I conducted an ethnography until August 1999.⁵ For

2 years I worked from home, participated in online activities, attended all possible local meetings (formal and informal), and walked the neighborhood chatting and observing. I made every attempt to share in the life of Netville, making friends and carrying out the daily obligations of life expected of any community resident. While a resident of Netville I administered a series of cross-sectional surveys with a sample of Netville residents, including those who were and were not connected to the local computer network. Social network data was collected by presenting survey participants with a roster of all adult Netville residents and asking them to identify those residents they recognize by name, talked with on a regular basis, or visited in the past 6 months (invited into their home or invited into the home of a neighbor). The analysis in this article consists of a combination of ethnographic and survey data. I begin with a description of the two major events that prompted collective action in Netville, analyze the structure of residents' local social networks, and proceed to an analysis of the role of CMC in residents' collective action.

THE FOCUS OF COLLECTIVE ACTION IN NETVILLE

The Developer

We did it! I would like to take this opportunity to thank everyone who submitted their deficiency list. This week the developer will be dragged over the coals by Ontario New Home Warranty. . . . This will affect the developer's permanent future rating. (Netville Resident, Message to NET-L 1997)⁶

New suburban developments are often the source of small-scale protest, generally in reaction to problems experienced by residents with their new homes and property (Clark, 1966). In interviews, the property developer responsible for construction in Netville reported that in all residential developments in which he has been involved, and all that he is aware of, a small number of residents, dissatisfied with the quality of their homes, organize collectively. In his experience, 5% of new homeowners will go door to door to gather support for some level of small-scale collective action ranging from petitions, through letter-writing campaigns, to picketing. He claims that these "rabble rousers" generally attract no more than 20% of homeowners.

In Netville the developer did not expect the size and speed of Netville residents' efforts to organize and act collectively. Within the first 9 months that homes had been occupied, Netville residents had begun an organized campaign to pressure the developer into addressing their problems and concerns. Ethnographic observations of attendance at community meetings, online participation, and

informal discussions with residents suggest that more than 50% of Netville households were involved in active protest against the developer, despite the fact that the housing problems experienced by Netville residents were little more than routine for a new residential development: the speed at which roads were paved and grass planted, minor housing deficiencies, frozen pipes in the winter, and faulty air conditioners in the summer.

Magenta

I had been searching for some documentation but so far all I have is the various newspaper clippings describing the so-called Smart Community. . . . [We] were told that it was a 5 year trial by the sales person at the sales office when we bought the house in the fall of '97. It is obvious that we were misled on many levels. Has anyone thought of contacting a lawyer? (Netville Resident, Message to NET-L 1998)

In early October 1998, the director of the Magenta Consortium e-mailed a message to NET-L announcing that the technology trial would be terminated and access to the local computer network would be removed in early 1999. The decision to end the trial was based largely on the partnering telecommunication company's decision to change its focus away from the ATM technology being tested in Netville to the now commercially available DSL technology. Other factors that were incorporated into the consortium's decision included the pending expiration of a government licence to provide broadband Internet service free of charge within Netville, and on-going costs associated with operating the network. The residents themselves may also have played an unwitting role in the trial's demise as a result of their organizational success against the developer. Resources spent dealing with housing concerns may have reduced available resources to continue building new homes in the community. There was dissatisfaction among key consortium members about the lack of progress in new home construction and the corresponding lack of new residents being connected to the local computer network. In early 1997, consortium members expected that there would be close to 400 households connected to the local network. With the number of connected homes at less than 100 in late 1998 there was disappointment in the consortium's inability to reach what was considered a significant mass of users.

The announcement that Magenta would no longer be providing access to the local computer network and its corresponding services was met with hostility and disappointment on the part of residents. The majority felt that the consortium had promised to operate the network free of charge for a 4 or 5-year period beginning when they purchased their homes. For those residents, the termination of the technology trial was 2 to 3 years premature.

The decision to end the trial was met with anger, distrust, and widespread collective action from a majority of wired Netville residents.

CMC AND COLLECTIVE ACTION

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)

Netville residents' ability to mobilize and act collectively was a function of two things: (a) a large, dense network of relatively weak social ties, and (b) use of CMC as a tool in collective action.

The first residents moved into Netville in December 1996 and were connected to the local computer network within weeks of their arrival. At this time, with the exception of the videophone, the network provided limited opportunity for residents to interact online. As depicted on bulletin boards located at the entrance to Netville and on displays in the developer's showroom, the primary advantage of living in a wired neighborhood was access to information. Residents were given high-speed Internet access, e-mail, and a small number of CD-ROMs that could be accessed over the network, but no method of contacting local residents.⁷ The network was geared toward information gathering and not interpersonal communication, not an uncommon characteristic of community networking projects (Beamish, 1999, p. 362).

It wasn't until July 1997, in response to requests from Netville residents, that Magenta established NET-L, a neighborhood e-mail list that allowed Netville residents to send a message to one email address and have it automatically distributed to every household connected to the local computer network.⁸ NET-L became one of the earliest opportunities for neighborhood interaction. Within the first few months, the list was used by residents as a means to exchange introductions, organize barbecues and parties, search for missing pets, exchange information on local services, share information related to the local town government, and help children locate potential friends or seek help with their homework. Through online introductions, often consisting of little more than a name, address, and occupation, residents were able to find others at the local level who shared common interests and experiences.

NET-L provided wired Netville residents with specific cultural capital in terms of knowledge of local events, local services, and the opinions and activities of other residents. Residents who casually met on the street or at the corner mailbox instantly had something in common and something to share in terms of the latest community information. Just as the topic of "the weather" can serve as a

common conversational reference between near strangers, topics from NET-L filled this role in Netville. The local nature of the list helped to personalize first encounters with a sense of shared interest, common concern, and community. Residents commonly recalled how initial in-person introductions increased in intimacy as residents related the facial presence of an individual to an e-mail address, or the personal signature people attached to NET-L messages.

While some have argued that it is the broad support, emotional aid, and companionship of strong ties that provides the encouragement and solidarity necessary for collective action (McAdam, 1986), Granovetter (1973) speculated that weak ties provide the connectivity necessary for collective action. In his pioneering work "The Strength of Weak Ties," Granovetter (1973) argued that network fragmentation among strongly tied residents in Herbert Gans's *The Urban Villagers* (1962) was responsible for the inability of local residents to mobilize collectively against urban renewal. While weak ties represent social relations of less intimacy, they are capable of "bridging" clusters of stronger ties, and of providing access to information and resources unavailable from those to whom we are closest (Granovetter, 1973). Threshold models, which suggest that the propensity of a person to act is a direct function of the number of others the person observes acting (Granovetter, 1978), have argued that weak ties may be particularly important in collective action when thresholds are high (Chwe, 1999). The value of strong ties is in "creating the common knowledge, that is, knowledge of other people's knowledge, essential for collective action" (Chwe, 1999, p. 129). In a situation where CMC facilitates knowledge sharing, weak ties may be more important for collective action than the strong ties pundits have focused on (Kraut et al., 1998; Nie, 2001).

To test the impact of CMC on the formation and strength of local social ties, wired and nonwired residents were asked to identify from a list of all adults in Netville those they *recognized*, *talked to*, and *visited*. Each of the three tie types, *recognition*, *talking*, and *visiting*, represents a progression in tie strength from weak to strong neighborhood ties.

The Strength of Weak Neighborhood Ties

Netville residents were presented with a social network survey containing a roster of all adult residents living within the community. Table 1 lists the mean number of residents participants recognized by name, talked to on a regular basis, or visited at home in the past 6 months. Wired Netville residents—those connected to the local computer network—recognized three times as many, talked with twice as many, and visited 50% more of their neighbors compared to their non-wired counterparts.

TABLE 1
Mean number of local ties of wired
and nonwired residents

		Mean	SD
Recognized by name	Wired	25.2 ^{.000}	18.8
	Nonwired	8.4 ^{.000}	4.6
Talked to on a regular basis	Wired	6.4 ^{.061}	7.2
	Nonwired	3.2 ^{.061}	2.9
Visited in the past 6 months	Wired	4.8 ^{.147}	4.5
	Nonwired	3.2 ^{.147}	3.1

Note. Numbers in superscript are *p* values (ANOVA); *n* = 36 wired, 20 nonwired.

Based on a matrix of the 56 Netville residents who completed the whole network survey, there was the potential for up to 1540 local social ties of varying strengths within the Netville sample (Wasserman & Faust, 1994, p. 101).⁹ Based on the most basic social tie, recognition, there are 233 ties between residents. The overall network density, or proportion of social ties present in the sample, is 0.151 (Wasserman & Faust, 1994, equation 4.3, p. 101). Dividing the sample into two subgraphs, one consisting exclusively of wired residents and the other of nonwired residents, the densities of each subgraph are 0.286 and 0.068, respectively (equation 4.5, p. 102). Table 2 compares the overall and subgraph densities of recognition, talking, and visiting ties. Wired Netville residents are more than four times as interconnected using the weakest tie of "recognition," more than three times as interconnected in terms of "talked to," and more than one and a half times as interconnected based on the stronger tie of "visited."¹⁰

A regression analysis controlling for length of residence and basic demographic variables for gender, education, and age (Table 3) suggests that being connected to Netville's computer network was associated with a significantly larger number of local weak ties (those they at least recognized by name), less significant for midstrength ties (talked with), and not at all significant in increasing the number of strong ties (visited). Contrary to dystopian predictions about the negative consequences of new home-based technologies, there is no evidence that these technologies damaged the network of Netville residents' local relations, in fact, the opposite was true for weaker social ties (for additional discussion on Netville's local social network, see Hampton and Wellman).

Wired Netville residents had a greater number of local social ties than their nonwired counterparts.¹¹ The large number of ties may have provided solidary incentives in addition to material and purposive incentives for participation in collective action (Clark & Wilson, 1961; Wilson, 1973). The significantly higher number of weak social ties, and the density of those ties, facilitated the flow of

TABLE 2
Number and density of local social ties within sample ($n = 56$)

		Maximum possible	Actually observed	Density
Recognized by name	Total	1540	233	0.151
	Within wired ^a	630	180	0.286
	Within nonwired ^b	190	13	0.068
	Between wired/nonwired ^c	720	40	0.056
Talked to on a regular basis	Total	1540	79	0.051
	Within wired ^a	630	54	0.086
	Within nonwired ^b	190	5	0.026
	Between wired/nonwired ^c	720	20	0.028
Visited in the past 6 months	Total	1540	55	0.036
	Within wired ^a	630	38	0.060
	Within nonwired ^b	190	7	0.037
	Between wired/nonwired ^c	720	10	0.014

^aTies within the subgraph for wired residents.

^bTies within the subgraph for nonwired residents.

^cTies between the two subgraphs for wired and nonwired residents.

information and helped Netville residents organize collectively. Still, unlike most residential communities when faced with a problem, it was not necessary for Netville residents to go door to door to find support. Awareness and information flow were improved not only through the connectivity of the local social network but also through the broadcast feature of the neighborhood email list (NET-L).

TABLE 3
Regression predicting number of local social ties ($n = 56$)

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 (years)	—	—	2.18 ^{.042} (0.27)
Intercept	−14.38 ^{.155}	3.15 ^{.023}	1.12 ^{.484}
R^2	0.30 ^{.000}	0.06 ^{.061}	0.27 ^{.042}

Note. Numbers in superscript are p values. Numbers in parentheses are standardized coefficients (β). Only those variables that significantly improved on the explained variance (R^2) are included in the final model.

^aDummy variable for wired status; reference category is access to the high-speed network.

^bDummy variable for gender; reference category is female.

Organizational Costs and Individual Thresholds

In reaction to a perceived threat or problem, or when faced with an emergency, the residents of most residential communities would have to knock on the door of near strangers to build support for collective action. This type of grassroots organizing can be expensive in terms of both time and financial resources. As threshold models suggest, the lack of visibility of early participants can also slow mobilization, as those who are eager to participate demonstrate their involvement before those with higher thresholds join (Granovetter, 1978; Schelling, 1978; Chwe, 1999). In Netville, CMC helped residents overcome the financial and temporal costs of organizing, and facilitated network visibility, which encouraged the involvement of participants with high thresholds.

Early support for action against the housing developer originated in an e-mail message sent to NET-L. This first message prompted residents to engage in a discussion of housing problems and strategies residents had used individually to acquire resources from the developer. The result was rapid, inexpensive dissemination of information. Members of NET-L had the flexibility to participate in collective action from home or work at a time and in a place that was individually convenient. Information was broadcast without consuming the time of a phone call or the cost of paper and photocopying, and without having to rely on others for the dissemination of information. Perhaps most important, NET-L provided a visibility of participation that accelerated the speed at which residents joined collective action. High-threshold individuals observed the

participation of others in greater numbers than they could have if they had only relied on conventional forms of communication.

The visibility of participation on NET-L facilitated rapid joining and individual commitment, but on occasion it also worked in the opposite direction. The majority of organizational efforts against Magenta took place online. In the 4 weeks that followed an initial in-person community meeting and the announcement that the technology trial would be coming to an end, NET-L became the front line in the conflict between local residents and Magenta. In that month nearly 100 messages were sent to NET-L, compared to 260 in the previous 16 months. Following 4 weeks of intensive online participation, residents grew tired of conversations dominating NET-L that were related to the end of the trial. Some even sent messages expressing how they had begun to dread checking their e-mail. The result was a rapid decline in the number of postings sent to the neighborhood list. When approached individually and in private, everyone that I spoke with remained willing to contribute to the collective good of trying to force Magenta into providing compensation for ending the trial prematurely. However, most of the action against Magenta had taken place online and residents had witnessed a sharp decrease in the frequency of Magenta related postings. There was new uncertainty over whether individual contributions would be wasted as the visibility of individual commitments declined.

Seeing other Netville residents contribute to NET-L may have been the strongest force in motivating residents to contribute to collective action. The same visibility, when there were few new e-mail messages, contributed to a rapid decline in individual participation. If the number of postings had not declined, it likely would have been embarrassing for individuals to withdraw from the project while others had the visible courage to continue with the action.

A New Tool in Collective Action

Netville's local computer network altered not only how residents communicated with each other but also how they could communicate with the targets of their collective action.

In the case of the housing developer, not only were residents able to fax and phone the developer's office, they were able to bypass secretaries and assistants by using e-mail to contact him directly. Although e-mail sent to the developer often consisted of a traditional letter and list of complaints (copied to NET-L), on at least one occasion it also consisted of an organized "flooding" campaign by residents who submitted one e-mail message for each of their potentially dozens of individual complaints.¹² Residents used e-mail as a tool both to organize collectively and to express their impatience with the developer, while

waiting for their concerns to be addressed by forces they often perceived to be outside of their control.

However, not all of Netville's residents were interested in acting collectively against the developer. As with most instances of collective action, there were free riders. As observed in other protest movements, residents were generally not self-conscious free riders, but reported lack of time, a sense of powerlessness, and criticism of the strategies employed by those involved in collective action as reasons for nonparticipation (Walsh & Warland, 1983). A small number of those residents who did not participate, acting independently of each other, tried to win favor with the housing developer by feeding him information about the activities of other residents. These insiders would forward e-mail messages from NET-L that publicly complained about the developer or made efforts at organizing some level of protest.¹³ In hopes of improving their relationship with the developer, some residents would also forward him e-mail messages such as "the joke of the day." Protesting residents were unaware of communication "leaks" that sprang from their NET-L discussions. Most would have been very surprised to learn that other community members had been reporting on their online activities. At the same time, as much as the developer was aware that NET-L leaked in his favor, he was surprised to find that NET-L discussions also leaked to powerful outsiders that could serve as advocates for Netville residents. On a visit to the office of the semigovernmental organization mandated to police housing quality, the developer reported being surprised to see copies of the same NET-L discussions he had received sitting on the desks of officials in that office.

Acting On- and Offline

Despite the availability of CMC within Netville, and its use in collective action, it is important to note that wired residents were actively involved both on and offline. Pundits have generally viewed cyberspace as a distinct realm, with social ties that do not cross-cut into the physical world (Wellman & Hampton, 1999). This view is rarely true, and it is particularly evident in community networking projects where online and offline ties inhabit the same geographic space. Online contact can influence the structure of offline interactions, and vice versa. This greatly impacts on how neighborhood residents act collectively. The experience of Netville residents following the decision to end the technology trial in their community highlights how offline contact can encourage online contact, and how online communication can be mediated by concerns for how it will impact offline relations.

Offline. Unlike the action taken against the developer, which originated with an online discussion, the organization of Netville residents against Magenta began

with an in-person community meeting. The meeting, organized by Magenta to formally announce the end of the technology trial, was held in a semipermanent structure erected by the local police association. The building served as both a social club and a meeting hall for the local police association, and was open for public use if an event was sponsored by a member of the association, a number of whom lived in Netville.

The meeting was attended by roughly 50 residents from primarily wired homes and served as a forum for residents to express their unhappiness with the loss of the computer network. Residents had the opportunity to talk among themselves and to address representatives from Magenta. The feelings expressed at the meeting were similar to those described by Marc Fried (1966) in "Grieving for a Lost Home."

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

Residents described Magenta as a "white knight" that had made life in Netville more tolerable given the problems they had experienced with the developer. The loss of the computer network was seen as a betrayal, and another example of how a big corporation had taken advantage of the "little guy." Residents framed their loss based on the belief (a) that they had been misled in advertising for their homes that included a commitment to a 5-year trial of the computer networks, and (b) that they had purchased their homes because of the available technology.

Residents' perception that Magenta had promised to operate the computer network for 5 years was amplified at the meeting by the current issue of a local housing magazine that advertised Netville as a "five year trial of unique communication technologies, at no extra charge to residents (a smallstack of the magazines were found at the meeting)." The argument that residents had purchased their homes because of the technology was taken at face value by most residents and members of Magenta. In reality, the availability of free, leading-edge technology was not the primary feature that attracted residents to Netville. When surveyed, affordability, location, and interior design were all listed as more important in residents' purchasing decisions than the availability of new technology services. The majority ranked Netville's information services as the fourth or fifth factor in their purchasing decision, with more than 15% reporting that it did not even factor into their decision when purchasing a home in Netville (Hampton, 2001, pp. 62–63). In private, a number of residents told me that they were not as much upset about the trial being canceled as they were embarrassed by having to tell friends

and relatives of the trial's end. Having purchased homes in Netville, for slightly less than the average price of a new home in the same area, free access to the high-speed local network was a point of pride. Having to admit to skeptical friends and relatives that they would not have access to the local computer network for as long as expected was not something they were looking forward to.

At the end of the community meeting approximately two-thirds of those in attendance stayed behind to discuss their situation. In an example of consensus formation, and the phenomenon of "milling" (Johnson & Feinberg, 1977), two frames of collective action divided the meeting down the center of the room into two almost equal groups. Those whose opinions did not fit with either of these frames backed away from the discussion and left for the evening. On one side of the room residents took a cooperative approach. Their position was that although they had been cheated by Magenta, they felt that the community ultimately had few resources to fight the consortium for restitution. They hoped to cooperate with Magenta to find a last-minute solution that would save the local network. The second group was visibly more hostile and interested in plotting a public relations strategy that would generate public pressure to force Magenta into restoring services. Members of this group believed that by framing their collective action to the media as a community exploited by the corporate members of Magenta, they could force the consortium into compensation. In addition, they felt that they could negotiate a discount on commercial Internet services (i.e., high-speed cable-modem Internet access) with a competing telecommunications provider. Regardless of their diverging perceptions, both groups of residents had a common motivation—preserve the services Magenta planned to discontinue.

Online. Following residents' initial in-person meeting, all additional collective action against Magenta was organized through the neighborhood e-mail list. Senior members from the consortium (with the exception of the developer) were subscribed to the list, as they had used it in the past to announce software updates and new services. Residents who took a "cooperative" approach used their online presence to present the consortium with offers to take over a number of minor network services. These residents also proposed running the computer network as a cooperative. The "conflict" group used NET-L to publish documents originally distributed by Magenta to advertise the "5-year trial," and to threaten legal action. Regardless of whether residents took a cooperative or conflict approach, their opinions on NET-L were almost always followed by messages of support from other residents. Occasionally, when a NET-L message was directed at Magenta, and a response from the consortium was not immediately forthcoming, other residents would send

taunting messages to NET-L in hopes of provoking a response. Although not an organized strategy, this was successful in creating the appearance, for both Magenta and between residents, that there was near universal condemnation of Magenta and support for local action against the consortium.¹⁴

Online disputes between residents demonstrated how residents' cyber-interactions were mediated by residential copresence. Throughout the action against Magenta, there was only one occasion when a resident publicly broke with the common frame that Magenta had deceived and taken advantage of the residents of Netville.

My family enjoyed being on the trial. We had access to free Internet, free health nurse and free games for the kids. . . . We did not buy our house because it was a smart home, but look at the computer system as a bonus that came with our house. We live in a great community, have the chance to talk to all of you through a community e-mail, and have contributed to a worth while study. . . . I think that everyone has treated us fairly, and I can't understand why there is all of this whining going on. (Netville Resident, Message to NET-L 1999)

This opinion was in stark contrast to all other comments broadcast on NET-L. It had the potential to undermine collective action against the consortium, and it placed one resident in opposition to the many who had already used NET-L to voice their anger and displeasure with Magenta. However, instead of "flaming"¹⁵ or publicly criticizing a neighbor, residents responded on NET-L with positive reinforcement, stressing that they should work to preserve the positive aspects of their community. Even the harshest response voiced over NET-L was still what could only be described as "neighborly":

I am very happy to be living in such a close-knit community as ours. . . . I am sorry that you misinterpreted my disappointment with Magenta and the developer to be an attack on our community and the positive aspects of living here. . . . I am simply asking for accountability and honesty, and I have yet to see either. . . . As for the term 'whining,' if that is what I am doing by speaking up about injustices, and bringing about public awareness, and hopefully positive change, then I am happy to 'whine.' However, I have another term that might help you to understand how I see myself. . . . it is called not being a 'doormat.' (Netville Resident, Message to NET-L 1998)

This is one example of residents' general desire to maintain positive social ties with neighbors. Indeed, long before community networking computers, Herbert Gans (1967), in his study of one of the first nonwired American suburbs, noted that Levittowners were particularly concerned with maintaining good social relations with those who lived very close by (p. 156). Another example from Netville, that took place shortly after this first online disagreement, reinforces the claim that online neighborhood ties are not a separate social realm but that in Netville they were gov-

erned by a broader concern for maintaining positive neighborhood relations.

One of the primary strategies "conflict" oriented residents pursued in their action against Magenta was to convince local media organizations to run stories about how Netville had been exploited by the corporate members of the consortium. Local print and television media were very interested in talking to residents about their experience in Netville. A common experience in collective action, but unexpected by Netville residents, was the lack of control over how the media represented their claims (for example, Baylor, 1996; Gamson & Modigliani, 1989; Klandermans & Goslinga, 1996).

The first media coverage residents received was a front-page story in the biweekly local town newspaper. To the surprise of residents, the media had broadened issues related to the end of the technology trial to include residents' experiences with the housing developer. The developer was included in the story as a result of residents depicting themselves as victims of corporate villains, most recently Magenta, but also the developer. The article included quotes from residents, such as "knock on wood that the house doesn't fall down," and "we thought we had bought our dream home, but it has become the worst nightmare we've ever had." This successfully maintained the frame of residents as victims, but introduced the unforeseen cost of potentially damaging property values.

Literally within minutes of the newspaper article hitting Netville doorsteps, a series of e-mails were sent to NET-L. These messages, from those residents quoted in the article, were deeply apologetic. Possibly out of fear of public criticism from angry neighbors, but more likely simply guided by an interest in preserving positive neighborly relations, these residents became their own harshest critics. While the content of the messages was penitent, residents also deflected blame back on the media for "quoting them out of context" and using "off-the-cuff comments." The online response from other residents was limited to a single e-mail message from someone wishing the paper had contacted them instead. Following the publication of the newspaper article, additional media sources began to contact local residents, but despite these additional contacts, there was no further media coverage. I believe that residents were no longer interested in using the media to build negative publicity against Magenta for fear that the negative publicity would damage property values. Residents' reluctance to engage in further use of the media reduced pressure on the consortium and limited the success of further attempts at forcing restitution.

All Things Must End

Results of Netville residents' action against the housing developer and Magenta were mixed. The speed at which

residents organized was unexpected by the developer, and it pressured him into addressing customer concerns with more resources and with greater speed than anticipated. Town planning officials were also surprised by the success of wired residents' demands for improved customer service. They noted that the developer had moved a customer service trailer into the neighborhood, a service that no other development had received in recent memory. Residents also achieved unusual success in preventing the developer from receiving approval from the town to begin work on a second housing development, even though this was a process perceived as bureaucratic and involving little more than a rubber stamp.

In a follow-up interview with the developer, he denied that the size of the residential protest in Netville was greater than his typical experience in new residential developments. Despite my observation that more than 50% of Netville households were involved in active protest, he maintained that less than 20% of residents were actually involved, but he did concede that e-mail had allowed residents to organize with greater efficiency than he had expected. The developer also stated that, based on his experiences in Netville, he would never build another wired neighborhood. The developer associated this decision with a poor housing market, even though housing sales were up on average in Canada at the time, and the town surrounding Netville was one of the top areas of housing growth in the country.

By the end of 1998, there were no further public discussion on NET-L about community action against Magenta. Privately, almost everyone remained dissatisfied with the outcome. The inability to control how the media framed their collective action and a decline in messages sent to NET-L contributed to the demise of residents' organized efforts. The lack of credibility behind residents' assertions that they purchased homes because of the available technology, was likely also a factor in reducing the long-term viability of collective action. The rival telecommunications company, that many had hoped would offer a deal on high-speed Internet access, offered only token discounts on installation fees.¹⁶ Fearing long download times and new household conflict over telephone lines, the majority of residents opted to subscribe to this service. Magenta and the telecommunications partner did make one concession: They agreed to give residents a free dial-up modem and 6 months of dial-up Internet service until DSL technology was available in the area. Most residents rejected this offer as token in comparison to the broadband local network, but ultimately accepted the free modem and the added benefit of being able to continue using their existing e-mail address. With the help of Magenta, residents did obtain a copy of e-mail addresses subscribed to NET-L so that the neighborhood e-mail list could be replicated once access to the local network was terminated. In purchasing

high-speed cable modem access, and replicating the neighborhood email list, residents were successful in replicating the two services that they reported valuing most from the technology trial.

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

CONCLUSION

The residents of Netville were better equipped to address community concerns than they would have been without the local computer network. ICTs reduced the cost and increased the speed of community organization. CMC made communication with network members instantaneous and inexpensive in terms of both time and resources. Residents had the flexibility to actively participate in collective action at a time and in a place that was individually convenient. Online forums provided a visibility to participation that encouraged individual contributions, overcame high thresholds to participation, supported the appearance of group solidarity, and prevented the loss of individual involvement. Yet visibility was a double-edged sword: Just as participation increased as network members witnessed the investment of others, individual commitment quickly declined when network visibility created the perception that others were no longer investing. The use of CMC led to in-person introductions, created larger local social networks, and facilitated the flow of information. The broadcast feature of the neighborhood e-mail list and a dense network of local social ties—particularly weak social ties—were key to wired residents' ability to organize collectively.

Contrary to dystopian predictions, Internet use is not inherently related to a decline in the size of people's social circles or a reduction in social capital. The focus of

existing Internet research on the benefits of strong ties has ignored the important role of weak ties (Kraut et al., 1998; Nie, 2001). For the most part North Americans do not have a large number of strong neighborhood ties (Wellman, 1979; Fischer, 1982) and there is no reason to assume that new ICTs can reverse this established trend. CMC at the neighborhood level provides an opportunity for local social interaction that facilitates the formation of weak social ties and community involvement (Hampton, 2002).

North American neighborhoods generally lack institutional opportunities for social contact. Local institutions that do exist to promote local interaction (cafés, bars, community organizations, etc.) are in decline (Putnam, 2000; Oldenburg, [1989] 1999). The introduction of ICTs specifically designed to facilitate communication and information sharing in a residential setting can reverse the trend of neighborhood noninvolvement. Indeed, community networking has become increasingly popular, and new residential developments with networks offering Internet access and other ICTs are a growing trend.

Still, the focus of much community networking and most new developments with built in ICT infrastructures has been on providing information applications and broadband services. The importance of communication applications is often overlooked. In fact, simple, asynchronous communication services may be the key. Videophones, multimedia chats, and other developing ICTs undergoing early adoption are limited in their use, not because they are bad ideas, but because they are not necessarily ubiquitous in people's personal networks. E-mail was successful in Netville because it was already well established. It is one of the first Internet applications that people learn, and remains one of the most popular Internet applications, if not the most popular. E-mail is already integrated into the maintenance of many people's existing nonneighborhood social ties. As is evident from Netville, e-mail is particularly good at overcoming problems of coordination and in bridging temporal constraints. For the foreseeable future, accessible and asynchronous forms of CMC are most likely to improve the flow of information, increase the size of social networks, and in turn facilitate community involvement in residential settings.

One question remains: Can we expect to see positive social impacts as a result of ICTs in all residential settings? Initial evidence from the E-neighbors project, a longitudinal study of the use of ICTs in three Boston area neighborhoods, suggests not. Size matters; large community networking projects beyond a few hundred homes reduce the social pressure of geographic copresence and limit the need for residents to maintain the "neighborliness" that appeared in Netville. Similarly, urban environments that self-select for residents who are not predisposed to community involvement, at least on some level, will never be

involved no matter how hard it is forced on them. At the correct scale, local use of CMC has the potential to expand social networks, generate high levels of social capital, and reduce the cost and increase the speed of community involvement.

NOTES

1. "Netville" and "Magenta" are both pseudonyms adopted to protect the identity and privacy of the residents of the wired suburb.

2. The chuckwagon was a 19th-century form of meals on wheels: a covered wagon used as a frontier kitchen during long journeys by travelers through the North American West.

3. Based on unpublished information provided by the Canada Mortgage and Housing Corporation (1999).

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

5. For a complete discussion of the methods used in the Netville project see Hampton (2001) and Hampton (1999).

6. Ontario New Home Warranty is the nonprofit organization that administers provincial legislation providing warranty protection for buyers of new homes against many problems, including deposit loss, delayed closing, major structural defects, Ontario Building Code violations, and construction defects.

7. The videophone was rarely used with the exception of demonstrations for friends and relatives and the occasional use by local children.

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

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

10. Wired and nonwired residents are not socially isolated from each other. Looking at each of recognition, talking, and visiting, the connectivity between nonwired and wired residents is similar to the level of connectivity observed in the nonwired subgraphs. This suggests that not only did CMC play a strong role in building social networks between wired households, but that it did not inhibit the formation of social ties between wired and nonwired homes.

11. For a discussion of Netville residents' nonneighborhood ties, see Hampton and Wellman (2003).

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

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

14. As an ethnographer living in the community I was privy to resident's discussions in private and online. As a member of Magenta I received more than one concerned telephone call from corporate members in search of information—information that, ethically, I could not provide.

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

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

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