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Netville On-line and Off-line[1]

Observing and Surveying a Wired Suburb

Keith N. Hampton and Barry Wellman
Department of Sociology
University of Toronto

Since the mid-1850s, scholars have debated how technological innovation would affect community. The debate continues as the Internet makes it increasingly possible for people to socialize, shop, work, learn, and participate in leisure activities all from within their home. Will the movement of these previously public activities into the private realm lead to reduced participation in public activities? What will be the fate of community and social relations as a result of the growth of computer-mediated communication? Netville is a suburban Toronto development equipped with a high-speed network as part of its design. The clustering of homes within this area allowed us to study the social networks, civic involvement, Internet use, and attitudes of residents. This paper explores the research approach of the Netville project and describes its main sources of data collection: surveys collected using computer assisted interviewing and ethnographic fieldwork.

Looking for Community in Neighborhoods and Cyberspace

For the past two years we have been looking for community in suburban Toronto: online and offline, locally, and globally. We want to find out how having no-cost, very high speed access to the Internet affects the kinds of interpersonal relations that people have with friends, relatives and neighbors.

Despite the breathless "presentism" of current discourse about the colonizing of cyberspace (reviewed in Wellman & Gulia, 1999), scholarly debate about the nature of community arose out of earlier concerns about the transition from agrarian to urbanized industrial societies (e.g., Tönnies, 1887 [1955]; Durkheim, 1893 [1964]). The list of large-scale social processes that might cause community to wither, solidify or mutate is long, rife with ideological overtones, and so intercorrelated that it is difficult to tease apart the causes. Technological change has been a prime candidate since the early 19th century advent of the steam engine, as has industrialization, urbanization, bureaucratization, capitalism, and

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socialism (Wellman & Leighton, 1979). Debates about the nature of community have been underlain by implicit assumptions about the nature of humankind: Are people inherently sinful, prone to lose community as society loses the restraining hand of village life? Are people inherently good, reaching out to support each other in supportive groups under all circumstances? Are people inherently entrepreneurial, forming exchange relationships but not densely knit, supportive groups? As to the consequences – the present-day nature of community – these too have been subject to debate, although the evidence has been there for the observing if only the question is framed properly.

Just as early urban theorists (Park, 1925; Wirth, 1938) worried about the effects of urbanization on community, modern dystopians suggest that the lure of new communication technologies withdraw people from flesh-to-flesh contact and further disconnect them from families and communities (for example: Fox, 1995:12; Slouka, 1995). Yet, several scenarios are possible. Indeed, each scenario may happen to different people or to the same person at different times. In an "information society" where work, leisure, and social ties are all maintained from a "smart home," people could completely reject the need for social relationships based on physical location, finding community online or not at all, rather than on street corners or while visiting friends and relatives. At the same time the location of the technology in the home facilitates access to local relationships, suggesting that domestic relations may flourish, possibly at the expense of ties outside the household.

Whatever happens, new communication technologies are driving out of fashion the traditional belief that community can only be found locally. Cyberspace has enabled people to find each other through electronic mail (e-mail), bulletin boards (BBS), group distribution lists, role-playing games and Web chat rooms (the list is incomplete and obviously evolving.) The rise of the "virtual community" has introduced new methods to be used in maintaining relationships with members of traditional communities, those who first met face-to-face, and with members of new electronic communities, where members first met online. For more than one hundred years, researchers have confronted fears that community is falling apart by searching for it in localities: rural and urban villages. For the most part, their investigations have adhered to the traditional model of community as little groups of neighbors intensively socializing, supporting, and controlling one another (Wellman, 1999b).

Since the 1970s, some of us have argued that community does not have to be local. It is the sociable, supportive, and identity-giving interactions that define community, and not the local space in which they might take place (Wellman, 1972; Tilly, 1974). Much research has been done to demonstrate the existence and importance of personal community networks and their existence in the modern urban environment (e.g. Fischer, 1982; see the reviews in Wellman, 1988; Wellman, 1999b). Textbooks give this a page or two and most community scholars continue to study neighborhoods while ignoring social ties that extend beyond the local setting.

Research Goals

This paper describes the methods used in our investigation into the suburban neighborhood of "Netville." A neighborhood unique in its electronic connectivity, and a study unique in its investigation of social relations both internal and external to the local setting. As sociologists of both community and cyberspace, studying community online fascinated us. When the opportunity arose to study the wired suburban development, "Netville," we seized it. Our research questions blend our interest in community, cyberspace, and the fate of western civilization:

1. Can supportive, sociable and meaningful relations be maintained online as they heretofore have in public (such as cafes, street corners) and private (such as homes, clubs).

2. How do online relationships articulate with offline relationships? Will life online replace, complement, or supplant life in the flesh? How do ties with the same persons incorporate online and offline relationships?

3. What will be the fate of community? Will it atrophy as people stay home to work, learn, and entertain themselves online? Will it foster new solidarities as people get drawn into compelling virtual communities? Will it encourage limited involvement in specialized, partial communities as people surf between interest groups?

4. Will the Internet accelerate a shift away from communities based on gender, race, class, and life cycle to communities based on shared interests, attitudes, culture, behavior and life style? Or will the current "digital divide" continue – with primarily white, well educated men in developed countries heavily participating – leading to communal segregation and stratification?

5. Will the Internet amplify "glocalization": intensely local – indeed, domestic – involvement as well as wider ranging social ties maintained in part through computer-mediated communication?

6. Will the Internet encourage social integration and civic involvement? Will it foster social networks and transitive relationships ("friends of friends") that cut across group boundaries, build online institutions, and articulate pressing concerns?

Netville: The Wired Suburb

"Netville" is a good place to investigate these questions. It is a newly-built development of approximately 120 detached, closely-spaced, single-family homes in an outer suburb of Toronto.[1] The typical Netville house, three or four bedrooms plus a study, 2,000 square feet on a 40 foot lot, cost about C$228,000 in 1997 (US$171,000), 7 percent less than the average price in 1997 for a new home in the same area,[2] or13 percent less than the fourth-quarter median for the Metropolitan Toronto new-home market (Canadian Mortgage and Housing Corp., 1997: 8). Netville is similar to other developments in the area, and is in an area of rapid population growth and home construction.

Netville looks like many other developments, except for the chuckwagon[3] at the entrance. "Canada's First Interactive New Home Community, "Netville," *Welcome Pioneers*" is written across its canvas. It is one of the few developments in North America where all of its homes were equipped from the start with a series of advanced communication technologies supplied across a high-bandwidth local network. For two years the local network provided residents with high speed Internet access (including electronic mail and Web surfing), computer-desktop videophone (but only within Netville), an online jukebox, a number of entertainment applications, online health services, and local discussion forums, all provided free of charge.[4] In return for this free, very high-speed access to the information highway, the residents agreed to be studied by the corporate and nonprofit members of the "Magenta" consortium. This agreement was only lightly enforced and often forgotten by the residents. No resident was ever denied service for refusing to participate, and no data were ever collected without the residents' knowledge.

Netville's local network was a dual hybrid fiber coax technology with an ATM (asynchronous transfer mode) backbone. A coaxial cable drop wire from a coax node was brought into the home where it connects to a PCCU (Personal Computer Connection Unit) located in the basement. The PCCU connected at least five computer ports within each home to the local network.[5] Unfortunately the PCCUs installed in homes were limited in that they only allowed one household port to connect to the local network at a time. A substantial number of households installed independent software, or rigged up internal networks, to circumvent this limitation. Users could reliably expect a bit rate of 16.96 Mbps

upstream and 13.57 Mbps downstream across the network. The Magenta consortium, provided computer and software support, and the major telecommunications member of the consortium staffed 24-hour help lines to support the network.

As technology developed and fashions changed, the telecommunications company responsible for the network decided that ATM technology was not the future of home Internet services. They, like the other telcos, have opted for ADSL (asynchronous digital subscriber line) technology. As the telco viewed Netville as a site for technical rather than social research, they terminated the field trial early in 1999, to the dismay of the residents who had grown to love the system and assumed it would be there indefinitely (a tale told in Hampton & Wellman, 2000).

The people who have moved into Netville are largely middle class, English-speaking, and married. About half have completed a university degree (Hampton, 1998). Some are first-time home owners, others were looking for a convenient suburban home, while some were attracted by life in a wired suburb. Those with older children often moved to Netville from a nearby suburb and plan to remain there for the foreseeable future. Those in the early stages of raising a family have less settled plans. About half of the couples had children living at home when they moved into the community, but as with most newly occupied suburbs a baby boom has since ensued. Most are white, but an appreciable number are racial and ethnic minorities. However, race and ethnicity is less an organizing factor in Netville than lifestyle, stage in the life-cycle, and to a lesser extent, socioeconomic status. Residents work at such jobs as technician, teacher, police officer, and small business person. Their median household income in 1997 was about $75,000 Canadian dollars ($50,000 U.S. dollars).

Only a minority of Netville residents were experienced with technology when they moved in.[6] Many families saw the move to the wired suburb as more an opportunity for their children than for themselves. Yet, even before the move to Netville, these families were somewhat more involved with home technology than most Canadians. Before the move, 78 percent of the homes had a personal computer as compared to 57 percent of Canadians in 1997 (Ekos, 1998). The great majority had more than one television, a videocassette recorder, and a compact disc player. These rates are higher than the Canadian average (Hampton, 1999).

Approximately 65 percent of Netville homes participated in the high bandwidth trial and had access to the network for up to two years. To our surprise, the other 35 percent of households were either unable, or unwilling, to participate in the trial despite the no-cost, low-fuss manner in which equipment and service were provided. These households provide a convenient comparison group for studying the effects of computer-mediated communication.

Research Design

Our research has been guided by a desire to study community offline (communication in-person or by telephone) as well as online. We are interested in the totality of relationships in community ties, and not just people's behavior in one communication medium or locale. In this we differ from studies of "virtual community" that look only at relationships online (see some of the chapters in Smith & Kollock, 1999) and from traditional sociological studies of in-person, neighborhood-based communities (e.g., Gans, 1982; Liebow, 1967; Whyte, 1981). The former overemphasizes the prevalence of computer-only ties while the latter ignores the importance of transportation and communication in connecting community members over a distance. Unlike many studies of computer-mediated communication, between undergraduates observed in laboratory experiments (see the review in Walther, et al., 1994), we are interested in studying people in real settings, taking into account their social characteristics (gender, socioeconomic status and the like), their social positions (prominence, power), and the broad nature of

their participation in social networks. We wonder how the tie between A and B is affected by the presence or absence of their ties with C (Wellman, 1988), and how their community involvement intersects with their institutional involvements (work, unions, church, bowling leagues, etc.) and their attitudes toward society (social trust, alienation, etc.; Putnam, 1995).

Studying Netville allows us to study local community dynamics as well as long distance relationships. It facilitates ethnographic fieldwork in the neighborhood and an appreciation of how institutional decisions (on the part of the developer, the municipal government, the experimenters) intersect with people's lives. Netville's high-bandwidth, no-cost Internet access is especially appealing. It has allowed us to peek into the future – for low-cost, high-bandwidth systems will surely proliferate – rather than being stuck in the constraints of the present. However, Netville is not an island, and the residents' interactions with others meant that members of their personal communities often were replying to them on slower connections.

Instead of screening a large random sample for the 28 percent of Canadians who have an Internet account from home (Ekos, 1998), we only had to knock on Netville doors to efficiently find many users. The small number of homes in Netville meant that we could interview at least one adult in each home and ethnographically observe many face-to-face interactions. The unanticipated fact that a sizeable minority of Netville residents did not get "wired," because of organizational and technical difficulties on the part of Magenta, sadly reduced our wired sample size, but gladly provided a comparison population that had similar experiences in every way to their neighbors except for their lack of high-speed Internet connectivity. Our principal regret is that we are unable to do a longitudinal before/after study due to difficulties in identifying incoming residents before their move and the unexpected termination of the field trial.

Every choice has its costs, especially in the penuriously funded social sciences.[7] The special circumstances and socioeconomic homogeneity of Netville means that we cannot generalize to the current Internet experiences of the bulk of residential Internet users with their much slower, less feature-laden, and higher cost connections. High-speed broadband residential settlements, where the majority of homes have access to the Internet, cannot be considered the current norm. Yet the number of online users continues to grow, as does the number of developments building high-speed residential networks (Jones, 1999). It is likely that similar settings will grow in popularity and over the next decade possibly become the norm. Similarly, as much as shared phone line, dial-up access is the current norm for in-home Internet access, the recent introduction of ADSL and cable-modem technology has shown a demand for high-speed "24/7" Internet access (Yankee Group, 1998). Field interviews with Netville residents, after the removal of the high-speed network, have also revealed that tied-up household phone lines may be as much a source of household problems as are problems resulting directly from Internet use.

Netville had its own internal dynamic as a newly-settled development that made the residents' experiences different from the majority of households in the western world whose residents have lived in the same place for a while. There may be less local interaction in Netville when residents get established and have to contend with fewer housing and neighborhood crises – as Herbert Gans found in unwired Levittown a generation ago (1967). At the same time, the newly-settled may atypically remain in contact with a number of former neighbors and coworkers. Even though spatial distance does not destroy community ties, neighbors still interact more frequently than those living further apart (Wellman & Tindall, 1993; Wellman, 1996).

The special nature of doing research in the midst of a technological experiment has presented a number of methodological issues. The fitful nature of housing starts meant that completions and move-ins were much slower and less organized than good experimental design would have dictated. Technical decisions were sometimes socially ill-informed (such as the limitation of one household port having

access to the network at a time); changes in equipment and service attenuated comparability across households. For example, originally only Apple computers could be used on the local network, a choice that proved unpopular and required those with only Windows PC experience to learn a new operating system. The first fifty households received a substantial discount on the purchase of a new Macintosh as part of their move-in package: an especially attractive offer to new computer users. Although subsequent arrivals could eventually use Windows computers, they had to own high-level equipment to use the broadband network.

We were in frequent communication with Magenta and the major telco partner (and needed their advice about technology and residential moves), but we needed to maintain a separate identity as researchers who were independent from the experiment's plans and who would maintain confidentiality. This became a pressing issue after the announcement that the field trial would end as our continuing access to residents depended on their not identifying us as part of this decision (Hampton & Wellman, 2000). The very nature of a new residential community, equipped with new and experimental technologies, requires organizational contact between those providing the technology and those who will use those services. In Netville this contact included a series of small group meetings between Magenta, the telco partner, and local residents, to introduce the aims of the experiment and to present new services. From a research perspective any interaction that takes place between residents as part of this organizational process, or in reaction to it, has the potential to facilitate the development of a unique and common identity that complicates the analysis of neighborhood interaction. Any increase in interaction that results from this process will likely dissipate over time. In an established community it would likely not become significant.

No one design is best. Alternative designs present their own opportunities, problems and challenges. Consider one other well-known study of residential Internet use. In the "Homenet" study of 73 households in Pittsburgh, Kraut, et al. (1998) are investigating the interpersonal and psychological impacts of involvement in the Internet by selecting households whose residents had not had previous access to the Internet.[8] In exchange for participation, these newbies were provided with a free computer, software, telephone line, access to the Internet and technical assistance. Homenet's selection of a sample with no prior access to the Internet allows powerful longitudinal analysis of impacts but affected the generalizability of results. If the focus of the investigation is on privatization and the effects of in-home technologies on social relations, technological use cannot be looked at in isolation from users' past experiences and future expectations.

Thus, there are costs and benefits to studying only newbies. For example, the extra time required to learn a series of new technologies, with which the participants had no prior experience, may account in the short term for reduced social involvement, isolation, and subsequent depression. The frustration involved in learning to use new technology, particularly if it does not meet prior expectations for its use, may increase stress, affect family communication, and encourage increasing levels of isolation and depression. Similar results may not be found in a sample with previous Internet experience and exposure to advanced computer technology.

Gathering Information

Our research objectives led us to gather information about the residents' community ties online and offline, globally and locally. We have concentrated on learning about residents' interactions within Netville, as well as their personal networks (which extend well beyond Netville), civic involvement, Internet use, and individual attitudes. We have principally relied on two methods:

- *Ethnographic observation* to study the behavior of Netville residents in the community, both informally and at group gatherings. We have also made personal visits to nearly every household.
- *Surveys* to study the residents' local and long-distance relationships with members of their personal communities, online and offline interactions, attitudes, experience with technology, civic involvement, and demographic characteristics.[9]

Observing

Netville's small and compact area made it feasible and desirable to live in the research setting. In April 1997, one of us, Keith Hampton, began participating in local activities (community barbecues, meetings, etc.) In October 1997 Hampton moved into a resident's basement apartment for a stay that lasted until August 1999. He identified himself to all residents he encountered informally and in groups as a student and researcher interested in Netville. Given the widespread public interest in Netville, residents were not surprised about his activity. They treated him kindly and respected his decision to live in Netville as a full participant.

Hampton worked from home, participated in online activities, attended all possible local meetings (formal and informal), walked the neighborhood chatting, and completed a community ethnography similar to that of Gans (1967) in the New Jersey suburb of Levittown. Observations of the day-to-day experiences of the community provided details about how residents used the available technology, information on local social networks, information on domestic and neighborhood relations, and details of the residents' use of time and local space.

Survey data is useful in tapping information on individual behaviour, preferences, and opinions. Yet, the ethnographic observations tell much of Netville's story. The ethnography serves as a record of the group perspective, not in the aggregate reporting of statistics, but in a contextual historical account of the daily events and activities of local residents. The ability to have 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 through the online forums.

For example, residents frequently talked online about burglaries in the community: who was burglarized, who witnessed what on that night, and future plans for prevention. By contrast, when a suspicious fire burned down a house one week before its new occupants were scheduled to take possession, nothing related to the fire was ever discussed online. Over the following days, when residents were approached by Hampton on the street, they each recounted a similar story surrounding the house fire, revealing a network of community information that existed externally to the online forum. Residents also wondered why the fire was never discussed online; we suspect that it would have crossed an invisible line between the provision of supportive aid and community gossip. The online forum was almost exclusively used for the search and provision of various resources. Since the owners of the burned-out home were not yet community residents, they were not members of the local email list, and could not benefit from online offers of support.

Netville was damaged by a major storm in June 1998 that caused power outages and the shutdown of the local network. Residents had to mobilize offline to check on the safety of their neighbors and their property, as prowling cars and attempted burglaries were discovered that same night. This in-person community activity was founded on spatial propinquity. By contrast, online community was founded on friendship and shared interests.

The opportunity to do detailed ethnography provided a unique source of information and played a key role in developing rapport with participants. The insights gained through observation and daily interaction was instrumental in developing the kinds of questions asked in our surveys. Moreover, Hampton's visibility and credibility in Netville were vital for convincing many residents to take the time from their busy lives to respond to our survey.

Hampton's relationship to community participants became particularly important when the field trial ended. Although most residents were angry at the telco partner and Magenta, our research was able to continue because Hampton was a Netville resident who shared the same loss of high-speed service. Residents continued to be interviewed, and our research goals took on an additional dimension as we studied how residents responded to the threat, and subsequent fact, of losing their high-speed service.

Surveying

Personal Networks:

Our survey has obtained information on geographic perception, personal and neighborhood networks, community alienation, social trust, work, experience with technology, time-use, and basic demographics. We discuss in detail here the most elaborate part: the social networks section. Learning about the residents' social networks – in Netville and outside of it – is a central concern for it is the nature of these networks that will show if personal communities are abundant, strong, solidary-fragmented, and local-nonlocal. Hence the survey used modified versions of social network protocols used by Wellman in earlier research (Wellman, 1982).

To obtain information about network ties within Netville, we presented residents with a list of up to 271 adult residents of Netville, asking them "do you recognize this person?" (see Erickson and Nosanchuk, 1983). In addition to asking whom they recognized we were able to collect more detailed information on each name selected, such as how often they socialized, and how they kept in touch. Reaction to this type of question was positive as participants found it intrinsically interesting (Hampton, 1999).

To elicit information about socially close members of the residents' personal networks, wherever they live, residents were presented with thirteen name-generator questions (Fischer, 1982; Wellman, 1982; Campbell & Lee, 1991). For each question, participants were asked to provide a list of names, one per line, using only first names and last initials to create a sense of anonymity and reduce any fear that we would attempt to contact those people listed. There was no limit on the total number of names that a participant could provide. Once participants listed names, the survey software created a master list of all the people listed and asked for more detailed information on each member of the personal network: demographics, where and how they met, how often they communicated, and through what means. The positioning of this some what demanding question set – at the beginning, middle, or end of the survey – affected the participant's willingness to complete a computerized self-administered questionnaire. The further back in the questionnaire, the more likely the other questions would be completed. The participants' reluctance to answer this lengthy online schedule eventually influenced our decision to use personal interviewing in the latter stages of the study (see later; for a complete discussion see Hampton, 1999).

Initial Plans:

We began surveying Netville residents in April 1998. The survey was to be administered to all household members 18 years of age or older during both a pre-move and post-move interview. The pre-move survey was to be administered approximately three months prior to moving into Netville, and the post-move survey approximately one year after living in the community. An adapted version of the pre-move survey was to be administered to all residents who had moved into Netville before they could be contacted for a pre-move survey. Both surveys were primarily closed-ended "check the box" with opportunities for longer, open-ended responses to a number of questions. Each was estimated to be two hours in length.

There was no way to identify which households would receive access to Netville's high-speed local network prior to administering the pre-move survey. A small number of households would eventually refuse to participate in the field trial, but still participate in our study, and a larger number of households would request to join the field trial, but would not receive access because of organizational and technical problems within Magenta.

When we began, we had no funds to hire a large complement of interviewers for either personal or telephone interviewing. All surveys were to be administered using specially designed computerized self-administered interviewing (CSAI) software that allowed participants to complete the survey over the Web. Those without Web access, but with a personal computer, were sent a self-booting DOS-based floppy disk that took a participant through the same survey (disk-by-mail or DBM surveying). Those who had neither Web access, nor a personal computer, would be lent a laptop to be used for completing the DBM survey: obsolete laptops (based on Intel 286 and 386 chips) bought at low cost.

Dealing with Reality:

Although some of these plans survived, a series of events led to changes in our initial survey plans. These events can be divided into three broad categories: (1) home construction, (2) losing the network, and (3) CSAI.

Home construction: When we began our research, a number of families had purchased homes, and had set dates to take possession of their new homes. Several families were already living in Netville, and given the excitement about it, we feared that we might be too late in getting started.

Soon after the pre-move survey was first deployed, it became obvious that things were not going as planned. Construction problems, planning issues, and strikes delayed home construction by six months or more. People expecting to move into their new homes were repeatedly given new dates for occupancy which were subject to frequent revision. As many had vacated their old homes, they were forced to find alternative housing in the interim, often with members of their extended families. These complications made it difficult to locate potential participants for a pre-move interview. When participants could be contacted they were often hostile toward the developer and refused to participate. For some, their difficult interim living arrangements did not give them time to participate. Others canceled their move to Netville because of the delays. We did have some success convincing incoming residents to participate in the survey, aided by incentives (such as coupons for free cappuccinos) and follow-up calls.

Nevertheless, difficulties in obtaining names and completing surveys led us in September 1998 to move from a pretest-posttest survey design to a single cross-sectional survey of people already living in Netville. The discovery that a sizeable minority of homes were not connected to the network made

comparative analysis possible and the loss of longitudinal information more palatable. We modified the survey for use with people already living in Netville and continued interviewing.

Losing the Network: In the midst of our surveying, the telco partner began suggesting privately in Fall 1998 that it might withdraw from the field trial and discontinue supplying Netville with access to the high-speed local network. This was publicly confirmed at the end of October 1998. Not only would free service soon stop, but any possibility of a pay-per-use service delivered over the network would end as arrangements were made to remove the hardware (the PCCU and some accessible wiring).

When the end of the experiment was publicly announced, Netville residents quickly mobilized, using their networked connectivity in an attempt to force the continuation of the field trial. The community uprising necessitated that surveying be temporarily suspended as a result of strong community feelings and a fear that these feelings would contaminate survey results. In part this was also a self-preservation strategy to dissociate our research from the ending of the trial. In late November 1998 we resumed surveying and completed it in Spring 1999.

The end of the trial did not mean that Netville residents became complete technological have-nots. They are using 56Kb dial-up service provided free for six months by the telco partner, waiting and hoping for DSL service, or they signed up with the high-speed @Home cable modem service.[10] This means that a few interviews undertaken in 1999 are partially retrospective, reporting about both past experiences with the local network and continued experience with high-speed Internet access via the @Home network.

CSAI: Until November 1998 all surveying was done using computerized self-administered interviewing: on the Web, or on a personal computer. The survey software was designed in-house by Ross Barclay and Keith Hampton. Although off-the-shelf CSAI software exists for simple surveys, we found it ill-suited for a number of our question types. We developed our own software to gather complex kinds of information about such matters as social networks and time use.

The advantages of using CSAI were the saving of interviewer costs and the computerized preparation of questions that followed up specific responses (Richman, et al., 1999). There was also an additional concern for how participants would react to detailed, and sometimes personal, survey data being collected in personal interviews by Hampton who was also collecting ethnographic data as a resident. The disadvantage was the great labor that it took to prepare and debug the survey and to modify its content in response to pretest experience.

Prior to the announcement of service withdrawal and without serious attempts at follow-up persuasions, the response rate for existing Netville residents in September and October 1998 was slightly more than 40 percent of households having started at least one survey. However, half of all participants attempting the Web survey were having difficultly completing the survey in its entirety. There were several difficulties:

(a) The survey was quite long, often running more than two hours.

(b) Unlike other types of long surveys, participants sitting alone at their computer screens did not have supportive interviewers cajoling them toward completion.

(c) The personal network questions at the start were crucial for our research but especially time-consuming.

(d) The CSAI technology was novel and sometimes daunting to use.

(e) Netville's commuting exurbanites -- mainly dual-career, child rearing families -- meant that potential survey participants were extremely busy. They were often exhausted when they had some leisure time and were in no mood to complete lengthy surveys.

With the end of the field trial imminent, in November 1998 we adapted our survey for face-to-face Computer Assisted Personal Interviewing (CAPI), and aimed for one interview per household. We moved away from having "Prof. Barry Wellman" write the letter introducing the survey to residents. Instead Keith Hampton wrote the letters made many personal visits to homes to arrange interviews. As Hampton was known as a student residing in Netville, he received greater acceptance.

We divided the CAPI instrument into three parts to make it less daunting. An initial section, one hour in length, contained questions about work, community, family, and the use of technology. A second, easily self-administered paper section was left behind at the initial interview. It contained questions about neighboring, technology, civic participation, and demographic characteristics. A final social network section, which ranged from 30 to 60 minutes in length, was administered following the initial interview, or during a second visit when the interviewer picked up the completed self-administered paper section.

Our completion rate jumped in response to these changes, at the cost of having administered different forms of surveys during different periods of our research. The questions in the surveys remained largely the same, although we reduced the survey's length in this last CAPI phase.[11]

As all of our surveying has been computer assisted, data preparation for statistical analysis largely avoids the data entry phase. SAS and SPSS are being used for statistical analysis, including special procedures developed by our group for personal network analysis (Wellman, 1992 ; Müller, Wellman and Marin, 1999).

In an ideal situation it would be appropriate to collect survey data at least twice, pre and post-move. Given the potential complications of doing research in a setting with many factors beyond the immediate control of the research team it may only be possible to complete one wave of surveys over as short a period of time as possible. In the end we interviewed a cross-section of residents, including a small number of people who "intended" to move into Netville, and those who had lived in the community for up to two years and had access to the high-speed network ranging from zero to two years.

In Conclusion, We Begin

This paper has focused on the methodological issues we experienced as part of the Netville project. Key to these methods has been the use of multiple data collection methods to increase the reliability and validity of our results. Using surveys and ethnography gave us continuing opportunities to clarify our data and refine our inquiry in our evolving field site.

The use of CSAI and CAPI in our project has revealed advantages and disadvantages to computer assisted interviewing that must be weighed against the characteristics of the research setting and the type of data intended for collection. With easy access to a stable and motivated population CSAI may be an efficient and cost-effective method of interviewing, but in a less certain situation with participants who are unfamiliar with the research team, CAPI may be necessary to ensure proper data collection.

To rely solely on survey research means ignoring major sources of data and can hinder revealing rapport with participants. We believe in the importance of having researchers live in the community under study, not only to provide easy access to the necessary observations and information, but to encourage trust in the research process, familiarity with the researchers, and to show a respect for the neighborhood as a place to live. The ethnographic portion of the Netville project has served not only as a powerful source of information, but ultimately the familiarity and trust established through this method

enabled us to complete our survey when the developer and consortium partners were under fire from the community.

We have completed gathering information and have started to study our notes, records and statistics. The computer assisted surveys are providing realistic numbers, and the ethnographic observations are providing a context and history to our statistics.

In studying community, be it on or offline, it is imperative to recognize that community does not have to be local, but that it is the sociable and supportive aspect of interaction that defines community and not the local space in which interaction may take place. It must be recognized that relationships extend beyond the neighborhood and include a personal network of friends, relatives, and coworkers that can extend across the city or around the world. Similarly, the study of virtual communities should not be limited to interactions that take place in that setting, but should look at how these interactions fit into the entire set of social ties that make up the multiple communities in which we are all involved.

Preliminary analysis suggests that the Internet supports a variety of social ties, strong and weak, instrumental, emotional, social and affiliative. Relationships are rarely maintained through computer-mediated communication alone, but are sustained through a combination of online and offline interactions. Despite the ability of the Internet to serve as a global communication technology, much online activity is between people who live (or work) near each other, often in Netville itself.[12] In Netville, the local network brought neighbors together to socialize, helped them to arrange in-person gatherings -- both as couples and as larger groups (barbecues, etc.) -- facilitated the provision of aid, and enabled the easy exchange of information. The high rate of online activity led to increased local awareness, high rates of in-person activity, and to rapid political mobilization to fight the developer and the end of the field trial. We call this combination of long-distance “global” interaction and within-Netville “local” interaction: “glocalization.”

Notes

1. To protect residents' privacy, "Netville"and "Magenta" are pseudonyms. Final home numbers are in flux as homes will continue to be built over the next two years. The suburb is far from the central city. It takes an hour to drive to downtown Toronto without traffic; two hours during rush hour. The exurban location may have increased the attractiveness of using computer-mediated communication with friends, relatives and coworkers living in the main centers of Toronto.

2. Based on unpublished information provided by the Canadian Mortgage and Housing Corporation, 1999.

3. The chuck wagon was a nineteenth-century form of meals on wheels: a covered wagon used as a frontier kitchen during long journeys by travelers through the North American west.

4. In addition to the free services, approximately 20 percent of residents purchased additional in-home computer-based technologies, such as: within-household networks and advanced home security systems.

5. Additional ports were available at cost when residents purchased their homes and many had them installed.

6. Netville received much publicity. The publicity and the intrinsic sense of being involved in an innovative use of technology may have made some residents susceptible to the "Hawthorne effect" of people self-consciously modifying their behavior on account of their being studied. Fieldwork suggests that only a small number of residents were affected in this way.

7. It is both humorous and depressing to have colleagues in the physical and life sciences suggest how we should design our research when social science research budgets are less than a tenth of theirs. It is annoying to listen to corporate executives make similar suggestions, when so many have also worked for reduced -cost government spending and ensuing small research budgets. At one of our first presentations, a physical scientist all but dismissed our research for failing to select potential participants randomly, buy them homes, and move them to Netville.

8. A study of the residents of Blacksburg, West Virginia, has also looked at a residentially dispersed sample in a municipality, albeit one much smaller than Pittsburgh (Cohill & Kavanaugh, 1997, Kavanaugh & Cohill, 1998; Kavanaugh & Patterson, 1998). Published work to date has focused on the institutional aspects of delivering services.

9. To a lesser extent, we used two methods not further discussed here. We monitored an *online community forum* to understand relationships in the local context and how the online behavior of residents is related to their offline behavior and social position. We participated in *focus groups* to obtain information about how the residents feel about technology and to clarify data collected through other means.

10. As "high-speed" as cable modem service may be, it is still considerably slower than the Netville network. The @Home sales representatives were bewildered when they received only grumbles and complaints from community residents when pitching the "high-speed" cable-modem service to people who had just lost a much faster system.

11. For a complete discussion of the use of CSAI and CAPI in the Netville study see Hampton, 1999.

12. This may not have been an artifact of Netville being a newly-settled development. A small study of experienced Internet users in Berkeley found that 50 percent of personal e-mail messages received in a twenty-hour period originated in Berkeley (Wellman, 1999a).

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Biographies

Keith Hampton obtained his B.A. (Hons.) from the University of Calgary, an M.A. from the University of Toronto and is currently a Ph.D. Candidate in the Department of Sociology at the University of Toronto. His dissertation research is an investigation of the use of new communication technology, social support and social networks in the wired suburb of Netville. Hampton recently founded the Urban & Community Section of the Canadian Sociology and Anthropology Association.

Barry Wellman is Professor of Sociology at the University of Toronto where his research group is studying wired living in Netville, virtual scholarly networks, and computer supported cooperative work.. He is the editor of *Social Structures: A Network Approach* and the just-published *Networks in the Global Village*. Wellman founded the International Network for Social Network Analysis, is currently chair of the American Sociological Association's Community and Urban section and Focus Group Advisor for Virtual Community of the Association for Computing Machinery's Special Interest Group in Groupware and Group Processes.