The Impact of Community Computer Networks on Social Capital and Community Involvement in Blacksburg

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Abstract

This chapter adds to the debate over whether easy access to the Internet is the only outcome of community computer network projects or if there are tangible impacts to these initiatives. Building from Putnam's (2000) links between quality of life, community involvement, and social capital the authors provide evidence as to the quality of life implications of the community computer network known as the Blacksburg Electronic Village (BEV). The results of the longitudinal study indicate frequent and increasing use of both the BEV (local online content and services) and the Internet for local, social capital building activities. However, there is no trend toward an increase in community involvement or attachment, except in a subset of the population. This subset is comprised of people who were already more actively involved in the local community, and then began using the Internet to increase their involvement. Early Internet adopters are more likely than later adopters to use the community computer network for purposes of civic engagement or community involvement. The longitudinal data show that while there is an increasing use of the Internet for social networking, there is a leveling off of the proportion of the population that reports increased community involvement since getting on the Net. The results offer Putnam justification for his claims about the Internet's role in social capital formation. Putnam argues that initiatives such as the BEV are an outcome of communities with already high levels of social capital, community involvement, and community attachment. Our results are also consistent with earlier studies regarding early adopters, social status, and civic engagement.

> Let us find ways to ensure that by 2010 the level of civic engagement among Americans then coming of age in all parts of our society will match that of their grandparents when they were that same age.
>
> <div align="right">Robert Putnam</div>

> When computer networks link people as well as machines, they become social networks.
>
> <div align="right">Barry Wellman</div>

What are the implications for the quality of life in a geographic community when the communication patterns in that community are bolstered by the addition of a universally available community-based computer network? This becomes a central question for the information society. One significant impact of a community computer network is a decrease in the digital divide and an increase in access to the information society among members of the community (Cohill and Kavanaugh, 1997, 2000; Patterson, 2000; Patterson and Kavanaugh, 2002). This chapter presents an additional picture of the case study developed in Blacksburg, Virginia surrounding the Blacksburg Electronic Village (or "BEV," see www.bev.net for background materials).[1] The BEV community computer network project began in 1993 and in seven years enabled over 80 percent of the community residents to gain access to the Internet and the information society. In this chapter we extend a debate about whether access to the Internet is the only outcome of community computer networking projects or if there are tangible quality of life impacts to these networking initiatives. We

1   For more detail on specific interventions by the BEV to increase social capital in the community please see the BEV website. The fully realized URL for the research pages of the Blacksburg Electronic Village is: http://www.bev.net/project/research/index.html.

begin with a case for the importance of a link between communication and quality of life, follow with evidence from the Blacksburg Electronic Village case, and then finish with a discussion of the role of the Internet in the quality of communal life.

Quality of Life in Communities

One approach to issues surrounding quality of life in our local communities is to focus on the amount and quality of communication that occurs within those communities. This link between communication and quality of life is elegantly postulated by Robert Putnam (1993, 1995a, 1995b, 2000). Putnam (1993) attributes variation in the quality of life among geographic communities to different levels of social capital and corresponding civic engagement within those communities. Putnam defines social capital as the "features of social organization, such as trust, norms and networks, that can improve the efficiency of society by facilitating coordinated actions" (1993, p. 167). Social capital, in part, refers to the amount and quality of communication about a community that takes place among its members within their social networks. One outcome of this participation and talk is the development of social trust that facilitates collective social action toward achieving common social goals (i.e. civic engagement). Thus, civic engagement is a function of communication among members via their social networks and as civic engagement increases so does quality of life in the community. Communities with vibrant communication networks are likely to have a higher quality of life.

Putnam (2000) argues that a variety of macro-level social conditions served to decrease the amount of social capital in US communities during the last century. Primary among these conditions is a "generational shift" that began in the 1960s where individuals no longer devoted time to running the voluntary associations (like the PTA and bowling leagues) necessary to build social capital and its corresponding social networks and social trust. These voluntary organizations gave their members the opportunity to develop self-government skills of organization, teamwork, and relationship building essential to increase the quality of life in their local communities. Putnam's central claim is that communities that exhibit high levels of social capital exhibit a higher quality of life and that quality of life decreases with reductions in social capital. Or stated another way, communities that exhibit high levels of interpersonal, vibrant, face-to-face communica-

tion have corresponding high qualities of life (Ryan, 2000). The question for media scholars and especially Internet scholars is what is the role of mediated communication in the quality of life in our local communities?

The claim made in this research is that one effect of community computer networks is to build social capital in the communities that host them. This claim is significant because of the implications drawn between social capital and quality of life in local communities. To summarize our expectations:

H1: As the number of community computer network users increases, the greater the community involvement and attachment within the community.
H2: As the number of community computer network users increases, the greater the use of the network to build social capital by communicating with other community members.

Community Computer Networks and Quality of Life

Research about the role of media in the quality of life of local communities indicates general support for a link between media use and community involvement. While Putnam argues that increased television use is a symptom of decreasing social capital (see Putnam, 1995a, 1995b), others argue that frequent newspaper readers are more attached to their local communities (Stamm, 1985), involved in their local communities (Rothenbuhler, 1991), and exhibit higher levels of social trust (Cappella, Lee, and Southwell, 1997) than infrequent readers. Dimmick, Patterson, and Sikand (1996) argue for the role of the traditional telephone in developing and maintaining strong interpersonal communication patterns in the local community.

Tomita (1980) and Neuman (1991) provide a starting point for the examination of the role of interactive media in building social capital. Tomita, anticipating the advent of email, chat, and so on juxtaposes the variables of audience size and speed of communication, and posits the existence of a "media gap" where no technology exists to facilitate small group communication. We agree with Neuman who posits that the advent of computer networks and applications such as chat and email, could be successful in filling the gap in media communication technologies described by Tomita. Several scholars view the Internet

as especially well suited to communication activities that lead to community building, virtual or otherwise (Jones, 1998; Rheingold, 2000; Wellman, 1997; Cohill and Kavanaugh, 1997, 2000).

Some researchers argue that the Internet is a social capital building technology because existing social networks can take advantage of the information distribution aspects of the network to become more effective and connected communicators (Wellman, Carrington, and Hall, 1988; Wellman and Gulia, 1999; Wellman, Salaff, Dimitrova, Garton, Gulia, and Haythornthwaite, 1996). Bonchak (1996) argues that Internet users are active consumers of political information and participate in a variety of online political activities. Kohut (1999) indicates that early adopters of the Internet are more politically active and civic minded than are later adopters. Moreover, while early adopters of the Internet are interested in news and political information, later adopters are more interested in commercial services such as shopping or games (see also Patterson and Kavanaugh, 1994). One important implication of the Kohut finding is that if the critical mass of early Internet adopters are more civic minded and active in communication, they might encourage new adopters to engage in talk about community – a social capital building activity. This conclusion seems confirmed by a study that finds Internet users are vibrant socialites who spend lots of time with family and friends and have a wide range of outside interests (Cole, 2000). Finally, perhaps most convincingly, Hampton and Wellman (1999) find in their study of the Netville community computer network, "online activity led to increased local awareness, high rates of in-person activity, and to rapid political mobilization" (p. 490).

Others paint a bleak picture of the role of the Internet in fostering the communication behaviors that lead to building social capital. Kraut and his colleagues (Kraut, Patterson, Lundmark, Kiesler, Mukhopadhyay, and Scherlis, 1998) find that Internet users tend to become more isolated and depressed over time. Others argue that the Internet use is dysfunctional to traditional interpersonal relations and can lead to an "Internet addiction disorder" (see Walther, 1999). While these authors paint a picture that Internet use is anathema to social relations, Turkle (1997) argues that the communication that occurs on the Internet may be more gratifying for participants than traditional face-to-face communication. Internet users may spend their social capital building energies in developing placeless virtual communities rather than enhancing their local geographic communities. For Turkle,

it is sufficient that people use the Internet for social capital building activities whether they are building that capital for offline or online communities.

Respondents were not asked in any of these studies specifically about the role of the Internet in building and maintaining their local communities. One important implication of the emerging literature on community computer networks is that such networks facilitate community development (Cohill and Kavanaugh, 1997, 2000; Acker and McCain, 2000; Patterson, 2000; Schmitz, 2002). One specific purpose of the Blacksburg Electronic Village is to encourage local community organizations (formal and informal) to take advantage of network resources to facilitate information exchange and communication with members or constituents and to mobilize collective action. The basic premise is that the BEV encourages members of the community to become users of the Internet. Further, the BEV provides structures such as listservs, grants for businesses to build online content, server space for local voluntary organizations to create a web presence and help for building that presence, and free high-speed access at public locations throughout the town. These are interventions designed to increase local content, community involvement and attachment, and eventually affect the quality of life in Blacksburg (Cohill and Kavanaugh 2000; Patterson and Kavanaugh, 2001).

More about the Blacksburg Electronic Village

Blacksburg is a university town (population 43,839 in 2000), home of the land grant university Virginia Polytechnic Institute and State University (also known as Virginia Tech). The town lies in the foothills of the Allegheny Mountains in rural southwest Virginia. It is fairly isolated and remote, geographically, about a five-hour drive from Washington, DC. Roughly 85 percent of the town residents are affiliated with the university, as faculty, staff or students. Even controlling for students, the demographics of the population are higher than the national average on measures of education, income and occupation. In both 1996 and 1999 survey rounds, the average level of education was college graduate; median household income was above the national median.

The high proportion of residents with above-average socioeconomic status has given impetus to Internet diffusion from the earliest years of the project (1993–4). As early surveys indicate (Cohill and

Kavanaugh, 1997) about half of the households in Blacksburg had PCs in 1994 (above the national average of about 35 percent at the time). Respondents with higher levels of education and income are more likely to have Internet access in both 1996 and 1999. Nonetheless, the education group with the biggest increase in Internet access is those reporting "some high school or less." The percentage of respondents in this group reporting Internet access jumps from only 13 percent in 1996 to 63 percent in 1999.

The university's leadership in the BEV project has been key in introducing technological options, ensuring project stability, and building a critical mass of users. From the outset of the project in 1993, the predominant task of BEV staff has been education and training, aimed at individuals and organizations in the public, private, and non-profit sectors. The project staff have initiated and sustained these ongoing interventions to attract and support Internet adoption and use among community members and organizations as information producers, as well as consumers. Interventions of the project staff include training and technical support for basic Internet services (email, listserv, web space) packaged at cost recovery rates to serve local non-profit organizations. Organization members or constituents have an ongoing need for exchanging information (meeting agendas, minutes, updates, announcements, newsletters) as well as discussion within the group. Services such as organizational email account, listserv and web site provide additional channels of communication and information exchange. The BEV bundles these basic Internet services in a package for a low annual fee (about $20 per year). It holds monthly support sessions over a brown bag lunch to further facilitate adoption and use by community organizations.

When people discover that their church or their child's teacher, soccer team, or Boy Scout troop is distributing news and inviting discussion via the Internet, they have a direct interest in using that service. Furthermore, as with telephone networks, computer networks provide increased access to members of a person's social circle, including members of the same group or organization. The acceleration of Internet adoption by organizations ratchets up the adoption by members affiliated with those organizations. By fall 2001, over a hundred and twenty non-profit organizations in the community were annual subscribers of these bundled Internet services offered by BEV in 2000.

Many of the interventions by the BEV staff have been supported through outside funding that provided connectivity and training in

the public schools and library systems, the town and county govern-
ments, and non-profit organizations. As the project established a crit-
ical mass of users in the early years of the diffusion process, more
organizations, including those in the private sector, began to take on
support roles, and to provide ongoing services. The high density of
users also fostered numerous new web-based businesses. In many
cases, the clients of these new businesses were predominantly other
organizations that sought to facilitate or enhance information ex-
change with their own clientele, constituency, or organizational mem-
bership via the Internet. The town government provided an average
of $350 in economic development mini-grants to any local business
interested in establishing a web site. The only requirement was that
the applicant business commit to covering the long-range costs of
maintaining and updating its site (see Kavanaugh and Cohill, 1997).
Of the 67 local businesses that applied for mini-grants, 47 received
awards. The existing web service companies and several start-up com-
panies marketed furiously to offer web publishing to businesses
receiving these grants. As each business completed its online pages,
usually by contracting services from one of the local publishing com-
panies or consultants, it sent a copy of the invoice to BEV, Inc., for
reimbursement. The number of online commercial listings more than
doubled during the one-year period between 1995 and 1996 (from 100
to over 200). This intervention helped to build critical mass in the com-
mercial area of the local Web content, and to add value and attract sub-
scribers to the network. By Fall 2001, over 75 percent of local
businesses had Web sites, most of which were established and main-
tained with their own funds.

Expectations of the Study

It is important to reiterate that the Blacksburg Electronic Village was
not initially conceived as a social capital building project (Cohill
and Kavanaugh, 2000; Patterson and Kavanaugh, 2001). The initial
purpose of the BEV was to increase access to the Internet in the inter-
est of overcoming rural isolation or "digital divide" based on geogra-
phy. Over time, as critical mass was achieved and near universal
access to the Internet emerged among the residents of Blacksburg, the
emphasis of network planners shifted from access to use. Once they
reach critical mass, community computer networks such as the BEV
can become interventions by designers directly targeted at increasing

the amount of communication within a community about that community. Whether that communication is an information product (like a web-site) or a discussion forum (like a listserv) the result is to add another means to facilitate exchange among local and distant network members. Indeed, the goal of community computer network designers is not to "replace" existing channels of communication and information exchange, rather to supplement these channels (see Quan-Haase and Wellman, this volume).

Methods

The main source of data for this chapter comes from a 1999 telephone survey of the year-round (non-student) residents (N = 320) of Blacksburg. The survey instrument employed in the 1999 survey was previously used in a 1996 telephone survey of the residents of Montgomery County, in which Blacksburg is located. In 1996, 156 year-round (non-student) residents of Blacksburg were interviewed as part of the larger survey project.

In this chapter we compare the 1999 (N = 320) and the 1996 (N = 156) datasets to address our research claims. For both samples, households were randomly selected using a random digit dialing selection procedure and individual respondents were selected using the most recent birthday technique (Frey, 1989).

The telephone survey instrument operationalized key concepts related to Internet use, community attachment, and community involvement, as well as demographic and media use measures. To measure community involvement we employed the Rothenbuhler (1991) community involvement scale. Community attachment was measured, following Stamm (1985), by a single indicator asking how happy the respondent would be if they had to leave the community. Several other correlates of community involvement and attachment were also measured including home ownership, length of time residing in the community, and mobility. Internet use measures focused on whether or not the respondent had access to the Internet and the extent to which they used the Internet to communicate with a variety of different social network partners. Undergraduate students enrolled in a research methods course administered the 1996 surveys. Students conducted interviews in a telephone survey research facility supervised by the authors. In 1999, a professional telephone survey research firm administered the surveys after initial training by the authors.

Table 11.1 Descriptive statistics and tests for differences over time, demographic variables, 1996 and 1999 samples

Variable name	1996[a]		1999[a]		Significance test[b]
	Mean	SD	Mean	SD	
Freq. read paper	5.33	1.39	5.57	1.41	n.s.
% subscribe cable TV	78.6%		78.5%		n.s.
Education	5.22	1.71	4.95	1.65	n.s.
Age	44.21	17.68	48.28	14.34	n.s.
Income	3.91	3.68	4.87	3.02	$F = 9.84$, $p < 0.01$

[a] 1996 (N = 156); 1999 (N = 343). [b] ANOVA for time by interval-level data; χ^2 for time by nominal.

Results

The data do not support our expectation that as access to the BEV increased, so would community attachment and involvement. Comparisons between the 1996 and 1999 scores on the community involvement scale and the community attachment indicator are not significantly different.

Yet, the general pattern of our data does point to significant increases in the use of the Internet for social capital building activities during the study period. As we agree with Putnam, among others, that social capital and civic engagement (or community involvement) are linked, we offer two interpretations of the unexpected results. This section first describes the general characteristics of the persons interviewed for this project, then considers the relationship between increasing access to and use of the Internet and community involvement and attachment. The third section of the results focuses on the relationship between the length of time using the net and predisposition to use the network to build social capital.

Neither the 1996 nor the 1999 samples were significantly different from each other in terms of demographic variables (see table 11.1). The majority of people in both samples were college graduates in their mid-forties. Income in the 1999 sample was reported as higher than in the 1996 sample but this difference is not significantly different when we control for inflation. Both samples represent roughly equal amounts of males and females (51.3 percent female in 1996; 53.4 percent female in 1999). Cable television penetration and use of the newspaper were not significantly different.

Table 11.2 Descriptive statistics and tests for differences over time, community involvement and Internet use variables, 1996 and 1999 samples

Variable name	1996[a]		1999[a]		Significance test[b]
	Mean	SD	Mean	SD	
Community involvement					
Community involvement scale	2.81	0.68	2.82	0.70	n.s.
Community attachment	3.46	1.09	3.29	1.03	n.s.
Years in community	14.61	16.17	19.54	13.89	$F = 12.20$, $p < 0.001$
No. of times moved	1.05	1.49	0.58	1.03	$F = 16.26$, $p < 0.001$
No. of meetings per week	1.45	0.64	1.32	0.66	$F = 4.24$, $p < 0.05$
% own home	58.4		74.6		$\chi^2 = 20.43$, $p < 0.001$
% church members	50.0		63.1		$\chi^2 = 8.54$, $p < 0.01$
% formal organization members	37.2		26.2		$\chi^2 = 5.81$, $p < 0.05$
% informal organization members	36.5		42.4		n.s.
Internet use					
% with Internet access	69.2%		80.1%		$\chi^2 = 7.14$, $p < 0.01$
Years using net	–	–	3.43	1.18	n.s.
Use the net to communicate with . . .					
Local family	2.20	1.64	2.89	1.67	$F = 13.35$, $p < 0.001$
Non-local family	3.28	1.66	3.48	1.58	n.s.
Local friends	3.27	1.67	3.38	1.60	n.s.
Non-local friends	3.68	1.52	3.58	1.51	n.s.
Co-workers	3.04	1.82	2.97	1.82	n.s.
Church members	1.71	0.80	2.05	1.32	$F = 16.21$, $p < 0.001$
Formal social groups	1.65	1.21	2.01	1.43	n.s.
Informal social groups	2.35	1.23	2.52	1.44	$F = 19.13$, $p < 0.001$

[a] 1996 (N = 156); 1999 (N = 343). [b] ANOVA for time by interval-level data; χ^2 for time by nominal.

There was a significant increase in Internet access (see table 11.2) among the residents of Blacksburg from 1996 to 1999 with over 80 percent of the community reporting access to the Internet in 1999. Also, Patterson (2000) reports that among people with Internet access in Blacksburg, virtually all (98 percent) were aware of the Blacksburg Electronic Village presence as part of the Internet.

While there were not significant differences in community involve-ment and attachment between 1996 and 1999, there were significant

differences on associated measures of involvement and attachment, such as length of residence, home ownership, and number of times moved. Respondents in 1999 were more likely to have lived in the community longer, moved less frequently, and were more likely to own a home than respondents in 1996. While it is difficult to link these activities to use of the Internet, they do provide evidence that the residents of Blacksburg were more predisposed to community involvement and attachment in 1999 than in 1996. However, in 1999 respondents were less likely to attend a meeting of a civic organization and were less likely to belong to formal social organizations such as the PTA or the Lions Club. This lack of participation in social capital building activities should point to a decrease in overall community involvement and attachment, however, there were no differences over time. Perhaps the presence of the Internet and the BEV contributed to social capital formation in new ways?

Residents of Blacksburg were significantly more likely in 1999 to use the Internet to communicate with local family members, church members, and members of informal social groups (such as baby-sitting circles and sports clubs) than in 1996. And although not statistically significant, Internet use also increased for communicating among members of formal social groups (the PTA or service organizations like the Rotary) and with local friends. In the aggregate, while there were no appreciable differences in community involvement and attachment over time, there were significant differences in the use of the Internet for social capital and community building activities.

To investigate this pattern, we examined questions from the 1999 dataset about the length of time (in years) people had been users of the Internet. Table 11.3 presents the correlations between length of Internet use and community involvement, attachment, and social capital variables.

Again, the community involvement and attachment variables are not significantly associated with Internet use. However, the longer people are users of the Internet the more likely they are to use the Internet for a variety of social capital building activities (all but communication with local friends). We also took a cue from the Kohut findings about community involvement and Internet adoption patterns and asked: what is the relationship between community involvement and length of Internet use?

The more the community involvement, the greater the predisposition to use the Internet for social capital building activities (table 11.4). People who used the Internet to communicate with members of formal

Table 11.3 Pearson product moment correlations with length of time using the Internet, 1999

	Length of Internet use
Community involvement scale	0.041
Community attachment	0.051
Years in community	−0.032
No. of times moved	−0.059
No. of meetings a week	0.021
Use the Internet to communicate with . . .	
Local family	0.097
Non-local family	0.199**
Local friends	0.336***
Non-local friends	0.361***
Co-workers	0.410***
Church members	0.140*
Formal social groups	0.192***
Informal social groups	0.195***

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ (two-tailed).

Table 11.4 Pearson product moment correlations for Internet users, community involvement scale by Internet communication activities, 1996 and 1999 samples

	Community involvement scale	
	1996	1999
Community attachment	0.135	0.035
Years in community	0.156*	0.103*
No. of times moved	−0.107	−0.073
No. of meetings a week	0.145	0.248***
Use the Internet to communicate with . . .		
Local family	−0.077	0.236***
Non-local family	−0.039	0.139**
Local friends	−0.039	0.233***
Non-local friends	−0.158	0.138*
Co-workers	−0.012	0.095
Church members	0.061	0.198***
Formal social groups	0.334***	0.312***
Informal social groups	0.244**	0.328***

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ (one-tailed).

Table 11.5 Comparison of self-perception of change in involvement by time, 1996 and 1999 samples

Variable name	1996		1999		Significance Test
	Mean	SD	Mean	SD	
Involved with issues	2.36	0.55	2.26	0.57	n.s.
Connected with people	2.47	0.60	2.18	0.65	F = 16.06, p < 0.001
Involved with community	2.22	0.55	1.99	0.57	F = 13.54, P < 0.001
Attended meetings	1.99	0.47	1.91	0.44	n.s.

For the 1999 sample only:
Pearson product moment correlations between length of time using the Internet and self-perception of change in involvement

	Length of Internet use
Involved with issues	0.329***
Connected with people	0.301***
Involved with community	0.181**
Attended meetings	0.062

* p < 0.05; ** p < 0.01; *** p < 0.001 (two-tailed).

and informal social groups were highly involved in their communities. This trend strengthens in 1999: people who had high levels of community involvement used the Internet more for a variety of interpersonal and small-group communication activities.

These results suggest a strong relationship between community involvement and the use of the Internet for social capital building activities. Why then was there no increase in community involvement, attachment, or participation as the number of Internet users in the community increased? In both the 1996 and 1999 surveys respondents were asked whether "Since getting on the net do you think you have:

Become more, equally, or less involved with issues that interest you;
Become more, equally, or less connected with people like you;
Become more, equally, or less involved with the community; and
Attended more, equal, or fewer meetings of local groups."

Table 11.5 presents the means and standard deviations and comparison tests between the 1996 and 1999 groups. Significant differences in the means for self-perceptions of change in involvement (falling between 1996 and 1999) suggest that people feel they have become less involved and attached to the community since beginning to use the

Internet. However, the 1999 data reveal significant positive associations between the length of time people have been using the network and the extent to which they feel more involved and connected to their local communities (see also Quan-Haase and Wellman, chapter 10). The longer people used the network, the more likely they were to use the Internet for social capital building activities that lead to increased community attachment and involvement. One interpretation is that late adopters report equal or less sense of involvement in the local community and over time these late adopters may report a sense of increased involvement as a result of increasing use of the Internet for social capital building activities. Alternatively, the observed 'decreasing involvement' trend may persist among late adopters, despite Internet use over time, as Kohut (1999) suggests. Kohut finds that later adopters are less politically active and civic minded, and that they prefer commercial services such as entertainment and online games to political news and participation.

Discussion

Our general expectation was that over time, the residents of Blacksburg would report higher levels of community involvement and community attachment. Further, these higher levels of community involvement and attachment would be attributable in part to increasing use of the Internet and the local community computer network to facilitate the building of social capital within the community. Evidence from the Blacksburg case supports only the claim that the longer people have been connected to the Internet, the more likely they are to use the network to build social capital, and to increase involvement in local community and issues. One logical extension of this conclusion is that if social capital building activities occur in the community, involvement and attachment should increase and quality of life should improve.

What's not supported is an increasing proportion of the population becoming more involved in the local community. While participation in social groups decreased over time, community involvement and attachment remained unchanged. There are two potential explanations for this finding. First, Putnam (2000) directly confronts the role of the Blacksburg Electronic Village and other community computer networks in building social capital. His claim is that perhaps initiatives such as the BEV are an outcome of communities with already

high levels of social capital, community involvement, and community attachment. Specifically, "Experience in Blacksburg suggests that . . . social capital may turn out to be a prerequisite for, rather than a consequence of, effective computer-mediated communication" (Putnam, 2000, p. 177). These results offer Putnam justification for his claims about the relationship between the Internet and the processes of social capital formation.

Putnam has little hope for community computer networks in the building of social capital. It is a basic chicken or egg problem – which comes first the community computer network or high social capital? Community computer networks may just be a "voluntary organization" for the information society. Just as the Lions Club or the PTA served to build social networks and social trust during the last century, it is possible that community computer networks may serve as a modern functional alternative. Perhaps people spent less time involved in traditional face-to-face meetings and more time building the Blacksburg Electronic Village? The conclusion that community computer networks are more likely to succeed in communities with already high levels of social capital needs further research and testing. One means of answering this question would be to compare the Blacksburg experience to experiences in other communities with local computer networks.

There is another approach to explaining the Blacksburg data. It is based on the notion that there is a latent capacity for civic engagement in every community. The demands of modern life compete for people's time and attention. Nonetheless, many community members are interested in local issues, and are predisposed or 'poised' to be more active. They will become involved under certain circumstances (including, basic awareness, and more convenient access to information and communication). For individuals predisposed to become more involved, the Internet and associated community computer networks help to distribute information of interest more widely, more conveniently, and allow for efficient participation in discussion. Thus, the Internet capitalizes on existing social networks while at the same time it reaches people 'predisposed to be more active.' In so doing, it draws additional participants into discussions and decision making. This explanation hinges on the notion that it is easier to reach people on a listserv or via a website than it is to get them to attend a face-to-face meeting or event, or to circulate information widely or efficiently by telephone.

The demographic data show that these additional participants are not individuals who are traditionally disenfranchised or otherwise under-represented in civic and community life. These are individuals of higher social and economic status, with high demands for their time and attention. By reintroducing their voice and attention into community life, computer networking may be helping to restore some of the "eroded" social capital and civic engagement to which Putnam refers.

The significant differences in community involvement between early versus later adopters in the results from the Blacksburg data clearly support the Kohut finding that early adopters of the Internet are more politically interested and civic minded than later adopters. The media, including the Internet, contribute to the political communication process, according to Norris (2000), by a "virtuous circle" of ratcheting up and reinforcing the participation of interested individuals. Over time these people serve as opinion leaders in the diffusion process. The longer people use the community computer network and the Internet, the more they report feeling involved in the local community, feeling connected to people like themselves, and becoming involved with issues that interest them. Is this an "early adopter" phenomenon that will persist, such that even over time later adopters do not become more civic minded or involved in their community? Or is this a temporary lag – a passing phase – in what may be a trend toward increased involvement by the majority of the population (notably, later adopters) over time? In either case there is an overall rising trend in the use of the Internet for social networking and relations (that is, social capital building activities). Further, the longer people are on the Internet, the more likely they are to use the Internet to engage in these social capital building activities.

Perhaps the most encouraging finding about the role of the Internet and community computer networks revolves around evidence indicating that people will use the Internet for social capital building activities. Whether the community computer network is a new kind of voluntary association or an efficient way of extending traditional associations to new audiences, network users are engaging in communication with their community members. It is this talk or social capital building among community members that strengthens social networks and social trust, and helps lead to community involvement and higher quality of life. It would be interesting to explore the extent to which people take community building behaviors learned online

into offline community realities. Perhaps, as Turkle suggests, we are capable of existing in multiple realities and each of our realities can learn and benefit from experiences in the others. Learning to build social capital online may transfer to offline social capital building behaviors. There is every reason to believe that the Americans coming of age in the year 2010 will have the opportunities to learn social capital building communication behaviors and that the Internet, especially community computer networks, will play an important role in that process.

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