

**Social Capital and Community Electronic Networks:**

**For-Profit vs. For-Community Approaches**

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## **Abstract**

In this paper we discuss the implementation of a community electronic network in a rural Minnesota town. The network is intended to help the community keep up with global technological progress by increasing access to the Internet. Our project compares this community approach to electronic networks with an economic, for-profit approach utilized in a non-equivalent control community. Drawing on the theory of social capital, we consider the relative impacts of privately-oriented social engagement versus publicly-oriented political engagement in relation to collective outcomes. Our findings to date show that in the presence of a broadly-based community electronic network, political as well as economic resources are linked to the use and knowledge of computer resources. The implications of these findings for larger issues of fair and equitable access to technology are discussed.

## **Introduction**

The number of people using the Internet has risen dramatically in recent years. Surveys show that the percentage of Americans going online has tripled recently, from 14 percent in 1995 to 42 percent in 1998 (Pew Research Center, 1999), and continues to rise rapidly. With this increase in the use of computer mediated information-gathering and communication via e-mail, virtual “chat rooms,” and real-time electronic “instant messaging,” questions about the import and impact of this technological revolution on our society have taken on new urgency.

There is significant concern about the extension of existing socioeconomic disadvantages to the realm of new technologies. Research has thus focused attention on disparities in access and the creation of new classes of information haves and have-nots (Wresch, 1996; Shields, 1998). A 1999 report prepared by the National Telecommunications and Information Administration (NTIA) in cooperation with the Census Bureau found that although overall rates of computer and modem ownership in American households have greatly increased since 1994, disparities between the most and least advantaged groups are also increasing (NTIA, 1999). Since 1994, the gap in computer and modem ownership levels has widened between higher income and lower income households, and between racial groups. Furthermore, those with a college education were nearly six times more likely to own a computer than those with less than a high school education (68.7% vs. 11.8%), and more than ten times as likely to have internet and e-mail access (48.9% vs. 4.7%) (NTIA, 1999). The rural poor and rural and central city minorities are among the least connected, however, trailing far behind national averages in both computer and modem penetration. Rural communities that lag behind their urban and suburban counterparts in areas such as economic growth, access to healthcare, and educational opportunities are therefore

justifiably anxious to avoid falling further behind as new technologies leave them on the disadvantaged side of the “digital divide”.

These recent developments have led to a proliferation of unanswered questions about the role of new information technologies. Will access to new technologies continue to be differentially distributed in terms of income, education, race, age, and gender? Will this ongoing revolution exacerbate existing economic and political differences between those who have benefited the most from the economy of the 1980s and 1990s, and those who have been left behind? Or, alternatively, can a means of communication that spans geographic, economic, and ethnic boundaries begin to attenuate these inequities? Can access to the Internet and electronic communication provide new educational, economic, and political opportunities to individuals who have been disadvantaged in the past? And, finally, will some approaches to providing access to the Internet and other technologies exacerbate the digital divide while others ameliorate it?

A related question is whether the growth of new forms of communication can serve to increase levels of social capital within communities, or whether it will deepen existing social divisions and serve to create new ones. Just as certain types of individuals have been left behind thus far by the revolution in electronic communications, so also have certain types of communities fallen further behind. In particular, rural, isolated communities have continued to experience a “brain drain” of their most skilled and talented youth to urban areas, and many of them are seeking new ways to enhance the quality of life and job opportunities in a quest to remain vital and to provide viable alternatives to sprawling, urban communities (Blandin Foundation, 2000). And, as noted above, these communities are in danger of dropping even further behind as society moves more deeply into the electronic revolution. Just as questions abound regarding the demographic and ethnographic “digital divide” among individuals there are

questions about the impact of these new developments on different types of communities. For example, will rural, isolated communities be helped by the development of the Internet, or will their decline be exacerbated by it? There are arguments to support either scenario. For example, since the communications revolution increasingly frees us from limitations imposed by location by allowing for telecommuting, it may lead ultimately to greater opportunity for higher end jobs to be located in isolated communities. Alternatively, it may enhance the mobility of talented youth to urban centers since they can now develop the skills necessary for these newer, high paying jobs. Young people in isolated, rural communities may find a growing differential between their economic and life-style potential in their small community compared to the regional urban centers closest to them.

However, another alternative—and the one considered here—is that some small communities might thrive while others flounder, largely as a consequence of the different strategies they adopt for dealing with the electronic communications revolution. To consider this possibility, we discuss recent work on the development, and consequences, of social capital. First, however, we describe the development of community electronic networks, and introduce our theoretical framework.

### **Description of the Problem**

A number of rural communities have begun searching for collective solutions to their information technology needs over the past decade. One popular approach has been the community electronic network. Such a network may provide any number of services including electronic access to government employees and information, community-oriented discussions, electronic mail, electronic bulletin boards, community organization information, and access to the Internet. Ideally, community electronic networks may also seek to fulfill a number of civic

goals including community cohesion, informed citizenship, access to education and training, and public participation (Anderson, Bikson, Law & Mitchell, 1995; Schuler, 1994). Given the present concern over an apparent decline in social capital in American society in recent decades (Putnam, 1995a, 1995b, 2000), and the concurrent decrease in political participation, especially voting (Rosenstone & Hansen, 1993), community electronic networks may present a technological solution to the problems of civic and political non-involvement. Whether these goals of community building and increased political engagement are realized, and the degree of their success, remain to be determined through careful empirical study.

In this paper we discuss the question of what individual-level resources can facilitate the development of a community-wide approach to an electronic network project. We also consider the potential of different community-level approaches to technology diffusion for reducing the digital divide. Our focus will be on the “individual within the community” rather than on communities as aggregations. Our conceptual approach involves a model built around three types of individual resources: economic, political, and social. Using this framework, we examine the impact of these different types of resources within two rural Minnesota communities, one with an emerging community-based electronic network and one with a network that lacks the community-building aspect. Building on analyses conducted in earlier phases of this project, we hypothesize that political resources, including psychological and behavioral engagement with the political process, and civic involvement in the life of the community, can play a crucial role in determining which individuals are open to the development of, and participation in, a community-based network (Sullivan, Borgida, Jackson, & Riedel, 2000; Riedel, Dresel, Wagoner, Sullivan, & Borgida, 1998). In our longer term project, we hope to shed light on the question of whether cities and towns that create community electronic networks develop greater

levels of social and political capital over the long run than do cities and towns that restrict themselves to market-driven approaches to electronic networking, based on economic competition. Ultimately, higher levels of social and political capital may provide the wherewithal to reverse the brain drain from isolated, rural communities and may enhance the quality of life for all residents, including young people.

### **The Importance of Social and Political Capital**

Social capital is defined as the norms and social relations embedded in the social structure of societies that enable people to coordinate action to achieve desired goals (World Bank, 2000). It is described as a feature that communities possess to varying degrees, with the key elements being social trust and civic engagement (Coleman, 1988, 1990; Putnam, 1993). Coleman (1988) described the concept in dynamic terms, as “inher[ing] in the structure of relations between actors and among actors” (1988, S98). Social trust can thus be viewed as the individual-level internalization of norms of reciprocity, which facilitates collective action by allowing people to take risks and to trust that fellow citizens will not take advantage of them. Civic engagement, most often measured by membership in voluntary associations, is an indicator of the social networks that facilitate face-to-face interaction and serve to disseminate information and promote cooperation among community members. Together, the presence of these elements of trust and participation creates a “civic community” that is best able to address public issues collectively, as a community of citizens rather than a collection of private individuals.

Robert Putnam (1993, 1995a, 1995b, 2000) argued for the political importance of social capital and sparked an ongoing debate over the character and nature of its role in collective outcomes (Booth & Richard, 1998; Foley & Edwards, 1996, 1997; Fuchs, Minnite & Shapiro, 1999; Levi, 1996; Schneider, Teske & Marshall, 1997; Skocpol, 1996; Tarrow, 1996). Social

capital has been credited with facilitating a number of positive social and political results including lower high school dropout rates (Coleman, 1988); improved public health (Kawachi, Kennedy, Lochner & Prothrow-Stith, 1997); increased voter turnout (Knack & Kropf, 1998); greater institutional responsiveness, and even the success of democracy itself (Putnam, 1993).

The privileged role accorded to voluntary civic associations in the social capital framework has been questioned for its exclusion of organizations engaged in direct political action, such as political parties, interest groups, or social movements (Booth & Richard, 1998; Foley & Edwards, 1996, 1997; Fuchs et al., 1999; Levi, 1996; Minkoff, 1997; Skocpol, 1996). More recently, a separate construct termed “political capital” has been proposed, to acknowledge the fundamental political core of the more general concept (Booth & Richard, 1998; Fuchs et al., 1999). Researchers studying democratization in Central America (Booth & Richard, 1998) and political participation in America’s urban centers (Fuchs et al., 1999) have examined the influence of political engagement as separate and distinct from non-political civic involvement, and found that political capital has significant explanatory value apart from social capital. La Due Lake and Huckfeldt (1998) have also demonstrated the usefulness of separating “politically relevant social capital” from a more general concept of social capital. They showed how “political capital,” measured by the political intensity of one’s social network, makes an independent and stronger contribution to political participation than general organizational memberships.

We adopt the view that political engagement is distinct from social engagement, and that it is distinctly important in its own right. More specifically, we argue that political engagement is made up of both psychological attention in the form of political interest, knowledge, and efficacy, and expressed political behavior such as voting or contacting public officials. Civic

memberships, while sometimes more politically relevant and sometimes less, similarly represent a form of engagement with public life and are therefore a type of political behavior in our framework. Private sociability, defined as the time spent talking to friends and relatives, attending social gatherings, and engaging in recreational activities with others, is an indicator of social, but not political, resources. Our political resources construct thus includes many of the same variables that have been used as measures of social capital in previous empirical work, such as civic memberships and political knowledge. However, we partial out the more privately oriented elements that we term sociability, into a separate construct labeled social resources. In this way, we are able to consider the separate impacts of these resources on outcomes in the two communities under investigation. In our model, we thus rely on the constructs of economic, social, and political resources rather than economic, social, and political capital. Our focus is on the impact of the different types of resources available to individuals on whether and how various technologies are used. Our theory leads us to expect, for example, that individuals who engage in civic activities are likely to develop higher levels of personal political capital than those who engage in private social activities, and eventually, communities characterized by high levels of the former will develop greater levels of political capital than will communities characterized solely by high levels of private social interaction.

### **Social Capital, Political Capital and Community Electronic Networks**

Community electronic networks are intended to provide greater access to both the Internet and electronic communication tools that can be utilized on a much broader basis than traditional types of communication. Consequently, the question of whether electronic media help or hinder the development of social capital and civic communities has drawn much recent attention. Concerned that face-to-face interaction may be essential to the development of social

trust, Putnam (1995a) asked, “What will be the impact, for example, of electronic networks on social capital? My hunch is that meeting in an electronic forum is not the equivalent of meeting in a bowling alley--or even in a saloon--but hard empirical research is needed” (p. 76).

Much of the research to date applying the concept of social capital to community electronic networks has been focused on the question of whether on-line relationships and virtual communities provide the conditions necessary to further the growth of social capital (Calabrese & Borchert, 1996; Kling, 1996; Wellman, Salaff, Dimitrova, Garton, Gulia & Haythornthwaite, 1996). The causal arrow is assumed to point from the network to social capital. Blanchard and Horan (1998) argue, however, that whether computer-mediated communication increases social capital depends on whether virtual communities develop around physically-based communities where face-to-face ties have already been established. Fukuyama (1995) claims in a similar vein that, “Societies where computer networking will really take off are the ones in which technology can ride on top of existing social networks” (80). Thus, the potential role of an electronic network appears to derive at least in part from the social structures already present in a community that enable diverse entities within the community to cooperate rather than compete to achieve a common goal.

Although empirical work on the demographic and political correlates of computer use and electronic network initiation is more limited than theoretical inquiries on computer-mediated communication, research from several domains provides support for Fukuyama’s (1995) proposition. Organizational studies, for example, imply that the implementation and success of computer networks rest on social networks and culture already in place (Ashburner, 1990; Kanungo, 1997; Pickering & King, 1995; Rubinyi, 1989; Sankar, 1988). Furthermore, the role of local institutions appears to be important in both the construction and design of community

electronic networks (Guthrie & Dutton, 1992). One of the best-known networks is the Blacksburg Electronic Village (BEV), serving Montgomery County, Virginia. It began in 1993 through the efforts of three major partners, Bell Atlantic, Virginia Tech University, and the town of Blacksburg, with the early addition of the public school system. Most of its users have ties to the university, though other public access sites, such as the Montgomery Public Library, attract unaffiliated Internet users. Huff and Syrcek (1997) state that both the local media and “word-of-mouth” strongly influenced the spread of information about BEV. Since its inception, computer use has increased in Blacksburg, with a substantial majority of residents (86%) now connected to the Internet and using e-mail to communicate with each other (Kavanaugh & Cohill, 2000).

The structure of the Blacksburg Electronic Village suggests a strong civic foundation, which is supported by research findings. For example, Kavanaugh & Cohill (2000) report that in a 1996 random sample telephone survey of local area residents, there was a positive correlation between civic involvement and Internet use, and in a 1999 follow up survey, 22% of respondents reported increased community involvement since they started using the Internet. Kavanaugh & Cohill (2000) also report evidence from cross-sectional mail surveys that suggest a high percentage of respondents expect the Internet to prove helpful with civic affairs and social relations.

Another well-known community electronic network is Santa Monica’s Public Electronic Network (PEN), which began in 1989 with goals of furthering public access to the Internet, facilitating a sense of community within Santa Monica, and increasing access to city services. PEN was initially driven by the liberal city council, resulting in a high number of public access sites in city libraries, senior citizens’ centers, recreation centers, neighborhood support centers, and other public buildings. Rogers, Collins-Jarvis and Schmitz (1994), in a comparison study of

PEN registrants and the general population of Santa Monica, found that registrants were predominantly male, highly educated, and exhibited higher levels of political interest and local political activity than the general population. At the same time, they argued, the strong emphasis on public access sites allowed normally disenfranchised groups to engage in collective political activity initiated through e-mail conferences. One such example is the formation of a local political action group by homeless and homeless' advocates, through initial on-line conferences.

An intriguing question is why some communities have begun developing community-based electronic networks, while others are relying on an approach primarily grounded in economic development and the free market, and still others have done little if anything at the community level to develop an electronic network. One hypothesis is that communities that are rich in social capital see this as a good way to draw citizens into a more active involvement in their communities. They are likely to have the desire and the wherewithal to develop an approach to electronic networking that attempts to involve the entire community and that is not based primarily on the ability to buy into the new infrastructure.

Another intriguing question focuses on the consequences for the development of future social capital of these differing approaches to community electronic networks. A related hypothesis is that communities that invest in a community-wide approach to networking are more likely to develop, in the future, a greater storehouse of social and political capital than will communities that focus more exclusively on promoting economic development, and that they may be the most successful at mitigating the evolving digital divide. These communities tend to provide deeper outreach into the community, including computer training that may be free rather than costly, and they may assist specific groups that a market approach may ignore, such as senior citizens or the poor. In addition, by instituting a community-oriented project, the local

elites send the message to citizens that this is something important that requires their attention and effort. Finally, to state the obvious, the presence of a community-wide approach allows easy access for citizens who may be high in social or political capital but who may lack personal economic resources. It provides the context for variation in individual levels of social and political capital to be consequential in shaping access to electronic communications.

### **The Current Project: Purpose and Design**

One of our long-term interests is in the relationship between social capital and community electronic networks from the perspective of how existing social and political resources may contribute to the initiation and maintenance of such networks. Specifically, what are the relative impacts of different types of community resources in facilitating and sustaining widespread participation in the sort of civic project that a community electronic network represents? How do these resources work separately and in combination with each other to achieve collective outcomes? A second long-term interest is the question of how evolving community electronic networks not only build on existing stores of social capital, but also shape and create new levels of social capital to build for the future. In other words, if existing communities take different paths---say, community-based vs. more narrowly economic---to the electronic future, will these differences exacerbate, diminish, or not affect existing differences in social capital? These questions are beyond the scope of the present paper, requiring data collection over a longer period of time. Once community networks have been studied longitudinally, we can address the longer-term questions of how differences in the ways communities approach networking may both reflect and create differences in the social and political capital available to communities. Before such questions can be addressed, however, it is crucial to identify the roles of economic, political, and social resources in developing community

electronic networks. This can help to provide an understanding of whether, in localities that emphasize a public and community-wide approach to networking, there is a greater potential to diminish the digital divide and to develop longer-term reserves of social and political capital. We may then be able to identify pathways to enhancing rural communities' ability to remain vital and to retain their human capital.

Consequently, in our research thus far, we have studied individual differences in economic, social, and political resources in relationship to technology ownership and computer use in two rural Minnesota towns, one with an emerging community electronic network (Grand Rapids) and one with a more purely market-based approach to community access (Detroit Lakes). Grand Rapids, Minnesota was one of the first communities in the state to develop a community electronic network. In Minnesota, there are significant differences between the Twin Cities metropolitan area and rural cities and towns such as Grand Rapids, which is located in the north-central area of the state, with a population of 8,400. In 1995 community leaders initiated the GrandNet community electronic network project to address concerns about falling behind the new technologies developing in the metro area and keeping young people and businesses in Grand Rapids. A partnership was formed among the local public school district, community college, public library, economic development corporation, and county health and human services agency. The GrandNet project was initially funded by grants received from the locally-based Blandin Foundation, and the Telecommunications and Information Infrastructure Assistance Program (TIIAP) of the U.S. Department of Commerce. The project's goals were consistent with several of TIIAP's aims such as building a telecommunications infrastructure in their rural community to keep up with new technologies, increasing computer and Internet access to citizens, and reducing the "digital divide."

To facilitate the long-term study of the effects of GrandNet on the community of Grand Rapids, we identified a similar Minnesota community to serve as a non-equivalent control group. We did so on the basis of a cluster analysis of demographic and social factors. The city of Detroit Lakes proved to be a close statistical match to Grand Rapids in terms of demographics and other relevant variables.<sup>1</sup> Detroit Lakes is not devoid of computer network technology, but, importantly for our purposes, the networks being developed were not initiated by a community-based partnership or by community agencies with the express purpose of providing a community-wide service. By contrast with the city of Grand Rapids, the approach to networking in Detroit Lakes has been driven by an entrepreneurial approach in which various networking enterprises in the community compete to establish a dominant market share. The cooperative social networking that gave rise to a multi-group partnership in Grand Rapids was not present in the Detroit Lakes community. As such, Detroit Lakes represented an ideal comparison for Grand Rapids in assessing the roles of community resources in the development of a community electronic network.

Our data set allows us to investigate the influence of different types of individual resources on citizens' attitudes toward computers, their computer expertise and level of support for the social uses of computers, and actual computer use. One of our underlying assumptions is that individual levels of pre-existing resources determine how many and which types of individuals in a community are predisposed to participate in a community-wide electronic initiative. Thus we expect that, in Grand Rapids, citizens who have more economic and political resources will be more likely to have access to, knowledge about, and support for the use of computers in individual and community affairs. Since this is a community project, individuals who lack economic resources can become aware of, and gain access to this project as a general

consequence of their knowledge of and involvement in community and political affairs. This is not the case in Detroit Lakes, the comparison community. In Detroit Lakes, individuals with economic resources can purchase privately what is provided publicly in Grand Rapids, but their level of political resources will not provide the sort of easy access that GrandNet provides in Grand Rapids. In this way, taking a broader, community-wide approach to networking has the potential to enhance community involvement and to provide a more egalitarian base for the continuing development of social and political capital.

After assessing the role of different types of resources in preparing individuals in the community to accept and participate in the electronic revolution, we then focus more closely on the determinants of community members' awareness of and support for the GrandNet network in Grand Rapids. Finally, we discuss the implications of our findings for understanding the special role of political resources in facilitating collective outcomes.

One goal of our analysis was to assess the importance of economic, social, and political resources in facilitating participation in an electronic community network. Our method involved a comparative analysis of individuals who live in a community with a broad-based community electronic network to those who live in a community lacking a comparable civic project.

We measured variables designed to represent three broad sets of constructs: the types of resources available to individuals within each community; individuals' access to evolving technologies, particularly microcomputers and the Internet; and, finally, individuals' actual use, understanding, and evaluation of these technologies. Conceptually, our model assumes that these different types of resources affect access, use, understanding, and evaluations of evolving technologies. Broadly speaking, our expectations were that economic resources would have these effects in both communities. In Grand Rapids, however, we expected that existing differences in

social and political resources would have powerful effects on attitudes toward and participation in the information technology revolution. In other words, “build it and they will come”— but they will come not randomly, but systematically, according to their level of social and political resources. Lacking such a community-wide effort, the attitudes and behaviors of citizens in the comparison community of Detroit Lakes will be primarily shaped by their economic situation, not by social and political resources.

In the second stage of our analysis, in Grand Rapids only, we assessed awareness, use and evaluation of the GrandNet community network. We expected that knowledge of, and participation in, the GrandNet project is an extension of existing individual differences in attitudes and behavior that reflect differential access to economic, social, and political resources. In other words, citizens’ posture toward the GrandNet project will reflect their attitudes and behavior toward the community and toward technology in general.

### **Sample**

In the fall of 1997, we conducted a mail survey of 2,000 residents to collect baseline data in Grand Rapids and Detroit Lakes. The survey covered attitudes toward computer use, technology ownership, attitudes toward the community, political engagement (interest, knowledge, efficacy, participation), membership in civic organizations, social attitudes (alienation, interpersonal trust), sociability, as well as various demographic indicators. The response rate was slightly above 40 percent for each community.

### **Measures of Resources**

The first set of constructs---economic, political and social resources---was measured in a fairly straightforward way. *Economic resources* play an important role in shaping access to and participation in the electronic revolution currently underway. Our measures of economic

resources included education level, family income, subjective social class, and employment status. *Political resources* consisted of a number of items measuring respondents' psychological engagement with public life. Scales measured political knowledge (Delli Carpini and Keeter, 1996), and political interest, political efficacy, alienation, and interpersonal trust, all drawn from the General Social Survey (GSS). In addition to political resources, we included measures of *political behavior*, such as membership in civic organizations and acts of political participation (voting, contacting public officials, working on local or national problems). We thus measured both psychological engagement in politics and behavioral manifestations of that engagement. The construct of *social resources* was measured by reports of private social interaction, including frequency of spending time with and talking on the telephone to both friends and relatives, as well as the frequency of attending social gatherings and meeting new people.

Overall, then, we examined models to compare the roles of economic, social and political resources, as well as actual political behavior. Our theoretical orientation led us to anticipate that there would be significant differences between citizens in the two communities in the roles that social and political resources, and political behavior, play in affecting whether and how citizens participated in the electronic revolution.

### **Measures of Technology Access, Use and Attitudes**

Our theory assumes that individuals' access to various types of resources will determine whether and how they gain access to computers and other manifestations of modern technology. This access also shapes how individuals use these technologies, as well as their attitudes toward the larger social and political meanings of the new technologies. Individuals who own computers and/or use them on a daily basis through their employment are likely to have different attitudes towards computers than those who do not. Our interest is in whether and how individuals in

these communities use the newer technologies, their attitudes toward these technologies, and their social vision for the electronic revolution. We expect that differences in economic resources will drive both access and attitudes in the control community, while individual differences in social and political resources will also have these effects in Grand Rapids.

To assess the roles of various types of resources in shaping use and attitudes toward technology, we developed measures of technology ownership, computer use, computer training, degree of personal comfort with computers and belief in the social value (or lack thereof) of computers. The construct of *technology ownership* was measured by asking about ownership and plans to buy a home computer, Internet/modem connection, fax machine, and cell phone. The construct of *computer use* included questions about home computer use, work-related computer use, public computer use (e.g. public library), and Internet computer use. *Computer training* included questions asking about training in word-processing, database use, Internet use, spreadsheet use, and electronic mail.

The two constructs of *computer comfort* and *computer social value* were based on a combination of items from previously published computer attitude scales. These include a computer attitude scale developed by Pinto and Nickell (1987), Coover and Delcourt's (1992) Adult-Attitudes Toward Computers Survey (ATC), and Popovich, Hyde, Zakrajsek, and Blumer's (1987) Attitudes Toward Computer Usage Scale (ATCUS).

### **Measures of Participation In and Attitudes Toward GrandNet (Grand Rapids Only)**

Two constructs representing *awareness* of GrandNet's presence in the community and *support for* GrandNet were included. GrandNet awareness was a function of three indicators that asked whether the respondent had used GrandNet, heard of GrandNet, or heard others talk about

GrandNet. Support for GrandNet was based on 10 statements of possible effects that GrandNet could have on the community.

## **Results**

Political resources (cognitive and affective engagement in politics) should influence computer use and computer attitudes at least in part through their impact on actual political behavior. Citizens with greater levels of political knowledge, political efficacy, political interest and so on are the citizens who would be most likely to engage in direct political participation. The effect of political behavior, in turn, on computer use and attitudes, is expected to be different in each community. In the presence of a community electronic network like GrandNet, political behavior should have an impact on computer use because individuals who attend community meetings will be more likely to learn about the project and also be more likely to become interested in the personal and social uses of computers. We therefore expected that citizens who are more knowledgeable about, and active in, the community would be more knowledgeable about, and more likely to participate in, the communications technology available to them. In the absence of such an established community network in Detroit Lakes, differences in political knowledge, involvement and behavior are unlikely to lead to differences in computer attitudes and sophistication, apart from existing differences in economic circumstances.

Unlike measures of political resources, measures of social resources do not determine whether the individual or the individual's friends and family are involved in the public sphere or discuss public issues. If the individual's social circle is closed off from the public sphere, social interaction will not promote awareness of or support for a community computer network, or even private access to and knowledge of computers. We expected, therefore, that private sociability would bear less relationship than political resources to either technology ownership or computer

use, even in communities with public community-wide electronic networks such as Grand Rapids.

We expected the relationship of economic resources to technology ownership and computer use to be similar in the two communities. These relationships are determined in large part by market forces that operate similarly across the country, particularly in geographically and demographically close communities. On the other hand, because of the GrandNet project and its public dimension, we expected that the effects of political resources on political behavior, community attitudes, computer use and computer attitudes would be much stronger in Grand Rapids than in Detroit Lakes.

As a result of these considerations, we used multi-group LISREL analyses to compare the two communities. We allowed most parameters to differ between the two communities, although we did constrain to equality the parameters that represent the impact of economic resources on technology ownership, and of ownership on computer use. This model best represents the theory presented earlier in this article, which assumes that the role of money in providing ownership, and the role of ownership in facilitating use, is invariant.<sup>2</sup> The impact of economic resources on technology ownership proved to be very strong (.96)<sup>3</sup> in both communities. Technology ownership in turn also had a strong effect on computer use in both Grand Rapids and Detroit Lakes (.51). Regardless of whether one lived in a community with an electronic community project, if citizens had access to financial resources, they were far more likely to own the technology; and if they owned it, they used it.

Differences in the utilization of economic and political resources were most pronounced when examining the predictors of computer use.<sup>4</sup> Among Grand Rapids residents, computer use was explained by reference to political behavior (.52),<sup>5</sup> while economic resources had little effect

(.21, *ns*) except indirectly through technology ownership. Strikingly, among residents of Detroit Lakes, the pattern was reversed. Economic resources were a very powerful predictor of computer use, both directly (.97) and indirectly through technology ownership, while political behavior had no significant impact (-.27, *ns*), direct or indirect. Thus in these two communities there were profound differences in the role of political resources and behavior in providing access to computer use. In both communities, political resources had a strong and significant impact on political behavior, but only in Grand Rapids did engaging in political behavior have a significant (and positive) impact on computer use. Thus in Grand Rapids, access to and use of computers could be gained not only through the expenditure of available personal economic resources, but also by possessing political resources through community political activity.

Finally, social resources of a purely private nature had little impact on either technology ownership (essentially 0) or computer use (-.11 in Grand Rapids and .16 in Detroit Lakes). In this analysis, then, economic resources matter for personal ownership of technology in both communities; they also matter for access to computer use in Detroit Lakes but not Grand Rapids, where political resources and political behavior matter more. Social resources matter little in either community. The results thus support the argument that the political variant of social capital has differential effects, in the predicted direction, within the two communities. In particular, where enhancing overall computer resources is a broad-based civic endeavor, political behavior has a significant relationship to computer use. Where computer resources are left mainly to the marketplace, economic resources dominate in explaining computer use.

### **Support and Use of an Electronic Community Network (GrandNet)**

In the previous analysis, we demonstrated how political capital, measured as political resources and behavior, was linked to computer use and ultimately to computer attitudes within

Grand Rapids but not in Detroit Lakes. Next, we examined whether knowledge and support of an electronic community network are affected by the individual-level resources identified earlier. Since the GrandNet electronic community network was a civic project, we expected that political resources and political behavior would enhance knowledge of and support for GrandNet.

It turns out that awareness of the electronic community network is a function of political behavior (1.34), hence indirectly of political resources. In fact, the effects of political behavior on awareness of GrandNet are more than twice as strong as those of personal computer comfort (.58), providing strong evidence that this community electronic network project was indeed part and parcel of more general civic awareness and involvement in the community. Positive evaluations of the GrandNet project are a result of both assessments of the social value of computers (.61) and political behavior (.27). By contrast, social resources had no significant direct or indirect effects on awareness and evaluation of GrandNet, and the effects of economic resources were also nil.

Overall, political capital, in the form of political resources and behavior, reverberates throughout our model, with direct and indirect effects on knowledge of and support for an actual community electronic network. Political resources operate through political behavior to affect computer comfort and computer social value, which in turn enhances knowledge and support of GrandNet. Some of the strongest effects of political resources, however, are those that operate through the intervening variable of political behavior, which in turn predicts knowledge and support of GrandNet. In contrast to the public nature of political resources and behavior, privately-oriented sociability has no significant effects in the GrandNet model.

### **Discussion and Implications**

What conditions and resources facilitate the development of a community electronic network project and contribute to its success? Can such a project serve to mitigate the “digital divide” that has evolved in most American communities? The initial scientific goal of our research project was to begin to address these questions by systematically examining the roles of economic, political, and social resources in developing support for and use of a community electronic network in a rural Minnesota community. There has been considerable academic and policy interest in the impact of such community electronic networks and, in particular, whether they enhance economic and political equality, increase community cohesion, contribute to a more informed citizenry, and increase public participation. Our results indicate that these networks have the potential to affect the digital divide. To test this further, in the fall of 1999, we conducted an additional survey and discovered that the income and education gap in computer use had disappeared in Grand Rapids but not in Detroit Lakes, adding strong support to our conclusions (Gangl, Oxendine, Jackson, Riedel, Sullivan, and Borgida, 2000).

Our hypothesis that pre-existing *political* resources in a community play an influential role in determining whether such community networks can be effective was confirmed. Differences between political and economic resources were highlighted when examining computer use in Grand Rapids, with its community-based electronic network, and in the comparison community of Detroit Lakes. As expected, we found that these two communities were clearly different in the extent to which political resources had a direct and significant impact on computer access and use. Only in Grand Rapids did we find that engaging in political behavior had a significant and positive impact on computer use; in Detroit Lakes, by contrast, economic resources were a significant predictor of computer use, directly and indirectly through technology ownership, but political behavior had no significant impact.

Taken together, these findings strongly affirm the importance of our theoretical distinction between public-oriented political engagement and private-oriented sociability. It is the political variant of social capital, and not the purely social variant (i.e., private sociability), that is significantly linked to different patterns of computer use effects in the two communities. While not incompatible with Fukuyama's (1995) arguments, the findings from the present study suggest that extant political resources and infrastructure in a community may be more critical to the development and growth of community electronic networks than social networking per se. Perhaps even more important than the level of preexisting political resources in a community is that the most politically knowledgeable and active citizens in the community also have a commitment to support community-wide civic projects. Local civic and political leaders recognize this commitment and hence can create projects like a community electronic network. In communities in which the politically active citizens are no more supportive of such projects than the politically apathetic citizens are, political and civic leaders have little to build on. Hence the likelihood is that in the latter community, market forces will drive the development of any number of projects, including electronic networks. When that happens, it is unlikely that the insidious effects of the digital divide will be mitigated.

Obviously, community electronic networks have the potential to be an effective solution to the digital divide dilemma, at least in rural communities. The potential problem is that it may not be possible to transport the Grand Rapids model to another city because of the role of spontaneous cooperation that stemmed from an already-existing stock of political capital. To assess this, we are currently tracing the histories of the two towns to analyze long-term developmental differences in political capital and civic organizations, trying to pinpoint what gives rise to the level of political capital needed to trigger spontaneous cooperation to solve

collective action dilemmas. Even if it is not possible to transport the community electronic network in its entirety, our research suggests that partial efforts such as providing free public access centers and community training sessions could be of some help in managing the digital divide.

## Authors' Notes

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## References

- Anderson, R. H., Bikson, T. K., Law, S. A., & Mitchell, B. M. (1995). *Universal Access to E-Mail: Feasibility and Societal Implications*. (Rand Report MR-650-MF). Santa Monica, CA: RAND Corporation.
- Ashburner, L. (1990). Impact of Technological and Organizational Change. *Personnel Review*, 19, 16-20.
- Blanchard, A., & Horan, T. (1998). Virtual Communities and Social Capital. *Social Science Computer Review*, 16, 293-307.
- Blandin Foundation. (2000). *2000 Rural Minnesota Pulse*. [On-line] Available: <http://www.blandinfoundation.org/new/ruralpulse.htm>.
- Booth, J., & Richard, P.B. (1998). Civil Society, Political Capital, and Democratization in Central America. *Journal of Politics*, 60, 780-800.
- Calabrese, A., & Borchert, M. (1996). Prospects for Electronic Democracy in the United States: Rethinking Communications and Social Policy. *Media, Culture, and Society*, 18, 249-268.
- Coleman, J. S. (1988). Social Capital in the Creation of Human Capital. *American Journal of Sociology*, 94, 95-120.
- Delli Carpini, M. X., & Keeter, S. (1996). *What Americans Know About Politics and Why it Matters*. New Haven, CT: Yale University Press.
- Foley, M. W., & Edwards, B. (1996). The Paradox of Civil Society. *Journal of Democracy*, 7, 38-52.
- Foley, M. W., & Edwards, B. (1997). Escape From Politics? Social Theory and the Social Capital Debate. *American Behavioral Scientist*, 40, 550-561.

- Fuchs, E. R., Minnite, L. C., & Shapiro, R. Y. (April, 1999). *Political Capital and Political Participation*. Paper presented at the 57th Annual Meeting of the Midwest Political Science Association, Chicago.
- Fukuyama, F. (1995, December 4). Now listen, Net freaks, It's Not Who You Know, But Who You Trust. *Forbes ASAP*.
- Gangl, A., Oxendine, A., Jackson, M., Riedel, E., Sullivan, J., & Borgida, E. (July, 2000). *The Role of Community Electronic Networks in Bridging the Digital Divide*. Paper presented at the 23<sup>rd</sup> Annual Meeting of the International Society of Political Psychology, Seattle.
- Guthrie, K. K., & Dutton, W. H. (1992). The Politics of Citizen Access Technology: The Development of Public Information Utilities in Four Cities. *Policy Studies Journal*, 20, 574-597.
- Huff, S. W., & Syrczek, B. (1997). Town Government in Cyberspace. In Andrew Michael Cohill and Andrea L. Kavanaugh (Eds.), *Community Networks: Lessons from Blacksburg, Virginia* (pp. 73-87). Boston: Artech House.
- Kanungo, S. (1997). An Empirical Study of Organizational Culture and Network-Based Computer Use. *Computers in Human Behavior*, 14, 79-91.
- Kavanaugh, A. L., & Cohill, A. M. (2000). *Use and Impact of Community Networking in Blacksburg Electronic Village*. Virginia Polytechnic Institute and State University. [Online] Available: <http://www.bev.net/research/index.html>.
- Kawachi, I., Kennedy, B. P., Lochner, K., & Prothrow-Stith, D. (1997). Social Capital, Income Inequality, and Mortality. *American Journal of Public Health*, 87, 1491-1498.

- Kling, R. (1996). Synergies and Competition Between Life in Cyberspace and Face-to-face Communities. *Social Science Computer Review*, 14, 50-54.
- Knack, S., & Kropf, M.E. (1998). For Shame! The Effect of Community Cooperative Context on the Probability of Voting. *Political Psychology*, 19, 585-600.
- La Due Lake, R., & Huckfeldt, R. (1998). Social Capital, Social Networks, and Political Participation. *Political Psychology*, 19, 567-584.
- Levi, M. (1996). Social and Unsocial Capital: A Review Essay of Robert Putnam's *Making Democracy Work*. *Politics & Society*, 24, 45-55.
- Minkoff, D. C. (1997). Producing Social Capital: National Social Movements and Civil Society. *American Behavioral Scientist*, 40, 606-619.
- National Communications and Information Administration (NTIA). (1999). *Falling Through the Net: Defining the Digital Divide—A Report on the Telecommunications and Information Technology Gap in America*. [On-line] Available: <http://www.ntia.doc.gov/ntiahome/digitaldivide/>.
- Pew Research Center for The People and The Press. (1999). *The Internet News Audience Goes Ordinary*. [On-line] Available: <http://www.people-press.org/tech98sum.htm>.
- Pickering, J. M., & King, J. L. (1995). Hardwiring Weak Ties: Interorganizational Computer Mediated Communication, Occupational Communities, and Organizational Change. *Organization Science*, 6, 479-486.
- Pinto, J. N., & Nickell, G. S. (1987). The Computer Attitude Scale. *Computers in Human Behavior*, 2, 301-306.

- Popovich, P. M., Hyde, K. R., Zakrajsek, T., & Blumer, C. (1987). The Development of the Attitudes Toward Computer Usage Scale. *Educational and Psychological Measurement, 47*, 261-269.
- Putnam, R. D. (2000). *Bowling Alone*. New York, N.Y.: Simon & Schuster.
- Putnam, R. D. (1995a). Bowling Alone: America's Declining Social Capital. *Journal of Democracy, 6*, 65-78.
- Putnam, R. D. (1995b). Tuning In, Tuning Out: The Strange Disappearance of Social Capital in America. *Political Science and Politics, 28*, 664-683.
- Putnam, R. D. (1993). *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, NJ: Princeton University Press.
- Riedel, E., Dresel, L., Wagoner, M.J., Sullivan, J.L., & Borgida, E. (1998). Electronic Communities: Assessing Equality of Access in a Rural Minnesota Community. *Social Science Computer Review, 16*, 370-390.
- Rogers, E. M., Collins-Jarvis, L., & Schmitz, J. (1994). The PEN Project in Santa Monica: Interactive Communications, Equality, and Political Action. *Journal of the American Society for Information Science, 45*, 401-410.
- Rosenstone, S. J., & Hansen, J. M. (1993). *Mobilization, Participation, and Democracy in America*. New York, NY: MacMillan Publishing Co.
- Rubinyi, R. M. (1989). Computers and Community: The Organizational Impact. *Journal of Communication, 39*, 110-123.
- Sankar, Y. (1988). Organizational Culture and New Technologies. *Journal of Systems Management, 39*, 10-17.

- Schneider, M., Teske, P., Marschall, M., Mintrom, M., & Roch, C. (1997).  
Institutional Arrangements and the Creation of Social Capital: The Effects of Public  
School Choice. *American Political Science Review*, 91, 82-93.
- Schuler, D. (1994). Community Networks: Building a New Participatory Medium.  
*Communications of the ACM*, 37, 39-51.
- Shields, M. A. (1998). Special Issue: Equality and Inequality in Information Societies.  
*Social Science Computer Review*, 16, 4.
- Skocpol, T. (1996, March). Unraveling from Above. *The American Prospect*, 25, 20-25.
- Sullivan, J.L., Borgida, E., Jackson, M., & Riedel, E. (2000). A Tale of Two Towns: Assessing  
the Role of Political Resources in a Community Electronic Network. Unpublished  
manuscript, University of Minnesota.
- Tarrow, S. (1996). Making Social Science Work Across Space and Time: A Critical  
Reflection on Robert Putnam's *Making Democracy Work*. *American Political Science  
Review*, 90, 389-97.
- Wellman, B., Salaff, J., Dimitrova, D., Garton, L., Gulia, M., & Haythornthwaite, C. (1996).  
Computer Networks as Social Networks: Collaborative Work, Telework, and Virtual  
Community. *Annual Review of Sociology*, 22, 213-238.
- World Bank. (2000). PovertyNet: Social capital for development website.  
<http://www.worldbank.org/poverty/scapital>.
- Wresch, W. (1996). *Disconnected: Haves and Have-nots in the Information Age*. New  
Brunswick, NJ: Rutgers University Press.

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## Endnotes

<sup>1</sup> Census data supplemented with updated information from DATANET were obtained for all 87 counties in Minnesota and entered into a hierarchical cluster analysis. (DATANET is an online information system maintained by the State of Minnesota's Land Management Information Center. Its web site is *lmic.state.mn.us*.) On the basis of strong statistical similarities, Detroit Lakes provides an excellent comparison community for our study of GrandNet.

<sup>2</sup> In our modeling efforts, we tested constrained against unconstrained models. Freeing up the constrained parameters did not improve the fit of the model. Economic resources have the same effects in both communities.

<sup>3</sup> The coefficients reported are unstandardized structural parameters from LISREL models. Unless noted by *ns*, all coefficients are statistically significant.

<sup>4</sup> We did not constrain to equality the effects of economic resources on computer use in the two communities, since the theory predicts that computer use—as opposed to ownership—will vary because of the GrandNet Project.

<sup>5</sup> And, of course, political behavior is strongly shaped by political resources (1.27), representing an indirect effect of political resources on computer use of over .67.