A TALE OF TWO TOWNS: Assessing the Role of Political Resources in a Community Electronic Network

John L. Sullivan, Eugene Borgida, Melinda S. Jackson, Eric Riedel, and Alina R. Oxendine

In this study we examine responses to the recent expansion of information technology in two rural Minnesota towns. One of these towns took a cooperative approach to technology access, developing a community electronic network, while the other town relied on a more individualistic, entrepreneurial model. The present study examines citizens' attitudes concerning social, political, and technological issues in these two communities, with the goal of uncovering what kinds of attitudes and resources citizens need to have in order to help support and sustain a community electronic network. Structural equation modeling is used to specify the relationships among individuals' economic, political, and social resources, technology ownership and use, and awareness of and support for the community network. Drawing on a theory of social capital, we consider the relative importance of privately- oriented social engagement versus publicly- oriented political engagement in relation to collective outcomes. Our analysis shows that in the town with the broadly- based community electronic network, individuals' political as well as economic resources are linked to knowledge and use of computer resources, whereas in the comparison community, economic stratification alone drives computer access. The implications of these findings for issues of equity, access to technology, and the development of strong community ties are discussed.

Key words: social capital, political capital, community electronic networks.

John L. Sullivan, Regents' Professor and Arleen C. Carlson Chair in American Government, Department of Political Science, University of Minnesota, 1414 Social Sciences Building, 267–19th Avenue South, Minneapolis, MN (jsull@polisci.umn.edu). Eugene Borgida, Professor, Department of Psychology, and Fesler-Lampert Chair in Urban and Regional Affairs, University of Minnesota, Minneapolis, MN (borgi001@tc.umn.edu). Melinda S. Jackson, Ph.D. Candidate, Department of Political Science, University of Minnesota. Eric Riedel, Research Associate, Center for Applied Research and Educational Improvement, University of Minnesota. Alina R. Oxendine, Ph.D. student, Department of Political Science, University of Minnesota.

0190-9320/02/0300-0055/0

The number of people using the Internet has risen dramatically in recent years. Annual surveys show that the percentage of Americans going online has nearly quadrupled over the last few years, from 14% in 1995 to 54% in 2001 (National Telecommunications and Information Administration [NTIA], 2002; Pew Research Center, 2001). With this rapid 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 impact of this technological revolution on our society have taken on new urgency. Will access to this new information technology be differentially distributed in terms of income, education, race, age, and gender? Or can a means of communication that spans geographic, economic, and ethnic barriers come to serve as a bridge across such political boundaries? Can access to the Internet and electronic communication provide new educational, economic, and political opportunities to those who have been disadvantaged in the past? Will the growth of new forms of communication serve to increase levels of social capital among citizens and communities, or will it deepen existing social divisions and serve to create new ones?

Recent work on Americans' patterns of civic involvement has found that poorer and less- educated citizens are far less likely to take part in the political process than those who are economically and socially better off (Verba, Schlozman, and Brady, 1995). As a result, the voices of the most advantaged segments of society are disproportionately represented in public discourse. Concern about the extension of existing socioeconomic disadvantages into the realm of new technologies has thus focused attention on disparities in access and the creation of new classes of information haves and have-nots (NTIA, 1995, 1998, 1999, 2002; Shields 1998; Wresch, 1996). As Internet access has spread across America, concern has risen over the digital divide that emerged with disparities based on income, education, race, and urban versus rural residence. Rural communities in particular have been concerned about falling behind, as they looked toward technology as a potential tool to alleviate longstanding problems specific to rural life, such as diminishing employment opportunities, an aging population, and a lack of amenities readily available in urban areas. By September 2001, 143 million Americans (53.9%) were using the Internet, and the rate of access among rural residents had caught up with the national average, at 52.9% (NTIA, 2002). However, among those at the lowest income levels, rural households continue to have the lowest rate of Internet access, 13.9%, compared to 19.3% in urban areas (NTIA, 2002). Rural residents also lag behind the rest of the nation in rates of computer use, with 42% reporting that they do not use computers at all, compared to 34% of suburbanites and 31% of urban dwellers (Pew Internet Project, 2001). Furthermore, rural areas are trailing urban areas in access to high-speed broadband services (7.3% vs. 11.8%), the most recent new information technology development

(NTIA, 2000). This disparity in high-speed Internet access limits opportunities for rural businesses with regard to electronic commerce and puts rural communities at a disadvantage in trying to attract new high-tech companies to their areas.

This study examines the way two different communities approached the problem of access to expanding information technology over the critical period from 1995 to 1998, comparing the role that political and social resources played in shaping the outcomes. One popular approach to addressing the problem collectively has been the community electronic network. Such a network may provide a number of services including electronic access to government employees and information, community-oriented discussions, e-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. In light of the present concern among political scientists over the apparent decline in social capital in American society (Putnam, 2000) and the concurrent decrease in political participation, some argue that community electronic networks may present a possible technological solution to the problems of civic and political noninvolvement. This may be especially true in rural communities, like the two we have studied. 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 our research, we analyze electronic networks as a dependent rather than an independent variable. We illustrate the kinds of attitudes that citizens need to have in order to support and sustain a community electronic project that addresses the digital divide by promoting equal technological access. Because the present analysis relies on cross-sectional survey results, we are not able to explore the longitudinal aspects of these issues yet. As we gather more survey data, however, we will explore the influence of community electronic networks on community connectedness and well-being.

In addition to giving us the opportunity to address urgent, timely concerns such as the digital divide, our project also sheds light on a question of fundamental importance to political scientists: What gives some communities the ability to cooperate and overcome collective action dilemmas, and what prevents others from organizing for such mutual benefit? The collective goal of many communities is to remain viable and competitive during the rapid influx and expansion of information technology. To succeed in doing this, rural communities must make sure that they keep pace with their urban counterparts and that most people in their community have access to computers and the Internet and the training to effectively use them. Communities face a collective action problem with community technological advancement as a key com-

mon pool resource; while everyone can benefit from such advancement once it develops, people in the community must still sacrifice time and effort in order to jumpstart technological endeavors.

In our project, we evaluate one community, Grand Rapids, Minnesota, that succeeds in creating and sustaining a community electronic network and thus successfully overcomes this collective action dilemma. People in this community, particularly forward-thinking leaders, have collaborated to improve technological know-how and to minimize the digital divide in their city. Moreover, active, engaged citizens have participated in the community electronic network, thereby contributing to its success. The citizens in a second "control" community, Detroit Lakes, Minnesota, do not show the same level of cooperation for mutual benefit. Instead, this community has attempted to attain technological advancement in a relatively individualistic and unstructured manner, rather than developing a communitywide electronic initiative.

By focusing on how these technological projects developed in Grand Rapids and Detroit Lakes, we have an excellent opportunity to pinpoint characteristics favorable (and unfavorable) to organizing a cooperative, communitywide endeavor. Putnam (1993, 2000) discusses the issue of collective action dilemmas in his work on social capital, asserting that

> Success in overcoming dilemmas of collective action and the self-defeating opportunism that they spawn depends on the broader social context within which any particular game is played. Voluntary cooperation is easier in a community that has inherited a substantial stock of social capital, in the form of norms of reciprocity and networks of civic engagement. (1993, p. 167)

Our study takes advantage of a natural quasi-experiment that gives us the chance to probe the emergence (or lack) of spontaneous cooperation in communities. We find that the social context of the two communities seems to matter. Our analysis of individual-level factors that predict the use and support of technology in these two towns reveals that *political capital* (a variant of Putnam's social capital) appears to have been important in motivating and sustaining citizens' understanding and participation in Grand Rapid's community electronic network; at the same time, it did not seem to be of importance in Detroit Lakes' individualistic approach to technological diffusion.

In essence, our analysis reveals the kinds of attitudes and resources citizens need to have to facilitate the development of a community electronic network project and contribute to its success. Our conceptual approach develops a model built around three types of individual-level resources: economic, political, and social. Using this framework, we have begun to examine the impact of these different types of resources on approaches to citizens' participation in technology access programs in two rural Minnesota communities. We hypothesize that political resources, including psychological and behavioral engagement with the political process, and civic involvement in the life of the community have the potential to prepare citizens to participate in a community electronic network. Where politically active and knowledgeable citizens are likely to participate in community technology projects, local civic and political leaders probably can rest assured that their efforts will be utilized, appreciated, and sustained. This confidence may well make them more likely to engineer and perpetuate these kinds of projects (Borgida et al., 2002; Oxendine, Borgida, Sullivan, Jackson, and Schneider, 2002). In this way, individual political resources have the potential to play a crucial, yet empirically neglected, role in laying the foundation for and facilitating the development of community electronic networks.

SOCIAL CAPITAL AND COMMUNITY ELECTRONIC NETWORKS

Community electronic networks are intended to provide greater access to the Internet and electronic communication tools for people in the communities they serve. Consequently, the question of whether electronic media help or hinder the development of social capital and civic communities has drawn a great deal of attention in recent years. Much of the research applying the concept of social capital to community electronic networks to date has been focused on the question of whether the quality of on-line relationships and virtual communities provides the conditions necessary to further the growth of social capital (Calabrese and Borchert, 1996; Kling, 1996; Wellman et al., 1996). The causal arrow is thus assumed to point from the network to social capital. There is a case to be made, however, that the particular form an electronic network takes is strongly affected by the economic, social, and political conditions that initially gave rise to the network (Borgida et al., 2002; Oxendine et al., 2002).

Previous research on existing community electronic networks lends credence to the argument that such networks may tap into different resources depending on the social and political context. Tsagarousianou (1998) argued in a review of European and American community electronic networks, that the networks differed in part because of differences in local political cultures, differences that circumscribed the types of citizen involvement solicited in each network. Virnoche (1998) made a similar case in her comparative case study of for-profit and nonprofit community electronic networks in Colorado. Contrasting "consumer" and "civic currents" in the planning stages of each network had consequences for the web page interface, interactive capacity, and outreach efforts to citizens without ready access to the Internet.

Guthrie and Dutton (1992) similarly compared four California cities and three community electronic networks, finding that the local political context

is significant in determining the shape or presence of an electronic network, which in turn has consequences for how it is used by community members. Additional research on one of the cities and networks included in Guthrie and Dutton's study, Santa Monica's Public Electronic Network (PEN), arrived at similar conclusions. Driven by the goals of furthering public access, increasing access to city services, and facilitating a sense of community within Santa Monica, PEN included a large number of public access sites around the city. Rogers, Collins-Jarvis, and Schmitz (1994) argued that the design of the network not only drew use from already politically engaged citizens but also provided a new avenue of political participation through the network for disadvantaged citizen constituencies, such as the homeless. Research on another well-known community electronic network, Blacksburg Electronic Village (BEV), serving Montgomery County, Virginia, also suggests that civic factors played a critical role in the success of the network. Cohill (1997) found that broad participation from local government institutions, local businesses, the public school system, the public library, as well as individual citizens, contributed to the BEV network's widespread use.

POLITICAL VERSUS SOCIAL CAPITAL

Social capital can be defined as the norms and relations embedded in the social structure of societies that enable people to coordinate action to achieve desired goals (Knack, 2000). Social capital, like economic capital, is thus an asset that communities possess to varying degrees, with the key elements being social trust and civic engagement (Coleman, 1988, 1990; Putnam, 1993). Together, the presence of these elements of trust and participation creates a "civic community" that is able to address public issues collectively, as a community of citizens rather than a collection of private individuals.

In our theoretical framework, we draw a distinction between *publicly oriented political engagement* and *privately oriented sociability*, arguing that these two types of individual-level activity differentially affect collective outcomes. Attending a political rally is a substantially different kind of act than going bowling with friends. Likewise, reading the newspaper and taking an active interest in public affairs are quite different uses of one's leisure time than socializing with friends and family on the telephone or over e-mail. In both cases, the former activity engenders contact within the public realm, and in certain cases within the formal political system, whereas the latter may build interpersonal and civic ties but does not necessarily facilitate political interest or activity.

We are not the first to note the relative neglect of explicitly political activity within discussions about social capital. The privileged role that has been accorded to voluntary civic associations in the social capital framework has been widely questioned for its exclusion of organizations engaged in more direct political action, such as political parties, issue-based interest groups, or social movements (Booth and Richard, 1998; Foley and Edwards, 1996, 1997; Fuchs, Minnite and Shapiro, 1999; Levi, 1996; Minkoff, 1997; Skocpol, 1996). In an attempt to highlight explicitly political elements of civic engagement, several researchers have proposed a separate "political capital" construct as an alternative to social capital. For example, political scientists studying democratization in Central America (Booth and 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 nonpolitical civic involvement and found that such 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 politically relevant social capital, as measured by the political intensity of one's social network, makes an independent and stronger contribution to political participation than organizational memberships in general.

We thus 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 the public life of one's community and are therefore considered a type of political behavior in our framework. Private sociability, defined as the amount of 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. Thus, our political resources construct includes many of the same variables that have been used to measure social capital in previous empirical work, such as civic memberships and political knowledge. However, we use more privately oriented sociability variables to measure the separate construct of social resources. In this way, we are able to assess the separate effects of these different types of resources on individuals as well as on the two communities under investigation.

In our models, we refer to economic, social, and political *resources* rather than economic, social, and political capital. Often in the literature, social and political capital refer to the character of aggregate groups and communities. Since individuals are our level of analysis, we chose to utilize slightly different terminology in order to describe potential capabilities available to individual

citizens. Moreover, our use of the term resources reflects our focus on the ways that capabilities available to individuals influence whether and how these citizens use various technologies.

STUDYING ELECTRONIC NETWORKS IN RURAL MINNESOTA COMMUNITIES

Grand Rapids was one of the first communities in Minnesota to initiate an electronic network. Located in the north-central area of the state, it is a classic small town with a population of 8,400. In 1995, local community partners joined in an effort to bring information technology to Grand Rapids. Civic leaders in Grand Rapids initiated planning for a communitywide electronic network called GrandNet, which was implemented in late 1997 with funding from the locally based Blandin Foundation and the Telecommunications and Information Infrastructure Assistance Program (TIIAP) of the U.S. Department of Commerce. The community partners included the local school district, the public library, Itasca Development Corporation, Itasca Community College, and Itasca County Health and Human Services. GrandNet's goals included increasing the community's access to and use of the national information infrastructure, reducing disparities in access levels among community residents, increasing information available to community members, and facilitating the sharing of data and information among the partner organizations. Since 1997 the network has had several outcomes. It developed a web site that provides access to each partner's web site while facilitating the sharing of computer hardware and expertise among the five partners. It has provided public access to computers and the Internet through computer labs housed by four of the five partners. At the same time, the project has supported training opportunities to the general public through free or low-cost classes. Finally, it has complemented other targeted efforts by local organizations to increase opportunities for computer use in the community.

We began studying GrandNet during its initial implementation in late 1995. Our preliminary research included focus groups with a variety of subpopulations in Grand Rapids, such as senior citizens and Native American parents and students, as well as in-depth interviews with community leaders including the mayor, the executive director of the local Chamber of Commerce, and representatives from each of the five GrandNet founding partners. We also identified a second Minnesota community that was similar in most respects except the presence of a communitywide electronic network, to serve as a comparison group. To select this comparison community, we conducted a hierarchical cluster analysis of demographic and social variables for all 87 Minnesota counties using census data supplemented with updated information from DATANET,[1] an online information system maintained by the state of

Minnesota. These datasets contained a number of variables including population size, per capita income, percentage employed in different industries and occupations, and number of people on public assistance. A full list of variables employed in the cluster analysis is provided in the appendix. The best statistical match for Itasca County and its county seat, Grand Rapids, was provided by Becker County and its county seat, Detroit Lakes. We therefore selected Detroit Lakes as the comparison community for our study of GrandNet.

Detroit Lakes is not devoid of computer network technology, but importantly for our purposes, the networks being developed there were not initiated by a community-based partnership or by community agencies with the express purpose of providing a community service. The city of Detroit Lakes initiated an electronic network called LakesNet through its municipal utility in 1997. This city-managed network supplies low-cost Internet access to the local schools and public library and offers Internet service to citizens for a monthly fee. There is also a small private communications company based in Detroit Lakes that has recently begun offering Internet access to local residents at competitive rates. By contrast with the city of Grand Rapids, networking in Detroit Lakes has been driven by an entrepreneurial approach in which various enterprises are competing with each other to establish a dominant market share in town. The kind of cooperative social networking that gave rise to a multigroup partnership in Grand Rapids has not been present in the Detroit Lakes community. As such, Detroit Lakes represents an ideal comparison for Grand Rapids in assessing the roles of community resources in the development of a community electronic network.

In order to investigate individual differences in economic, social, and political resources in relationship to technology ownership and computer use in these two rural Minnesota towns, we conducted a baseline survey of citizens in each community in the fall of 1997. This survey dataset (described in detail below) allows us to consider the influence of different types of individual resources on citizens' attitudes toward computers, their computer expertise, their level of support for the social uses of computers, and their actual use of computers within the two communities. One of our underlying assumptions is that individual levels of preexisting resources will determine how many and which types of individuals in a community will participate in a communitywide electronic initiative. 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 GrandNet is a community project, individuals who lack economic resources, in theory, can gain knowledge about and access to this project as a general consequence of their knowledge of and involvement in community and political affairs. This is much less likely to be the case in Detroit Lakes, the comparison community. In Detroit Lakes, individuals with economic re-

sources can purchase access to computers and the Internet, but their levels of political resources have less potential to provide the additional path to technology access that the presence of GrandNet provides in Grand Rapids. While the present dataset does not address this issue directly, we have shown elsewhere that taking a broader, communitywide approach to networking has the potential to enhance community involvement and to provide a more egalitarian base for the development of the next round of social and political capital (Borgida et al., 2002; Gangl et al., 2000).

METHODS

Overview of Data Analysis Strategy

The goal of the analysis presented here is to assess the role of economic, social, and political resources in facilitating participation in an electronic community network. Our method involves a comparative analysis of individuals who live in a community with a broad-based community electronic network with those who live in a community with a market-based approach to technology access. The analysis is presented in two stages. In the first stage, we model potential support for a community electronic network using a multigroup structural equation analysis with survey data from both communities. We measured variables in both communities that were designed to represent three broad sets of constructs: the types of resources available to individuals within each community; individuals' access to evolving technologies, particularly computers and the Internet; and finally, individuals' actual use, understanding, and evaluation of these technologies in everyday life. Conceptually, our model assumes that the different types of individual resources will affect access, use, and evaluation of evolving technologies and that access and use will, in turn, have additional effects on understanding and support for these technologies. Broadly speaking, our expectations are that economic resources have a strong effect on the use, understanding, and evaluation of these technologies in both communities. In Grand Rapids, however, existing differences in political resources will have powerful effects on attitudes toward and participation in the information technology revolution: in other words, "build it and they will come"—only they will come not randomly, but systematically, according to their level of political resources. Lacking such a communitywide effort, the attitudes and behaviors of citizens in the comparison community of Detroit Lakes will be shaped primarily by their economic situation, not by their political resources.

In the second stage of our analysis, in Grand Rapids only, we assess awareness, use, and evaluation of the GrandNet community network. Recall that Grand Rapids has a community electronic network and Detroit Lakes does not, which is why we concentrate primarily on Grand Rapids for the second

stage of our model. We expect that knowledge of and support for the GrandNet project will be merely 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.

While the dependent variables we analyze (technology use, understanding and support, and evaluation of the community electronic network) are not overtly political, they have clear political implications. First, measuring technology and network use is an effective way to observe the extent to which these networks are achieving success. For instance, if citizens in Grand Rapids are using the Internet and supporting and participating in the community electronic network, it is clear that the project is working. Moreover, it is important to uncover the forces that explain technology use in these cities in order to understand what makes a collective endeavor like a community electronic network flourish.

Second, there are significant political consequences stemming from not only the use of technology in a general sense but also the use of a community electronic network in a specific sense. There are numerous ways in which Internet use can (and has) influenced the political system—by generating and perpetuating class divisions through the digital divide, by acting as a new tool for gaining local and national political information, and by serving as a new line of communication between citizens, organizations, and political leaders, just to name a few. Moreover, when citizens are a part of a community electronic network, their use of technology can have notable political effects. In their analysis of a community electronic network in Blacksburg, Virginia, Kavanaugh, Cohill, and Patterson (2000) find that citizens who use the Internet more and more over time become more likely to use the Internet for communicative activities that build social capital. Internet use, particularly in the context of a community electronic network, is likely to foster and strengthen social connections and enhance community life as the project progresses. Although we do not explore the effects of community electronic projects on community life in this article, our analysis is still a significant portion of this broader empirical puzzle. By analyzing technology and network use, we begin to gain a better understanding of what communities need in order to successfully develop and perpetuate community technological efforts.

Sample

In the fall of 1997 we conducted a 10-page mail survey 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, and various demographic indicators.

We selected samples of 1,000 residents each in Grand Rapids and Detroit Lakes. The samples were drawn randomly from voter registration records and telephone book listings. This method was intended to counterbalance the tendencies of higher socioeconomic status individuals to register to vote but also to have unlisted phone numbers. The surveys were mailed to the Grand Rapids and Detroit Lakes samples in September 1997, with response rates slightly above 40% for each community.[2]

Measures of Resources

The first set of constructs—economic, political, and social resources—was measured in a straightforward way. *Economic resources* have been shown to play an important role in shaping access to and participation in the technological revolution currently under way (Anderson, Bikson, Tora, Law, and Mitchell, 1995). Not only are the poor less able to afford the purchase of computers, they are also unlikely to be employed in occupations that foster exposure to computer use. This trend has persisted, although actual computer use has become more broadly integrated into public institutions such as libraries and schools in recent years (Pew Research Center, 1999). Our indicators of economic resources consist of education level, family income, subjective social class, and employment status.

Our indicators of *political resources* included a number of items measuring respondents' psychological engagement with public life. Scales measured political knowledge, political interest, political efficacy, alienation, and interpersonal trust.[3] In addition to political resources, we also included measures of the kinds of political behavior that potentially enrich one's level of social and political capital. We incorporated scales for membership in civic organizations and acts of political participation (voting, contacting public officials, working on local or national problems).[4] We therefore measured both psychological engagement in politics and behavioral manifestations of that engagement.

The construct of *social resources* was based on reports of private social interaction. These indicators included frequency of spending time with and talking on the telephone to both friends and relatives, as well as the frequency of attending social gatherings, meeting new people, and participating in community or sporting events. As noted above, we believe it is important to measure this kind of private sociability separately from publicly oriented civic engagement so that the effects of each type of community involvement can be considered in turn.

Although it has more usefulness as a control variable than as a measure of theoretical significance, we also included in this analysis a fourth type of resource that can influence the acceptance and use of information technology. This is what we refer to as *generational resources*. The electronic revolution of recent years has not affected everyone equally. In addition to the digital divide that has been much discussed, there are generational implications to this revolution, with the effects being greatest on younger members of society (Anderson et al., 1995; Pew Internet Project, 2001; Rosen and Weil, 1995; Times Mirror, 1994). Laguna and Babcock (1997) report that older adults experience significantly higher computer anxiety than younger adults in using computers. In addition, families with younger members are more likely to invest in a home computer and to develop the required expertise than are families without children at home. Recent statistics show that households with children under the age of 18 are more likely to access the Internet (62%), compared with families without children (53%), and computer and Internet use are much higher among those under 55 than among older Americans (NTIA, 2002). In our models, we measure generational resources by the age of the respondent in years and whether the respondent reported having children under the age of 18 living in the household. Additionally, due to the large proportion of retirees in both communities, employment status was taken as an indicator of generational resources.

Overall, then, the models we examine include measures of economic, social, political, and generational resources, as well as measures of actual political behavior. We anticipate that there will be significant differences between citizens in the two communities in the role that political resources and political behavior play in influencing whether and how citizens participate in the Internet and in their community network. This, in turn, influences their attitudes toward and participation in projects that have the potential to enhance future social and political capital.

Measures of Technology Access, Use, and Attitudes

Our models assume that individuals' access to various types of resources determine whether and how they are able to use computers and other manifestations of modern technology, as well as their attitudes toward the larger social and political meanings of the new technologies. Individuals who own computers or use them on a daily basis through their employment are likely to have different attitudes toward computers than those who do not. Here, we also examine whether citizens think that this electronic revolution bodes ill or good for the future. What are the various potentials of the Internet? Do these changes mean that people will be increasingly isolated and alienated or that they could provide new and promising meaning to the concept of community? Do citizens anticipate the development of an electronic democracy, and what does this mean for notions of political representation and fairness? Our

interest is in whether and how individuals in these two communities actually use the newer technologies, their attitudes toward these technologies, and their social vision for the electronic revolution. All of these questions are important because new technologies have the potential to alter the way in which citizens participate in their communities and in politics more generally. The Internet can enhance democratic processes by making political information such as information about political meetings, campaigns, and organizations, easily accessible. Moreover, with e-mail and electronic communication, citizens can easily contact their representatives, political groups, and fellow citizens with similar interests. With the plethora of political information available to citizens, coupled with the ability to communicate easily with others, citizens' attitudes toward technology become increasingly relevant in assessing their attitudes toward politics and in analyzing the democratic system. Citizens who are supportive of the Internet and electronic projects seem much more likely to utilize technology to learn more about and participate more fully in political activities.

We expect that differences in economic and generational resources will drive both technological access and attitudes in the comparison community of Detroit Lakes, while individual differences in political resources will also have these effects in Grand Rapids. We therefore 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 two constructs of computer comfort and computer social value were based on a combination of items from previously published computer attitude scales (Coover and Delcourt, 1992; Pinto and Nickell, 1987; Popovich, Hyde, Zakrajsek, and Blumer, 1987).[5]

Measures of Participation in and Attitudes Toward GrandNet (Grand Rapids Only)

Two variables representing awareness of GrandNet's presence in the community and support for GrandNet are included. GrandNet awareness is a function of three indicators that ask whether the respondent has used GrandNet, has heard of GrandNet, or has heard others talk about GrandNet. Support for GrandNet is based on agreement with 10 statements based on potential advantages and disadvantages of the network raised by Grand Rapids residents in focus groups and interviews. These measures apply to the Grand Rapids sample only and will be explored as dependent variables in the second stage of our modeling efforts. (The first stage will compare Grand Rapids respondents with those from Detroit Lakes.) Focusing on these variables helps us to assess not only participation in the electronic network but also general support and knowledge of this project. It does little good to have an electronic network that no one knows, talks, or cares about. It is unlikely that such a network would continue to function for long. For this reason, these measures are of utmost importance for evaluating the overall success of the community electronic project and the propensity for individuals to support similar technological endeavors in the future.

RESULTS

Stage 1 Model: Individual-Level Resources, Computer Use, and Computer Attitudes

In formulating a model to assess the underlying bases of support for an electronic community network, we theorized that the relationship of the four basic resources to computer comfort and computer social value would operate through the intermediaries of political behavior, technology ownership, computer use, and broader attitudes toward the community. Table 1 reports similar mean levels of these variables in Grand Rapids and Detroit Lakes. To the extent that there are important and relevant differences between these two communities, they lie in the different relationships among the variables, not in the mean levels of resources, technology ownership, or computer use. Structural equation modeling is therefore an ideal method for examining these causal relationships and comparing them across the two towns.

TABLE 1. Comparison of Mean Levels of Resources, Grand Rapids ($N = 404$) and Detroit Lakes ($N = 401$)

	Grand Rapids	Detroit Lakes
Economic Resources[a]	2.5076	2.4364
Generational Resources[b]	1.8262	1.8264
Political Resources[c]	2.9821	3.0648
Political Behaviors[d]	0.6343	0.6382
Social Resources[e]	3.5526*	3.7629*
Technology Ownership[f]	1.3007	1.3728
Computer Use[g]	1.3047	1.3759

Note: Higher numbers mean more resources/behaviors/ownership/use.
[a]Education level, family income, subjective social class, employment status.
[b]Age (reverse scored), whether household includes children under 18, employment status.
[c]Political knowledge, interest, and efficacy; alienation (reverse scored), interpersonal trust.
[d]Membership in civic organizations, acts of political participation.
[e]Frequency of social acts like spending time with and talking on the phone with friends and relatives.
[f]Owning or planning to buy: home computer, modem/Internet access, fax, cellphone.
[g]Home computer use, work-related computer use, public computer use (e.g., public library), Internet-related computer use.
*Differ at $p < .01$.

We expect the model identified in Figure 1 to operate similarly in some respects, and differently in other respects, in the two communities. The relationship of economic resources to technology ownership, and technology ownership to computer use, was expected to be about the same in both communities. These relationships are determined in large part by market forces that operate similarly across the country, particularly in geographically and demographically similar communities. However, because of the GrandNet network and its public dimension, we expected that the effects of political resources and political behavior on community attitudes, computer use, and computer attitudes should be much stronger in Grand Rapids than in Detroit Lakes.

As a result of these considerations, we used a multigroup structural equation analysis to estimate and compare alternative formulations of the Stage 1 Model.[6] In this Stage 1 model, we allowed most parameters to differ between the two communities, although we constrained to equality the parameters that represent the technological impact of economic resources as well as the impact of political resources on community attitudes. This model best represents the theory presented earlier in this article—that differences in political resources matter most in the presence of a community-based electronic network, but otherwise have little effect on the acceptance of new technologies. Thus, we expect to find a significant impact for political resources in Grand Rapids but not necessarily in Detroit Lakes.

Figure 1 presents a path diagram displaying the results of estimating the Stage 1 Model. The unstandardized coefficients for Grand Rapids are presented first, and those for Detroit Lakes are in parentheses just below; when parameters are constrained to be identical, the bottom number is replaced with "same." These results are also summarized in Table 2, where all structural coefficients are listed along with the R^2 values for each equation. As expected, the impact of economic resources on technology ownership is strong in both communities. Although it was constrained to be equal in both communities, the estimated parameter could be large or small, statistically significant or insignificant. Technology ownership had a strong effect on computer use in both communities; regardless of whether one lived in a community with an electronic community project, if one owned the technology, one used it. Differences in the impact of economic and political resources are most pronounced when examining the predictors of computer use, however. Among Grand Rapids residents, computer use is explained best by reference to political behavior, while economic resources have little effect except through the indirect influence of technology ownership. Among residents of Detroit Lakes, the pattern is reversed. Economic resources are a very powerful predictor of computer use, both directly and indirectly through technology ownership, while political behavior has no significant impact. Thus, in the two communities there were significant differences in

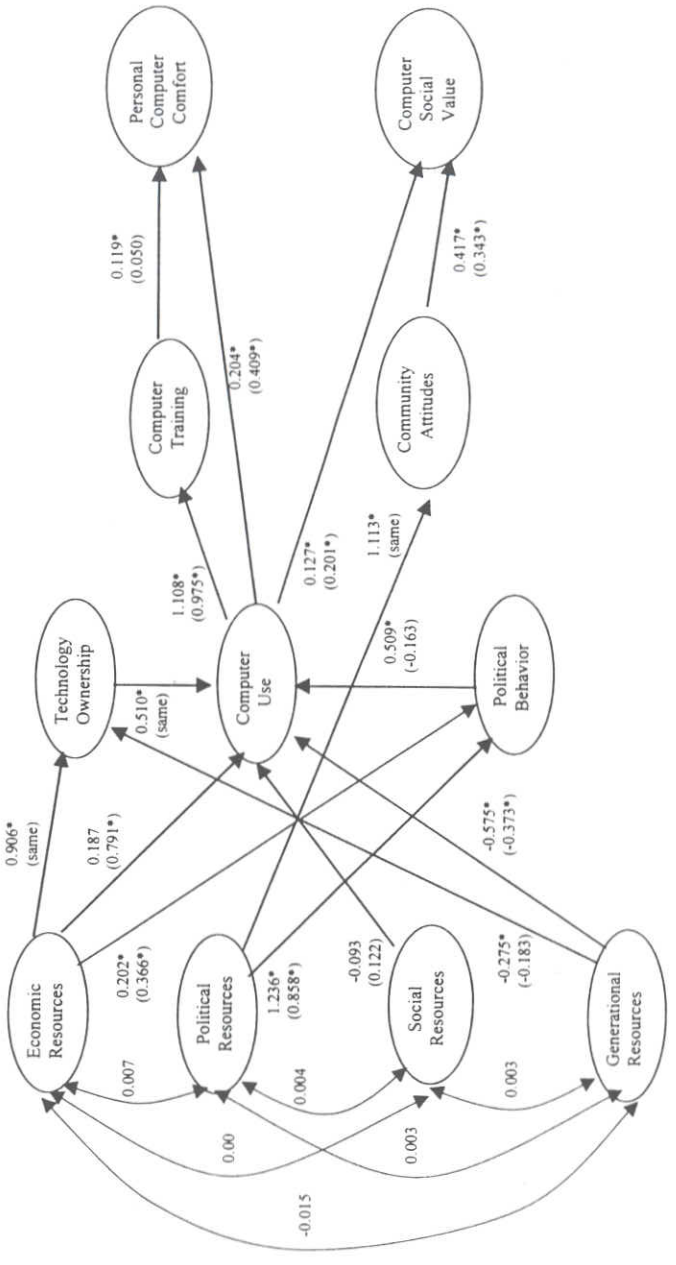

FIG. 1. Stage One Model.

Notes: Path coefficients for Grand Rapids with Detroit Lakes in parentheses.
*Coefficients marked with an asterisk are statistically significant at $p < .05$. See Table 2 for full listing of all structural coefficients. $N = 787$. *Model Fit:* Chi-squared with 2175 d.f. = 4011.499; chi-squared ratio = 1.844; RMSEA = 0.033; AGFI = 0.812.

TABLE 2. Stage 1 Structural Path Coefficients for Figure 1

	Grand Rapids			Detroit Lakes		
	Political Behavior	Tech. Own.	Computer Use	Political Behavior	Tech. Own.	Computer Use
Economic Resources	.202 (.077)	.906 (.151)	.187 (.181)	.366 (.076)	Equal	.791 (.198)
Political Resources	1.236 (.191)			.858 (.169)		
Political Behavior		−.084 (.113)	.509 (.148)		Equal	−.163 (.163)
Generational Resources		−.275 (.070)	−.575 (.080)		−.183 (.062)	−.373 (.069)
Social Resources			−.093 (.061)			.122 (.061)
Technology Ownership			.510 (.088)			Equal
R^2	.650	.598	.757	.621	.555	.750

	Grand Rapids	Detroit Lakes
	Community Attitudes	Community Attitudes
Economic Resources	−.299 (.116)	Equal
Political Resources	1.113 (.260)	Equal
Generational Resources	−.063 (.055)	Equal
Social Resources	.011 (.035)	Equal
R^2	.408	Equal

	Grand Rapids			Detroit Lakes		
	Computer Training	Computer Comfort	Computer Social Value	Computer Training	Computer Comfort	Computer Social Value
Computer Use	1.108 (.080)	.204 (.041)	.127 (.026)	.975 (.072)	.409 (.044)	.201 (.028)
Computer Training		.119 (.027)			.050 (.028)	
Community Attitudes			.417 (.079)			.343 (.078)
R^2	.554	.565	.211	.483	.678	.276

Notes: Chi-squared with 2,175 degrees of freedom = 4011.499 (p = .000); chi-squared ratio = 1.844; AGFI = .812; RMSEA = .033. Unstandardized coefficients with standard errors in parentheses.

whether individual political resources had a separate and significant effect on computer access and 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 effect on computer use. Therefore, in Grand Rapids, access to and use of computers could be gained not only though the expenditure of available economic resources but also by possessing and expending political resources through community political activity.

As may be seen in Figure 1, generational resources, in both communities have a negative impact on computer use, although the effects are stronger for the Grand Rapids community. This confirms our hypothesis that older citizens and those without children in the home are less likely to use computers. With regard to explaining community attitudes, we note that the pattern was consistent in each community with only political resources having a significant and large impact on community attitudes.[7] This suggests that many (but not all) of the political effects of social capital identified in previous research may be a consequence of the political rather than purely social dimensions of social capital.

The differences between the two communities support our argument that the political variant of social capital will have different effects within the two communities. In particular, where enhancing community technology access 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 factors alone predominate in explaining computer use. This pattern of effects was not inevitable in either community; even in Grand Rapids, economic resources could have been the sole driving force behind technology use. However, this was not the case, and the data reveal quite clearly that the GrandNet project seems to be working and has been successful at achieving its objectives.

When we examine the direct predictors of comfort level with computers and computer social value, the differences between the two communities are a bit more subtle but consistent with expectations. Computer use has a significant effect on computer training in both communities. When explaining computer comfort, however, computer training matters in Grand Rapids but not in Detroit Lakes. Computer training for citizens was an important component of the GrandNet Project, and it apparently worked. In Detroit Lakes, there is instead a larger direct effect of computer use on computer comfort. Finally, turning to the predictors of computer social value, we find that community attitudes matter slightly more and computer use slightly less for residents of Grand Rapids than for those of Detroit Lakes, although both are significant for both communities.

Goodness of Fit and Model Comparisons

The Stage 1 Model presented in Figure 1 was specified from a theoretical exposition of expected differences in social and political resources between the two communities. This model compared the two communities, incorporating some fixed and some free parameters. By the more traditional measure of chi-squared over degrees of freedom, the fit is below 5.00 (it is 1.844), considered a good fit (Wheaton, Muthen, Alwin, and Summers, 1977). The root mean square error of approximation (RMSEA) may provide a more appropriate measure for the highly complex model presented in Figure 1. The RMSEA of this model is equal to 0.033, also indicating a good fit.[8] As noted in Table 3, the R^2 values are high for all of the equations in the model. With only four exceptions, the R^2 terms are above .50, often considerably so.

Another method used to assess the adequacy of the Stage 1 Model is to address the claim that differences discovered between the parameters for the Grand Rapids and Detroit Lakes communities are not really significant. These differences could have resulted by chance, and a fully constrained model would fit the data, within chance limits, just as well as the mixed model estimated here. In other words, are the differences between the communities in the Stage 1 model statistically significant? To investigate this possibility, we estimated a second model, one that constrained all structural paths to be equal for the two communities. We compared this model against our mixed model in which only selected structural paths were constrained to be equal. This fully constrained model is thus nested within the first, semiconstrained model. This allows a test for the difference in goodness of fit (Bollen, 1989). Table 3 reports the differences between the models based on a chi-square difference test. The first model provides a significantly better fit ($p < .001$) than the second model, which constrains all structural paths to be equal. This confirms

TABLE 3. Chi-Squared Difference Tests

	Chi-Squared		Degrees of Freedom		Chi-Squared Difference Test		
Models	1st	2nd	1st	2nd	χ^2 Diff	*d.f.* Diff	*p* Value
(2) vs. (1)	4053.559	4011.499	2187	2175	42.06	12	< .001
(1) vs. (3)	4011.499	4007.311	2175	2168	4.188	7	> .20

Model 1: Semiconstrained. Some structural parameters equal between Grand Rapids and Detroit Lakes.

Model 2: Fully constrained. All structural parameters equal between Grand Rapids and Detroit Lakes.

Model 3: Fully free. All structural parameters allowed to vary between Grand Rapids and Detroit Lakes.

that there are significant differences between the two communities in how basic resources, particularly political resources, relate to computer use and attitudes.

A final test of the significance of the first model is to examine the possibility that the particular semiconstrained model provides a better fit than the fully constrained model merely because less constrained models must fit the data better than fully constrained models. By chance, some portion of the less constrained models will provide a statistically significantly better fit than the fully constrained model. To examine this possibility, we estimated a third model, one that allowed all of the relationships in the model to vary between the two communities. This third model must fit the data better than the first model, but not necessarily significantly better. Table 3 provides the results of a chi-square difference test between the semiconstrained model and the third, fully free model. In this case, the semiconstrained model is nested within the fully free model. In fact, freeing up the remaining parameters does not result in a significantly better fitting model ($p > .20$). Again, the original theoretically based semiconstrained model provides the best fit to the data.

Stage 2: Support for the GrandNet Community Electronic Network

In the previous analyses, we demonstrated how political capital, as expressed through political resources and behavior, was linked to computer use and ultimately to computer attitudes within Grand Rapids but not in Detroit Lakes. We theorized that personal comfort with computers and assessments of the social value of computers would directly affect support for an electronic community network. In this second stage of analysis, we more specifically demonstrate that knowledge of and support for the GrandNet community electronic network are indeed affected by these variables. We expect that while political behavior continues to play an indirect role through computer use, it will also have powerful, direct effects on knowledge of and support for a collective endeavor like GrandNet. While we build on the model in Figure 1, our Stage 2 model is now limited to Grand Rapids residents only. We expect that awareness of GrandNet is a function of personal computer comfort and political behavior. Support for GrandNet is expected to be a function of personal computer comfort, political behavior, and assessments of computer social value.

This Stage 2 model, presented in Figure 2, achieves an acceptable fit based on the chi-squared ratio (1.570) and RMSEA (.039). As shown in Table 4, the R^2 values are generally high, although the model provides a much better explanation for support for the GrandNet network than for awareness of it. In large part, this is due to the strong predictive power of judgments of the social value of computers toward evaluations of GrandNet.

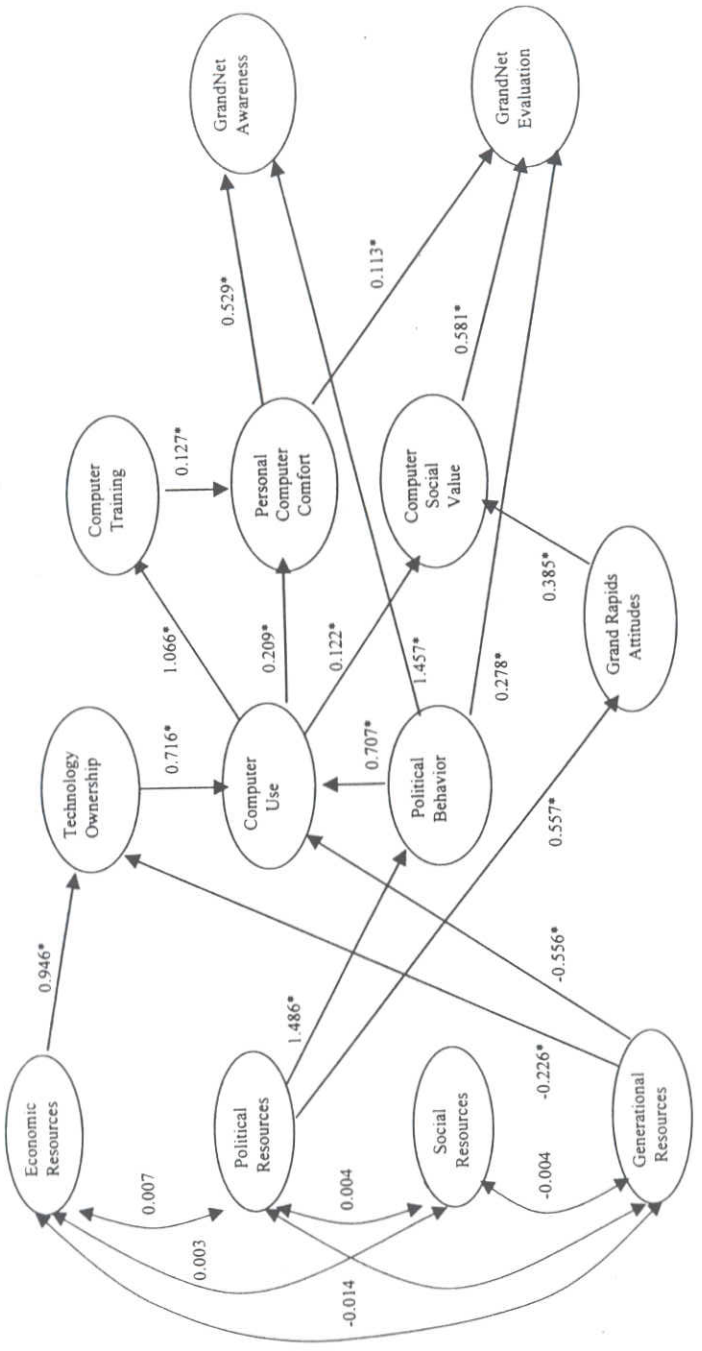

FIG. 2. Grand Rapids Stage 2 Model.

Notes: Coefficients marked with an asterisk are statistically significant at $p < .05$. See Table 4 for complete listing of all structural coefficients. $N = 371$. *Model Fit*: Chi-squared with 1,622 d.f. = 2546.626; chi-squared ratio = 1.570; RMSEA = 0.039; AGFI = 0.80.

TABLE 4. Stage 2 Model Structural Path Coefficients for Figure 2

	Political Behavior	Technology Ownership	Computer Use
Economic Resources	.151 (.092)	.946 (.259)	−.180 (.281)
Political Resources	1.486 (.282)		
Political Behavior		−.109 (.181)	.707 (.214)
Generational Resources		−.226 (.090)	−.556 (.102)
Social Resources			−.161 (.074)
Technology Ownership			.716 (.154)
R^2	.902	.602	.755
	Community Attitudes		
Economic Resources	.015 (.094)		
Political Resources	.557 (.190)		
Generational Resources	.113 (.045)		
Social Resources	.092 (.043)		
R^2	.290		
	Computer Training	**Computer Comfort**	**Computer Social Value**
Computer Use	1.066 (.084)	.209 (.040)	.122 (.023)
Computer Training		.127 (.027)	
Community Attitudes			.385 (.066)
R^2	.545	.681	.317
	GrandNet Awareness	**GrandNet Evaluation**	
Computer Comfort	.529 (.208)	.113 (.056)	
Political Behavior	1.457 (.229)	.278 (.059)	
Computer Social Value		.581 (.095)	
R^2	.363	.521	

Notes: Chi-squared with 1,622 degrees of freedom = 2546.626; chi-squared ratio = 1.5706; AGFI = 0.796; RMSEA = .039. Unstandardized coefficients with standard errors in parentheses.

The pattern of significance among the structural path coefficients in the Stage 1 model and this more complex Stage 2 model remains basically equivalent. The same structural paths that were significant in the Grand Rapids data in the Stage 1 model are also generally significant when the model uses only Grand Rapids data and expands to predict awareness and evaluation of GrandNet. Awareness of the electronic community network is a function of both personal comfort with computers and political behavior. The effects of political behavior are more than twice those of computer comfort, however, providing strong support that this community electronic network project was indeed

part and parcel of more general civic awareness and political involvement in the community. Evaluations of the network are a result of slightly different forces. Personal comfort with a computer no longer matters; instead, assessments of the social value of computers determine support. Political behavior is again a significant predictor, but with considerably less strength than in the case of computer social value.

Overall, political capital in the form of political resources and behavior reverberates strongly throughout our model, with direct and indirect effects on knowledge of and support for a community electronic network. Political resources operate through political behavior to affect computer comfort and computer social value, which in turn affect knowledge and support for GrandNet. Political resources affect community attitudes, which in turn affect evaluations of GrandNet through assessments of computers' social value. Some of the strongest effects, however, are those of political resources on political behavior, which in turn affects knowledge and support of GrandNet. These results highlight the extent to which it is necessary to have citizens who are politically knowledgeable, interested, efficacious, and trusting in order for a community electronic network to succeed. These politically engaged citizens perpetuate the network by discussing and utilizing the project and by supporting community leaders who seek to engineer these kinds of efforts.

In contrast to the public nature of political resources and behavior, privately oriented sociability has no significant effects in our model. Economic resources play a more limited role through enabling personal ownership of technology, which in turn affects computer use, although in the absence of a community electronic network, its impact on computer use is apparently also direct.

DISCUSSION AND IMPLICATIONS

Taken together, our findings strongly affirm the importance of the theoretical distinction between social and political capital. It is publicly oriented civic engagement and not privately oriented sociability that is significantly linked to different patterns of technology use and support for a community electronic network project. The findings from the present study suggest that existing individual-level political resources in a community may be more critical to the development and growth of collective endeavors, such as community electronic networks, than individuals' social networking alone. Subsequent investigations of the relationship between civic projects and social and political capital, however, should be careful to tease apart and test the differential impact of these public and private political and social resources.

Perhaps even more important than the level of preexisting political resources is that the most politically knowledgeable and active citizens in the community also have a commitment to support community-wide civic projects. In our analysis, we find that these politically active citizens in Grand Rapids are enthusiastic about technology and exhibit knowledge, understanding, and support of the community electronic network. Local civic and political leaders recognize this interest and commitment if it is present and have the opportunity to create projects such as a community electronic network. In communities in which the politically active citizens are no more supportive of such projects than are the politically apathetic citizens, political and civic leaders have little on which to build. The likelihood then is that in the latter community, market forces will drive the development of any number of projects, including electronic networks (Oxendine et al., 2002). This is consistent with Fukuyama's (1995) claim that "societies where computer networking will really take off are the ones in which technology can ride on top of existing social networks" (p. 80). As our study of GrandNet suggests, the potential of a community electronic network derives at least in part from the social structures already present in a community that enable diverse entities within the community to cooperate to achieve common goals.

It remains to be seen whether and how economic, social, and political resources will play a role in the evolution of the Grand Rapids community electronic network since the 1997 baseline assessment described in the present research. The original GrandNet partnership, for example, has stayed intact, but GrandNet has given way to a broader, countywide electronic network that has been renamed ItascaNet. Only a longitudinal and multimethodological perspective will enable us to examine how this evolving community electronic network not only may build on existing stores of political capital but also how it may shape and perhaps create new levels of political capital for the future. If communities like Grand Rapids and Detroit Lakes continue to take different paths (i.e., community-based vs. more narrowly economic) to the electronic future, will these differences exacerbate or diminish existing differences in political capital, or will they have little appreciable effect? Understanding the intriguing relationship between social and political capital and community electronic networks, in our view, will depend on further scientific scrutiny of such questions.

Acknowledgments. This research was supported in part by grants from the Center for Urban and Regional Affairs at the University of Minnesota, NSF Grant #SBR9619147, and funding from the University of Minnesota's College of Liberal Arts to Eugene Borgida and John L. Sullivan. Melinda Jackson is also supported in part by a NSF graduate fellowship.

The authors would like to thank Greg Belshe, Marc Wagoner, and Libby Dresel for research assistance early in the project. We also like to thank the following individuals for helpful comments on earlier drafts of this article: Joe Galaskiewicz, Jon Krosnick, David Peterson, Dan Stevens, John Transue, John Brehm, and Amy Gangl. In addi-

tion, we extend our thanks to Frank Allen, Ben Hawkins, Sandy Layman, Milda Hedblom, and the communities of Grand Rapids and Detroit Lakes, Minnesota, for their cooperation. Portions of this article were presented at the 22nd Annual Scientific Meeting of the International Society of Political Psychology, Amsterdam, July 18–21, 1999, and at the 12th Annual Meeting of the American Psychological Society, Miami Beach, Florida, June 8–11, 2000.

APPENDIX: Selection of Control Community through Cluster Analysis

To select a control county to compare with Itasca County, the home of the GrandNet Project, we performed a cluster analysis of all Minnesota counties using the variables listed in the table below. We standardized the data values using *z*-score transformations, used squared Euclidean distances as the proximity measure, and used the average linkage between groups as the clustering method. The first time Itasca County was placed in a cluster was when it was added to one that already contained two counties: Becker and Carleton. That cluster later added six more counties, but the core of the cluster was Becker, Carleton and Itasca Counties. For substantive reasons we selected Becker County as the best control group.

Data Obtained from DATANET (maintained by Minnesota Planning's Land Management Information Center)	Data Obtained from the 1990 U.S. Census
Population (1995 projection)	Age
Sex—percentage male (1995 projection)	Per capita income
Justice system expenditures (1992)	Number of people
Liquor sales (1992)	. . . at various education levels
Monthly unemployment rates (1996)	. . . identified as disabled
Number of	. . . with interest, dividend, or net rental income
. . . households (1995 projection)	. . . with farm self-employment income
. . . married-couple households (1995 projection)	. . . with nonfarm self-employment income
. . . school suspensions (1992–93)	. . . with wage income
. . . runaways (1994)	. . . with public assistance income
. . . dropouts (1993–94)	. . . at each extreme of income scale
. . . infant mortalities (1992–94 total)	. . . employed in financial industry
. . . low birthweight babies (1994)	. . . employed in service industry
. . . mothers under 18 (1994)	. . . employed in public industry
. . . babies whose mothers had no prenatal care (1994)	. . . employed in basic industry
. . . homicides (1993)	. . . in homes where a Native American language is spoken
. . . criminal offenses—by type of offense (1993)	. . . with manual occupation
. . . arrests (1993)	. . . with technical occupation

. . . drug arrests (1993)	. . . with service occupation
. . . DWI arrests (1993)	. . . with laboratory occupation
. . . chemical dependency programs (1994)	. . . below poverty level, by age group
Number of people	. . . who are Native American
. . . 65 and over (1995 projection)	. . . who are non–Native American non-White
. . . 19 and under (1995 projection)	. . . enrolled in public schools
. . . in labor force (1995 projection)	. . . enrolled in private schools
. . . on probation (1993)	. . . living in urban areas
. . . in detox (1992)	. . . living in rural areas
. . . in chemical dependency programs (1993)	
Number of children	
. . . in poverty (1989)	
. . . on AFDC (1995)	
. . . reporting abuse, neglect (1994)	
. . . placed out of the home (1993)	
. . . receiving free school lunches (1993–94)	

NOTES

1. 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*.
2. A comparison of the demographic characteristics of our survey respondents in each community to the 1990 U.S. Census data reveals that our respondents were more highly educated and had higher incomes compared with the populations in each community: 39.5% of Grand Rapids survey respondents and 37.4% of Detroit Lakes survey respondents had a college degree or higher level of education, compared with 14.4% of Grand Rapids residents and 15.9% of Detroit Lakes residents; 60.5% of Grand Rapids survey respondents and 50.8% of Detroit Lakes survey respondents had household incomes of $35,000 or higher, compared with 29.8% of Grand Rapids residents and 21.9% of Detroit Lakes residents. While this does reflect a socioeconomic bias in our survey respondents, the degree of bias is similar in each community, making it unlikely that comparisons between the two towns will be compromised.
3. We measured political knowledge with an eight-item scale. The scale included five questions recommended by Delli Carpini and Keeter (1996) plus three additional questions to assess local political knowledge. Political interest, political efficacy, alienation, and interpersonal trust were assessed by items drawn from the General Social Survey (GSS). Coefficient alphas were all between .73 and .80.
4. Coefficient alpha was .63 for civic membership and .74 for political participation.
5. All but one of the coefficient alphas for these variables are in the .80s. One is .63.
6. The parameter estimates reported in Figure 1 were obtained using the AMOS structural equation modeling program, although to be thorough we also estimated the models using LISREL and obtained virtually identical results (most coefficients differed only in the third decimal place).
7. The same pattern of significance is found whether the determinants of community attitudes are allowed to vary among communities or constrained to be equal.

5. Browne and Cudeck (1993) indicate that the RMSEA takes into account the effect of additional parameters on the chi-square statistic, such that it decreases if the additional parameters substantially reduce the F statistic but increases if the effect is only minimal. They argue that an RMSEA below 0.05 indicates a close fit of the model, and models with RMSEA scores above 0.10 should be rejected.

REFERENCES

Anderson, Robert H., Bikson, Tora K., Law, Sally Ann., and Mitchell, Bridger M. (1995). *Universal Access to E-Mail: Feasibility and Societal Implications*. (Rand Report MR-650-MF). Santa Monica, CA: RAND Corporation.

Bollen, Kenneth A. (1989). *Structural Equations with Latent Variables*. New York: Wiley.

Booth, John, and Richard, Patricia Bayer (1998). Civil society, political capital, and democratization in Central America. *Journal of Politics* 60: 780–800.

Borgida, Eugene, Sullivan, John L., Oxendine, Alina, Jackson, Melinda S., Riedel, Eric, and Gangl, Amy (2002). Civic culture meets the digital divide: the role of community electronic networks." *Journal of Social Issues* 58: 125–141.

Browne, Michael W., and Cudeck, Robert (1993). Alternative ways of assessing model fit. In Kenneth A. Bollen and J. Scott Long (eds.), *Testing Structural Equation Models*, pp. 136–162. Newbury Park, CA: Sage Publications.

Calabrese, Andrew, and Borchert, Mark (1996). Prospects for electronic democracy in the United States: rethinking communications and social policy. *Media, Culture, and Society* 18: 249–268.

Cohill, Andrew Michael (1997). Success factors in Blacksburg electronic village. In Andrew Michael Cohill and Andrea Lee Kavanaugh (eds.), *Community Networks: Lessons from Blacksburg, Virginia*, pp. 297–318. Norwood, MA: Artech House Publishers.

Coleman, James S. (1988). Social capital in the creation of human capital. *American Journal of Sociology* 94: 95–120.

Coleman, James S. (1990). *Foundations of Social Theory*. Cambridge, MA: Harvard University Press.

Coover, Dee, and Delcourt, Marcia A. (1992). Construct and criterion-related validity of the adult-attitudes toward computers survey for a sample of professional nurses. *Journal of Personality and Social Psychology* 71: 130–140.

Delli Carpini, Michael X., and Keeter, Scott (1996). *What Americans Know About Politics and Why it Matters*. New Haven, CT: Yale University Press.

Foley, Michael W., and Edwards, Bob (1996). The paradox of civil society. *Journal of Democracy* 7: 38–52.

Foley, Michael W., and Edwards, Bob (1997). Escape from politics? Social theory and the social capital debate. *American Behavioral Scientist* 40: 550–561.

Fuchs, Ester R., Minnite, Lorraine C., and Shapiro, Robert Y. (1999). Political capital and political participation. Paper presented at the 57th Annual Meeting of the Midwest Political Science Association, Chicago, April 15–17.

Fukuyama, Francis (1995). Now listen, net freaks, it's not who you know, but who you trust. *Forbes ASAP* December 4, 1995, p. S80.

Gangl, Amy, Oxendine, Alina, Jackson, Melinda S., Riedel, Eric, Sullivan, John L., and Borgida, Eugene (2000). The role of community electronic networks in bridging the digital divide. Paper presented at the International Society of Political Psychology 23rd Annual Scientific Meeting, Seattle, WA, July 1–4.

Guthrie, K. Kendall, and Dutton, William H. (1992). The politics of citizen access technology: the development of public information utilities in four cities. *Policy Studies Journal* 20: 574–597.

Kavanaugh, Andrea L., Cohill, Andrew M., and Patterson, Scott (2000). Use and Impact of Community Networking in Blacksburg. Unpublished manuscript. [On-line] http://www.bev.net/project/research/Research.Highs.5_00.doc.pdf

Kling, Rob (1996). Synergies and competition between life in cyberspace and face-to-face communities. *Social Science Computer Review* 14: 50–54.

Knack, Stephen. (2000). Social Capital and the Quality of Government: Evidence from the States. Policy Research Working Paper 2504. Washington, D.C.: The World Bank Development Research Group.

La Due Lake, Robert, and Huckfeldt, Robert (1998). Social capital, social networks, and political participation. *Political Psychology* 19: 567–584.

Laguna, Kerrie, and Babcock, Renee L. (1997). Computer anxiety in young and older adults: implications for human-computer interactions in older populations. *Computers in Human Behavior* 13: 317–326.

Levi, Margaret (1996). Social and unsocial capital: a review essay of Robert Putnam's *Making Democracy Work*. *Politics & Society* 24: 45–55.

Minkoff, Debra C. (1997). Producing social capital: national social movements and civil society. *American Behavioral Scientist* 40: 606–619.

National Telecommunications and Information Administration (NTIA). (July 1995). Falling Through the Net: A Survey of the "Have Nots" in Rural and Urban America. [On-line] Available: http://www.ntia.doc.gov/ntiahome/fallingthru.html.

National Telecommunications and Information Administration (NTIA). (July 1998). Falling Through the Net II: New Data on the Digital Divide. [On-line] Available: http://www.ntia.doc.gov/ntiahome/net2/

National Telecommunications and Information Administration (NTIA). (November 1999). Falling Through the Net: Defining the Digital Divide. [On-line] Available: http://www.ntia.doc.gov/ntiahome/fttn99/contents.html

National Telecommunications and Information Administration (NTIA). (February 2002). A Nation Online: How Americans are Expanding Their Use of the Internet. [On-line] Available: http://www.ntia.doc.gov/ntiahome/dn/index.html

Oxendine, Alina, Borgida, Eugene, Sullivan, John L., Jackson, Melinda S., and Schneider, Monica (2002). The importance of trust and comminity in developing and maintaining a community electronic network. Manuscript under review in the *International Journal of Human Computer Studies*.

Pew Internet Project. (2001). Internet tracking report: more online, doing more." [On-line] Available: http://www.pewinternet.org/

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

Pinto, John N., and Nickell, Gary S. (1987). The computer attitude scale. *Computers in Human Behavior* 2: 301–306.

Popovich, Paula M., Hyde, Karen R., Zakrajsek, Todd, and Blumer, Catherine (1987). The development of the attitudes toward computer usage scale. *Educational and Psychological Measurement* 47: 261–269.

Putnam, Robert D. (1993). *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, NJ: Princeton University Press.

Putnam, Robert D. (2000). *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon & Schuster.

Rogers, Everett M., Collins-Jarvis, Lori, and Schmitz, Joseph (1994). The PEN project in Santa Monica: interactive communications, equality, and political action. *Journal of the American Society for Information Science* 45: 401–410.

Rosen, Larry D., and Weil, Michelle M. (1995). Computer availability, computer experience and technophobia among public school teachers. *Computers in Human Behavior* 11: 9–31.

Shields, Mark A. (1998). Introduction to special issues: Equality and inequality in information societies. *Social Science Computer Review* 16: 349–352.

Skocpol, Theda (1996). Unraveling from above. *The American Prospect* 25 (March–April): 20–25.

Times Mirror. (1994). *Technology in the American Household*. Los Angeles: Times Mirror Center for the People and the Press.

Tsagarousianou, Roza (1998). Electronic democracy and the public sphere: opportunities and challenges. In Roza Tsagarousianou, Damian Tambini, and Cathy Bryan (eds.), *Cyberdemocracy: Technology, Cities, and Civic Networks*, pp. 152–166. London: Routledge.

Verba, Sidney, Schlozman, Kay Lehman, and Brady, Henry. (1995). *Voice and Equality: Civic Voluntarism in American Politics*. Cambridge, MA: Harvard University Press.

Virnoche, Mary E. (1998). The seamless web and communications equity: the shaping of a community network. *Science, Technology, & Human Values* 23: 199–220.

Wellman, Barry, Salaff, Janet, Dimitrova, Dimitrina, Garton, Laura, Gulia, Milena, and Haythornthwaite, Caroline (1996). Computer networks as social networks: collaborative work, telework, and virtual community. *Annual Review of Sociology* 22: 213–238.

Wheaton, B., Muthen, B. Alwin, D., and Summers, G. (1977). Assessing reliability and stability in panel models. In D. R. Heise (ed.), *Sociological Methodology 1977*, pp. 84–136. San Francisco: Jossey-Bass.

Wresch, William. (1996). *Disconnected: Haves and Have-nots in the Information Age*. New Brunswick, NJ: Rutgers University Press.