The relationship between social networks and ICT use in historical communities

by Kate Williams

Social capital theory, particularly since Putnam (2000), has attracted the attention of scholars working to understand ICT (information and communications technology) projects in local, historical communities. Putnam's theory focuses on the value of bridging, across-group, social ties. Earlier social capital theory, particularly Coleman (1988), emphasizes the value of bonding, within-group social ties. Lin (2001) delineated the connections between social capital theory and social network theory. Among these connections is the work of Granovetter (1973), who asserted the value of weak ties for profession/managerial/technical jobseekers. But Granovetter's study has been replicated or adapted in many settings, and results are mixed. The author's scan of North American dissertations which tested his Strength of Weak Ties theory found that only 42% of 64 studies confirmed the theory. A possible explanation for this is that in some situations new information, thought to come from weak ties, is found to be key, and in others social support, thought to come from strong ties, appears to be more important.

A search of the literature on community ICT turned up more than a dozen scholarly studies that use the concepts of either social networks or social capital. A number of them also use the Strength of Weak Ties theory. It is possible to summarize these studies and what they suggest about the relationship between social networks (or social capital) and community ICT, how they inform the proposed study. This is a way to construct a framework that will help explain theoretically this diverse empirical literature and therefore contribute to evaluation of community ICT work.

Each study defines community ICT practically, empirically, as the particular community ICT project under study. In one case it's a telecenter. In another case it's a virtual community, which essentially means a community network. It's a cybercafé. It's a high-speed connection in the home and a local community listserv to go with it. The most elaborate instantiation of community ICT in the studies examined here is Blacksburg Electronic Village, which supported electronic discussion lists, gave grants for people to develop websites, provided server space, tech support, and high-speed public Internet access points. These studies are either of 1) community networks, 2) community technology centers, or 3) either or both of these combined with other ICT tools and services delivered to a local community.

As we have seen, technology and society shape and influence each other. The cases in these studies either focus on 1) community ICT shaping social networks/social capital; 2) social networks/social capital shaping community ICT; or 3) both processes. After reviewing the finding in these three areas, this section will recap the studies' findings with regard to strong ties and weak ties and draw a framework from the findings reviewed.

1 Does community ICT shape social networks/social capital?

All but two of these studies find that community ICT does indeed contribute to social capital/social networks. Of those that explore weak ties and strong ties,

- Strong ties only are augmented in an Australian housing estate (1 instance)

- Weak ties only are augmented in a Denver youth-serving CTC and at the end of the Netville project in a Toronto suburb (2 instances)
- Both kinds of ties are augmented in Blacksburg, Va. (weak augmented more than strong there), in a Stockholm cybercafé, and earlier in the Netville project (3 instances)

An additional complexity is that each study defines strong and weak ties somewhat differently. This is also true for the studies that ask the question, does community ICT shape social networks/social capital? Figure 1 below summarizes these definitions.

Summing these studies to say weak ties are augmented the same or more by community ICT than strong ties, it is important to see how these studies arrived at their conclusions. In large part they are case studies. They represent a tiny fraction of the total community ICT projects in the world. But what do they say?

Kavanaugh (1999, and similarly in Kavanaugh and Patterson 1998) asked what is the relationship between computer networks, social networks, and civic engagement? Working in an affluent small US city, they interviewed 10 members of social networks that had an online presence by means of the Blacksburg (Va.) Electronic Village, and found that the ICT, especially email and listservs, reinforced and extended social networks. Using the internet to garner resources suggested that it was weak ties social networks, but data from seniors demonstrated that social support, within-group strong ties, were also reinforced and extended by community ICT.

A related study (Kavanaugh and Patterson 2001) asked if a community computer network was a way to build social capital. Considering again the effect of the Blacksburg Electronic Village (listservs, grants for web development, server space, tech support, high speed public internet access points), they carried out two resident surveys (N=156 and N=320). They were not able to measure an increase in community involvement and attachment over the period that BEV had grown, but they did see an increase in community communication. They found that length of use of the internet was directly related to 1) use of the internet for social capital and 2) a sense of increased community involvement.

Blanchard and Horan (2000) surveyed 342 people in a mid-sized California city that was about to get a “virtual community” (i.e., a community network). Following the Putnam thesis, they wanted to know if virtual communities could “compensate for a decrease in social capital due to a decreased participation in face-to-face communities.” They also asked what topics would attract people’s virtual participation. Their conclusions were that people would indeed make use of a new virtual space and interact with their neighbors, building social capital by using child education resources, community bulletin boards, communicating with family and friends, and participating in government or politics.

Hampton and Wellman (2000) asked how living in a wired neighborhood affects interpersonal relations. They carried out a two-year case study of a middle income suburban development in Toronto (“Netville”) where close to half the residents were provided with a high speed internet connection and a residents’ listserv. They found that wired households evidenced more social ties of every type: strong, weak, instrumental, emotional, social, and affiliative. Their operationalization of strong and weak included three categories: host someone at your home or vice versa (strong); talk with regularly (weak); or the “knowing tie,” recognize someone by name.

Additional data analyzed by Hampton (2003), the end stage of the Netville project when the community had begun to fight the development project over house repairs and over withdrawing the high speed internet suggested that ICT only contributed to weak ties, defined as above. This is from surveys done with 65 wired and unwired households. Analysis of participant observation and interview data (Hampton and Wellman 2003) says again that a household's being wired was associated with and a causal factor in more weak ties. It may have been that the local ties that were augmented most at the later stage were the weak ties, due to a chronological factor (all the households moved in roughly the same time and were becoming settled in the community) and due to the fact that weak ties took on an importance in the struggles with the landlord and high speed access provider.

Tonn et al (2001) examined 40 community network websites based in a variety of communities and countries to see what are typical and cutting edge features of CNs and how might CNs foster an increase in social capital. They looked for nine features they identified as fostering social capital in the sense of Putnam. Of the 40 CNs, eight appeared to have one or more of the social-capital-building features. (Features were: helping people be better citizens, fostering direct democracy, helping students interact with larger community, letting citizens comment on proposed new developments, fostering barter and other alternative economics, building an "organic online community history," bringing citizens together for mentoring, and paying special attention to seniors and low income communities.

Ferlander (2002, 2003) asked, "To what extent can the use of an internet café crease social capital in a local community?" She found that community ICT, namely a cybercafé in a disadvantaged and multiethnic Stockholm suburb, strengthens both weak ties (defined as ties to people emotionally distant) and strong ties (to people who are emotionally close). Her studies investigate the effect of use of two distinct community ICT projects (an internet café and a community network) on social capital in a local community. In another small survey, residents expected the community network to generate social capital (Ferlander and Timms 2001), but it did not attract enough users to carry on, perhaps due to a requirement that all posts had to be in Swedish, and, what might have followed from that, a sense of surveillance by system operators.

Kvasny (2002) carried out a case study of a CTC run by the city of Atlanta. She asked what the relationship was between participating in a technology-rich environment and one's life changes and examined the process by which ICT reproduced social stratification. She defined social capital, after Bourdieu, as social networks that improve one's social standing, and found that community ICT reproduced social stratification rather than fostering people's social development. Inner-city Atlantans were taught what she called "light training" (p 200) which wouldn't get them ahead in career or in life. The CTC in fact acculturated them to a new setting for relative powerlessness and exclusion. She does allow that a different approach to community ICT could actually boost participants' social capital.

A study by Meredyth et al (2002) asks "What is community?" in a heavily immigrant, impoverished, multilingual housing estate in Australia. Along the way they find that community ICT strengthens strong ties, bonding ties rather than weak ties. Their community ICT project is a package, a networked community comprised of recycled home computers, subsidized internet access, classes, a computer lab, and online community information. They define bonding social capital, or strong ties, as the links within distinct language or country-of-origin networks connecting residents to family

and friends in a home country, and bridging capital, or weak ties, as local communication and exchange between residents. They find that the estate consists of multiple bonding social capital networks with almost no bridging social capital or weak ties, and they find that community ICT, specifically the computer lab and the training (the rest had not yet fully rolled out), is used only for email and exchange with the diasporic communities – hence augmenting only the bonding social capital.

This study examines both the social capital that preceded the community ICT as well as that resulting from it. So in a community where bonding ties predominate, community ICT augments and extends those ties and not bridging ties. The obverse is true for Kavanaugh et al: when they examine people whose ties are mostly weak, community ICT augments and extends those ties, not the strong ties. Haythornethwaite and Wellman's finding (2002) may hold here: that ICT augments and extends what already is, rather than making any dramatic change. Yet augmenting and extending what ties exist is often dramatic in and of itself.

In an ethnography of a youth-oriented CTC in Denver, Clark (2003) asks how digital divide policy is actually practiced. Her main finding, apart from gaps of meaning between parties and between policy and practice, makes use of Granovetter and of Oldenberg's concept of third places (1997), to say that young people's gaming and other typical teen online activities builds their weak tie networks, ties to a "wider circle of resources and opportunities than … through their family or peer contacts." (Clark 2003 p 109) Using Bourdieu, she concludes that these networks enable them to "do such things as find employment, locate housing, and otherwise function in society." (p 109)

Pinkett (2003) and Pinkett and O'Bryant (2003) ask, "How can community social capital be increased and community cultural capital be activated through community technology?" They install and implement new home computers, high speed internet, computer classes in the development and community building software and survey 58 heads of households. The residents were seen to expand their local ties, and their access to information. Social networks were seen to become more dense, and ties stronger, for those engaged in the community ICT project. This was measured as visiting other residents at home, phoning them, emailing, and recognizing them by name.

2 Do social networks/social capital shape community ICT?

The previous set of studies considered community as having a deficit in social capital, following Putnam, and asked whether community ICT might reverse this deficit or improve the situation. A set of four studies considers the social networks and social capital that already exist in the community, before the arrival of ICT. They take a point of view close to the asset-based community development model elaborated by Kretzmann and McKnight (1993), that all communities have assets that can be mobilized to improve conditions.

What are the findings of these four studies with respect to social networks/social capital and social networks as an influence on community ICT? Taken together, they report that social capital/social networks are a powerful influence on community ICT. They provide more evidence of projects suffering from a lack of attention to the positive influence of social ties than of community ICT projects that mobilize resources available through social ties and see the benefits.

Liff and Steward (2001, similarly in 2001a) ask how the policy prescriptions guiding the establishment of telecenters stack up against practice. Analyzing a rural UK youth-serving telecenter, they find that rather than the prescribed strong tie reliance, it is weak ties in a community that support the community ICT and help it serve the community. Social capital contributes, but weak ties contribute more. The authors construct a network diagram of the telecenter and its board, staff, partners, and clients to help illustrate this. Since weak ties are deemphasized in policy directives, they are often overlooked, to the detriment of the community ICT project. By strong ties the authors mean more intimate, multistranded, mutual ties based in kinship and the traditional community. By weak ties they mean "boundary spanners," people who are in two or more organizations.

Borgida et al (2002) ask what role social capital plays in addressing the digital divide. In a comparative case study of two rural Minnesota towns which each develop community electronic networks, they find that the town with more social capital evidences a more positive attitude towards the internet and a eliminates income-based disparities in computer and internet use. This town develops a community electronic network collaboratively with support from a local foundation and the Department of Commerce. The town with less social capital, which pursues networking via an entrepreneurial, competitive approach, evidences a more negative attitude towards the internet and income-based disparities in computer and internet use persist, and are even justified by locals. The community electronic network in this town, or rather the two networks, are set up by the municipal utility and a competing businessman.

Kvasny and Keil (2002) investigate two town's responses to local digital divide initiatives and ask why they were less successful than expected. One town is the city of Atlanta, with its string of city-operated telecenters, and the other is Lagrange, Georgia, which offered free cable internet access, set top boxes, and email accounts to all residents. In both cases, disregard for existing social networks and social capital kept the projects from greater success. In Atlanta, existing social networks brought people into the centers, but their social capital was disregarded. In LaGrange, the absence of positive word-of-mouth across poor neighborhoods left people who were not familiar with the internet uninterested and suspicious.

Alkalimat and Williams (2001) report a case study of a telecenter in a Midwestern inner city. They find that when social networks supporting the center became a mixture of strong and weak ties, the center grew and expanded its offerings and its user base.

3 Do social networks/social capital and community ICT shape each other?

One study in the set looks at both processes, social networks/social capital shaping community ICT and community ICT shaping social networks/social capital. On the latter process, they find that community ICT does indeed build social capital in the local community. Looking at both processes, they find that the people with more weak ties to start with are the ones who increase their social capital the most. In other words, the social networks/social capital that can take the most advantage of community ICT is the weak tie, bridging type of social capital.

Kavanaugh et al (2003) look again at the Blacksburg Electronic Village and ask how strength of ties and internet use influence what they call "community and collective efficacy" – a concept close to local social capital. The internet use the study looks at

is specifically group use of ICT – organizational email, listservs, online bulletin boards and websites. People with weak ties (members of more than one organization) boost their local community involvement and connections more than people without weak ties (members of just one organization), and they also use the internet more for political purposes.

They define strong ties as thick trust, bonding social capital, intensive daily contact, for support and mutuality, within homogeneous and exclusive communities. They define weak ties as thin trust, bridging social capital, less personal, for instrumental purposes, information sharing, linking homogeneous groups to integrate them into one social environment.

4 Weak ties and strong ties

Ferlander and Meredyth's definitions exemplify a challenge in synthesizing the work on community ICT and social capital. For Ferlander, bridging ties are what she calls "global," (Ferlander 2003 p 83) to people outside the local community, while bonding ties are to people within the local community. For Meredyth et al, it is opposite: bridging ties are to people inside the local community but not of your language group or nationality, and bonding ties are to your language group or nationality, either local or global. And this when both studies are looking at multiethnic or multinational urban communities: just outside Stockholm with "28% foreign citizens born abroad or in Sweden or foreign-born Swedish citizens" (Ferlander 2003 p 8) and Atherton Gardens housing estate with 64% of tenants "born in Asia, predominantly Vietnam. … only 14% of residents born in Australia." (Meredyth et al 2002)

In fact, all the studies define strong and weak ties rather differently, and Figure 1 details this. Hampton and Wellman, as was said above, operationalize the two (strong and weak ties) as a continuum, from strong to weak to "knowing" tie. Clarks' study of a CTC in Denver describes weak ties as young people in a CTC meeting people they wouldn't otherwise meet, in the sense of a great good place (Oldenburg 1997). Figure 1 below details how strong and weak ties and bridging and bonding social capital (if mentioned) are defined in each study. This issue of varying definitions and operationalizations is taken up in a current study now being carried out by the author.

Figure 1. Each of the community ICT studies defines strong and weak ties, bridging and bonding social capital, somewhat differently. As the last column indicates, some, but not all, equate strong ties to bonding and weak ties to bridging social capital.

Studies	Definitions	S/W = Br/Bo?
Community ICT package, Blacksburg Electronic Village, in Virginia city (Kavanaugh 1999, Kavanaugh et al 2003)	strong ties = bonding social capital = thick trust = intensive daily contact, in homogeneous exclusive communities capable of exercising sanctions ... support, mutuality. weak ties = bridging social capital = thin trust = less personal, links groups to integrate them in one social environment ... instrumental, information resources, increased reach. bridges = people who belong to 2+ community groups	Yes
Listserv and high speed internet in suburban Toronto development (Hampton 2000, 2003, Hampton and Wellman 2003)	operationalized as three kinds of ties: strong ties = invited over, or invited over. weak ties = talk to regularly. knowing ties = recognize by name.	--
Telecenter in rural England (Liff and Steward 2001)	strong ties = more intimate, multiple bases for interaction, mutuality; kinship, traditional community ties; provide a rance of resources in times of need weak ties = boundary spanning. people who are boundary spanners are members of 2+ groups	--
Computer classes as beginning of community ICT package delivered to Australian housing estate (Meredyth et al 2002)	bridging social capital = weak ties between many people = local communication and exchange between residents bonding social capital = strong ties in small groups = email and exchange with diasporic community	Yes
Youth telecentre in Denver (Clark 2003)	weak ties = those fostered in informal meeting places	--
Cybercafe in Sweden (Ferlander 2003)	strong ties = emotionally close weak ties = to people emotionally distant bonding = to similar people = local bridging = to different people = global	No

The community ICT studies that use the concepts of social capital or social networks can be seen as puzzle pieces that don't fit together quite tightly. But stepping back, the two ways of looking at the phenomenon, with the richness of the narratives and descriptions just reviewed, can say something. Those two ways were:

1. Does community ICT shape social networks/social capital?
2. Do social networks/social capital shape community ICT?

In the first question, the community ICT that shapes the social networks/social capital can be said to represent the social engineering of that community, the change. In the second question, the social networks and social capital that exist in a community can be said to represent the historical community, the continuity. Continuity and change are in fact both necessary for community ICT. Change refers to launching a community ICT project and continuity to sustaining that project. Along the way that project may morph, as in Clark's telecenter, from a CTC that offers training to a CTC that offers gaming and fun online stuff for teens; or from a single computer lab to a wireless facility supporting a set of independent computer labs and home users, as in the case of PrairieNet's latest project in East St. Louis, Illinois (Paul Adams, personal communication); or from grassroots community networks to public library community information services. The community network that flopped in Skarpnäck, Sweden,

created the change, but after about 50-odd users, it couldn't generate the sustainability. The historical community, the locals, mostly turned their backs on it.

For a community to move into the information society and the knowledge economy – to surmount digital inequality – it appears to take both establishing the ICT and sustaining the ICT. Examining social networks and social capital appears to lead to insights about the policy challenges surrounding launching and sustaining ICT in communities. In particular, the role of strong and weak ties in those interrelated processes is not yet well understood.

In addition, Kavanaugh's work suggests that people who are members of community organizations constitute social-capital-rich nodes in a local social network that can take up community ICT and make it produce more social capital.

To examine community groups, each of them arising from some collectively identified sense of community, and representing a leadership network in that community, and their use of ICT is to look across a set of cases to see how continuity intersects with transformation. What helps them take up and use ICT, how do they take it up and use it? That is the question being addressed in a study now underway.

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