

Scholars who have high degree centrality are those with many connections with other network members. Such scholars are involved in relations with many others and could be recognized by other scholars as major channels of scholarly information and activity. Well-connected network members usually play key roles in shaping the behavior and perceptions of others in the network, particularly in the diffusion of innovations and the use of available media (Rogers, 1983; Valente, 1995). Central network members tend to use a variety of media (Haythornthwaite & Wellman, 1998), have the most positive experiences with media use (Papa & Tracy, 1988), be early adopters of new information systems, and facilitate the development of critical masses of users for the systems (Rice, 1997; Rice et al., 1990).

When directionality is taken into account, there are two kinds of degree centrality: In-degree centrality measures how many other network members report having a relationship with a specified person. For example, others mention scholars with high in-degree centrality as people they approach for advice or discussions. Thus, in-degree centrality is one measure of the prestige of a network member. In contrast, out-degree centrality measures how many other network members a person reports being connected with. Thus, it is an indicator of the extent to which a scholar reports reaching out to others.

Betweenness centrality measures the extent to which a network member occupies a location between others in the network. Persons with high betweenness are often positioned in the collaborative and communication network between people who are not directly connected. Network members with high betweenness facilitate communication and information flows. They broker information, link otherwise disconnected scholars, and transmit information across disciplinary and organizational boundaries (Ahuja & Carley, 1999; Burt, 1992; Orlikowski & Barley, 2001; Tushman & Scanlan, 1981). Thus, scholars with high betweenness are in powerful collaborative and communication brokerage positions between otherwise disconnected scholars.

Central scholars are better able to control and diffuse information. They also are better able to sustain more central communication roles because of their prestige, popularity, and grant funding (Crane, 1972). This has positive feedback effects, leading to increased conference attendance, speaking engagements, and interaction with disparate others (Perry & Rice, 1998). All of these interactions expose scholars to more ideas, make them better known within professional and policy circles, and popularize their research. This sustains the cycle of centrality and prestige because central scholars are better able to respond to promising ideas, influence the direction of policy, and retain funding.

Central scholars tend to have a more sophisticated level of knowledge of the things worth knowing: the debates and lore that are crucial for leading-edge scholarship. While peripheral scholars may be apt to discover new ideas because of their connections to other scholarly communities, central scholars may introduce such peripheral ideas into the mainstream or else

be sources of new information and potential alliances (Granovetter, 1973; 1983).

4.4. Tie Strength

The strength of a tie is a multidimensional construct comprising social closeness, voluntariness, and multiplexity. Some scholars also add frequent contact to the defining criteria (Granovetter, 1973; 1983; Wellman & Wortley, 1990). Strong ties often provide more support and information, and a sense of belonging. However, Granovetter contends that weak ties are useful for specific purposes. He argues that people belong to clusters of others with whom they have strong and weak ties. Information circulates at high velocity within these clusters, and each person tends to know what other cluster members know. Hence, the spread of new information, ideas, and opportunities often comes through the weak ties that connect people in separate clusters.

Some studies have focused on the effect of tie strength on the flow of resources and information among scholars. Friedkin's (1980, 1982) study of university faculty contrasts the importance of strong versus weak ties for information flows. He shows that in the aggregate, the large number of weak scholarly ties contribute significantly to information flows. Although strong ties provide much information about activities within an organization, weak ties provide useful information about activities outside of a work group or organization (Levin et al., 2002).

Despite e-mail and IM's limited social presence and absence of social cues, their ease and ubiquity supports strong, frequent, supportive, and companionable contact (Garton & Wellman, 1995; Kling, 1996; Nie et al., 2002; Rheingold, 2000; Sproull & Kiesler, 1991; Quan-Haase & Wellman, 2004; 2005; Wellman & Gulia, 1999). So, strong and supportive are some online relationships that some participants in an online group came to feel that fellow members were close friends (Bastani, 2001; Hiltz & Turoff, 1993; Kendall, 2002). Concerns about how computer-mediated communication supports strong ties ignore the many relationships that combine online and offline communication. Computer-mediated communication is often used to maintain contact between face-to-face meetings and phone calls. Indeed, computer-mediated communication often coincides with in-person meetings, fills in gaps between, and helps arrange future meetings. Conversations began in one medium and drift to another. For example, computer scientists and programmers working in the same physical space often communicate by email and IM as well as in-person (Haythornthwaite & Wellman, 1998; Quan-Haase & Wellman, 2004; 2005). Learning communities are no different, with friendship and informal relationships—online and offline—being the fluid that lubricates the formality of collegial and academic collaborations (Carley & Wendt, 1991; Glanz, 1999; Gresham, 1994; Grimshaw, 1989; Toren, 1994).

5. TECHNET: A SCHOLARLY COMMUNITY

TechNet is a network of scholars and professionals in a North American university interested in a coherent set of issues at the intersection of the social sciences, humanities, sciences and engineering. It began informally in the early 1990s as a scholarly network at one university and formally became a university research institute “a visible college” in the mid-1990s (Nazer, 2000; Walsh & Bayama, 1996). TechNet’s goals are to:

- facilitate an intellectual community of scholars, researchers, and students from a number of disciplines;
- facilitate appropriate partnerships with other universities, the private sector, non-profit organizations, and government;
- afford the intersection of the relevant disciplines a more prominent place and role within the university;
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TechNet’s activities have been guided by a multidisciplinary steering committee that meets monthly. Membership in TechNet is voluntary and open to all faculties with an interest in TechNet’s domain. At the time of our data gathering at an early stage of TechNet’s development, administration was informal, with only one part-time paid administrative assistant. There were 24 members of TechNet—from the social sciences, physical sciences, medical sciences, humanities, and engineering. Members of TechNet organize and meet in a variety of online and offline forums to exchange ideas, to discuss emerging research, and to socialize. Some of these are weekly multidisciplinary seminars, annual conferences and symposia, retreats, end-of-semester/year parties.

TechNet is a scholarly network or more broadly, a community of practice with a shared history and cosmology (Barab & Duffy, 2000). Many founding members and some other members were initially linked through participation in joint research, conference attendance, reading the same journals, membership in university committees, and advising on graduate student projects. TechNet is also linked with other communities interested in the intersection of the humanities, social sciences, and technology. As one member explains in an interview:

The ways that an entire citizenry can be much more actively and successfully involved in knowledge development and knowledge society is the core interest of mine and that of a number of TechNet members. I just think that this interest is grossly under-represented in the kind of work that is done in the university and underrepresented in formal structures. There are lots of faculty who are doing exciting things, but there are no formal structures to network together.

6. RELATIONSHIPS AND NETWORKS IN TECHNET

To learn more about TechNet, one of us (Emmanuel Koku) interviewed all 24 TechNet members in 1997–1998 about their work, friendship, and media use inside and outside of TechNet, asking members to describe their scholarly and social relations with each other TechNet member. This elicited reports about 405 pairs of scholars: their work relationship, social closeness, friendship, frequency of scholarly communication, and type of communication media used. Although much of these interviews are analyzed statistically, we also rely on notes of conversations held during the interviews and Wellman and Koku's own active participation in TechNet [this section summarizes material presented in Koku and Wellman (2004); see also Koku et al. (2001)].

TechNet scholars report having an average of five “friends” within TechNet (22% of the total membership), 10 “colleagues” (43%), 9 “acquaintances” (39%), and 4 others of whom they are “just aware” (17%; Koku and Wellman, 2004; Koku et al., 2001). They are in email contact with 19 (82%) other members and in face-to-face contact with 14 (61%). Most use email where necessary for work relationships such as discussion of research, and supplement this with face-to-face communication when they meet in person in workshops, seminars, and other collegial gatherings. These statistics underestimate the significance of face-to-face contact, as it is usually longer in duration than email contact and provides more communication bandwidth. Those pairs of TechNet scholars who are in touch are in relatively frequent contact: a mean of 20 times per year and a median of 10 times per year. As all TechNet members are comfortable with computers, they use email often: 56% of all Technet pairs have some email contact.

Email and computer-mediated communication supports face-to-face contact rather than supplants it, with members using it to arrange face-to-face meetings, disseminate news, and exchange documents. Those TechNet members using email send messages to each other at a mean rate of 24 times per year, an average of twice per month. To Technet members, non-face-to-face communication means computer-mediated communication. Only a minority use telephones, faxes, and couriers, and those who do use these media, use them infrequently. The most widely used of these are local telephone calls, used by only 25% of TechNet members to communicate with other members.

Those who telephone do so on the average of once per month (mean = 11 calls per year). Most TechNet pairs use a combination of communication media to keep connected. Thirty-two percentage use two media while 23% use three or more.

Discussing and seeking research advice are not uniformly distributed in collegial communities. The more intense the work relationship, the smaller the scholar's network. The average TechNet member discusses work with 17 other TechNet members (74%), but reads the work of only five (22%) and also collaborates with five (22%; not necessarily the same five) in research and proposal writing. These may be overlapping networks, with some scholars discussing each other's work, reading these works, and collaborating in research.

Larger scholarly networks vary more in the intensity of their communications (e.g., email) and scholarly (e.g., discussion) networks. Thus, email contact networks are as large and heterogeneous as face-to-face contact networks. Similarly, research discussion networks are larger and more heterogeneous than reading or collaborative networks. The size and heterogeneity of email networks stem in part from the ease of making contact without regard to spatial and temporal separation, and the ease of including several scholars in the same message. Moreover, forwarding email messages fosters the development of more extensive and intensive relationships among scholars. The development of such heterogeneous linkages is facilitated by TechNet's weekly seminars, workshops, and other social events that provide an in-person focus (Feld, 1981) where scholars make and sustain collegial and sociable contact with people from different disciplines [for a similar pattern in another scholarly network, see Koku et al. (2001) and Nazer (2001)]. Such networks are important avenues for the provision of social, instrumental, and emotional support and for the mobilization and co-ordination of collective activity.

Email and face-to-face contact play complementary roles and reinforce each other. Rather than substituting for face-to-face contact, those who use email often also tend to have more face-to-face contact (Chen et al., 2002; Quan-Haase & Wellman, 2002; 2005). The impact of email is not so much in what is communicated, but in who communicates with whom, how frequently, and over what distances. Despite TechNet's frequent public gatherings, face-to-face contact is more centralized than email contact. Core planners and researchers combine face-to-face, email and occasional phone contacts. Peripheral members are more apt to use one of these media to keep in touch with TechNet activities. Some rely on scheduled face-to-face get-togethers to find out what is happening administratively and intellectually. Others, who do not want to go across campus to meetings, rely on broadcast email and occasional focused exchanges. These networks have fluid and permeable boundaries for the structure of relationships in TechNet varies according to the activity being performed (Ahuja & Carley, 1999; Koku & Wellman, 2004). These networked scholars use email for a wide range of things: exchanging drafts among

coauthors, setting up meetings, asking for information, or gossiping about colleagues. Although pundits worried a decade ago about whether merely textual email could sustain a wide range of interactions—from information seeking to emotional stroking—it is the social context, more than the nature of the medium that affects whether email will be used. Expectations only a decade ago that email would only be used for purely instrumental communication appear to have been a product of an early fascination with the novelty of email and an over-reliance on McLuhan's (1962) speculation that the medium is the message.

In short, TechNet has been a success in building a scholarly network and turning it into a visible college. It has:

1. linked scholars across a variety of disciplines in the humanities, social sciences, and sciences;
2. provided a milieu where most members are aware of each other's work;
3. fostered a large amount of innovative collaborative work and discussions across disciplines;
4. integrated the use of email and face-to-face contact into useful means of communication.

TechNet has continued to develop. The scholarly network has become more visible and institutionalized. Collaborative research has become more extensive, and well-attended lecture series solidify internal communication and reach out to other scholars, policymakers, technology companies, and the public. A graduate program offers a set of core interdisciplinary courses and an extensive list of affiliated courses with collaborating scholarly departments in the social sciences, physical sciences, and engineering. Although most arrangements remain informal, there is a full-time paid director, additional paid part-time staff, and steering and executive committees.

CONCLUSIONS

We are living in a paradigm shift in which the way in which people and institutions are becoming more connected through social networks and less so through formal groups. Members of old-paradigm societies deal only with fellow members of the few groups to which they belong: at home, in the neighborhood, at work, or in voluntary organizations. They belong to a discrete work group in a single organization; they live in a household in a neighborhood; they belong to one or two kinship groups, and to one or two voluntary organizations: churches, bowling leagues, professional associations, and the like. All of these are hierarchically structured bodies with precise boundaries for inclusion.

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- Garton, L., Haythornthwaite, C., & Wellman, B. (1998). Studying on-line social networks. In: Jones, S. (Ed.) *Doing Internet Research*. Thousand Oaks, CA: Sage, 75–105.
- Garton, L. & Wellman, B. (1995). The social uses of electronic mail in organizations: a review of the research. *Communication Yearbook* 18, 434–453.
- Glanz, J. (1999). What fuels progress in science? Sometimes, a feud. *New York Times*, D1–D2.
- Granovetter, M. (1973). The strength of weak ties. *American Journal of Sociology* 78, 1360–1380.
- Granovetter, M. (1983). The strength of weak ties: a network theory revisited. *Sociological Theory* 1983, 201–233.
- Gresham, J. J. (1994). From invisible college to cyberspace college: computer conferencing and the transformation of informal scholarly communication networks. *Interpersonal Computing and Technology* 2(4), 37–52.
- Grimshaw, A. (1989). *Collegial Discourse: Professional Conversation Among Peers*. Norwood, NJ: Ablex.
- Haines, V. & Hurlbert, J. (1992). Network range and health. *Journal of Health and Social Behavior* 33, 254–266.
- Hampton, K. & Wellman, B. (2003). Neighboring in Netville: how the internet supports community and social capital in a wired suburb. *City and Community* 2(3), 277–311.
- Haythornthwaite, C. (2002). Building social networks via computer networks: creating and sustaining distributed learning communities. In: Renninger, K. A. and Shumar, W. (Eds.) *Building Virtual Communities: Learning and Change in Cyberspace*. Cambridge: Cambridge University Press, 159–190.
- Haythornthwaite, C. & Kazmer, M. (2002). Bringing the internet home: adult distance learners and their internet, home, and work worlds. In: Haythornthwaite, C. and Wellman, B. (Eds.) *The Internet in Everyday Life*. Oxford: Blackwell, 431–463.
- Haythornthwaite, C. & Wellman, B. (1998). Work, friendship and media use for information exchange in a networked organization. *Journal of the American Society for Information Science* 49(12), 1101–1114.
- Hillery, G. J. (1955). Definitions of community: areas of agreement. *Rural Sociology* 20, 111–122.
- Hiltz, S. R. & Turoff, M. (1993). *The Network Nation*, 2nd ed. Cambridge, MA: MIT Press.
- Hiltz, S. R. & Wellman, B. (1997). Asynchronous learning networks as virtual communities. *Journal of the ACM* 40(9), 44–49.
- Kendall, L. (2002). *Hanging Out in the Virtual Pub: Masculinities and Relationships Online*. Berkeley: University of California Press.
- Kling, R. (1996). Social relationships in electronic forums: hangouts, salons, workplaces and communities. In: Kling, R. (Ed.) *Computerization and Controversy: Value Conflicts and Social Choices*, 2nd ed. San Diego: Academic Press, 426–454.
- Koku, E., Nazer, N., & Wellman, B. (2001). Netting scholars: online and offline. *American Behavioral Scientist* 44(5), 1750–1772.
- Koku, E. & Wellman, B. (2004). Scholarly networks as learning communities: the case of TechNet. In: Barab, S. and Kling, R. (Eds.) *Designing Virtual Communities in the Service of Learning*. Cambridge: Cambridge University Press, 299–337.
- Kollock, P. & Smith, M. (Eds.) (1998). *Communities in Cyberspace*. London: Routledge.
- Levin, D., Cross, R., & Abrams, L. (2002). The strength of weak ties you can trust: the mediating role of trust in effective knowledge transfer. Presented to the *Academy of Management Conference*, Denver, August.
- Marsden, P. & Campbell, K. E. (1984). Measuring tie strength. *Social Forces* 63, 482–501.
- Matzat, U. (2004). Academic communication and internet discussion groups: transfer of information or creation of social contacts? *Social Networks* 26(3), 221–255.

- McLuhan, M. (1962). *The Gutenberg Galaxy: The Making of Typographic Man*. Toronto: University of Toronto Press.
- Mutschke, P. & Quan-Haase, A. (2001). Collaboration and cognitive structures in social science research fields. *Scientometrics* 52(3) 487–502.
- Nazer, N. (2001). The emergence of a virtual research organization: how an invisible college becomes visible. Unpublished Ph.D. Thesis, Department of Sociology, University of Toronto.
- Newman, M. E. J. (2001). Ego-centered networks and the Ripple effect: why all your friends are weird. Working Paper, Santa Fe, NM: Santa Fe Institute, 7.
- Nie, N., Hillygus, D. S., & Erbring, L. (2002). Internet use, interpersonal relations and sociability: a time diary study. In: Wellman, B. and Haythornthwaite, C. (Eds.) *The Internet in Everyday Life*. Oxford: Blackwell, 215–243.
- Noam, E. M. (1998). CMC and higher education. *Journal of Computer Mediated Communication* 4(2). Available at: <http://www.ascusc.org/jcmc/vol4/issue2>.
- Orlikowski, W. & Barley, S. (2001). Technology and institutions: what can research on information technology and research on organizations learn from each other? *MIS Quarterly* 25(June), 145–165.
- Papa, M. J. & Tracy, K. (1988). Communicative indices of employee performance with new technology. *Communication Research* 15(5), 524–544.
- Perry, C. & Rice, R. (1998). Scholarly communication in developmental dyslexia: influence of network structure on change in a hybrid problem area. *Journal of the American Society for Information Science* 49(2), 151–168.
- Price, D. D. S. (1961). *Science Since Babylon*. New Haven: Yale University Press.
- Quan-Haase, A., Cothrel, J., & Wellman, B. (forthcoming). Instant messaging for collaboration: a case study of a high-tech firm. *Journal of Computer Mediated Communication*.
- Quan-Haase, A. & Wellman, B. (2002). Capitalizing on the net: social contact, civic engagement, and sense of community. In: Wellman, B. and Haythornthwaite, C. (Eds.) *The Internet in Everyday Life*. Oxford: Blackwell, 291–324.
- Quan-Haase, A. & Wellman, B. (2004). Local virtuality in a high-tech networked organization. *Analyse & Kritik* 26(special issue 2), 241–257.
- Quan-Haase, A. & Wellman, B. (forthcoming). Hyperconnected network: computer mediated community in a high-tech organization. In: Heckscher C. and Adler, P. *Collaborative Community in Business and Society*. New York: Oxford University Press.
- Ragusa, J. & Bochenek, G. (Eds.) (2001). Collaborative virtual design environments. *Communications of the ACM* 44, 12(December), 40–90.
- Rheingold, H. (2000). *The Virtual Community*, Revised edition. Cambridge, MA: MIT Press.
- Rice, R. (1997). Relating electronic mail use and network structure to R&D work networks. *Journal of Management Information Systems* 11(1), 9–29.
- Rice, R. E., D'Ambra, J., & More, E. (1998). Cross-cultural comparison of organizational media evaluation and choice. *Journal of Communication* 48(3), 3–26.
- Rice, R., Grant, A., Schmitz, J., & Torobin, J. (1990). Individual and network influences on the adoption and perceived outcomes of electronic messaging. *Social Networks* 12, 27–55.
- Rogers, E. (1983). *Diffusion of Innovations*. New York: Free Press.
- Scott, J. (1991). *Social Network Analysis*. London: Sage.
- Smith, M. A. (2000). Some social implications of ubiquitous wireless networks. Working Paper, Microsoft Research, Redmond, WA.
- Sproull, L. & Kiesler, S. (1991). *Connections*. Cambridge, MA: MIT Press.
- Tindall, D. & Wellman, B. (2001). Canada as social structure: social network analysis and canadian sociology. *Canadian Journal of Sociology* 26, 265–308.
- Toren, N. (1994). Professional-support and intellectual-influence networks of Russian immigrant scientists in Israel. *Social Studies of Science* 24, 725–743.

- Tushman, M. L. & Scanlan, T. J. (1981). Boundary spanning individuals: their role in information transfer and their antecedents. *Academy of Management Journal* 24(2), 289–305.
- Valente, T. (1995). *Network Models of the Diffusion of Innovations*. Cresskill, NJ: Hampton Press.
- Walsh, J. P. & Bayama, T. (1996). The virtual college: computer-mediated communication and scientific work. *Information Society* 12, 343–363.
- Wasserman, S. & Faust, K. (1994). *Social Network Analysis: Methods and Applications*. Cambridge: Cambridge University Press.
- Wellman, B. (1988). Structural analysis: from method and metaphor to theory and substance. In: Wellman, B. and Berkowitz, S. D. (Eds.) *Social Structures: A Network Approach*. Cambridge: Cambridge University Press, 19–61.
- Wellman, B. (1997). An electronic group is virtually a social network. In: Kiesler, S. (Ed.) *Culture of the Internet*. Mahwah, NJ: Lawrence Erlbaum, 179–205.
- Wellman, B. (1998). A computer network is a social network. *SIGGROUP Bulletin* 19(3), 41–45.
- Wellman, B. (1999a). The network community. In: Wellman, B. (Ed.) *Networks in the Global Village*. Boulder, CO: Westview, 1–48.
- Wellman, B. (Ed.) (1999b). *Networks in the Global Village*. Boulder, CO: Westview.
- Wellman, B. (2001a). *The Persistence and Transformation of Community: From Neighbourhood Groups to Social Networks*. Ottawa: Law Commission of Canada, 101.
- Wellman, B. (2001b). Physical place and cyber-place: changing portals and the rise of networked individualism. *International Journal for Urban and Regional Research* 25(2), 227–252.
- Wellman, B. 2002. Little boxes, glocalization, and networked individualism. In: Tanabe, M., van den Besselaar, P., and Ishida, T. (Eds.) *Digital Cities II: Computational and Sociological Approaches*. Berlin: Springer-Verlag.
- Wellman, B. & Berkowitz, S. D. (Eds.) (1988). *Social Structures: A Network Approach*. Cambridge: Cambridge University Press.
- Wellman, B., Carrington, P., & Hall, A. (1988). Networks as personal communities. In: Wellman, B. and Berkowitz, S. D. (Eds.) *Social Structures: A Network Approach*. Cambridge: Cambridge University Press, 130–184.
- Wellman, B. & Gulia, M. (1999). Net surfers don't ride alone. In: Wellman, B. (Ed.) *Networks in the Global Village*. Boulder, Colorado: Westview Press, 331–366.
- Wellman, B. & Hampton, K. (1999). Living networked on and offline. *Contemporary Sociology* 28(6), 648–654.
- Wellman, B. & Haythornthwaite, C. (Eds.) (2002). *The Internet in Everyday Life*. Oxford: Blackwell.
- Wellman, B. & Hogan, B. (2004). The immanent internet. In: McKay, J. (Ed.) *Netting Citizens: Exploring Citizenship in the Internet Age*. Edinburgh: Saint Andrew Press, 54–80.
- Wellman, B. & Leighton, B. (1979). Networks, neighborhoods and communities. *Urban Affairs Quarterly* 14, 363–390.
- Wellman, B., Salaff, J., Dimitrova, D., Garton, L., Gulia, M., & Haythornthwaite, C. (1996). Computer networks as social networks: virtual community, computer supported cooperative work and telework. *Annual Review of Sociology* 22, 213–238.
- Wellman, B. & Wortley, S. (1990). Different strokes from different folks: community ties and social support. *American Journal of Sociology* 96, 558–588.

