Information Communities: Characteristics Gleaned from Studies of Three Online Networks

Karen E. Fisher & Kenton T. Unruh
The Information School, University of Washington, Box 352930, Seattle, Washington, 98195
Email: {fisher, ktunruh}@u.washington.edu

Joan C. Durrance
School of Information, University of Michigan, 550 East University Ave., Ann Arbor, MI 48109-1092
Email: durrance@umich.edu

Digital network infrastructures such as community networks have heralded powerful new ways for enhancing people's quality of life. We argue that the Internet has further facilitated the creation of information communities: constituencies united by a common interest in building and increasing access to sets of dynamic, linked, and varying information resources. Using data from a two-year study of three community networks, we describe five defining characteristics of effective information communities: (1) emphasis on collaboration among diverse information providers, (2) capacity to form around people's needs to access and use information, (3) capacity to exploit the information sharing qualities of emerging technologies, (4) ability to transcend barriers to information-sharing, and (5) capacity to foster social connectedness.

Introduction

The notion of community has been widely studied but never easily defined. Hillary (1955), for example, identified 94 definitions of community and highlighted such unifying characteristics as geography, social interaction, and ties. Community also has been viewed as outgrowths of institutional structure (Effrat, 1974; Ogburn & Nimkoff, 1964; Park, et al., 1925), such as the communities that develop around hospitals, churches, family, government, etc. McMillan & Chavis (1986) proposed that a definition of community be drawn using four significant dimensions: membership, influence, integration and fulfillment of needs, and emotional connection. In the health sciences "community" is often a population—geographically defined or otherwise—that shares a common health characteristic(s) (Jewkes & Muncott, 1996). Regarding people affected with HIV, for example, MacQueen, et al., (2001), described five core elements of community: locus (or sense of place), sharing, joint action, social ties, and diversity.

The notion of electronic or virtual communities was largely propelled by the advent of the Internet. As early as 1968, Liklider & Taylor (1968, p. 30) envisioned online communities as comprising "geographically separated members, sometimes grouped in small clusters and sometimes working individually. They will be communities not of common location, but of common interest." Burnett (2000) describes the development of virtual communities as the result of the convergence of information communication through computer-mediated-communication technologies: "from the point of view of the provision and availability of information, the primary significance of virtual communities is the fact that they function for their members not only as social settings, but as 'information neighborhoods,' contexts within which they can engage in ongoing information sharing activities." But defining such virtual communities is not necessarily straightforward. Studying a Finnish newsgroup on consumer issues, Savolainen (2001) noted that while newsgroups offered an interactive forum for information seeking some discussion threads appeared to be irrelevant to the topic or information seeking behavior. Komito (2001) argues that only two types of community—moral communities characterized by egalitarian values and reciprocal relations and norm-based communities based on a system of shared rules and meanings—are generally possible in a virtual sense.

The concept of information communities contains some of these same foregoing notions with its main element focusing on the role of information. As Durrance (2001,
p. 64) explains, information communities form primarily around people’s needs to get and use information. She thus defined information communities as “constituencies united by a common interest in building and increasing access to a set of dynamic, linked, and varying information resources.” She further elaborated how information communities can be:

A partnership of institutions and individuals forming and cultivating a community of interest around the provision and exchange of information, or knowledge, aimed at increasing access to that information or increasing communication, and thereby increasing that knowledge (Durrance, 2001, p. 64).

Information communities may differ in their primary subject of information focus. They also can and do arise and function quite effectively outside of geographic communities. Examples of these include those in the health sciences such as HealthWeb <http://healthweb.org/> (Redman, et al, 1997), the humanities (H-Net) http://www2.h-net.msu.edu/ and various scientific collaboratories (Teasley & Wolinsky, 2001). A general article examined such non-geographic information communities (Durrance, 2001).1 In this paper we build upon Durrance’s work by proposing five key characteristics of information communities. These characteristics are based upon empirical data drawn from field studies of three online geographic community networks and their stakeholders.

The Field Studies

In “Help-seeking in an Electronic World,” a two-year study funded by the Institute of Museum and Library Services (IMLS), we investigated how community networks2 are affecting physical communities in terms of how they are being used as vehicles for disseminating information and for fostering social connectedness. We used a standard case study design with three community networks: (1) NorthStarNet (nsn.nslsilus.org; established in 1995 for Northeastern Illinois), (2) the Three Rivers Free Net (trfn.clpgb.org; created in 1995 for Southwestern Pennsylvania), and (3) CascadeLink (www.cascadelink.org; established in 1996 for Portland and Multnomah, OR).

Data collection methods at each site included an online survey and follow-up telephone interviews with adult users, along with in-depth interviews, field observation and focus groups with social service providers (who post information about their services on the networks) and public library staff (who manage the networks). The user online survey and follow-up interviews were based on Dervin’s (1992, c.f., Dervin & Frenette, 2000) sense-making framework. The survey was posted an average of 73 days during different time periods on each network. Aggregately, 197 users responded. Across the three networks, data were collected from 60 library-community network staff, human service providers, and other individuals. Further details about the study’s methodology and major findings are discussed in Pettigrew, et. al., (2002) and Durrance and Pettigrew (2002).

Information Communities: Five Characteristics

Analysis of our data from the three community networks reveal five ways in which information communities may be characterized (Figure 1). Each characteristic is discussed as follows using data from our field studies.

![Figure 1](image.png)

| Connect People and Foster Social Connectedness |
| Form Around People’s Information Needs |
| Emphasize Collaboration Among Diverse Information Providers |
| Exploit Information Sharing Qualities of Technology |
| Transcend Barriers to Information Sharing |

FIG. 1.

Five Characteristics of Information Communities

---

1 Our website lists several other non-geographic information communities: www.si.umich.edu/libhelp/examples.htm
2 Community networks are locally based, locally driven communication and information systems hosted on the Internet. For an in-depth description, see Pettigrew et. al., (2002).
Characteristic #1: Information Communities Emphasize Collaboration among Diverse Information Providers

Information communities involve the collaboration of a variety of organizations or groups that provide information, and may share joint responsibility and resources (including in-kind contributions). Our field studies revealed two facets of this characteristic of information communities: (a) collaboration between/among information resources and (b) diversity of information resources present in the information community. By definition, information communities depend on their ability to share information and information resources. As a conduit for online community networks, information technology plays a crucial role in facilitating access to and providing information for a user base.Both information users and information providers emphasized the importance of collaborating, especially around information technology. For example, an information provider who developed websites for a number of community organizations praised the assistance he received from his local library when he lacked the technical and organizational skills needed to develop community websites: "It's the personnel who are so important. I went to the library and talked to my contact there. I didn't have a clue and he took me by the hand and I think it was two months before I went online. Not only did he show me, but he also explained what a web site is, and why a site would be good for my organization and to the community."

The use of collaborative approaches is a hallmark activity of information communities. One small town library staff person spoke of the direct increase in collaboration as a result of their central involvement in the community network. Since beginning their involvement, the library has signed off on two collaborative grant applications, one with the high school and another with the senior center. For community networks, a healthy diversity of resources is viewed as essential for the efficacy of the information community they foster. For instance, CascadeLink is a regional information community. According to its mission it "provides online community information, encourages citizen involvement and supports Internet access for people living in the Portland, OR and Vancouver WA region." Users reported using CascadeLink to find jobs, access neighborhood profiles, identify educational resources, locate non-profit organizations, gather demographic data, and track down information on ordinances and zoning laws. Such user activity would be difficult to support within one single information resource, and CascadeLink works hard to maintain links to a diversity of information providers essential to the life of the regional information community.

Opportunities for public feedback and suggestions are available on each CascadeLink page. The network offers forms for users to submit additional organizations, access points, educational opportunities or links to the current resource listings. In addition, CascadeLink staff call information for the events calendar from all over the city by monitoring a wide range of resources, including neighborhood newsletters, hospital pamphlets, specialty magazines, business flyers, and organizational brochures. This extensive effort by CascadeLink is another example of the importance that successful information communities place on providing diverse information resources from multiple information providers.

In turn, this diversity feeds back into collaboration by allowing users to find new opportunities to connect with information providers, and providers to make additional connections with both users and other information providers. While the Internet provides valuable functionality, information communities are built upon quality, sustained interaction. This interaction relies on the availability of substantial information resources from diverse information providers. Studies in Information Behavior have shown that (a) people use different information for different contexts, and (b) potential users of information are often unaware of the sources of information available (Fabisoff & Ely, 1976; Harris & Dewdney, 1994). Individuals may turn to an information community, in this case community networks, to solve a problem or seek out particular information. However, information seeking is a complicated process. Members of an information community might not be able to articulate exactly what they are looking for and therefore must navigate the web of information resources available until they find the information that best fits their need. This navigation may take users to information resources that they were not initially aware of, or perhaps had knowledge of but didn't initially identify that particular information resource to have relevant or helpful content. In both cases, diverse information resources that are linked together in a coherent structure is essential to user searching efficacy.

3 This does not mean that the analyses of social informatics researchers can or should be ignored when considering the evaluation and design of digital CIS. To the contrary, their research into important social interactions and critique of technology systems can inform evaluation from an IR perspective. However, evaluation must move beyond such analyses and make the next step toward improved system design.
Characteristic #2: Information Communities Anticipate and Often Form Around People’s Needs to Get and Use Information

Information Communities form around people’s needs to get and use information in ways that they perceive as helpful, concepts of which their leaders have some understanding. Users in our case studies, for example, accessed their community networks for many different types of situations, including work-related and those of a personal nature. Specifically, they sought online information regarding: business, computer and technical, education, employment, financial support, governmental and civic, health, housing, library operations and services, local events, local history and genealogy, local information, local news, organizations and groups, other people (both local and beyond the community), parenting, recreation/hobbies, sale, exchange, or donation of goods, social services and volunteering.

Beyond these general categories of online information, our analysis of qualitative data revealed that context plays a significant role in illuminating why people seek information. In Pettigrew et al., (2002) we listed several examples of the situations that created information needs and how respondents used information from their community networks for solving daily problems. These examples included:

- teenagers who sought summer employment information because they believed the community network contained all the local job information in one place and trusted it as a reliable, current source
- a man who found a local directory of gay and lesbian organizations on his community network after finding only national resources on the Web
- a homebound person who used the network to research his family genealogy because of its comprehensive organization of local resources, including public library, county agency and local historical association materials
- a woman who used the network for such local government information as current ordinances pertaining to trash pick up and flood damage prevention, and to identify sources of funding for a community service project intended to help a nearby low-income community.

These examples illustrate a key finding of our study: the interaction between the information needs of individuals and the available content provided via the information system is the genesis of an information community. Information is empowering—a concept we used to develop a typology that describes what people are trying to accomplish through seeking information. In Pettigrew, et al., (2002) we identified several “enabling characteristics” of the information that community network users accessed for everyday situations: comparing, describing, promoting, relating, trusting, verifying. These characteristics were derived not from the community network per se or from distinct units of content available online, but from the collective information resource made available to users through the community network. By enabling users to solve problems through information that ultimately helps them reach their goal, community networks become information communities. Thus, information communities provide value-added dimensions that facilitate the access and use of relevant content.

Characteristic #3: Information Communities Effectively Exploit the Information Sharing Qualities of Available Technology and Yield Multiplier Effects for Stakeholders

As a medium, the Internet facilitates multiple methods of communication. For information providers, the Internet provides an important place to “post” information that is accessible for public access. In the past, many information providers (particularly those without large budgets specifically earmarked for dissemination) with important information to share had to make very selective decisions about where to share their information. While traditional mass media such as newspaper and radio may reach a large public audience, it may not reach the target group of individuals most affected by the information. In addition, notices in newspapers and radio spots do not generally provide enough space to deliver information in significant detail. Grassroots media such as flyers, public meetings, and door-to-door campaigns can require significant investment in time and energy and still may not reach everyone potentially interested in or affected by the information. For information providers, the Internet facilitates the sharing of information by providing: (a) a “place” where information resources can be posted and frequently updated for the public, (b) in-depth, detailed, and comprehensive information that may be difficult or impossible to achieve via other communication media or dissemination formats, and (c) built-in links to other relevant information content. For users, the Internet provides the opportunity to engage in such a way that (a) is anonymous for users, if they chose, (b) is conducive to their available time schedules, and (c) may expand their knowledge of the subject via direct links to other external information resources.

In our field research, community networks consistently took a leadership role in capitalizing on the information sharing qualities of the Internet for the benefit of information communities they were fostering (Durrance & Pettigrew, 2002). For example after embracing the community network idea, a village trustee began posting the village trustee agenda online so that citizens could see
what issues were on the table. In response to this posting, groups told her that they were now much more aware of what was going on in the different areas of local village politics and government. This is a classic case of where information was available as part of the public record but prior to utilizing online functionality, citizens were less aware but were engaged enough in the issue to respond directly to the information provider after it appeared online.

A second example involved a municipal health department that incorporated the community network directly into its grant-making and public funding campaigns. As a representative explained, "since funders often require that you show how you will share information on your activities with the community, we list the community network in our grant applications, citing the network as an important means of disseminating our message." By providing an "open space" on the Internet, the community network seeded a new official channel for dissemination of information about the use of public funds.

A third example included a staff member of a very small non-profit organization who had information to provide to the public but didn't have the expertise to provide the information online. He explained: "I wanted to learn the mechanics of building and maintaining a site. The hands-on experience I got from working with the community network gives me more control over the content of our web site. When you go through a design firm, you have to try to explain to them how to represent you, but when you do it yourself, you can get it right, faster." In this case, the community network provided opportunities for an information provider to manage the information without going through an intermediary (e.g., design firm). One of the important information sharing qualities of the Internet is that information providers can be directly responsible for the information they make available. This can work to ensure accuracy and that the level of detail meets the providers' purposes in notifying the public.

One of the most essential information sharing qualities of the Internet is that it can be used in conjunction with other forms of communication to enhance information exchange. For example, the Internet facilitates direct communication about information resources via email. But healthy information communities can facilitate traditional information exchange media as well: online information can help increase awareness of issues and help individuals be more prepared for community meetings or forums. For information providers, the Internet can be a place where they can be directly responsible for organizing and distributing detailed information content that best represents current issues, situations or phenomena at the local level. In sum, the Internet facilitates this interaction between information providers and individuals that is central to the development of healthy information communities.

Information communities can also yield multiplier effects for their stakeholders. While libraries have a long history as being a center for information sharing, there are limits to the information that they can encompass through their own efforts. As community networks evolve into information communities, those who contribute to them are able to tap into a much larger information community with greater chances of providing information customized to the needs of community residents. More dramatically, however, is that other members of the community network also have bi-directional access to that same information community. They can provide and receive information that was previously only available through traditional physical information institutions, such as libraries. In this sense, the broad collaborations within the community networks yielded multiplier effects. A viable community network results in a critical mass of organizations that understand its functions and contribute to its success. When these conditions occur the community network can make strong contributions to community building by bringing organizations together, thus strengthening organizational partnerships. Capitalizing on these multiplier effects, information communities create important byproducts such as community development of physical communities and enhanced information access for traditional and nontraditional information institutions.

Characteristic #4 Information Communities Transcend Barriers to Information-Sharing

While few studies have examined how the public uses such digital services and what barriers they encounter, numerous studies reveal that all citizens encounter situations where they experience great difficulties in recognizing, expressing and meeting their needs for information (Bishop et al, 1999, Chatman, 1996, 2000; Chen & Hernon, 1982; Childers, 1975; Dervin et al., 1976; Durrance, 1984; Durrance & Pettigrew, 2001; Harris & Dewney, 1994; Palfour et al., 1979; Pettigrew, 1999, 2000; Warner, et al., 1973). In Pettigrew et al., (2002) we discussed a number of barriers from the perspective of sense-making, including cultural, financial, geographic, and physical. These barriers challenge users with obtaining information about needed services and participating in civic life. While technology holds significant promise for linking individuals with information and one another, they are accompanied by the potential for a deeper divide between the information rich and the information poor.

Our field studies revealed how community networks can lessen the effects of such barriers as geography and finances, along with the reluctance to ask for sensitive
information. The community networks in our study harnessed the power of the Internet to bring together previously unconnected individuals and groups by diminishing the barriers faced by citizens. Our case study of The Three Rivers Free-Net (TRFN), for example, indicates how an information community can overcome geographic barriers. Pittsburgh is a product of its geography. Many of the characteristics that make Pittsburgh a scenic place—its three rivers, its many neighborhoods built upon rolling hills—are also those that tend to separate municipalities from each other. This results in a patchwork of towns and boroughs that do not always communicate well with each other or collaborate on programs. In fact, there are 130 municipalities in Allegheny County—the location of Three Rivers Free-Net—alone. The non-profit network in Pittsburgh is extensive—there are over 3000 health and human service organizations in the area—and tightly knit. Area non-profits are very interested in working together to solve problems and TRFN works to build connections among Pittsburgh's many dispersed resources. By working to link in cyberspace non-profits that don't easily meet in real space, TRFN creates an internal geography to counter Pittsburgh's segmented physical geography. This information community uses several approaches to overcome barriers to information seeking. The TRFN Subject Guide is designed to bring resources together and make information more accessible for area residents. TRFN staff recognize that many non-profit organizations operate on a shoestring and are therefore not likely to have a surplus of resources (funds and staff) to devote to web pages. Thus, TRFN hosts some agency pages on its own server, providing non-profits (which the Free Net staff refer to as “information providers” with server space and one free email account per group and with training on setting up an effective page. Since many non-profit agencies don't have access to the latest equipment or technical advice, this level of training is essential to TRFN's mission. In addition, TRFN staff encourage new information providers to link with related agencies—with an emphasis on those in southwestern Pennsylvania—both to serve users and to support sister organizations. As an information community, TRFN reduces several barriers faced by non-profits and enables these organizations to lessen barriers encountered by their clientele. As one non-profit staff member explained, “in the non-profit community, we want to help each other out, so we should provide links to related organizations whenever appropriate.”

The following are a few examples of how information communities assist non-profits in bridging geographic and physical barriers encountered by citizens:

A non-profit organization included materials for the visually impaired via Real Audio on their community network web page. The director sees this technology as a way to give “blind drivers a lane on the information superhighway.” The network also serves the non-profit's clientele by requiring that all of its web pages are designed to be easily accessible for the visually impaired.

An employee at a nonprofit agency explained how many of the people they serve are the least likely to have their own computers and Internet access. The community network allows access to everyone through dial-up services and public library access.

An agency that serves a disabled community created an online access guide to its city, which appears on their community network-sponsored page. The guide offers information on access to parking, buildings, restrooms, telephones, water fountains, etc. provided by local businesses to persons with disabilities.

Characteristic #5 Information Communities Connect People and Foster Social Connectedness

Information communities connect people and information, which contributes to the degree of social connectedness within the community. Throughout our study, respondents distinguished between getting “information about community” and getting “information that would help them make connections with other people and organizations.” This “connecting characteristic” of information communities creates links that can increase the knowledge a member of such a community can offer someone else. For instance, librarians reported using community networks to put people in touch with other people and resources available in their local information community that met their information/social needs. For example:

- a man wanted to join a male chorus like the one he was in where he had previously lived. The library provided him with a name and he is now a member of that group.
- An individual wanted to home-school her children. She used the community information database to locate other home-schooling parents and joined a related organization.
- There was a tragic fire that claimed the lives of a father and all but one of his children. The Fire Department asked the library to suggest some social service organizations and community groups that could offer aid to the surviving mother and child. The library created a potential referral list using the community information database.

While these everyday examples from our field studies indicate the direct impact that collaboration can have on individuals, the benefits of such collaboration also rely on the diversity of information resources to span the range of
information need for a community. An employee at a non-profit that serves AIDS patients indicates that the community network works as a catalyst that links his organization with other like-minded groups: “AIDS services are often fragmented, leaving people who are living with HIV infection wondering where to turn. Having our web site hosted on the network allows us to pool our resources and create links to other agencies, thus broadening the availability of resources.”

Users throughout our study emphasized the importance of diverse information providers to developing healthy information communities, particularly at the local level. In some cases, however, providers did not realize the extent of the interconnectedness of their resources and the potential benefits yielded by new partners’ diverse perspectives. As a social service provider explained:

I was sitting in a room with people representing pretty much every facet of a community: we had a business owner, a fireman, a police officer, social service agencies, the chamber of commerce, school districts, and park districts. That’s what I think is the coolest idea—the PTA president and the police chief might get together, the park district and someone who works with physically disabled kids might get together, the school librarian and the public librarian might get together.

Our data revealed that community networks played a pivotal role in both emphasizing and facilitating the connection among diverse information providers. Community networks help non-profits and government agencies become information providers. In the process, groups become more likely to link to and from related information, understand the value of information currency for their own information and that of others.

Conclusion
As demonstrated through our field studies, an information community is a partnership of institutions and individuals forming and cultivating a community of interest around the provision and exchange of information, aimed at increasing access to that information or increasing communication, and thereby increasing that knowledge-base. Information communities develop resources and access approaches with an eye to meeting the specific needs of its members. The five characteristics discussed apply to situations which can bring people together to form information communities using information technologies. These vary from scientific collaboratories to groups of dispersed scholars to community networks. Information communities can help transform the way that information providers such as libraries think about information delivery. In the process they can change the way people gain access to and use information.

As objects of investigation, information communities raise several questions for future research. How, for example, do individuals and other stakeholders become members or involved in information communities? How do people express their information needs? How do they go about seeking information? What is the lifespan of an information community? What other characteristics do information communities exhibit? How do information communities contribute to eliminating the digital divide? And, to what degree are they reliant on different technologies? Through investigating such questions, researchers can gain further insights into the nature of information communities and suggest ways for facilitating the creation and exchange of information therein.

REFERENCES


