

# Making Infocities Livable

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## Introduction

Have you ever heard anyone say, “I love to live in Manhattan because there’s so much information there.” Or, “I was happy to leave Pittsburgh because there was too little information there.” Information may be part of what makes cities lively and livable, but it’s certainly not the first thing people think of.

I suggest that “information” is too narrow a focus for a vision of city life over the Internet. Instead we should broaden our view to focus on “participation” in community life over the Internet. What follows begins with an overview of what is known about participation in electronic communities and the relationship between information and participation. Then I to focus on one particular type of infocity, the local infocity, which is tied to and embedded within a physical city. I have chosen this focus because I have long been interested in the relationship between people’s electronic lives and their lives in the physical world. For example, I have studied electronic support groups and documented how people’s experiences in those groups changed their behavior in the real world. I have studied how people move back and forth between electronic work and face-to-face work and documented their experiences and effectiveness in blended teams. Until now I have studied these relationships and effects for individual people, but now I

am becoming more interested in the effects on the physical community in which these people live.<sup>1</sup>

### **Participating in Electronic Communities Today**

Information and participation are closely linked in the electronic community. Participation probably begins with a search for information. No one wakes up in the morning and says, “I think I’ll join an electronic community today.” But the results of an information search may lead a person to an electronic community. And if that experience is satisfying, the person may return. Millions of people participate today in hundreds of thousands of voluntary electronic discussion groups and communities.<sup>2</sup> They congregate with others who share a common interest and pursue that interest in threaded discussions. By now, the dynamics of these groups and communities are familiar. Anyone with net access can participate any time from any place. Someone posts a seed question or proposal and others reply with answers or comments. Messages, both seeds and responses, typically range between 10 and 30 lines of text. Threads typically range between one and ten messages. People can read one or more messages at their convenience; they can post or send one or more messages at their convenience. Each message itself represents a rather small unit of time and attention and can be thought of as a voluntary micro-contribution to the community. In effect, the micro-contribution is the basic building block of the electronic community.

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<sup>1</sup> I am certainly not the first to be so intrigued. There is a small community computing movement that began in the early 1980s with dialup freenets and has seen a small number of highly visible experiments, such as Blacksburg Electronic Village. The Association for Community Networking estimates that there are currently about 150 electronic community or civic networks ([www.afcn.org](http://www.afcn.org)). My thinking on this topic has been influenced by the work of John Patterson (2000).

<sup>2</sup> Employees are increasingly participating in virtual teams in the workplace as well, but that is not the focus of these remarks.

Although people can volunteer them at random, micro-contributions must be organized into larger units for efficiency and social effectiveness. Both technical and social mechanisms are used to aggregate micro-contributions. Today threads, topics, and topic maps are the most common mechanisms for aggregating discussion micro-contributions. They are complemented by the social roles of owner, maintainer, moderator. Community norms and peer monitoring reinforce the legitimacy of these mechanisms.

A small number of electronic groups is characterized by micro-contributions other than discussion messages. The most well-known is probably the open source communities whose member micro-contributions include bug reports, new code, patches, releases. Open source communities have their own mechanisms and roles for aggregating these micro-contributions: modules, module maintainer, versions, version maintainer, etc. Some literary groups aggregate voluntary micro-contributions of text to produce collaborative fiction, poetry, essays, and even an encyclopedia.<sup>3</sup> In these cases the literary form determines the aggregation structure: lines or stanzas, footnotes, article topics. In an experiment conducted by NASA, net-based volunteers identified and marked craters on images of Mars. Each marked crater was one voluntary micro-contribution of time and effort. The marked craters were aggregated across volunteers to produce composite boundary markers.<sup>4</sup> The Openmind initiative is using net-based volunteers to help write “intelligent” software. In this case people volunteer micro-

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<sup>3</sup> In the first 18 months of its existence the community encyclopedia project has produced more than 40,000 entries ([www.wikipedia.org/wiki/Main\\_Page](http://www.wikipedia.org/wiki/Main_Page)).

<sup>4</sup> The quality of the volunteer boundary markers was statistically indistinguishable from those produced by PhD astronomers (<http://clickworkers.arc.nasa.gov/top>).

contributions to train handwriting recognizers and populate common sense reasoners (www.openmind.com).

What do people get in exchange for their micro-contributions? Many benefits that people report receiving from their participation can be categorized in three broad areas. The first is information benefits: facts, problem solving, intellectual pleasure, learning. Two observations about information benefits are relevant. The first is that the relationship between producing and consuming information is a positive one. That is, people who actively post messages report receiving higher levels of information benefits than do those who are more passive members (Galegher, Sproull, and Kiesler, 1998; vonHippel and Lakhani, 2002; Butler et al, 2002). People who only read and never post do report receiving information benefits (as one would hope), but their level of reported benefits is lower than that for people who actively post. The second observation is related to the form that information often takes in these communities. It is not the disembodied, depersonalized information that can be found in databases, which are themselves easily accessible on the web. It is not the authoritative information that can be found in official documents, also easily available on the web. Instead, it is profoundly *personalized* information, personalized in two senses. First: its form and content are personal—personal experiences and thoughts. My story. My experience. My opinion. As one member of a support group for people with hearing loss said:

“It’s one thing to visit a web site or read a book or article regarding hearing issues. It’s something **quite** different to read words composed by individuals with hearing impairments that aren’t professional writers or authors, and also are not motivated by profit.”

And second: its audience is personal. Questions or requests for comment do not look like database queries: they are framed for human understanding and response.<sup>5</sup> Replies typically address the person or situation initiating the request and are based on the replier's own situation or experience.

Active members also derive the social benefits that can come from interacting with other people: getting to know them, building relationships, making friends, having fun. And active members can derive psychological and emotional benefits from their participation as well. There is pleasure in helping others or furthering a cause. There is solace in discovering "I am not alone." There is comfort in affiliation and increased self-efficacy in group identification.<sup>6</sup> Although one can enumerate these three broad classes of benefits separately, their real power derives from their reinforcing one another in on-going interaction. Active participation begets benefits which increase participation which produces more benefits.

### **Community-level Benefits from Participation**

Electronic participation benefits have mostly been framed and studied as ones that accrue to individual members. There has been little research or documentation of benefits accruing to the electronic community as a whole from its members' participation in it.<sup>7</sup> An individual focus is understandable so long as the electronic community is entirely virtual, that is when there is no community other than individual electronic

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<sup>5</sup> A discourse analysis study of Usenet groups found that almost all questions included a specific reference to readers; the few that did not were much less likely to receive replies (Galegher, Sproull, and Kiesler, 1998).

<sup>6</sup> A very few studies have documented health benefits from participating in electronic communities (e.g., Lorig et al., 2002). Economists are trying to demonstrate economic benefits to individuals who participate in open-source projects but the evidence is not yet persuasive.

<sup>7</sup> One exception is documentation of the quality of software produced by various open-source communities.

participants. But when an infocity is tied to and embedded within a physical city, then one can speculate on benefits to the physical city from residents' participation in its virtual extension.

Putnam (2000) has documented a decline in civic and social participation in physical communities over the past fifty years. Voter turnout is down. Informal social interaction with family, friends, and neighbors is down. Church attendance is down. Time devoted to clubs and other voluntary organizations is down. Membership in bowling leagues is down.<sup>8</sup> Decreased levels of social and civic participation decrease citizen awareness of public issues and official awareness of citizen views. Decreased levels of volunteer activity decrease the efficacy of social institutions. Decreased engagement in community life decreases social capital. These negative consequences accrue to the physical community as a whole as a result of decreased community participation by members. If aggregated voluntary micro-contributions can slow or even reverse this decline, local communities as a whole, in addition to their individual members, may benefit.

Civic and social engagement in the real world has always depended upon two requirements. One is people with the motivation and opportunity to participate. The other is social organizations that organize and aggregate participation into community benefit. These organizations may be formal ones like the Girl Scouts, municipal libraries, hospital auxiliaries, Kiwanis, PTAs, churches, or the Red Cross. Or they may be informal ones like bridge clubs, book groups, or friendship groups. The community-level

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<sup>8</sup> What is up for some people are hours spent working and commuting to work, although the nationwide aggregate data do not support this generalization. Also see Robinson and Gobey (1997; Schor, 1992). There is a substantial increase in peoples' reports of feeling "always rushed." What else is up is a privatization of leisure activities--bowling alone rather than in leagues--and television viewing. By the mid-1990s the average American watched television roughly three to four hours a day.

benefit from informal organizations may not be so evident as that from formal ones. Putnam and others argue, however, that even such informal organizations increase the density of social connections that support civic engagement.

People's motivation to participate in local activities is connected to feelings of affiliation, identity, and obligation, as well as to anticipated benefits, all of which increase with increasing density of local social connections. Thus, participation reinforces further participation. When a person goes to a community group meeting, s/he gains information about the issues and concerns of others present. S/he may contribute information. S/he can create informal connections with others through realizing commonalities of shared interest or circumstance. Moreover, others realize those same commonalities and begin to see and treat the person as a legitimate participant. The density of social connections is increased and the likelihood of future interaction is also increased (Etzioni and Etzioni, 1999).

Many of today's civic and social organizations were invented at the beginning of the twentieth century, a time when people's lives were much more local than they are today. Work, commerce, and leisure activities were all locally organized. Even today civic and social organizations typically organize people's voluntary participation in two-hour to three-hour blocks of time at a pre-specified time and a particular place. Contrast this structure for organizing participation with that of any time/any place electronic communities. In electronic communities, people do not have to commit to participating at a particular time;<sup>9</sup> they do not have to go to a particular geographic location; and they do not have to devote an uninterrupted two-hour to three-hour period of time. People can

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<sup>9</sup> Scheduled on-line chats are a partial exception. They do occur at a prescheduled time, but one can log on from anywhere with net access.

participate in smaller units of time, at any time, and from any place. For example, a study of an electronic support group for eating disorders (Winzelberg, 1997) found that only one-third of the messages were posted during the typical meeting time for face-to-face support groups (7 pm to 11 pm). About one-third were posted during working hours (7 am to 7 pm) and 31% were sent between 11 pm and 7 am. The mean message length or size of voluntary micro-contribution to this group was 131 words. Other studies of electronic group participation report similar patterns (e.g., Galegher, Sproull, Kiesler, 1998; Sproull and Faraj, 1995).<sup>10</sup> Can we support local civic participation in physical communities through voluntary micro-contributions in infocities? What might that support look like? Would it be worthwhile if we did so?

### **Supporting Micro-contributions**

Let us begin with a simple example from a community organization of today which was founded about 100 years ago—youth scouting. Most youth scouting troops meet in the afternoon or evening once a week for two to three hours in a particular place. The meeting time and duration preclude adults who work or travel during those hours or are homebound from volunteering to be a troop leader. Indeed the peak membership for adult scouting leaders was 1958, with a steady decline since (Putnam, 2000: 438). Possibly some fraction of today's non-volunteers would volunteer to participate electronically if they could do so easily and effectively. Assuming that everyone has good access at home and work to networked computing, ways to integrate electronic

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<sup>10</sup> No studies report good estimates of how much time people spend reading messages, which would be necessary in order to construct a measure of total participation time.

participation with face-to-face participation would be helpful. Here are some suggestions:

- A facility for troop activity awareness so that electronic and face-to-face members, both kids and adults, could have background information and participation information about one another.
- A facility for displaying face-to-face troop meetings so that electronic members could participate in real time, if feasible, or asynchronously, if not.
- An interactive troop calendar, which includes project reporting and management features, so that scouts and leaders can report and coordinate activities.
- An annotatable neighborhood map, which the troop could use to solicit donations from neighborhood residents and offer benefits to them.
- A facility for sharing best practices with other local electronic volunteers and other scouting electronic volunteers across the country.

I am confident that computer tools that could support each of these facilities have already been invented. But computer tools alone are insufficient.

In addition to computer tools, support for activities like those described in the scouting example requires social tools. By social tools I mean norms, roles, procedures, and behaviors that are understood, accepted, and practiced by members across different organizational contexts. The more that local organizations and activities use these social tools (norms, roles, procedures, behaviors) in concert with computer tools to support voluntary micro-contributions, the more people will become habituated to them and the more easily they will transfer from one organized activity to another. Here are some

examples of social tools to integrate electronic participation with face-to-face participation.

- Organizations with volunteer schedules initiated at a particular time of year might hold net-based volunteer fairs at the beginning of that period in which organizations could describe their programs, members could electronically describe opportunities and answer questions, members could electronically solicit new members, local companies could offer financial contributions or in-kind donations to match electronic pledges of volunteer hours.
- Over time, norms and procedures will develop for how members should treat virtually-present and physically-present volunteers during face-to-face meetings. Whether members are physically present or virtually present, they could be referred to by name, asked to make reports, given assignments, given praise for their work, allowed to vote on motions, etc.
- Norms will develop for meeting length and the obligation to participate sometime during the duration of a meeting. For example, a face-to-face meeting may last for two hours with the electronic extension continuing for another twenty-two hours. All members would accept their obligation to participate sometime during the twenty-four hour meeting period.
- Scouts whose troops have leaders who participate electronically as well as face-to-face will come to take for granted this blended form of participation as they grow up.

The scouting example is based on an organizational form that has been in existence for almost 100 years and speculates on how it might be invigorated through

electronic micro-contributions. It is not a trivial example because local communities still value adult-supervised group activity for their children, although the supply of adult volunteers is dwindling.

But we can also consider other types of voluntary micro-contributions not necessarily tied to a particular social organization and how they might enrich the local community.

- Financial micro-contributions could be donated to local charities or service organizations as a percent of sales through local e-commerce or bids in local e-auctions.
- Residents could provide service ratings of local government offices and agencies as well as local businesses. The ratees may find such services to be problematic, of course. But a community dialog on who gets to provide information for what purposes could be energizing.
- Residents could provide net-based homework help or electronic mentoring for school kids.
- School kids could provide electronic “grandchildrening” for senior citizens.
- Assuming hand-held computers will be equipped with gps, peripatetic citizens could contribute wild life sightings, missing street signs, traffic counts or participate in other ways to map public spaces.

It’s fairly easy to imagine many different types of voluntary micro-contributions and aggregation mechanisms. It’s more difficult to imagine the social tools that would be necessary to turn them into a community asset.

## Issues

Broadening the focus from information to participation in community life surely raises a host of research issues for both computer tools and social tools which can be better elaborated in other forums. Here, instead, I want to raise four policy issues. The first is the question of how open or closed should infocities associated with local communities be? In physical communities, verification of residence is required in order to receive some public services but not others and to participate in some community activities but not others. For example, anyone can use reading rooms in municipal libraries but only residents can check out materials. Anyone can attend political rallies but only residents can vote in local elections. Anyone can buy Girl Scout cookies but only troop members can sell them. Only students can freely enter public schools; visits by parents or members of the public are strictly controlled. On the global net, people are not required to offer proof of identity to participate in most electronic communities. The fact that people who share a common interest will probably never meet face-to-face helps create a sense of psychological safety that allows people to talk openly with strangers. Paradoxically, tight controls on registration and verification of identity and residency may be necessary to create psychological safety for local electronic participation.<sup>11</sup>

The second policy issue is what should be the size or granularity of the infocity associated with a local community? In the real world, people inhabit multiple, nested and partially-overlapping local communities and psychological neighborhoods. The same will probably be true in the infocity associated with a physical community. But how can those different, but related, spaces be represented and navigated easily and effectively?

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<sup>11</sup> John Patterson of IBM Lotus has written about these issues in the context of the Carlisle Community Center (Patterson, 2000).

Returning to the scouting example, all municipal residents should have access to a small amount of basic troop information. Presumably only scouts and their leaders should have access to troop project and activity information. But what about the parents of scouts? How far inside the electronic troop should their access extend?

The third policy issue is the digital divide. Conventionally the divide has been framed in terms of access to computing (National Telecommunications and Information Administration, 1999). However, when access is no longer an issue, the digital skills divide becomes more problematic. New scholarship is beginning to document the importance of the skills divide (Hargittai, in press) and highlights the importance of this policy issue.

The fourth policy issue is the relationship between physical city participation and infocity participation. I have suggested some benefits from making it easy for people to make voluntary micro-contributions and participate electronically in local communities. If people can and do begin to participate electronically in community groups, they may become more motivated to do so in the real world as well. They will "meet" people electronically and see that their microcontributions can make a difference and how they do so. A potential negative consequence of providing support for electronic microcontributions is that people who currently participate face-to-face may be lured away from those venues to the more comfortable and convenient electronic forms of contribution. The history of technology and social change is full of unintended consequences. That would be a bad one indeed.

## **Conclusion**

Many interesting social consequences of the net stem from connecting strangers from all over the world to build on their common interests. We may also generate interesting social consequences by connecting strangers from the same town to build on their common interests.

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