# The Dynamics of Social Interaction in a Geography-based Online Community

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**Abstract.** A study of a geography-based online community was undertaken, in part, to understand the factors that promote social interaction within the community. 120 participants in the online community completed a survey that investigated technology attitudes and use, general allocation of time, and civic engagement and attitudes about the physical community. Results of the survey showed that experience with interactive communications applications, a high degree of non-work time spent socializing and on the Internet, and a lower-than-average level of trust and shared community values were related to early online community participation. These results suggest several possible strategies for building or facilitating online community development.

## Introduction

There is a growing research literature investigating various aspects of online communities. Much of this research has been descriptive, focusing on understanding different types of communities and reporting about the various activities of the members and visitors. Among the various types of online communities that have been the focus of research are *communities of practice*, *communities of interest*, and communities that support a specific real world community.

Communities of practice, which are formed in support of shared work interests and practice, have been the basis for the creation of several vibrant online communities (Wenger, 1999). Examples of these communities include a group of journalists (Millen & Dray, 1999), health care professionals (Bowers, 1997), a

group of engineers (Donnelly & Hermann, 1994), and groups of scientific and medical researchers (Schoch & Shooshan, 1997; Walsh & Bayma, 1996). In many cases, these online groups were comprised of members who have never met face to face, but have nevertheless developed strong friendships and emotional ties. In other cases, the online community supported a specific professional organization, and the community members met regularly face to face at professional conferences.

Another distinctive type of online community, communities of interest, is formed around a shared interest among its members. Naturally, there is great variety in the topics of interests that can be found. For example, online communities have formed to support a variety of shared medical conditions (see, for example, Preece, 1999). Other groups, such as Systers, have been formed to discuss issues that are more gender-related (see, for example, Sproull & Faraj, 1997). Still other communities, such as SeniorNet, are more focused on issues of interest to a specific age group (Mynatt et. al, 1999).

Both communities of practice and communities of interest can arguably be considered *intentional* communities, which are characterized by members who have voluntarily joined together and share a common purpose (Smith, 1992). Several community researchers have argued that a shared *sense of purpose* is extremely important to the successful creation of online communities [Kim 2000; Preece, 2000].

Still other online communities are grounded in a physical place or location. These include groups that were formed to support a specific town or village (Franzke & McClard, 1996; Schuler, 1994), or a university and its local community (Carroll & Rosson, 1996). Whereas geographically remote members often join these online communities, much of the online interaction is grounded in several aspects of the physical place. For example, online discussion topics are often focused on local news, community events, and local business activities (see, for example, Carroll & Rosson, 1996).

Geographical communities are a good example of *unintentional* communities, which are comprised of individuals who have been brought together by circumstances and may be considerably more heterogeneous than intentional communities in their attitudes, beliefs, and interests (Smith, 1992; Cherny, 1999). The heterogeneity of geographic communities poses additional challenges to online community developers. For example, there may be multiple or even conflicting purposes motivating the interaction. In other cases, there may be no strong purpose or only a very casual purpose motivating the online interaction.

A growing number of correlational studies of online groups attempt to more clearly understand the factors that contribute to specific online behavior (e.g., frequency of participation by message postings). In a recent study of 500 newsgroups, researchers found that increased repeat participation (postings) from newsgroup members increased the overall interactivity of the group as measured

by the depth of conversation threads. Further, cross-posting messages to other groups seemed to increase interactivity, which was interpreted as increasing the visibility of a local conversation in other groups and inviting broader participation in the thread. (Whittaker et. al, 1998).

In a second study of newsgroups, the factors that contributed to creating a sense of community were explored (Roberts, 1998). The research showed that a significant percentage (two-thirds) of newsgroup participants report feeling a sense of community within the group, and this feeling was predicted best by the degree of effort and time that individuals put into the groups.

In the fall of 1999, we initiated a field study to explore the factors that facilitate or inhibit the development of a geography-based online community in a lightly-settled suburban town. We were particularly interested in understanding the following;what is the relationship between attitudes about technology or prior computer experience and participation in the online community? Do differences in the ways that community members allocate their time among various physical world activities influence their online behavior? And finally, to what extent do levels of civic participation and attitudes about the physical world community influence online community participation?

## Carlisle Community Center

The Carlisle Community Center (CCC) was created to support online interaction among the residents of Carlisle, a small suburban community outside of Boston, Massachusetts. Access to the community site is free, but is restricted to residents of the town or to teachers who work in the public school (K-8). To promote trust and accountability among participants within the community, a member's online identity is their real-world identity; there is no anonymity.

The online environment supports the creation of distinct meeting spaces (or rooms), which may contain persistent message boards, shared links, calendars, ballots and documents. At present six rooms to support civic groups, four rooms to support clubs or organizations, five rooms to support the school, and five general-purpose rooms including a central meeting place which is called the lobby, have been created.

Several aspects of the CCC design are intended to increase a member's awareness of other members' activities. For example, members can subscribe to email activity alerts that indicate when new information has been posted in one of the community rooms. Members can tailor these alerts to notify them of activity in specific rooms on a daily, weekly, or monthly basis. Most members monitor at least one room, and the majority of CCC users receive their alerts daily (the default setting).

A second design element that promotes social awareness is what might be considered a very lightweight and low-granularity *social proxy* (a minimalist

graphical representation of users that depicts their presence and their activities, Erickson & Kellogg, 2000). Lurking and posting activity is captured in the system log, and a small display element shows members how many visitors have been in the room since their last visit. This visitor metric, which includes both lurkers and contributors, and offers the visitor a reasonable idea of how many other community members have been looking at the same message boards and documents that he/she has been looking at.

As a social proxy, this "number of recent visitors" display is of extremely low granularity; it does not indicate who visited, when visits occurred, or what activities took place. This data was intentionally withheld to protect the privacy of CCC members. In addition, displaying the data in an understandable manner would be impractical with a large community.

A third element of the CCC design intended to foster social interaction is "channeling" members through a common entry to the Center, which concentrates activity and makes more new material visible. We created a central lobby with access from it to other rooms through corridor spaces. New messages and calendar items within the site are highlighted in the lobby. Although members can enter specific rooms directly without going through the lobby, most members enter the CCC through the lobby. This has helped promote the shared feeling of a large interactive public space with the CCC.

To date, about 185 of the 1500 households in the town of Carlisle have registered with the CCC. Of the 280 individuals who have visited the CCC, 74 % of these individuals visited the site three or more times. A core group of about 60 members visits the site at least once a week. Like other online communities, a small percentage (20%) of the site users account for a majority (50%) of the site traffic (see, for example, Smith, 1999).

## Participant Survey

Approximately six weeks after registering for the Carlisle Community Center, members are invited to complete an online (Web-based) survey. The survey invitation is sent via email and informs members that the survey is intended to obtain additional information about their background and experience, and to determine their general attitudes about the Internet and the Carlisle Community Center. Of the 280 members of the CCC, 132 individuals completed the survey (47 % response rate). The survey contained approximately 50 questions, including several open-ended questions. The survey included questions about the respondents' allocation of time to various activities, technology attitudes and use, and social involvement and attitudes about the town of Carlisle.

## Demographics of Community Members

The online survey respondents were comprised of more women (59%) than men (41%), while the largest age group represented was between 40-49 years (42%), followed by 50-59 (24%), and 30-39 (17%). Survey respondents worked mostly in professional occupations (41%), management positions (24%), or were self-employed (16%). In addition, the respondents worked in a variety of industries with 16% working in education, 19% in software or information services, 9% in publishing, and 9 % in the health field.

## Time Use

To better understand the CCC users' personal choices in allocating their time, survey respondents were asked to indicate the number of hours *per week* that they spent on various work, family and social activities. The mean number of hours per week spent in each of the categories can be seen in Table 1. The greatest time was spent in job-related work, followed by home-and family-related work, which is consistent with other studies of time use [Robinson & Godbey, 1997].

The largest use of non-working (free) time is in social activities with friends and family. This propensity to socialize, combined with a sizable number of hours in non-work Internet time appears to be a reasonably good foundation for online community development.

A factor analysis of the time use items yielded three easily interpretable factors. The first factor, labeled *social time*, is heavily weighted on the nonwork activities that include socializing, as well as screen activities (television and Internet use). The second factor, labeled *unpaid work* is heavily loaded on home and family work as well as participation in group activities. The final factor has been labeled *hobby time* and is heavily loaded on use of free time on hobbies and in various reading activities. The detailed factor loadings for this analysis and the factor analysis of all other survey questions can be found in Appendix 1.

**Table 1 Use of Time**

| **Question: How many hours *per week* do you spend …** | **Mean hrs/wk** |
|---|---|
| Working at your job, profession or studies? | 34.4 |
| Home maintenance work (e.g., cleaning, childcare)? | 24.9 |
| Socializing with family and friends? | 11.4 |
| Reading newspapers, books, or magazines? | 8.3 |
| Watching television, movies, or videos? | 7.5 |
| In non-work-related Internet activities? | 5.2 |
| In hobbies that do not involve groups? | 4.8 |
| Participating in non-work groups **outside of Carlisle?** | 2.2 |
| Participating in non-work groups **in Carlisle**? | 2.0 |

## Attitudes About Technology

A second group of questions in the survey was intended to measure general attitudes about the Internet and computer proficiency. Mean ratings for the six questions covering this area can be found in Table 2. This group appears to be technologically advanced, using computing equipment almost every day and generally agreeing that they know a lot about computers. On average, this group of respondents is quite comfortable with computers, is not afraid of using them and finds them fun to use.

A factor analysis of these items revealed a single factor that was labeled *comfort/skill* (See Appendix 1).

**Table 2 Comfort and skill using computers.**

| ***Technology Attitudes and Computer Skill*** | **Mean Response** |
|---|---|
| I use computers almost every day | 4.7 |
| I am afraid of using a computer ** | 4.7 |
| The extent comfortable with the Internet * | 4.5 |
| I don't know much about using computers ** | 4.4 |
| Using computers is fun | 4.1 |
| I am very skilled at using computers | 4.0 |

(1—Disagree Strongly to 5—Agree Strongly)
* Different scale: 5 = very comfortable. ** (scale reversed)

A second group of survey items focused on privacy and security issues. The mean responses to these items (shown in Table 3) show that this group is only moderately worried about online security and privacy issues. A factor analysis of these survey items yields a single factor that we have labeled *security.*

**Table 3. Attitudes about security and privacy and the Internet.**

| **Attitudes about Security/Privacy I worry about being victimized…** | **Mean Response** |
|---|---|
| by malicious behavior like unsolicited email | 3.6 |
| by unauthorized access to information about me | 3.8 |
| by erroneous or fraudulent info on the Internet | 3.3 |
| by people masquerading as people who they are not | 2.9 |
| In general, concern about security on the Internet* | 3.0 |

(* Different scale: 4 = very concerned.)

We included a third group of items in the survey to understand usage levels of various types of communications applications used on the Internet. While the respondents may be comfortable and highly skilled in computer use, their use of various messaging applications was more modest (See Table 4). It should be noted, however, that use of basic email service was not included in the survey. The most widely used communications medium was email lists followed by bulletin boards. This result is good news for online community developers, since many communities, including the CCC, are based on similar asynchronous messaging platforms.

The factor analysis of the communication applications yielded two easily explainable factor solutions (See Appendix 1). The first factor has been labeled *asynchronous* and is heavily loaded on the three popular asynchronous messaging applications. The second factor has been labeled *synchronous* and includes a high factor loading on the chat and instant messaging survey items.

**Table 4. Use of various communications applications.**

| **Question: Please indicate your level of partitipation in….** | **Mean Response** |
|---|---|
| Email lists | 2.5 |
| Bulletin boards | 2.0 |
| Instant Messaging | 1.9 |
| Newsgroups | 1.7 |
| Chat | 1.3 |

(1—Do Not Participate to 4—Participate Frequently)

## Civic Behavior and Attitudes

The online survey included 13 questions that were intended to measure respondents' attitudes and values about the real world community of Carlisle. The survey questions and the mean responses are included in Table 5.

**Table 5. Attitudes about living in Carlisle.**

| **Question** | **Mean** |
|---|---|
| I am satisfied with living and working in Carlisle | 4.6 |
| I am interested in knowing what goes on in Carlisle | 4.6 |
| I feel "at home" in Carlisle | 4.4 |
| If I had to move away, I would be very sorry to leave | 4.2 |
| I feel like I belong in Carlisle | 4.1 |
| Most people in Carlisle can be trusted | 3.9 |
| I have a lot in common with other residents of Carlisle | 3.7 |
| I have a lot in common with other Boston area residents | 3.7 |
| I agree with the values and beliefs of Carlisle residents | 3.6 |

| | |
|---|---|
| I feel that I am an important part of Carlisle | 3.5 |
| Most people in the Boston area can be trusted | 3.3 |
| I have a lot in common with people on the Web | 3.1 |
| Most people on the Web can be trusted | 2.9 |

(1—Disagree Strongly to 5—Agree Strongly)

In general, the survey respondents have very positive attitudes about the real world town of Carlisle. They are quite satisfied with living in Carlisle and like to know what is going on there. They generally agree that most people in Carlisle can be trusted and that they have a lot in common with other local residents. On the other hand, they are less likely to trust or have a lot in common with people in the nearby city of Boston or with the more remote people on the Web.

A factor analysis of these items resulted in four factors. The first two factors include survey items that are specifically focused on attitudes about Carlisle. They have been labeled *belong* and *trust local.* The third factor is weighted with the items about trust for people outside of Carlisle, and the fourth factor includes items about having a lot in common with outsiders.

The final group of questions reported here contains questions about civic behavior. Respondents were asked to consider a list of 31 local clubs and organizations and to indicate whether they had supported these groups by donating time, money, or both. The groups were taken from a local phone directory and included groups that were oriented towards children (e.g., Boy Scouts, youth sports), and some groups that were more focused on adult interests (e.g., garden club, historical society). Respondents could also add up to five groups that were not pre-identified in the survey. The average number of groups that respondents gave time or money to, along with the results of club time activity (reported above), can be found in Table 6.

**Table 6. Degree of involvement with Club activities.**

| **Club Involvement** | **Mean** |
|---|---|
| Number of the groups listed in the survey (donate time) | 2.2 |
| Number of the groups listed in the survey (donate money) | 3.2 |
| Hours *per week* participating in non-work groups **in Carlisle**. | 2.0 |
| Hours *per week* participating in non-work groups **outside of Carlisle.** | 2.3 |

While there was considerable variability in the club involvement, the respondents indicated that on average they participate in 2-3 clubs or organizations and spend a total of 4 hours per week (half to clubs within Carlisle and half to clubs outside the town). Supporting a larger number of clubs with money rather than time is a result consistent with the broad trends reported in studies of social engagement and social capital [Putnam, 2000].

A factor analysis revealed a single factor, indicating that the measures of club activity in the survey are likely measures of a common characteristic, which we have labeled *clubs.*

# Predictors of Online Social Engagement

The Carlisle Community Center online survey provided a detailed description of the members' time use, technology attitudes and use, and civic engagement and attitudes about real world community of Carlisle. The analysis of various online behavioral data has given us insights into patterns of use of the online community in Carlisle. In an effort to understand the factors that influence social engagement in the online community of Carlisle, we performed multiple regression analyses using the survey responses as independent variables and a measure of CCC interactivity as the dependent variable. While the determination of a reliable relationship in this analysis does not imply causation, it will increase our understanding of what factors are important in the developing online communities that support real-world towns.

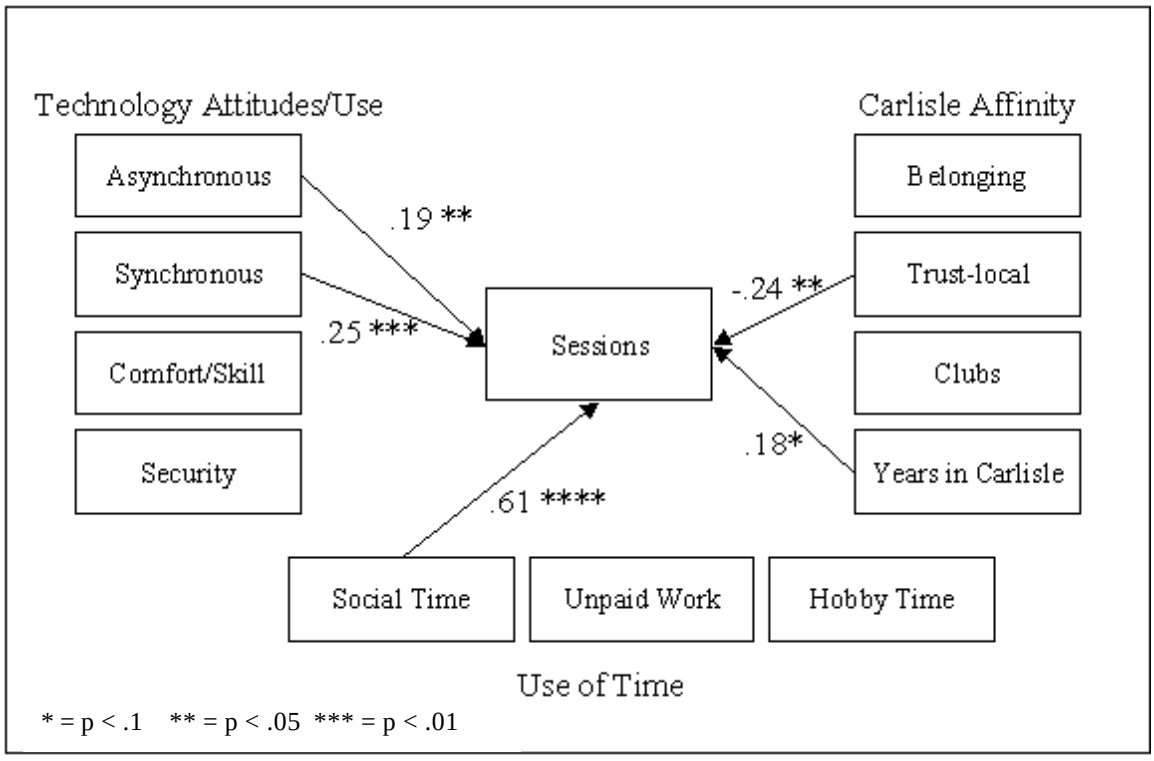


**Figure 1. Factors related to CCC session activity.**

The independent variables used in the regression models were based on estimated factor scores, which were computed for each survey respondent using

the factor solutions provided in Appendix 1. A regression method was used to estimate the factor scores, which has the added benefit of normalizing the factor variables.

While we considered several behavioral measures of CCC interaction (e.g., number of messages posted, number of rooms visited), we decided to use the number of sessions at the CCC site. This measure of participation is useful in that it includes visits by members who are frequent visitors but infrequent message posters or lurkers. To normalize the session data, we included only the first six weeks of usage history for every CCC member. It should be noted that the models analyzed and discussed below are most useful in understanding early behavior in an online community.

The three models that we examined are shown in Figure 1. Each box represents a factor and the arrows with standardized Beta weights are reliable predictors of session activity.

Our first regression analysis was designed to determine whether attitudes about technology and computer use are related to CCC activity. The factors entered into the regression model included the two factors that measured computer application use (i.e., asynchronous and synchronous) and the two factors that were based on attitudes about technology (i.e., comfort/skill and security). The results, shown in Figure 1 are not very surprising. They show that prior experience with other communications applications, such as email lists and chat services, reliably predict increased participation in an online community [Model: ($F[4,113] = 3.29$, $p < .05$, $R^2 = .10$)]. This result is good news for community builders since there is considerable growth reported in the use of various chat services [Nardi, Whittaker, Bradner, 2000].

It is a bit surprising that attitudes about technology were not reliable predictors of CCC use. It is easy to imagine how increased skill and positive attitudes about computer technology would promote online social engagement, while concerns about security would inhibit interaction.

The second regression that we performed was to test the relationship between the CCC participants' reported use of time (taken from the survey) with their participation in the online community. To this end we analyzed the factor scores for each of the three time-use factors (i.e., social time, unpaid work, and hobby time). The regression results are also shown in Figure 1, [Model: ($F[3,104] = 20.46$, $p < .001$, $R^2 = .371$)].

These results show clearly that individuals who participate a lot in the CCC are also those who spend their non-work time involved in social activities and non-work Internet. It was a bit of a surprise to us that those individuals who spend the most time in external groups (unpaid group factor) are not also spending time in some of the areas of the CCC that have been designed to support groups.

The final regression analysis that we performed was to test the relationship between CCC participation and various measures of real world civic engagement

and attitudes about the town of Carlisle. We analyzed the two factors that focused on Carlisle-specific attitudes (i.e., belonging and trust-local) and the group club involvement factor. We also included a measure of the number of years that respondents had lived in Carlisle. The results can be seen in Figure 1, [Model: ($F[4,92] = 2.6$, $p < .05$, $R^2 = .10$)].

We were initially puzzled by these results. The negative weight for the trust factor suggested that those CCC members who least trust and share the values of other Carlisle residents were the most active participants in CCC. A closer look at the survey items for the trust factor revealed that almost everyone responded at the neutral or positive end of the rating scale. A second interpretation is that those individuals who are less connected in the community may be using the CCC site to search for and develop social relationships with members of the community. There is a glimmer of support here for the idea that those who feel less socially engaged use an online meeting place to develop new social capital.

The positive relationship between years in Carlisle and CCC participation may be due to the leadership role that some long-time residents took in establishing some of the rooms within the CCC.

# Implications and Next Steps

It is important for online community facilitators or builders to understand the kinds of factors that are important in creating participation among members. Taken together, the results of the regression analyses reported here suggest that the early participation in this geographic-based community is related to several factors. First, familiarity with other kinds of online interactive services (e.g., chat and email lists) is an important predictor of online participation. This suggests that one strategy to growing a new online group would be to *recruit* members from existing, possibly related online groups. This is also consistent with the reported result that cross posting in newsgroups predicts greater newsgroup interactivity (Whittaker et al, 1998).

The second implication for community builders is perhaps not very surprising. Individuals who spend a great deal of their non-work time socializing and on non-work Internet activities are likely active participants in an online community. One strategy may be to seed the community with a group of people who fit that time-use demographic.

A third implication for community builders is that there may be a significant group of individuals who feel less connected with the geographic community and who are in search of interaction in an online venue. Inviting new residents or longer-term residents who are searching for new relationships may help promote involvement in the online community.

The results reported here are based on a baseline survey and early session activity measures at the CCC. Work is underway to understand better the nature

of the online interaction through a formal content analysis of the conversation, as well as ongoing analysis of the usage behavior. We also intend to re-administer portions of the baseline survey to investigate changes in attitudes, time use, and social engagement over time.

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## References

Bowers, L. (1997) Constructing International Professional Identity: What Psychiatric Nurses Talk About on the Internet. *International Journal of Nursing Studies 34*(3), 208-212.

Carroll, J. M. & Rosson, M. B. (1996). Developing the Blacksburg Electronic Village. *Communications of the ACM 39*(12), 69-74.

Cherny, L. Conversation and Community: Chat in a Virtual World. CSLI Publications: California, 1999.

Donnelly, R. & Hermann, R. (1994). Building an Internet Resource for a Specialized Online Community. In *Proceedings of SIGDOC '94: Technical Communications at the Great Divide*, pp.190-197. New York: ACM.

Erickson, T. & Kellogg, W. ACM Trans. Comput.-Hum. Interact. 7, 1 (Mar. 2000), pp. 59 – 83.

Franzke, M. & McClard, A. (1996). Winona Gets Wired: Technical Difficulties in the Home. *Communications of the ACM 39*(12), 64-66.

Kim, Amy Jo. Community Building on the Web. Peachpit Press, Berkeley, California. 2000.

Millen, D. R., & Dray, S. M. (1999). Information Sharing in an Online Community of Journalists. *Proceedings of Esprit i3 Workshop: Ethnographic Studies in Real and Virtual Environments: Inhabited Information Spaces and Connected Communities*. Edinburgh, January 25-26.

Mynatt, E. D., Adler, A., Ito, M., Linde, C. & O'Day, V. L. (1999). The Network Communities of SeniorNet. *Proceedings of ECSCW '99.*

Nardi, B, A., Whittaker, S. & Bradner, E. (2000) Interaction and Outeraction: Instant Messaging in Action. In Proceedings of ACM Conference on Computer- Supported Cooperative Work (CSCW). Philadelphia, PA, USA, pp. 79-88.

Preece, J. Empathic Communities: Balancing emotional and factual Communication. *Interacting with Computers,* 12, 63-77.

Preece, J. *Online Communities: Designing Usability, Supporting Sociability.* Wiley: Chichester, UK, 2000.

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

Roberts, T. L. (1998). Are Newsgroups Virtual Communities? *In Proceedings of ACM Conference on Human Factors in Computing Systems* (CHI-98), Los Angeles, CA, USA, pp. 360-367.

Robinson, J. P. & Godbey, G. (1997) *Time for Life: The Surprising Ways Americans Use Their Time.* University Park, PA: Pennsylvania State University Press.

Schoch, N. A. & Shooshan, S. E. (1997). Communication on a Listserv for Health Information Professionals: Uses and Users of MEDLIB-L. *Bulletin Medical Librarian Association 85(*1), 23-32.

Schuler, D. (1994) Community Networks: Building a New Participatory Medium. *Communications of the ACM 37*(1), 39-51.

Smith, M.A. Voices from the WELL: The Logic of the Virtual Commons. Master's thesis. UCLA. 1992.

Smith. M. A. (1999). Invisible crowds in cyberspace: mapping the social structure of the Usenet. In Smith, M. A., & Kollack P., (Eds.) *Communities in Cyberspace*, New York: Routledge.

Sproull, L. & Faraj, S. (1997). Atheism, Sex, and Databases: The Net as a Social Technology. In S. Kiesler (Ed.) *Culture of the Internet*. New Jersey: Lawrence Erlbaum Associates.

Walsh, J. P. & Bayma, T. (1996). Computer Networks and Scientific Work. *Social Studies of Science, 25,* 661-703.

Wenger, Etienne. Communities of Practice, Cambridge University Press, 1999.

Whittaker, S., Terveen, L., Hill, W., & Cherny, L. (1998). The Dynamics of Mass Interaction. *In Proceedings of ACM Conference on Computer-Supported Cooperative Work*. Seattle, Washington, USA, pp. 257-264.

# Appendix 1 – Factor Analysis Results for Survey Items

In each table below represents the result of a factor analysis, and includes the survey items that were analysed and the rotated factor loading for that item. For all analyses, the extraction method was a principal components analysis, and the rotation method was a varimax with Kaiser normalization.

| **Question : How many hours *per week* do you spend …** | **Social Time** | **Unpaid Work** | **Hobby Time** |
|---|---|---|---|
| Socializing with family and friends (e.g., face-to-face or phone) | .74 | | |
| Watching television, movies, or videos? | .84 | | |
| in non-work-related Internet activities? | .64 | | |
| in home maintenance work (e.g., cleaning, cooking, childcare) | | .67 | |
| Participating in non-work-related groups **outside of Carlisle** | | .53 | |
| Participating in non-work-related groups **in Carlisle** | | .76 | |
| Reading newspapers, books, or magazines? | | | .83 |
| in hobbies that do not involve groups (e.g., sewing, fishing) | | | .68 |
| (Total variance explained: 56.3%) | | | |

| ***Technology Attitudes and Computer Skill*** | **Comfort/ Skill** |
|---|---|
| I use computers almost every day | .599 |
| I am afraid of using a computer (scale reversed) | .785 |
| The extent to which you are comfortable with the Internet * | .769 |
| I don't know much about using computers (scale reversed) | .804 |
| Using computers is fun | .645 |
| I am very skilled at using computers | .837 |
| (Total variance explained: 55.5%) | |

| **Question: Please indicate your level of partitipation in….** | **Asynch-ronous** | **Synch.** |
|---|---|---|
| Newsgroups | .81 | |
| Bulletin Boards | .74 | |
| Email Lists | .64 | |
| Chat | | .87 |
| Instant Messaging | | .74 |
| (Total variance explained: 61.7 %) | | |

| **Question** | **Belong** | **Trust local** | **Trust far** | **Com-mon** |
|---|---|---|---|---|
| I am satisfied with living and working in Carlisle | .86 | | | |
| I feel "at home" in Carlisle | .86 | | | |
| If I had to move away from here, I would be very sorry to leave | .75 | | | |
| I feel like I belong in Carlisle | .86 | | | |
| I feel that I am an important part of Carlisle | .62 | | | |
| I am interested in knowing what goes on in Carlisle | | .68 | | |
| Most people in Carlisle can be trusted | | .69 | | |
| I have a lot in common with other residents of Carlisle | | .68 | | |
| I agree with the values and beliefs of Carlisle residents | | .72 | | |
| Most people in the Boston area can be trusted | | | .83 | |
| Most people on the Web can be trusted | | | .86 | |
| I have a lot in common with other Boston area residents | | | | .83 |
| I have a lot in common with people on the Web | | | | .77 |
| (Total variance explained: 65.9 %) | | | | |

| **Club Involvement** | **Clubs** |
|---|---|
| Number of the groups listed in the survey (donate time) | .91 |
| Number of the groups listed in the survey (donate money) | .66 |
| Hours *per week* spent participating in non-work-related groups **in Carlisle**. | .83 |
| Hours *per week* spent participating in non-work-related groups **outside of Carlisle.** | .49 |
| (Total variance explained: 55.0 %) | |