SOCIAL TYPES IN TECHNICAL NEWSGROUPS: IMPLICATIONS FOR INFORMATION FLOW

By Tammara Combs Turner and Karen E. Fisher[1]

ABSTRACT

Using Fisher and Durrance's[2] framework of information communities, this study examines the roles played by differed social types in information flow within online technical newsgroups. Data collection methods included content analysis of discussion threads from technical newsgroups, focus groups, participant observation and interviews with key informants, along with quantitative analysis of data obtained from Microsoft Research's Netscan project. Findings support and expand the information communities framework. Four social types were identified: (1) Questioners, (2) Answer People, (3) Community Managers and (4) Moguls. Newsgroups facilitated social and information exchanges among individuals from diverse backgrounds, cultures, and geographic locations as they posted and replied to messages publicly available for viewing. Interaction of these various social types cultivated information flow as users engaged in information seeking, giving and use behavior. Implications for information policy are *discussed.*

INTRODUCTION

Searching for information in online technical environments is challenging. Even harder is understanding whether content is trustworthy or if the people offering the information are reputable. Every day, information seekers traverse online environments on various topics seeking help and offering to assist others in online technical communities or newsgroups—Usenet discussion forums for publicly exchanging threaded messages. Lee, Vogel and Limayem[3] define an online community as, "a technology-supported cyberspace, centered upon communication and interaction of participants, resulting in a relationship being built up." While "community" was defined in many different ways[4], the study of online communities—and specifically the flow of information within them are relatively new.

---

[1] The authors can be contacted respectively at: Tammara Combs Turner, Microsoft Research, One Microsoft Way, Redmond, WA 98052, tcombs@microsoft.com; Karen E Fisher, The Information School, University of Washington, Seattle, WA 98195, fisher@u.washington.edu.

[2] Fisher, K. E., & Durrance, J. C., "Information communities", In K. Christen & D. Levinson (Eds.), *The encyclopedia of community: From the village to the virtual world*, pp. 657-660. Thousand Oaks, CA: Sage Reference, 2003.

[3] Lee, F., Vogel, D. and Limayem, M. Virtual Community Informatics: What we know and what we need to know. *HICSS-35*, 2003.

[4] Durkheim, E., *The division of labor in society*. Translated by George Simpson. New York: Free Press, 1933; Jewkes, R. & Murcott, A., "Meanings of community", *Social Science Medicine*, 43.4, 555-536, 1996; Kim, A. J., *Community Building on the Web: Secret Strategies for Successful Online Communities.* Peachpit Press. Berkeley, CA., 2000; MacQueen, K., McLellan, E., Metzer, D., Kegeles, S., Strauss, R., Scotti, R., Blanchard, L., Troter, R., "What is community? An evidence-based definition for participatory public health", *American Journal of Public Health*, vol. 91, no. 12, 1929-1938, 2001; McMillan, D. W., &

Comprising newsgroups, forums, conferences, and bulletin boards[5], online communities occur "when users are given tools to use their voice in a public and immediate way, forming intimate relationships over time" such that users associate themselves with those communities[6]. While members commonly refer to one another by name even though they have never met in-person, they assist each another in varied ways, most particularly through sharing information. While early literature focused on the technical aspects of online communities, recent work addresses their myriad social aspects, which are emerging where information is free-flowing and for the most part free of censorship[7]. For the digital economy and hi tech companies in particular, the growth of online communities is a vital way of creating and sustaining a strong customer base; delivering products and services in ways that can alleviate barriers of time, distance and cost; obtaining customer feedback for product modifications and new product design; saving personnel cost by having customers provide help to each other via support groups; keeping in touch with customers in a high tech and high (and low) touch way; and promoting company and brand loyalty.

The current study aimed (1) to explore the role of information—particularly how information needs are expressed, and how information is sought and shared—in technical newsgroups and (2) to learn whether these informal, technical support-based, peer-to-peer newsgroups are consistent with Fisher and Durrance's[8] framework of information communities from the field of information science. We examined the role and flow of information and key social types that emerged throughout our study.

According to Fisher and Durrance, information communities form primarily around people's needs to get and use information. The framework arose from their study of how people use online community networks for situations of everyday life. Thus, an information community is a group of people "united by a common interest in building and increasing access to a set of dynamic, linked, and varying information resources"[9]. While they may differ in their primary subject of information focus (e.g., healthcare,

---

Chavis, D. M., "Sense of community: A definition and theory", Journal *of Community Psychology*, vol. 14, no. 1, 6-23, 1986.

[5] Preece, J., *Online Communities: Designing Usability, Supporting Sociability*, John Wiley & Sons, Chichester, UK, 2000

[6] Powazek, D., *Design for Community: The Art of Connecting Real People in Virtual Places*, New Riders Publishing, 2001

[7] Burnett, G., "Information exchange in virtual communities: A typology". *Information Research*, 5.4, can be found at http://informationr.net/ir/5-4/paper82.html [Accessed 8/23/01], 2000; Butler, B., Sproull, L., Kiesler, S., Kraut, R., "Community Effort in Online Groups: Who Does the Work and Why?" *Leadership at a Distance*, S. Weisband & L. Atwater (Eds.) [can be found at http://www.katz.pitt.edu/fac_pages/Butler.htm], forthcoming ; Komito, L., "Electronic communities in an Information Society: Paradise, mirage, or malaise?" *Journal of Documentation*, 57.1, 115-129, 2001; Tedjamulia, S., Dean, D., Olsen, D., Albrecht, C. "Motivating Content Contributions to Online Communities: Toward a More Comprehensive Theory", *HICSS*, IEEE, 2005.

[8] Fisher & Durrance, supra note 1; Fisher, K. E., Unruh K. T., & Durrance, J. C., "Information communities: Characteristics gleaned from studies of three online networks". In R. J. Todd (Ed.), Proceedings of the 66th Annual Meeting of the *American Society for Information Science & Technology* (pp. 299-305), Medford, NJ, Information Today, 2003.

[9] Fisher et al, Id, Pg. 299.

Author	Roles
Brush, Wang, Turner & Smith (2005)	Key contributor, Love volume replier, Questioner, Reader, Disengaged observer
Golder & Donath (2004)	Newbie, Celebrity, Lurker, Flamer, Troll, Ranter
Kim (2000)	Visitors, Novices, Regulars, Leaders, Elders
Turner, Smith, Fisher & Welser (2005)	Answer person, Questioner, Troll, Spammer, Binary poster, Flame warrior, Conversationalist
Waters & Gasson (2005)	Initiator, Contributor, Facilitator, Knowledge-elicitor, Vicarious-acknowledger, Complicator, Closer, Passive-learner

Table 1: Social Roles suggested by various authors.

automotive repair, music, etc.), they are not bound by geography. As Fisher and Durrance explain, information communities embody the following five characteristics, they:

(1) Anticipate and form around people's needs to get and use information;
(2) Effectively exploit the information sharing qualities of available technology and yield multiplier effects for stakeholders;
(3) Transcend barriers to information-sharing;
(4) Connect people and foster social connectedness; and,
(5) Emphasize collaboration among diverse information providers

Following these attributes, we studied information communities as they relate to the use, social structure and motivation of Usenet discussion groups where people with similar interests and needs exchange information about technology.

RELATED WORK

As research foci, behavior in Usenet is growing swiftly in areas of information, social and computer sciences. A common observance addresses how diverse people in differing locations find their way to a common online place to help and support people who would otherwise be strangers. Constant, Sproull and Kiesler[10], for example, found that strangers (i.e. weak ties[11]) were sometimes willing to share information to technical questions online although they did not know the person they were helping and that information seekers thought the advice was useful in many cases.

We studied whether particular social types[12] exist within information communities and how these roles affect information flow. According to Fisher, et. al.[13],

---

[10] Durkheim, E., *The division of labor in society*. Translated by George Simpson. New York: Free Press, 1933.

[11]Granovetter, M., "The strength of weak ties", *American Journal of Sociology*, 78, 1360-1380, 1973.

[12] Lofland, J., & Lofland, L. H., *Analyzing social settings: A guide to qualitative observation and analysis*, Wadsworth, Belmont, CA, 1995.

[13] Fisher et. Al, supra note 7.

two crucial roles are present in any information community: *information users* and *information providers*. We anticipated that our focus on social types might build on earlier work conducted by Berger and Luckman[14], Davis and Schmidt[15], Goffman[16], Klapp[17], Lofland and Lofland[18], and Nardi and O'Day[19]. Golder and Donath[20], for example, reported such social roles as newbie, celebrity, lurker, flamer, troll, and ranter. Kim[21] hypothesized differences between eight official and unofficial roles in online communities based on anecdotal evidence, and suggested that for online or offline community to be successful and thrive it must have the right mix of people. Her five sequential stages of community participation were: visitors, novices, regulars, leaders and elders. Roles have also been studied in the virtual learning environment. Using asynchronous learning situations, Waters and Gasson[22] studied the progression of student roles, including initiator, contributor, facilitator, knowledge-elicitor, vicarious-acknowledger, complicator, closer and passive-learner in asynchronous learning situations. Although these roles were explored for the purpose of a graduate course, they can be generalized to other online environments.

Regarding Usenet, Turner, Smith, Fisher and Welser[23] provide descriptions to seven types of authors based on their visual and quantitative patterns of posting behavior. Turner et al., first used a Treemap visualization technique to display relative change over time in newsgroups hierarchies; next they used "Newsgroup Crowds" visualization to classify different types of newsgroups and finally "AuthorLines" visualization[24] to show activity of individual authors. Social network diagrams were used to classify author roles, which included: answer person, questioner, troll, spammer, binary poster, flame warrior and conversationalist. Brush, Wang, Turner and Smith[25] used a different approach by assigning social roles to contributors in Usenet based on participants' self-report on a survey that was then tested and verified with their behavioral metrics in

---

[14] Berger, P. L., Luckman, T., *The social construction of reality: A treatise in the sociology of knowledge*. NY: Doubleday, 1966

[15] Davis, M. S., & Schmidt, C. J., "The obnoxious and the nice: Some sociological consequences of two psychological types", *Sociometry*, 40, 201-213, 1977.

[16] Goffman, E., *The presentation of self in everyday life*. New York: Doubleday, 1959.

[17] Klapp, O., "Social types", *American Sociological Review*, 23, 673-681, 1958.

[18] 18 Lofland & Lofland, Supra note 11.

[19] Nardi, B. A., & O'Day, V. L., *Information ecologies*. Boston, MA: MIT Press, 1999.

[20] Golder, S. & Donath, J. "Social Roles in Electronic Communities" *Association of Internet Researchers (AoIR)*, Brighton, England.

[21] Kim, supra note 3.

[22] Waters, J., Gasson, S., "Strategies employed by participants in virtual communities", *HICSS*, IEEE, 2005.

[23] Turner, T., Fisher, D., Smith, M., and Welser, T. "Picturing Usenet: Mapping Computer-Mediated Collective Action." Journal of Computer-Mediated Communication, 10(4), article 7. Can be found at http://jcmc.indiana.edu/vol10/issue4/turner.html.

[24] Viegas, F. B., & Smith, M. A., "Newsgroup Crowds and Authorlines: Visualizing the activity of individuals in conversational cyberspaces", *Proceedings of the 37th Hawaii International Conference on System Sciences. Los Alamitos*: IEEE Press, 2004.

[25] Brush, A., Wang, X., Turner, T., Smith, M., "Assessing differential usage of Usenet social accounting meta-data", In *Proceedings of CHI 2005*, ACM Press (2005), 889-898, 2005.

Microsoft Research's Netscan[26]. They classified 127 participants into five role types: key contributors (26%), low volume repliers (43%), questioner (2%), reader (28%) and disengaged observer (2%).

Both Turner et al[27] and Brush et al[28] recruited study participants who were users of the product and technology newsgroups under investigation. The majority of customers (i.e. information users) primarily participated in technical newsgroups to have a question answered. This model of peer-to-peer support, although not monetarily quantified, potentially saves a company millions of dollars in support costs. Additionally, customers can gain quick, archived solutions (via search) that other users have tried. In ideal situations key community leaders (i.e. information providers) are integrated into the product development cycle by serving as beta testers or advisors. Indeed, Franz and Wolkinger[29] found that in their research lead users (i.e. "super users" who are very active and have special rights) are ahead of others in their needs and concerns of a product. They claim that a leader's strong needs now are evidence of what will be needed in the future for general users. Therefore their presence in online communities can help developers by introducing new features, or reporting bugs and usability issues ahead of the general population.

Through the current study, we make four contributions to the literature. First, we use a novel framework, i.e., information communities, to explore an online community from an information science perspective. Second, we employ triangulated qualitative[30] and quantitative methods to study an online community from the perspectives of varied stakeholders. Third, we offer detailed descriptions of social types that exist in technical newsgroups, where an extrinsic reinforcement[31] model exists. Fourth, we introduce a general model of the flow of information and authority in online technical communities.

METHODOLOGY

The following research questions guided our investigation of online communities:
1. Do technical newsgroups exhibit characteristics of Fisher and Durrance's information communities?
2. Do particular social types exist within technical newsgroups?
3. What are the roles of these social types regarding information flow?

Data were collected April 2003 – October 2004 using multiple qualitative and quantitative methods, including online participant observation, online focus groups, and in-person interviews with key informants. We also conducted content analysis of newsgroup postings, and analyzed social accounting meta-data from Microsoft Research's Netscan project. Each method is described in-depth as follows.

---

[26] Smith, M., "Invisible Crowds in Cyberspace: Measuring and Mapping the Social Structure of USENET" in *Communities in Cyberspace*, Marc Smith and Peter Kollock (Edt). London, Routledge Press, 1999.

[27] Turner et. Al, Supra note 22.

[28] Brush et. Al, supra note 24.

[29] Franz, R., Wolkinger, T., Customer Integration with "Virtual communities: case study: the online community of the largest regional newspaper in Austria", *HCISS*, IEEE, 2003

[30] Erlandson, D. A., Harris, E. L., Skipper, B. L., & Alen, S. D., *Doing naturalistic inquiry: A guide to methods*. Newbury Park: Sage, 1993.

[31] Tedjamulia et al, Supra note 6.

Participant Observation

To understand interactions in online technical newsgroups we spent over 300 hours during sixteen months observing and participating in six clusters of technical newsgroups ranging from 15–30 newsgroups each. Newsgroup topics were SQL, SDK, Webservices, ASP, Visual C++ and Visual Basic. These newsgroups were chosen based upon the following criteria:

1. A Community Manager (CM) was assigned to superintend the group and to serve the leaders in the community. Newsgroup participants could contact this person if they had a problem or suggestion, although the CM did not serve as a moderator for the group.

2. Microsoft Research's Netscan project contained social accounting metadata which showed significant activity in the newsgroups at the time of study.

3. The representative type of thread in the newsgroup was question-answer, indicating that a form of technical support was taking place in these online public spaces.

Each morning a research team member spent 30 minutes (excluding holidays and weekends) in the busiest newsgroups (i.e. greatest in posting volume and replies) of each cluster reading threads that occurred since the next morning analyzing the content of messages, any social cues that alluded to a person's status in the community and text that signaled that the author of the message was involved in a social interaction (i.e. a response to "Is anyone else out there experiencing a problem with…" or "I asked <person's name> with help on…"). The researcher also participated in private newsgroup sessions and email exchanges where she answered questions for leaders and invited them to online and offline community events such as webcasts, chats, forums and round tables.
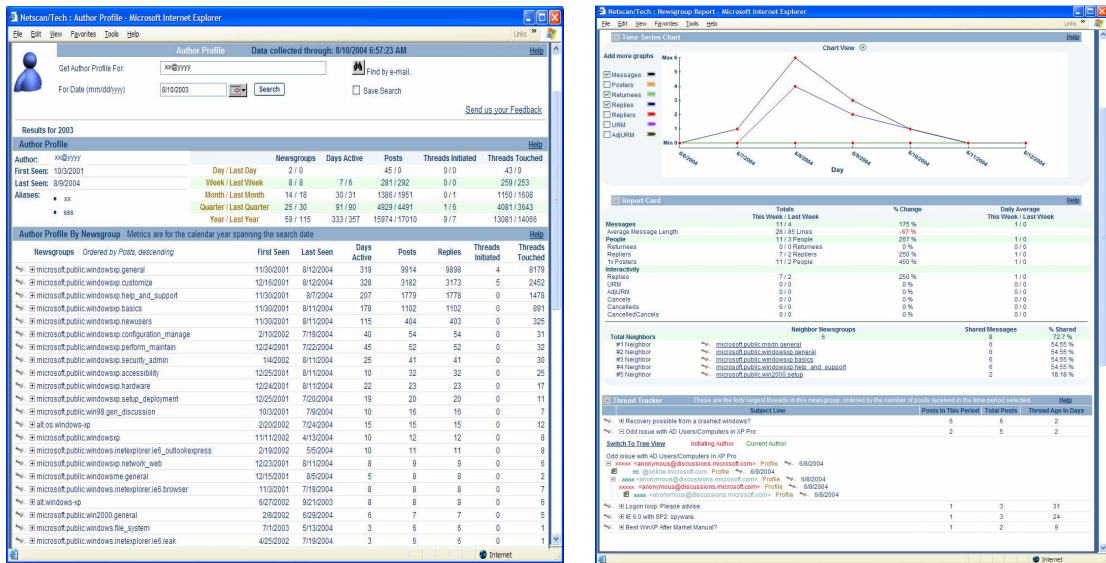
Figure 1: Author Profile (left) allows users to select an author and receive summary and detailed information about the author's activity in Usenet. The Newsgroups Report Card (right) shows activity in a newsgroup for a selected time period.

The same researcher also occupied a cubicle with the Community Managers (CM) in order to deepen her understanding of the CM role. In particular she wanted to observe their interactions in public and private newsgroups as well as any other forms of communication CMs had with the leaders and influencers of their assigned newsgroups. She asked specific questions of the Community Managers when she saw particular information interactions and received recommendations on which leaders to email for participation in the online chat-based focus groups.

While observing technical newsgroups we primarily saw evidence of problem-solving (i.e. question-asking, question-answering, clarification of both questions and answers), bug reports (trying to get the message to developers) discussions (on and off topic), announcements (spam, useful information, bragging) and miscellaneous posts (i.e. showing gratitude, trolls, etc). Somewhat to our surprise we also observed appeals for consultants (some were requested by name) who were skilled in an area to help small companies in exchange for payment. This yielded insight into how Usenet participants were receiving financial incentives just for being part of these communities, providing evidence that everyone in technical support newsgroups may not participate only for the sake of altruism. We further probed on this phenomenon during focus groups with key community leaders.

Social Accounting Metadata

Once the observations were underway, we used behavioral metrics to help focus our research to question-answer newsgroups with high posting volume with a core group

of leaders who answer questions (i.e. high reply rate). For this task, we used Netscan[32], a tool designed and developed at Microsoft Research that quantitatively computes and collects social accounting metadata on authors, newsgroups and threads. With Netscan (Figure 1) we viewed data about community leaders (using the Author Profile), which lists the top 40 posters computed by days active and number of replies to determine what type of information is shared by top contributors), the newsgroups they participated in (using the Newsgroup Report Card) and the threads they contributed to (using the Thread Tracker).

We used Netscan to partially verify the self-reported data provided by community leaders in the focus groups, particularly regarding how long they were active in newsgroups (first seen date), when they first started to reply (as opposed to asking questions), and how often they posted. Additionally we examined message identification numbers to search for the content that the leaders contributed in different newsgroups to help us understand the types of threads to which they primarily contributed. From a methodological perspective we found that Netscan was useful for understanding the general pulse of the particular newsgroups in which we were interested.

Focus Groups And Interviews

Six Community Managers were asked to recommend two or three highest volume community leaders, i.e., community leaders who post the most number of days per month (see Figure 2 for an example). A "call for participation" was emailed to these nominees as well as those in the private newsgroups with whom we communicated often and who fit the criteria for this phase of the study. We conducted two online chat- and phone-based focus groups at times that were convenient for participants in different time zones, each lasting approximately two hours. Participants received a $20 gift certificate to Amazon.com in exchange for their participation.

We recruited people who primarily provided responses (i.e. replies) in developer-related newsgroups. Participants shared how they felt about technical online peer-to-peer newsgroups. They talked about first experiences with technical newsgroups, the types of duties personally performed as they sought to build community, and their observations on dynamics and accountability in the newsgroups.

The focus groups comprised an online chat in a chat room designated specifically for data collection of this study and a recorded conference call that participants were able to dial into toll-free. This two-step approach enabled participants to expound and to clarify statements based on what another participant may have typed or said during the chat.

In order to better understand communication and information exchanges in the high volume Microsoft public newsgroups, we interviewed individuals who were established, long-term leaders in their communities. These key informant developers used Usenet newsgroups for many years and had usually posted in the same places for a long period of time. They were further characterized by being recognized by and knowing others in the newsgroups as well as having social ties to the group. Findings from the focus groups are detailed in Section 4.4.
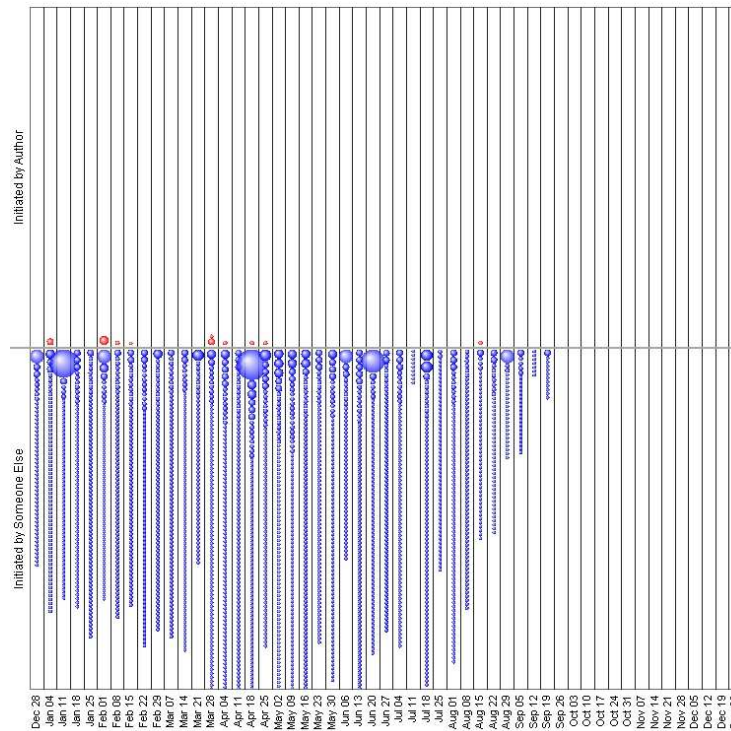
---

[32] Smith , Supra note 25.

Figure 2: Example of the posting pattern of a community leader. Red "bubble" in top half of double histogram show messages initiated by author while blue "bubbles" in lower half show messages replied to by the author, indicating that this person answers a lot of questions. Size of the bubbles correlates to number of messages per thread. Selecting a bubble exposes the conversation thread. See Turner, et al 2005 [41].

Trustworthiness

The quality or rigor of qualitative research is referred to as "trustworthiness" by Lincoln and Guba[33] and also Effrat[34], who recommend several techniques for ensuring it. In this study we enhanced credibility (similar to internal validity) through prolonged engagement, persistent observation, triangulation of sources, methods and investigators, peer debriefing, negative case analysis, referential adequacy checks and member checking. Transferability or external validity, was achieved by providing "thick description" in our methodology notes and writings. Dependability (comparable to reliability) was ensured by examining the data for factors of instability and factors of phenomenal and design induced change. Confirmability (or objectivity) was enacted by tracing data to their sources and as researchers asking ourselves whether our findings "made sense" based on the sources and findings reported by cognate studies.

---

[33] Lincoln, Y. S., & Guba, E. G., *Naturalistic inquiry*. Newbury Park, Sage, 1985.

[34] Effrat, M. P., "Approaches to community", In: Effrat, M. P. (Ed.). *The community*. New York: Macmillan Publishing Co., Inc., 1974.

As initial observations and focus groups were completed, we iteratively developed a coding scheme using Strauss'[35] technique for analyzing the data. Tests of inter-coder reliability were conducted with two independent coders, who coded the raw data for incidents that reflected the themes in the codebook (i.e. activities and roles). They were instructed to assign as many codes as necessary to accurately represent each segment of the transcripts. The coders were also instructed to indicate their degree of certainty (based on a three-point scale) for each decision. To calculate reliability scores, we used a formula recommended by Miles and Huberman[36] in which the number of coding agreements is divided by the total number of agreements plus the number of disagreement. Final agreement rates reached 100.0%.

FINDINGS

After data collection was complete and all the transcripts had been analyzed, we grouped evidence for each of the five characteristics of information communities as well as interactions that showed information exchanges. We used AuthorLine[37] profiles (as shown in Figure 2) to follow information exchanges and threads in which selected authors had participated. The transcripts and observations also exposed some social types that we discuss further in this section.

Newsgroups As Information Communities

Initial analysis shows strong support that online technical newsgroups function as information communities. Using the five characteristics of information communities described by Fisher and Durance[38], we share our preliminary findings as follows.

(1) Information communities anticipate and form around people's needs to get and use information. The founding purpose of technical newsgroups mirrors this first characteristic of information communities: they were formed as venues for people with similar interests to share problems and solutions as well as news and developments in the field. Beyond instructing each other in how to use resources, participants reveal selectivity in sharing information sources such that their information-giving is tailored to the needs of the requesters. As one participant explained, "I was really impressed to see a bunch of people—who had no financial incentive—participate and give up their time to help others. I wanted to be a part of it." A different participant was amazed that he could "send questions and get answers quickly." These users had positive experiences after they finally decided to post questions having silently observed how other people behaved in the newsgroups.

---

[35] Strauss, A. L., *Qualitative analysis for social scientists. 2nd ed.*, Cambridge: Cambridge University Press, 1998.
[36] Miles, M. B., & Huberman, A. M., *Qualitative analysis: An expanded sourcebook (2nd ed.)*, Thousand Oaks, CA, Sage, 1994, Pg. 64.
[37] Turner et al, Supra note 22.
[38] Fisher & Durrance, Supra note 1; Fisher et. Al, Supra note 7.
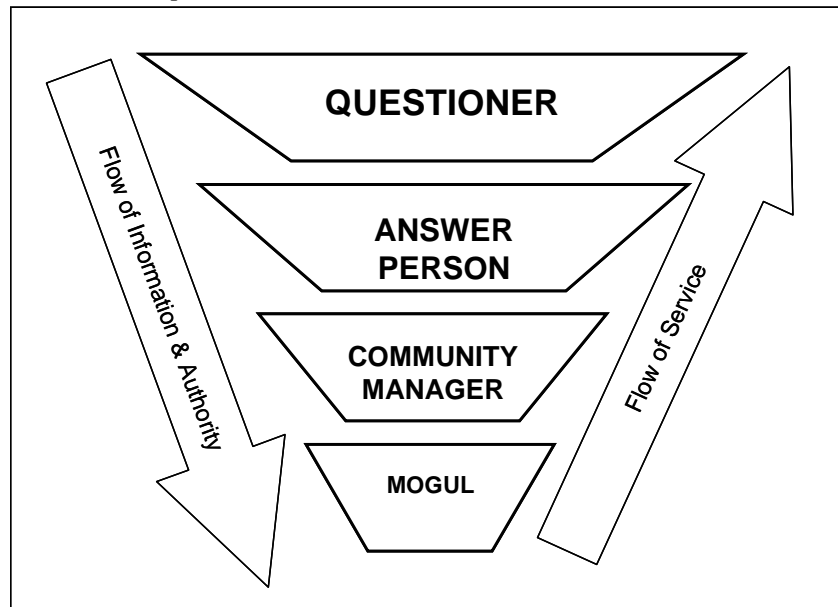
Figure 3: Flow of Information, Authority and Service in Technical Newsgroups

(2) Information communities effectively exploit the information sharing qualities of available technology and yield multiplier effects for stakeholders. By virtue of their professional skill set, newsgroup users were savvy technologists, which they exploited for sharing information in several ways, including posting queries and responses in the newsgroup space, sending files to one another, hosting websites, writing FAQs (responses to frequently asked questions), providing recommender services to other resources, providing introductions to experts outside the group, etc. Benefits accrued at the individual level as well as with his/her employer. In addition to technical expertise, newsgroup users received helped with clarifying problems, emotional support, employment leads (consulting and long-term), and information about topics unrelated to the newsgroup. Some newsgroup users also enhanced their reputation—both within and outside—the newsgroups. One newsgroup user, calling himself a "wizard" in a specialized technology, said he encountered a thread with three prior posts that referred the initial poster to him, which, he added, "got [him] a consulting gig and seminars." Informants reported saving considerable time and money personally as well as for their respective organizations due to newsgroup access. In short, newsgroups provided information, social benefits, and visibility for the participants that went beyond users' local networks.

(3) Information communities transcend barriers to information-sharing. The primary barrier to information sharing among technologists is access. The newsgroups alleviated this barrier in several ways. Collectively, the participants in the six newsgroups were from 42 countries, including the U.S., Japan, Germany, Italy, Spain, UK, Korea, France, and China. However, despite cultural boundaries, the newsgroups enabled participants to share information about more than 60 products or technologies. Ordinarily in an organization or even in other face-to-face interactions, individuals with similar titles or job responsibilities would interact with one another. However, because information in technical newsgroups is free-flowing, IT executives and managers of one company are able to ask question or share best practices with a staff person who works in

the IT department of another company without disclosing proprietary information or even disclosing the company for which they are employed. The many consultants within technical newsgroups ask for help with setting the price of a service or getting a project finished for a client. This type of synergy is more difficult to accomplish when people are face-to-face and are more prone to embarrassment.

(4) Information communities connect people and foster social connectedness. It was evident that newsgroups fostered social relations in many ways. Relationships were formed and strengthened, for example, when peers worked together, especially on solving a problem plaguing one of the newsgroup users. Such concentrated problem-solving moved quickly to private email or private newsgroups in a courteous effort to keep off-topic posts out of the public newsgroup spaces and resulted in closer ties among those involved. But the act of meeting someone in-person was considered particularly exciting, as one participant explained recounting his own emotions over his first face-to-face encounter with someone he knew well online. One newsgroup discussed a couple who married after meeting face-to-face. All of the informants had at least one offline encounter with someone they met in a technical newsgroup. Some described their pre-existing impressions of people and said their offline encounters usually confirmed the former. As one participant explained, "You know what sorts people are based on their responses. You tend to make up some impression of them, which helps especially when you meet in-person. That's when you solidify your opinion of them."

(5) Information communities emphasize collaboration among diverse information providers. The newsgroups in our study were undoubtedly richer for encouraging participation from developers worldwide and from different corporate backgrounds with different motivations. This diversity created a broader range of expertise and experience for users to draw upon. For example, while some newsgroup users posted a query as a point of first level escalation (i.e., before calling to pay for support) for their company, others were there simply because they code for fun or were just beginning to learn programming. The congregating of people with diverse backgrounds and interests added richness to the information sources that might not otherwise have existed.

Identification Of Social Types In Technical Newsgroups

When we speak of social types typically we are categorizing a person to say he or she acts like others who behave in a similar way. Almog[39] says the meaning of social type suggests "that this person can be recognized as a typical example of a familiar group or social category and reminds us of other individuals with similar values, behavior, style, and habits". Lofland and Lofland[40] explain that social types are "constructs that fall, conceptually, somewhere between an individual, idiosyncratic behavior on the one side and formal or informal role behavior on the other side." More specifically Golder and Donath[41] when discussion social roles for electronic communities states that an "individual's behavior in groups is constrained by several factors, including the skills, privileges and responsibilities they enjoy". Bearing in mind that a newsgroup user's role tends to change over time and across settings, our analysis of the six newsgroup clusters

---

[39] Almog, O., "The Problem of Social Type: A Review", *Electronic Journal of Sociology*, 1998.
[40] Lofland & Lofland , Supra note 11, Pg. 106.
[41] Golder, S. & Donath , Supra note 19, Pg. 1.

revealed four distinct social types that play significant roles in the flow of information: Questioner[42], Answer Person[43], Community Managers, and Moguls.

A *Questioner* is any one who participates in a newsgroup information community, either actively or passively, by "showing up" in the past twelve months to post at least one message. There are two types of Questioners: posters, who have sent queries and comments on a regular basis (at least monthly), and silent searchers (sometimes referred to as lurkers), who tend to observe or read others' postings and seldom respond to or create their own threads. Although silent searchers[44] do not contribute content or information to the newsgroups they read, they are a vital part of the community since they are the consumers of the content. Silent searchers are purported to make up 80-90% of an online community's participants[45]. Questioner is usually the first or entry stage to joining a newsgroup information community. People engaged at this level may or may not yet understand the benefits of the community's collective action[46]. Questioners often participate when they are in need of information and not necessarily because they have information to share. Questioners, as with other social types, are also faced with the dilemma of deciphering the roles of content contributors within the community often with no clear indicators of the role of the author of a message. Because Questioners are not very active in community-building activities, they may not be able to identify the major information providers. Even if they understand which social types distribute most information, they may not be savvy in knowing which sources they should trust.

If a Questioner ever hopes to become recognized as a leader[47] in the newsgroup or information community, he/she must distribute information (i.e. answers) of noticeable quality over an extended period of time. One type of leader is the *Answer Person*, a highly active participant who holds influence with the community at-large and can advocate a topic/solution or help a Questioner. Significant contributions by Answer People are noticed by those managing the newsgroups and they are sometimes awarded for consistently answering questions and providing useful information to people in the community. Simultaneously, Answer People operate as informants or direct links to Community Managers (a third social type), escalating issues that Community Managers need to be made aware of while asking for (and sometimes demanding) changes to the community. Answer People emerge as leaders within their communities; depended on for problem-solving, discussions, help and support. They comprise the core group and serve as liaisons between Questioners and Community Managers. Moreover, they constantly add to the dynamics of community because have larger spheres of influence than any of other actor: many Answer People host their own websites, write FAQs, white papers and books.

---

[42] Tedjamulia et al, supra note 6.

[43] Id.

[44] Nonnecke, B., Preece, J., "Why lurkers lurk", *Proceeding of Seventh Americas Conference on Information Systems*, Boston, 2001.

[45] Nonnecke, Id.; Tedjamulia et al , Supra note 6.

[46] Kollock, P., The Economies of Online Cooperation: Gifts and Public Goods in Cyberspace. In Marc Smith and Peter Kollock (editors). *Communities in Cyberspace*. London: Routledge, 1999.

[47] Franz and Wolkinger , Supra note 28.

While Answer People may appear overly altruistic, giving information with little in return, they do aim to enhance their subject expertise and social standing. They enjoy answering challenging questions and nurturing newcomers. In the focus group, one Answer Person said he answers simple questions posed by newbies (i.e. first time posters in the group) because "they seem to be largely ignored by a collection of people." As a rule, he generally gives others in the newsgroup 24 hours to respond to the newbie's question before formally welcoming the newbie and answering the person's question as a means of "straightening them out." This claim was substantiated by a person in a different focus group, who stated that he "tend[s] not to go into detail unless [he] know[s] the person or unless there has been a discussion in which [he] was already participating." He further clarified: "If you don't know the person you have no idea if you go to all the depth whether that person will ever use that". Answer People are familiar with the regulars in the group and are able to recognize when someone new posts a message to the newsgroup.

Although the observed newsgroups were established for peer-to-peer interactions, there is a need for roles dedicated to the administrative duties of *Community Managers*. Community Managers are responsible for facilitating the governing of community, by enforcing rules or evoking social norms—when they perceive that they are called upon to do so. They serve their communities by holding everyone responsible for particular rules of conduct, which may make them unpopular at times with a few individuals. Community Managers desire not to be seen as policing the community, but as facilitating the community instead. As explained by Hafner[48], Community Managers are viewed as hosts, helping to guide, shape, and monitor discussion. The primary distinction between Answer People and Community Managers is that managers do more "behind the scenes" work. They are the official, paid community leaders who are responsible for bringing together the right mix of people, at the right time to the right place for the purpose of building community. They sometimes have to take on roles that they would rather not, like having to police the community, asking people to abide by a code of conduct, deleting spam, redirecting traffic (posts that do not belong in a newsgroup), rewarding good behavior and monitoring deviant behavior. They balance all of these sometimes conflicting duties while maintaining relationships with many of the other social types. In this sense, they may be able to mitigate anything that might negatively affect the community's health and may seize opportunities that may even help it thrive. Community Managers facilitate information flow primarily between Answer People and Moguls and to foster working relationships with them in order to put a human face on the product or technology that the Mogul develops. At their best, Community Managers enable and encourage participants to share resources, knowledge and information.

Similar to Community Managers, *Moguls* are designated gurus that may have to be engaged, especially when a problem escalates that no one else can solve. They are internal to the organization and are privy to the inner workings of the technology that is being discussed in the newsgroups. Highly esteemed, technical experts they tend not to enter threads until the discussion has been filtered through the Answer People and

---

[48] Hafner, K., *The Well: A Story of Love, Death & Real Life in the Seminal Online Community*, Avalon Publishing Group, 2001, Pg. 104.

Community Managers. In this sense, the Mogul takes on the tough situations or questions and may add insights that other social types could not provide. Moguls answer the very complex questions that sometimes deal with the inner-workings of a product or technology. They write code snippets, send private email to newsgroup users, engage in newsgroups exchanges, engage and coach authors who wish to write books on the technology, host online chats, moderate webcasts, and many other activities. Moguls mostly participate where they will receive maximum return on the investment of their time. They provide content to content providers. Answer People highly value their relationships with Moguls: knowing that the Mogul's time is prized, Answer People carefully and reverently craft their questions. The Community Manager, in many cases, makes the Answer Person – to – Mogul relationship possible by inviting both types to engage with one another, and by providing the forum.

Interactions Of Social Types

Figure 3 shows a delineation of order among the four social types regarding information flow, authority, and service. While any one of the four social types could potentially interact with another, information typically flows from Questioners to Answer People (i.e., questions are posted in a newsgroup); from Answer Person to Community Manager (i.e., if the answer to the question requires some type of internal information to which the Answer Person is not privy); and from Community Manager to Mogul (i.e., if there is a need to understand the internal workings of a product or if a bug or feature needs reporting or verification).

With respect to information flow of answers, for Moguls and Community Managers, time is a major reason for not responding to posted questions. Moguls are very busy developing software that is being discussed in the newsgroups while Community Managers are overseeing operations in and surrounding the newsgroups for which they are responsible. What about Answer People? In our research, some Answer People said they would not enter a discussion unless it was technically challenging. Others respond to clarity, as the following participant explained, "I definitely prefer the questions where the title is clear or they give you a sentence that explains the problem. I tend not to go into detail unless I know the person or unless there has been a discussion in which I was already participating… but if they're already long drawn, I tend to ignore them. Unless it happens to be in an area which I know very well."

The roles of Questioner, Answer Person, Community Manager and Mogul are all highly subjective and may call into question proper or improper behavior–especially when rules have not been formally established or circulated in the community. Social norms are sometimes established by punishing those who commit deviant acts and by rewarding those who do good deeds. Moreover, such restrictions and sanctions are sometimes the bases or impetus for establishing new rules. Questioners and Answer People tend to pass along the code of conduct through constant interactions and orient new participants, who must observe current behavior and govern themselves accordingly.

Details From Focus Groups

We gained deeper insights about the Answer Person role through analyzing the focus group data. The typical participant had been an Answer Person for three years

(minimum 2 years, 2 months; maximum 7 years), at the time of the study visiting newsgroups most week days. The overwhelming majority of their posts are replies rather than initial/start messages (i.e. mostly likely answers rather than questions). Five of the eight focus group participants were professional developers, another participant was a consultant who also maintained developer-related resources on a website. The final participant taught Microsoft technology courses for a private commercial teaching firm, published nearly one hundred articles designed specifically for other Answer People, and wrote books on Windows NT and WIN32 Programming.

When asked if Answer People in particular felt respected in newsgroups, participants responded that anyone who provides good, quality answers to a question can gain respect. One participant stated, "it is the level of correctness and usefulness that we provide in the newsgroup," "whether they respect you or not" added a different participant. Another respondent stated, "I think people learn to recognize certain people who can get them good answers and they appreciate the willingness of some people to dedicate some time to give answers… it's the fact that we're willing to help that makes the biggest difference to them." Because of this recognition by other social types in newsgroups and because they know Community Managers are possibly reading their responses (2 mentions), Answer People feel they "have higher responsibility for delivering quality and useful replies."

Other common themes from Answer People include their level of commitment to the various newsgroups in which they participate, satisfaction with the amount and type of access to Moguls and gratitude over the extrinsic rewards. Answer People realized they were more free of censorship than Moguls and were able to verbalize or write about topics that Moguls, employed by the company, could not write for fear of loosing their job or having the company sued. An Answer Person who has participated in newsgroups since the days of CompuServe stated that Moguls "should be more open, but I'm not saying they an be given the current legal climate… There are just issues that arise when a rep of the company makes a flat statement about something… I think there really is a very real constraint that makes it impossible for [Moguls] to be as open as [Answer People] can be. Any company that has ever had an open forum newsgroup, the employees [in] the newsgroup have to be very circumspect about how they say things. Even if they're disagreeing with the basic company line it has to be done extremely delicately." This comment reinforced the ideas of freedom and flexibility Answer People seem to have in newsgroups.

IMPLICATIONS

There were a number of design and policy implications that arose from our findings.

Mobilize and Empower Answer People
For hi tech companies like Microsoft, online communities are a significant offering to a portion of their customer base. For example, while suggestions and bug reports from the community are valued by product development teams, it is the pool of

key contributors[49], like the Answer People in this study, who provide consistent, reliable feedback whether solicited or not.

This study revealed that Answer People feel they are an invaluable extension of the company's development process. They said it was their responsibility to be early adopters of the company's new technology as well as to give feedback before that was technology released to the general public. We further observed that Answer People, who were extrinsically rewarded for their contributions in newsgroups want to be further involved in the development process and are thus key contributors in the product feedback cycle (i.e. bug reports, break/fix, etc.).

Consider Extrinsic Motivation

Extrinsic motivation happens when members of a community are motivated by external factors like rewards or recognition. We recommend that professionals who wish to leverage the power of community in their own business practices consider ways of incorporating Answer People's feedback, suggestions and content into the company-sponsored technical support database. When Answer People feel their contributions are welcomed and utilized, they tend to seed more contributions into the community.

External pressures or exposure of some type of reputation system also provide a source of extrinsic motivation. Answer People did not say explicitly but did suggest that having a list of top contributors like the Netscan "Top 40 Authors" feature may motivate them to contribute more content for the sake of being one of the top 40. Having a clear sense of reputation that is transparent to all social types may prove helpful in trying to assess which content to trust. A person who has been in the group (or in Usenet) a long time and who posts lots of replies may be looked to as one who can be trusted. These are metrics that can be acquired without having members explicitly vote on the usefulness of the content. We can, however, imagine that allowing members to provide feedback on content or an author makes for an added dimension to the overall reputation system.

Rely on Self-policing in the Online Group

Durkheim[50] discusses social norms and deviance in society, which is of particular interest since all of the social types that emerged from our data engaged in some form of disciplining or governing of community. Many of them had also been corrected in some way. This is an indicator that something occurred to offend or violate some set of written or unwritten rules. Are codes of conduct a direct response to the actions that are viewed as deviant by certain social types? How do people respond and adjust when there are social or structural changes introduced and how does this affect information flow? Elfreda Chatman's information science theory of normative behavior[51] would also be relevant to understanding social conventions in online settings.

We asked participants if they'd ever been publicly corrected in a public or private newsgroup. Most of them said they had and although they were embarrassed at the correction, it caused them to be more careful and thorough in subsequent posts. Some of

---

[49] Franz & Wolkinger, , Supra note 28.
[50] Durkheim, Supra note 3.
[51] Chatman, E. A., "Framing social life in theory and research", *New Review of Information Behaviour Research: Studies of Information Seeking in Context*. 1, 3-17, 2000.

the public correction came because content was incorrectly stated other times it was because of "a typo or silly mistake". One participant felt relieved at this idea of self-policing stating, "It also puts me a little more at ease about answering other questions. I know that if I'm wrong, someone else may 'fix' my goof." Another chimed in to say, "I think that a healthy community allows for anyone to correct anyone." A long-time Answer Person who frequently has questions emailed directly to him typed, "I avoid answering questions in email like the plague because I want the question and answer to be public, so mistakes can be caught." So when he gets questions from members of the community emailed directly to him, he posts them back into the newsgroup in order to subject his response to this make-shift peer-review process. In the end, the Answer People we interviewed said they were mostly happy at this self-policing because the correct information was eventually posted, helping the Questioner who needed an accurate response. While this is not the only way to manage a community, it is one that has worked in the technical peer-to-peer question-answer newsgroups we observed.

Decide on Openness of the Online Group

Early in the planning process managers of online systems should decide on the policy of who can subscribe to the group and how much access those individuals will be granted. The amount of access an individual has to a group is important. Deciding whether to allow people access to a group without registering or without providing verifiable data could be a factor in their willingness or ability to participate. Sometimes asking for personally identifiable information from a user can be a deterrent to their participation. This point was made evident during this study when a participant did not want to use his verifiable credentials to log in to the chat session. However he provided even more information to have access to some private newsgroups. It turns out that the cost versus perceived benefits model had to be more beneficial to him to justify exchanging his information to join a closed system.

Managers of online groups should think through this issue well. While the openness of a system allows anyone to contribute at a relatively low cost, it could also be attractive for deviant behavior. Spammers have the ability to flood the group with unwanted content without the immediate fear of their true identity being discovered. At the same time closed systems provide some protection from random spammers by either being hidden or requiring users to create a personal profile for logging in to the community system. Since two-thirds of authors in Usenet post only once, the process of registering to ask a single question may be too much of a barrier for some. Creators of groups should decide if they want to control for more protection in the group or have free access.

Be Transparent About Storing Traces of Conversations

Deciding if and where content from online groups is stored can be a multi-million dollar question as it relates to storage. Doing internet scale research like that of Usenet newsgroups has the potential of growing up to multi-terabytes of data. There are advantages to archiving at least some parts of conversational threads. Preserving every interaction is ideal for researchers wanting to study online behavior or for consumers who want to search the archives for answers to their questions. Unsuspecting contributors

who do not know their content is being collected should have an opportunity to opt out of the system. Thus making it important to reveal exactly what information is being collected from the system.

Creators of online groups should provide a policy around whether an archive will be created, what types of information is collected in the archive and who will have access to the archive. Should they decide to save content to an archive, it is our recommendation to practitioners to reflect back to the users any aggregate information that is collected about the individual or the groups in which they participate.

CONCLUSION

The inquiring Questioner, the nurturing Answer Person, the accommodating Community Manager, and the content expert Mogul, all have contributions that are valued in the function of online information communities. While the majority of developers began their newsgroup usage through the course of information seeking, along that line they began engaging at a deeper level and helping others. As Burnett[52] says, "it is through the flow of information taking place via these messages that the small worlds of virtual communities come into existence and are sustained in the online environment."

While our data show strong support that technical newsgroups exhibit characteristics of information communities and that social types affect the types and quality of interactions that take place therein, several areas were revealed for further research. Beyond exploring the notion of information communities and the role of social types in other online settings, research is needed on the types of information seeking activities in which participants engage before posting their questions on newsgroups. Several of our informants stated they consulted peers, looked through books, and searched the web and through various knowledge bases before posting a question in the newsgroups.

The effects of source reputation and seeker anonymity also warrant further investigation as does the effects of tie multiplicity on information exchange. Our study suggests that some users feel a stronger sense of community and therefore a deeper commitment to share, use and generate information than others. What are the factors that primarily cause feelings of community and hence promote information exchange? How can these factors, such as social interaction both on- and off-line, be promoted? Moreover, what factors prompt a participant to respond (or not respond) to a question? And, what factors affect an information seeker's likelihood of accepting a posted response as accurate? Wilson's[53] work on cognitive authority might assist in this line of investigation. He proposes that particular types of authority influence one's thoughts regarding what one would consciously recognize as proper, i.e., people who are known for producing high quality work hold cognitive authority in that area.

Lastly, while not explicitly stated in many instances human values frequently emerged with in some of the users of newsgroup information communities. Those values included: trust, intellectual property, safety, autonomy, accountability, privacy, anonymity, and a sense of community. Future research could apply Friedman's[54] Value-Sensitive Design to information communities to assess the four social types: Questioner, Answer Person, Community Manager, Mogul. Which values are most important in sustaining communities where information flows freely? What happens if specific values are violated or if certain social types do not feel their values have been considered in the structure or organization of technical communities? Answers to these questions and others are important for information system designers working to create the building

---

[52] Burnett, Supra note 6, Pg. 539.

[53] Wilson, P., *Second-hand knowledge: An inquiry into cognitive authority*. Westport, CN: Greenwood, 1983.

[54] Goffman, Supra note 15.

blocks of information communities and a place where key participants want to exchange the highest quality information.

ACKNOWLEDGEMENTS