Technology and Contingent Conditions in Community Formation on the Internet

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Technology has captured the attention of researchers in computer-mediated communication from early on but there is yet little attempt to assess the impact of technology on community formation on the Internet. This paper investigates the impact of technology on community formation on the Internet through studying a bulletin board created on the World Wide Web by a women's group in Hong Kong, the Queer Sisters. Using content analysis, an online survey, interviews and observation, I found that a community substantially autonomous of the offline group was formed on the bulletin board. Explanation for the substantial autonomy of the bulletin board community is sought from the technological characteristics of the bulletin board and of the Web. However, other conditions are also found relevant for explanation. Acknowledging that medium theory allows for the existence of contingencies in the impact of media technology, this paper proposes to input contingent conditions as factors that work with technology in the formation of Internet communities.

People who have never met or even heard of each other come to know each other on the Internet and develop a sense of belonging among them. This phenomenon provides supporting evidence that Internet technology fosters a social space for the development of new communications, relationships and communities. However, the view that Internet technology shapes the communication environment has been gaining attention only since online groups became widespread and the study of Internet culture emerged during the 1990s (Jones, 1997a; Silver, 2000). The dominant view of how the Internet may impact communities remains focused on the information transmitted by the computer network (Jones, 1997b; Sproull & Faraj, 1997), as is articulated by the Secretary-General of the International Telecommunication Union, Yoshio Utsumi (2001):

> The promise of the Internet is to broaden and enhance access to information through a service that can be reached anywhere in the world that has

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> connectivity…. It can offer businesses the possibility to 'leapfrog' into the development mainstream by allowing them to sell their wares and services globally and directly to customers…. The Internet also offers the hope of delivering basic services such as health and education more efficiently by allowing people to follow lectures by experts and participate in a learning exchange from their very own homes and communities.

This paper seeks to evaluate the impact of technology on community formation on the Internet by investigating the autonomy of online communities from their offline counterparts. The paper is based on a case study of a bulletin board on the World Wide Web and the women's group in Hong Kong, the Queer Sisters, that created the board. It was found that technology works with factors in the socio-economic and communication contexts in predicting the autonomy of Internet communities.

Technology as Absence of Desired Characteristics

The first generation of studies on the Internet was heavily influenced by early studies on computer-mediated communication (CMC), which took CMC systems as mere instruments of communication. Those studies concentrated on how different CMC systems might affect the efficiency and effectiveness of information transmission in work processes (Garton, Haythornthwaite & Wellman, 1997; Kiesler, Siegel & McGuire, 1984; Rice, 1989). They were typically conducted in laboratories where small groups that communicated through computers were compared to groups that communicated face-to-face. A strong line of research was the "cues-filtered-out" approach (Culnan & Markus, 1987). They found that groups communicating through computers were disadvantaged in forming positive relationships as more verbal aggression, blunt disclosure, and nonconforming behaviour were found owing to the fact that

CMC groups lacked the communication cues and social context that facilitated relationship formation (Parks & Floyd, 1996). Later studies, however, found that when groups were given more time, adaptation took place in the way people communicated (Walther & Burgoon, 1992).

Following this perspective, most early studies on sociality on the Internet were concerned about the effects of the absence of social presence and social context cues. The concept of "cyborg," which refers to the merger of the subject and the computer in cyberspace, assumes a separation of the mind from the body and hence the social cues communicated through the body (DiGiovanna, 1996; Haraway, 1990; Heim, 1991; Lupton, 1995; Reid, 1996c; Tomas, 1995). Such separation gives participants anonymity and allows them to fake and multiply identities on the Internet (Danet, 1998; Poster, 1995; Reid, 1995, 1996c; Turkle, 1997a, 1997b).

Technology as the Presence of Certain Characteristics

Some exceptions in CMC studies explored the social psychological aspects of CMC (Kiesler, Siegel & McGuire, 1984; Kiesler & Sproull, 1992; Sproull & Kiesler, 1986, 1991; Walther & Burgoon, 1992). This perspective acknowledges the characteristics present in the technology and seeks to understand their effects. For example, Sproull (1991) pointed out that electronic mail has three advantages over face-to-face meetings: asynchrony, externally recorded memory, and computer-processable memory. Asynchrony gives senders and receivers the convenience of attending to the same communication at different times. The external memory allows tracing the history of an issue and is particularly useful as social memory in group interactions. That the memory is processable by computer makes it easy to search, edit, partition, and share with others. Some studies found that computer networking stimulated new communications and changed the pattern of communication within the group (Feldman, 1987; Hiltz, 1985; Kiesler & Sproull 1992; Sproull & Kiesler, 1991).

The Internet Is a Range of Media

Communication scholars who attempted to understand the Internet have treated Internet technology as if it were one technology having one set of uniform characteristics. Characteristics identified include interactivity (Newhagen & Rafaeli, 1996; Williams, Rice & Rogers, 1988), asynchrony, channel segmentation, mechanomorphism, lack of sensory data (Williams, Rice & Rogers, 1988), real-time synchrony (James, Wotring & Forrest, 1995; Newhagen & Rafaeli, 1996), packet switching,[1] multimedia, and hypertextuality[2] (Newhagen & Rafaeli, 1996). These specific characteristics are not particularly helpful for understanding human communication mediated by the Internet, as most of them come from communication applications rather than the Internet itself and do not apply to the Internet per se. The official definition of the Internet[3] consists of three elements:

1. an *address* space based on *Internet Protocol* (IP);
2. *communications* using *Transmission Control Protocol/Internet Protocol* (TCP/IP); and
3. services *layered* on the communications infrastructure.

Networks that follow TCP/IP are able to communicate with each other. An individual communication on one network is able to travel through these networks to its intended destination when the communication is given an address that follows IP. Service applications such as games can run on these networks. The Internet, therefore, is a form of technology that allows interconnection. For understanding communication mediated by "the Internet," characteristics other than interconnectivity come from the service/communication applications and the technology in which the applications are embedded.

As different technologies and communication applications have different characteristics, it is helpful to see the Internet as a range of media related to these applications (December, 1996).

The mode of message distribution[4] is one dimension that differentiates Internet media. The time delay between sending and receiving messages is another. Other dimensions suggested include the degree of control by the system administrator over information dissemination, and the degree of freedom in information access (December, 1996). Conceiving the Internet as a range of media rather than one medium alerts us to the specific characteristics of different types of communication environments on the Internet, while it also guards against ungrounded generalization of observations from one type of Internet media to another.

"Technology" in Internet Community Studies

The tendency to take the Internet as one technology was found in some earlier studies on Internet communities. Most studies on Internet communities are case studies; observations obtained on one site were generalized to other types of sites without regard to the difference in technology (e.g. Markham, 1998; Sproull & Faraj, 1997; Turkle, 1995, 1997a, 1997b). Some research did discuss the implications of specific Internet communication applications on community formation, but without formulating them in terms of the impact of technology. The characteristics most discussed are whether there is a time lag between the sending and receiving of messages (synchrony/asynchrony), and what powers the administrators of the online groups exercise.

There is a view that communication applications that do not allow synchronous communication, like the Usenet, bulletin board, or the email list, are not particularly favourable to Internet community formation (Tepper, 1997). Earlier studies on Internet communities were conducted on groups formed by synchronous technology such as MUDs/MOOs[5] and IRC[6] (e.g. Reid, 1995, 1996a, 1996b, 1996c; Turkle, 1995, 1997a, 1997b). Yet the "unfavourable" applications do possess characteristics that are positive to community formation, and in reality do

support online communities. One of the advantages of asynchronous applications is they do not require people to log on at the same time (Tepper, 1997). On the Usenet, the cost of coordination and communication within newsgroups does not increase with the size of the group, and the monitoring of behaviour is thorough and cheap (Kollock & Smith, 1996). The ability to multiplex also makes dispute resolution more effective and efficient (DuVal Smith, 1999). The capability of cross-posting messages on more than one newsgroup was found to help community formation as it cut across the social divisions that divided the offline community (Mitra, 1996).

Email lists give administrators the option of controlling who can contribute to the group so they tend to be more ordered and focused (Kollock & Smith, 1999). In text chat channels, the server administrator can eject people, and control which people enter the channels (Kollock & Smith, 1999). In MUDs, the power structure of the community is formed by the differential technical capabilities of players (DuVal Smith, 1999; Reid, 1995, 1999). The "wizards" at the top have the technical and therefore often the social power to punish an offending player – by changing the characterization of the player, moving the character to a place for public humiliation, severely restricting the player's actions, or preventing connection (Curtis, 1997). In MOOs, anti-social commands are restricted to elite players only (Cherny, 1999). The assignment of specific powers to particular classes of players is decided by the archwizard.

Medium Theory

Medium theory, a term coined by Meyrowitz (1997; 1998), holds that the particular characteristics of each individual medium or of each particular type of media and typical patterns of use tend to encourage certain behaviours, social interactions, social identities and structures of social life (Meyrowitz, 1986; 1994; 1997). The focus of medium theory on technological

characteristics therefore promises to address the inadequacies in research on Internet communities.

Within the perspective of medium theory, Meyrowitz (1985; 1986; 1994) developed the information system theory, which sees the influence of media characteristics in two ways:

1. The widespread use of a new medium increases or decreases the "shareness" of information among people of various social groupings such as male versus female, and adult versus child.
2. Media differ in their extent of integrating the personal versus public contexts.

Comparing books and television, Meyrowitz (1986) highlights five contextual media characteristics that integrate or segregate the sharing of information:

1. Access code – the degree of skill required to encode and decode television is less, so television integrates the information worlds of people of various social groups.
2. Object-subject link – the characteristics of television do not vary with the characteristics of the messages it transmits so the link between the medium (object) and the subject's information world is weak. This makes television more integrative of people of various social groups.
3. Degree of association of subject with content – unlike books, the association of the subject with the content is not assumed in television use. People are more likely to watch things on television that they would feel uncomfortable to read about in a book. This integrates social groups.
4. Conditions of attendance – people are more likely to watch television than read books because watching television requires little effort. This has an integrative effect.

5. Implicit vs explicit access – traditionally, members of social groups lacked explicit knowledge of exactly what the members of other groups knew. Television gives various social groups access to the same content and integrates their information worlds.

Other characteristics of the media, namely the form, speed of encoding and obtrusiveness of information conveyed, make television more integrative of the personal and public contexts than books (Meyrowitz, 1986).

This paper employs medium theory and information system theory to understand the community formation on the bulletin board created on the Web by the Queer Sisters. In the following, I shall introduce the group and its bulletin board before identifying the technological characteristics shared by bulletin boards on the Web. Then I shall discuss the impact of the technology on community formation on the bulletin board.

The Queer Sisters and its Bulletin Board on the Web

Formed in 1995, the Queer Sisters is the oldest queer/ lesbian group in Hong Kong. It proclaims itself as a human rights organization fighting for the sexual rights of women. Queer Sisters does not have a membership system and is run by volunteers, some of whom make decisions for the group as a self-proclaimed core group of organizers.[7] The group maintains a certain public profile in the media through granting press interviews and staging campaign action. Its gatherings normally attract 20 to 50 participants. The group created its Web site in November 1997 (http://www.qs.org.hk), to which a bulletin board was linked in October 1998 (author's interview, 12 July 2000).

The Queer Sisters and its bulletin board were selected for study as they are both active, and have some overlap in participants. They are also accessible for data collection. Like other

organizations in new social movements, the Queer Sisters organize themselves around a collective identity and therefore are likely to use the bulletin board for such a purpose. The social disapproval facing lesbians/queers, who are potential supporters of the Queer Sisters, is likely to attract more participants to the bulletin board, thus making the study of community formation meaningful.

The Queer Sisters bulletin board

Electronic bulletin boards (BBSs) originated independently of the Internet. A BBS is a communication application stored in a host computer that individual users can reach by computer modem dialling or telneting. Users can share text messages or other files. The messages on most bulletin boards are available for everyone to see, although bulletin boards can accommodate private channels. Many BBSs have now adopted Internet protocols and are interconnective; many are embedded on the World Wide Web, which offers them hypertextuality.

The Queer Sisters bulletin board was set up using free software provided on the "Inside the Web" site, and was hosted free-of-charge by the same service.[8] The bulletin board is accessible to anyone without registration or subscription by clicking an icon on the Queer Sisters' home page, or by bookmarking the board's address. Anyone can post a message by filling in a pre-formatted form posted on the board or post a reply by clicking on the link to a message without pre-censorship. The board's system administrator, one of Queer Sisters organizers, has the technical power to delete messages but she notes that such power was used only in the initial months of the bulletin board. Another organizer monitors the content of the board as quasi-moderator.

The Queer Sisters bulletin board shares certain characteristics with other bulletin boards on the Web:

1. Point to server broadcast message distribution – individual communicators send messages separately to a server, which makes them available to any user with the appropriate client software. This is the only mode of message distribution available.
2. Asynchrony – because the files sent by communicators are stored in the server until viewers retrieve them, there is a time delay between the sending of a message and the viewing of it. This allows filtering or censorship of messages before posting. But the software service does not allow such powers to the administrators of the Queer Sisters. Messages (between 300 to 700) are archived on the server for some time before they are erased automatically.
3. Text-based – before broadband transmission becomes popular, most messages on BBSs will remain in written language form. This drastically reduces the social presence cues of the communicators (Short, Williams & Christie 1976). Some bulletin boards do, but the Queer Sisters board does not, offer a choice of visual icons to posters for attachment to their messages to indicate their emotions.
4. Hypertextuality – a written message can contain hyperlinks that connect the viewer to other World Wide Web sites, which may contain multimedia texts.
5. Chronological display – messages are displayed according to the sequence in which they are posted, unless they are replies to earlier messages. Replies are threaded with the relevant message.

Most messages and replies on the Queer Sisters bulletin board are in standard Chinese or Cantonese dialect, but some are in English. An indication of the size of the Queer Sisters bulletin board participation came from a survey posted by the group on its home page, asking what new

features people would like on the site. In six weeks from mid-May to the end of June 2000, over 1,000 respondents were recorded.[9]

Autonomous Community Formed on Queer Sisters Bulletin Board

The research confirmed the existence of a community on the bulletin board as a sense of belonging, and interactions and social ties were present to a large extent. My online survey[10] found that 76% (n = 77) of respondents shared a sense of belonging to the board. Sixty-two percent (n = 63) visited it (almost) every day; another 15% (n = 15) 2 to 3 times a week. The majority of postings were meant for all participants on the bulletin board, with the average message drawing around 5 replies. Fifty-six percent (n = 53) of board participants had made friends through the board. My observation[11] also found that the community on the bulletin board upheld goals and norms different from those of the Queer Sisters and they developed features of language use independently of the offline group.

Goals

Survey and content analysis[12] both found that the bulletin board was most used for sharing and expressional purposes. Sixty-five percent (n = 66) of survey respondents reported that sharing was what they got from the bulletin board; 57% (n = 58) said expression was what they got.[13] Sharing and expressional messages[14] together made up 39% (n = 235) of the sampled messages. Interviews[15] with board participants and observation of the board confirmed the central importance of sharing on the bulletin board. One core organizer of the Queer Sisters said the board existed as a gathering place, “like a café,” (author’s interview, 3 November 2000), for women who differed from the mainstream in sexual inclination. The following message excerpt from 25 April, 2000 illustrates this sentiment:

> Recently there was a discussion here about finding a partner in the latter halves of our lives. I think the atmosphere of the discussion is really nice. I really appreciate the harmonious atmosphere.[…] I hope the harmonious atmosphere will continue so we can have a place to express ourselves freely [author's translation from Cantonese].

Another major use of the bulletin board was liaison with friends the poster already knew (offline or online) or soliciting friends on the board. Relational messages[16] made up 34% (n = 207) of the sample.

Sharing, expressional and relational goals were very different from those of the Queer Sisters, which can be classified into political, educational, service, and administrative. Politically, the Queer Sisters campaigned with other women's groups and gay and lesbian organizations from time to time. The group also granted press interviews on issues relating to the sex rights of women. Educational activities of the group included a bi-weekly radio talk programme broadcast on a commercial Web site, and essay competitions held every four months. Social activities such as barbecues, dinner gatherings and dance parties were held several times a year to help achieve the service goal. The group's main service was telephone counselling on the hotline one evening a week. Workshops organized from time to time trained volunteers, and achieved the group's administrative goals.

Norms

My observation[17] and interviews[18] found that the bulletin board community disagreed with the Queer Sisters in relation to their most fundamental norms, another indication of the substantial autonomy of the bulletin board community from the Queer Sisters.

Queer versus lesbianism

The Queer Sisters were influenced by queer theory which, heavily influenced by postmodernism and poststructuralism (Esterberg, 1996), challenges the notion that sexual identity is a unitary essence residing in the person irrespective of social location (Esterberg, 1996; Gamson, 1996; Stein, 1997). The Queer Sisters held the "queer" norm of accepting individuals' sexual orientation as fluid, but the bulletin board was divided over queerness and lesbianism. A debate between lesbians and queers was observed on the board where the queers criticized the Queer Sisters as being too narrowly concerned with lesbians, while the lesbians attacked the group of being non-committal about lesbian identity.

On 12 September 1999 the following message was posted in response to a message posted by Queer Sisters organizers that defined tongzhis[19] not as lesbians but as "non-heterosexuals of multi-dimensional sexuality":

> "Why the hell is 'tongzhi not the same as lesbian'?
>
> Why the hell 'the choice of wording is consistent with the ideals of the Queer Sisters'?…
>
> In organizing an activity you talk about political incorrectness even in picking a word.[…]
>
> You spend your whole life pondering about the publicity flyer, and leave 15% of your time for organizing it.[…] [author's translation from Cantonese]"

On 14 September came this reply from a queer:

> "[…] I can see QS is/has become an organization which only serves the narrowly-defined communities, namely LESBIANS. So where the hell are those QUEERS? I have no intention to speak against LESBIANS. I likED this web site, i likED this chat room, because i thought it was the only organization in Hong Kong [that] had its own stance which I stand up with and which provided us, as women, as queers or as whatever you dare to be (no

matter what gender(s) you fxxk) to talk OPENLY about gender and sexuality.[…][capitals are the poster's emphasis]"

Instead of the queers dictating the norm on the bulletin board, they were sidelined, as shown in the following message posted on 17 September:

"I'm glad that some serious discussion has surfaced in QS…. But sometimes the human brain is like a silted-up river or an ancient closet. No matter how much others try, the stubborn old silt or garbage can't be cleared.…

The perspective on sexual inclination of the Queer Sisters has enlightened me. It liberated my thinking from labels found in the closet. […]

The arguments in recent days have troubled me a lot. This is my last posting for this argument [author's translation from Chinese]."

Discussion on the queer/lesbian norm disappeared from the bulletin board afterwards.

Public concerns versus private interests

The Queer Sisters upheld the norm of concern about public issues, whilst the bulletin board community practised the norm of focusing on one's private affairs. Core organizers of the Queer Sisters were critical of the abundance of self-pitying emotions related to romantic love displayed on the bulletin board. One core organizer commented that the norms of the board community differed tremendously from those of the offline group: "They [participants on the board] are very young, very shallow, and would not look further than their immediate lives" (author's interview, 3 November 2000).

Use of Language

Certain features of language use and para-linguisitc patterns sprang up on the bulletin board as a result of the communication environment; they were not observed in the offline Queer Sisters group.

Most messages and replies on the board were written in Cantonese, a dialect of the Chinese language generally considered proper only as an oral form. The writing in Cantonese indicates the nature of the bulletin board as a space more for "chatting" than writing. Offline, written Cantonese is not popular, and its use was not observed in Queer Sisters publications.

It is common among Cantonese speakers in Hong Kong who have some education to mix in some English words in their daily conversation. This was common on the bulletin board as well as in the Queer Sisters offline. A variant of this also occurred on the bulletin board: Instead of typing the English words, the English transcriptions of Cantonese words were typed. For example, the line "I know your work is very sun foo, dun fat pay hay la" actually means "I know your work is very hard but don't lose your temper." This type of phonetic transcription was mixed into Cantonese as well as English postings. It apparently saved Cantonese posters the trouble of typing certain Chinese characters (Chinese character inputting is difficult to learn), and helped English posters who had difficulty expressing themselves fully in English to communicate. These transcriptions are observed occasionally in some other online spaces in Hong Kong but not in offline written media or Queer Sisters publications.

Some participants used large fonts and coloured words in their writing, and some scanned images into their messages after they were taught on the board how to add these features in May 2000. These para-linguistic features as well as the above-reported features of language use arose

from the bulletin board environment. They were not observed in publications produced by the Queer Sisters.

The substantial autonomy of the bulletin board community from the Queer Sisters came as a result of the technology of the board and of the Internet, which the Queer Sisters allowed full play because of purpose and resource considerations (see below).

Technology and Community Formation on the Bulletin Board

The majority of participants came to the bulletin board because of the interconnection provided by the Internet. Once they were on the board, the technology of the board helped to form a community among them. Most of the technological characteristics, however, did not have a determining effect; many were merely facilitative.

Seventy-five percent (n = 76) of survey respondents learnt of the bulletin board through online channels including hyperlinks, Web search and friends they knew online; only 10% (n =10) learnt of the board through offline channels related to the Queer Sisters.

The absence of private channels on the bulletin board is one of the few technological characteristics that could be said to have a determining effect on community formation on the bulletin board. It made it impossible for Queer Sisters organizers to conduct their organizational communications away from the eyes of other board participants. As a result they opted for an e-group, the telephone, and face-to-face meetings (author's interview, 10 November 2000). This left other participants greater freedom to use the bulletin board for their own purposes.

The board's broadcast distribution facilitated group interaction and thus community formation by creating a "virtual public space" (Q. Jones, 1997) on the bulletin board. The archive feature of the bulletin board strengthened the participants' sense of community by fixating their shared memory in a visible, physical display (Etzioni & Etzioni, 1999). The effect of broadcast

distribution and the archive on community formation is not determining, however, as some board participants appropriated these features for liaison with specific friends they knew. Interviews revealed that these posters treated other board participants, not as recipients of their messages, but as an audience to their liaisons with the intended addressees or as messengers who passed on their messages to the intended addressees (who might not visit the board), or simply as uninvolved bystanders (author's interviews, 10, 20, 21, 24, 27 November 2000). Uses of the board for private liaisons disrupted community formation on the bulletin board but at the same time strengthened the sense of community of those involved.

Unlike what is usually assumed, asynchronous messaging actually facilitated participants' interactions on the bulletin board because the potential community of the bulletin board was too small to support synchronous communication, as confirmed by the live chat rooms put to test on the Queer Sisters Web site in June 2000. The incidental match between the messaging mode and the community suggests that asynchronous messaging does not have a determining effect on community formation.

On the contrary reliance on typed language as a means of communication does seem to have had a negative determining effect on community formation. It excludes certain people and makes participation difficult for some others. Some participants of the Queer Sisters bulletin board said they could not participate actively because they had difficulty expressing themselves in written language (author's interview, 16 October 2000) or because they could not type (author's interview, 28 October 2000) (It is possible to input Chinese by handwriting using a software but the conversion is slow). Those who did not know Chinese or Cantonese also found their English messages drew fewer responses (author's interviews, 19, 20 October 2000). Scanning in images

required command keys that had to be learned and the several hand-written messages that were ever scanned in did not show the words well enough to be easily read.

Anonymous participation on the bulletin board encouraged participation and community formation on the bulletin board by allowing participants to segregate their participation on the board and offline. The only built-in marker of identity on the bulletin board was the IP address of the computer used by the poster. Names and contact means (real or fake) were optional. Previous research has found that anonymity in the online environment brings more expressive communication (Kiesler, Siegel & McGuire, 1984), which sometimes bring positive (Kiesler, Siegel & McGuire, 1984) and sometimes negative results (Reid, 1995; Rheingold, 1996). The anonymity on the Queer Sisters bulletin board suited the use of its participants, who revealed during interviews that they posted in different names for different purposes. Only 28% (n = 26) had used all of the names they used on the bulletin board offline, meaning that the great majority maintained some persona on the board separate from their offline ones. But whether anonymity facilitated community formation depends on the needs of the community; it may not facilitate the formation of a community where participants need to know the offline identities of the other participants.

Threaded chronological display made it easy to trace the development of a conversation and complemented the archive feature in facilitating interactions. Compared to many bulletin boards, the Queer Sisters board had the advantage of allowing posters to display their replies in full without first clicking on the reply headings. This facilitated interaction and was advantageous to community formation.

Hyperlinks were sometimes included in informational messages for pointing board participants to certain Web sites. As the linked Web sites were mostly about lesbian activities,

hyperlinks, together with the information messages, connected board participants in a shared information world that helped to build a community.

Of the characteristics discussed above, only the absence of private channels and the reliance on written language seems to have had determining effects that predict community formation in one way or another. The broadcast distribution mode, archive feature, chronological display and hypertextuality were characteristics that facilitated community formation. The influence of other characteristics, including asynchrony and anonymity, was contingent on the use of the communicators.

The impact of these technological characteristics, however, had a chance to play out only in certain socio-economic and communication contexts.

Contingent Conditions in the Autonomy of the Bulletin Board Community

Further interviews with organizers of the Queer Sisters identified five conditions pertaining to the socio-economic and communication contexts that governed the impact of the technology of the bulletin board on the Web. They are

1. the purpose of creating the bulletin board;
2. resources of the Queer Sisters;
3. accessibility of the board;
4. norm setting role of the administrator on the bulletin board community; and
5. the degree of overlapping participation in the bulletin board and the Queer Sisters.

Socio-economic context

Purpose of creating the bulletin board

The Queer Sisters created the bulletin board to provide a space for free exchange and expression (author's interview, 12 July 2000) rather than to serve the group's offline activities. Nor was the

bulletin board intended as an educational instrument for the Queer Sisters to politicize its potential supporters (author's interview, 10 November 2000). Given the purpose of creating the bulletin board, the Queer Sisters allowed open access of the board on the Internet and they refrained from enforcing the norms of the group on the board. Limited resources of the Queer Sisters also explained the choice of the communication application and why the group did not use or intervene in the board to any great extent. Taken together, these conditions worked to enhance the influence of technology on the community formation on the bulletin board.

Resources of the Queer Sisters

A free-of-charge service ("Inside the Web") was a logical choice for the Queer Sisters when the group decided to establish an online space, given their lack of membership income and reliance on sporadic funding. The choice however delimited the powers of the Queer Sisters over the bulletin board. The only technical powers that the group had were the posting of information on the headers and the deletion of messages on the board. They had no power to restrict access or censor messages.

The Queer Sisters started posting information of their activities on the board's headers only after the group recruited a volunteer (who later became an organizer) with computer skills as system administrator of the board in late 1999. The number of offline activities served as another limit to the amount of information that the group could post on the board. The lack of time on the part of the quasi-moderator was another resource limitation that partly explains why no attempt was made to initiate discussion on the board (author's interview, 10 November 2000), thus leaving the bulletin board free to develop in its own direction.

Communication context

Accessibility of the bulletin board

Consistent with the purpose of creating the bulletin board, the Queer Sisters Web site was registered with 17 search engines, making the bulletin board easily accessible to any user of the World Wide Web. High accessibility was also built into the technology of the bulletin board, which required no extra installation or charge for getting on or posting. High accessibility encouraged visits by individuals who were unrelated to the Queer Sisters and who were likely to form a community autonomous of the Queer Sisters.

Norm enforcement role of administrators

Organizers of the Queer Sisters recognized that the goals and norms of many participants on the board were different from theirs, and although they were critical of the abundance of personal expressions on the bulletin board (author's interview, 3 November 2000), they allowed it to develop in its own way, given the original purpose of setting up the board and their limited resources,

The administrators of the bulletin board never tried to enforce norms or control the content on the bulletin board. Observation of the board and interviews with the board's quasi-moderator found that she perceived her role as smoothing over tension that might disrupt the friendly atmosphere of the bulletin board (author's interview, 21 September 1999). The limited role of the administrators in norm setting was most obvious in the above-reported heated debate surrounding the queer/lesbian orientation of the Queer Sisters. It was a perfect chance for the Queer Sisters to state once and for all what it stood for, but the group refrained from doing so. The power of deleting messages was used only in the early days after the board was created, and only in the case of offensive messages.

Degree of overlapping participation in the online and offline groups

As overlapping participants can transmit culture from one community to the other, they impose a limit on the autonomy of online communities from their offline counterparts. But the differences in goals and norms between the bulletin board and the Queer Sisters, plus the different sets of logic of action in the online and offline realms diminished the overlap in participants between the two communities.

A count at the monthly gathering of the Queer Sisters group held on 28 May 2000 found that only half of those present visited the bulletin board. Even among the organizers of the Queer Sisters, 2 of the 7 did not visit the board; those who did only did so infrequently. Of the board participants, even fewer (34%, n = 34) said they had taken part in the offline Queer Sisters.

These contextual conditions affect the influence of technology. Focusing on technology alone does not adequately explain community formation on the Internet. But first I shall discuss the community formation on the Queer Sisters bulletin board using medium theory and information-system theory. Then I shall propose the incorporation of the contextual conditions into the framework of understanding.

Understanding Community Formation on the Queer Sisters Bulletin Board

Participants were brought to the Queer Sisters bulletin board mainly through online means. Some had never lived in Hong Kong, some had left, and some were temporarily out of Hong Kong. The aggregation of people around the board was the result of the interconnection provided by the Internet.

The majority of the messages on the board were meant for all board participants. The technology of the Internet and the bulletin board created a social space that supported interaction, which enabled the development of friendships – more than half had made friends on the board.

Technology also created a public space that supported egalitarian participation and feedback. In the process, participants shared a sense of belonging with each other. The formation of a community on the Queer Sisters bulletin board lends support to medium theory in that the communication medium serves as an environment for new interaction, relationships and communities to emerge.

The information-system theory propounded by Meyrowitz (1994) helps us to understand further the formation of a community on the Queer Sisters bulletin board. If the contextual characteristics used by Meyrowitz (1986) to compare books and television were to be used to analyze the technology of the Queer Sisters bulletin board, then had the board not been connected to the Internet it would have been segregating in its operation. As the code of access to the board was written language, access was restricted to proficient language users. The content was directly related to the bulletin board; the link between the board and the user's information world was high. Moreover, the association of the user with the content was implied, so only those who were interested in the content would access the board. A fair amount of effort was required in attending to the content of the board, which meant that only those prepared to expend the effort would attend. Analyzing the Internet with the same characteristics, however, would find that the Internet, as a system of interconnection, is integrating. The Queer Sisters bulletin board on the World Wide Web, therefore, both segregated and integrated: It segregated people sharing the same locality even while it integrated people of different localities.

On the other hand, the messages and replies posted plus the hyperlinked sites provided a common information world to frequent visitors of the bulletin board. This sharing of information formed the basis of the socialization of participants into a shared identity.

The abstract written form, obtrusive code and slow encoding process of the bulletin board also encouraged segregation of the personal and the public contexts, so the bulletin board encouraged onstage behaviour.[20] Indeed 72% (n = 67) of board participants had used some names on the board that were not used offline. This suggests that deliberate presentation on the board was common.

Medium theory recognizes the contingent use of a medium. On the Queer Sisters bulletin board, the broadcast and archive features were appropriated by some for private liaisons, which disrupted the formation of a community even as it reinforced the sense of community of those involved. Asynchrony was facilitative of community formation, but it somewhat depended on the fact that the potential community of the bulletin board was small. The use of para-linguistic features was indeed induced by the technological environment of the bulletin board, but their use was contingent upon participants' learning.

However, medium theory does not account for the conditions pertaining to the socio-economic context within which the above-discussed technological characteristics of the bulletin board worked. Nor does it account for the conditions pertaining to the communication context, which technological characteristics, among others, help to shape. The neglect of contextual factors is recognized as a weakness of medium theory (Meyrowitz, 1986; 1994). Medium theory would gain greater explanatory power by building contingencies into the effects of technology.

Proposing Contingencies to Medium Theory in Internet Community Formation

Reviewing historical studies, Misa (1994) states that studies on a macro level often arrive at a technologically deterministic conclusion, and micro level studies tend to find multiple contingencies. He suggests that studies conducted at the meso level – between the individual and society – would help to formulate a more insightful analysis of technology and society.

This study at the group level suggests that the role of technology is most fruitfully seen in relation to two sets of contextual conditions, operating before and after the technology is adopted. The conditions pertaining to the socio-economic context influence both the adoption of the technology and the conditions of the communication context. The technology adopted in turn shapes the conditions pertaining to the communication context (Figure 1). This view is consistent with various theories of technology that highlight the role of social conditions at various stages of a technology – development, production, design, stabilization, and use (Grint & Woolgar, 1997).

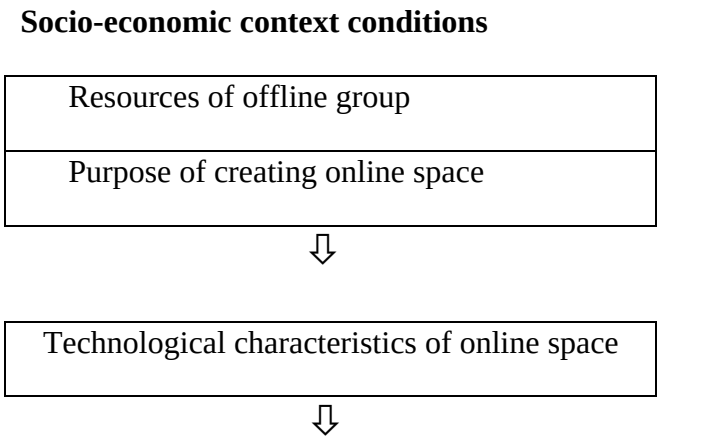

Figure 1. Contingent conditions that influence the autonomy of online communities.

Among these conditions, the influence of the purpose of creating the online space is most predictive of other conditions. For example, if an offline group establishes an online space to disseminate information among its members, it is likely to choose a communication application that supports asynchronous broadcast message distribution that requires a minimum effort for attendance. The technology chosen is likely to provide powers of posting only to the administrators and the option of restricting access to the online space, which the administrator is likely to use for limiting access only to members of the offline group. The technology is likely to be one that maximizes the overlap in online-offline participation. In such a case, a Web page that is pushed to its members when information is updated may be used. In this scenario, the online space would be used solely as an instrument of the offline group and has no autonomy.

Resources of the offline group constrain/enable/influence the online space in its establishment purpose, the choice of technology, the administrators' enforcement of norms, accessibility, and the degree of overlap between online and offline participation. Other conditions being equal, resource considerations may affect whether access to the online space is charged for or is free. The resources of the group could influence the overlap of online-offline participation by, for example, providing members with the installation (where it is required) and training in using the technology of the communication application.

Relating technology to the purpose of its choice adds understanding to medium theory, which holds that a particular type of technology tends to induce a certain pattern of use. In the Queer Sisters' case, the online space was created to fulfil a demand expressed in a suggestion at a monthly meeting of the group. As McLuhan said, "This power of technology to create its own world of demand is not independent of technology being first an extension of our own bodies and senses….The need to use the senses that are available is as insistent as breathing" (1964, p. 67).

On the other hand, the contingent use of technology is always foreseen: “In the case of any medium . . . it is the user himself who is the content, and it is the user alone who constitutes the experience of that service. No matter what is on TV, if the user is a Chinese, it is going to be a Chinese program” (McLuhan & Zingrone, 1995).

References

Cherny, Lynn (1999). *Conversation and community: Chat in a virtual world*. Stanford: CSLI Publications.

Culnan, Mary J. & Markus, M. Lynne (1987). Information technologies. In Frederick M. Jablin; Karlene H. Roberts; Linda L. Putnam and Lyman W. Porter (Eds.), *Handbook of organizational communication: An interdisciplinary perspective* (pp. 420-443). Newbury Park, CA: Sage.

Curtis, Pavel (1997). Mudding: Social phenomena in text-based virtual realities. In Sara Kiesler (Ed.), *Culture of the Internet* (pp. 121-142). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers. A paper of the same title first appeared in *Intertek*, (1992), 3(3), 26-34.

Danet, Brenda (1998). Text as mask: Gender, play, and performance on the Internet. In Steven G. Jones (Ed.), *Cybersociety 2.0: Revisiting computer-mediated communication and community* (pp. 129-158). Thousand Oaks: Sage.

December, John (1996). Units of analysis for Internet communication. *Joint Issue of Journal of Communication, 46(1) and Journal of Computer-Mediated Communication, 1*(4). Available: http://jcmc.huji.ac.il/vol1/issue4/december.html

DiGiovanna, James (1996). Losing your voice on the Internet. In Peter Ludlow (Ed.), *High noon on the electronic frontier: Conceptual issues in cyberspace* (pp. 445-457). Cambridge, Massachusetts: MIT Press.

DuVal Smith, Anna (1999). Problems of conflict management in virtual communities. In Marc A. Smith and Peter Kollock (Eds.), *Communities in cyberspace* (pp. 134-63). London: Routledge.

Etzioni, Amitai & Etzioni, Oren (1999). Face-to-face and computer-mediated communities, a comparative analysis. *The Information Society, 15*, 241-248.

Feldman, Martha S. (1987). Electronic mail and weak ties in organizations. *Office: Technology and People, 3,* 83-101.

Garton, Laura; Haythornthwaite, Caroline & Wellman, Barry (1997). Studying online social networks. *Journal of Computer-Mediated Communication, 3*(1). Available: http://jcmc.huji.ac.il/vol3/issue1/garton.html

Grint, Keith & Woolgar, Steve (1997). *The machine at work: Technology, work and organization*. Oxford: Polity Press.

Haraway, Donna (1990). A manifesto for cyborgs: Science, technology, and socialist feminism in the 1980s. In Karen V. Hansen and Ilene J. Philipson (Eds.), *Women, class and the feminist imagination* (pp. 580-617). Philadelphia: Temple University Press.

Heim, Michael (1991). The erotic ontology of cyberspace. In Michael Benedikt (Ed.), *Cyberspace: First steps* (pp. 59-80). Cambridge, Massachusetts: MIT Press.

Hiltz, Starr Roxanne (1985). *Online communities: A case study of the office of the future*. Norwood, NJ: Ablex.

James, Michael L.; Wotring, C. Edward & Forrest, Edward J. (1995). An exploratory study of the perceived benefits of electronic bulletin board use and their impact on other communication activities. *Journal of Broadcasting and Electronic Media, 39,* 30-50.

Jones, Quentin (1997). Virtual-communities, virtual settlements & cyber-archaeology: A theoretical outline. *Journal of Computer-Mediated Communication, 3*(3). Available: http://www.ascusc.org/jcmc.huji.ac.il/vol3/issue3/jones.html

Jones, Steven G. (1997a). Introduction. *Virtual culture: Identity and communication in cybersociety* (pp. 1-6). London: Sage.

____. (1997b). The Internet and its social landscape. In *Virtual culture: Identity and communication in cybersociety* (pp. 7-35). London: Sage.

Kiesler, Sara & Sproull, Lee (1992). Group decision making and communication technology. *Organizational Behavior and Human Decision Processes, 52,* 96-123.

Kiesler, Sara; Siegel, Jane & McGuire, Timothy W. (1984). Social psychological aspects of computer-mediated communication. *American Psychologist, 39*(10): 1123-1134.

Kollock, Peter & Smith, Marc (1996). Managing the virtual commons: Cooperation and conflict in computer communities. In Susan C. Herring (Ed.), *Computer-mediated communication:*

Linguistic, social and cross-cultural perspectives (pp. 109-128). Amsterdam: John Benjamins Publishing Company.

____. (1999). Communities in cyberspace. In Marc A. Smith and Peter Kollock (Eds.), *Communities in cyberspace* (pp. 3-25). London: Routledge.

Lupton, Deborah (1995). The embodied computer/user. In Mike Featherstone & Roger Burrows (Eds.), *Cyberspace, cyberbodies, cyberpunk: Cultures of technological embodiment* (pp. 97-112). London: Sage.

Markham, Annette N. (1998). *Life online: Researching real experience in virtual space*. Walnut Creek, CA: AltaMira Press.

McLaughlin, Margaret L.; Osborne, Kerry K. & Ellison, Nicole B. (1997). Virtual community in a telepresence environment. In Steven G. Jones (Ed.), *Virtual culture: Identity and communication in cybersociety* (pp. 146-168). London: Sage.

McLuhan, Eric & Zingrone, Frank. (Eds.). (1995). *The essential McLuhan*. NY: Basic Books.

McLuhan, Marshall (1964). *Understanding media: The extensions of man*. NY: McGraw-Hill.

Meyrowitz, Joshua (1985). *No sense of place*. NY: Oxford UP.

____. (1986). Media as social contexts. In Ralph L. Rosnow & Marianthi Georgoudi (Eds.), *Contextualism and understanding in behavioral science* (pp. 229-250). NY: Praeger.

____. (1994). Medium theory. In David Crowley and David Mitchell (Eds.), *Communication theory today* (pp. 50-77). Cambridge: Polity Press.

____. (1997). Shifting worlds of strangers: Medium theory and changes in "them" versus "us." *Sociological Inquiry, 67* (1), 59-71.

____. (1998). Multiple media literacies. *Journal of Communication, 48*(1), pp. 96-108.

Misa, Thomas J. (1994). Retrieving sociotechnical change from technological determinism. In Merritt Roe Smith and Leo Marx (Eds.), *Does technology drive history? The dilemma of technological determinism* (pp. 115-142). Cambridge, MA: MIT Press.

Mitra, Ananda (1996). Nations and the Internet: The case of a national newsgroup, 'soc.cult.indian.' *Convergence, 2*(1), 44-75.

Newhagen, John E. & Rafaeli, Sheizaf (1996). Why communication researchers should study the Internet: A dialogue. *Journal of Computer-Mediated Communication, 1*(4). Available: http://jcmc.huji.ac.il/vol1/issue4/vol1no4.html

Parks, M. R. & Floyd, Kory (1996). Making friends in cyberspace. *Joint Issue of Journal of Communication, 46(1) and Journal of Computer-Mediated Communication, 1*(4). Available: http://www.ascusc.org/jcmc/vol1/issue4/parks.html

Poster, Mark (1995). *The second media age*. Cambridge: Polity Press.

Reid, Elizabeth (1995). Virtual worlds: Culture and imagination. In Steven G. Jones (Ed.), *Cybersociety: Computer-mediated communication and community* (pp. 164-183). Thousand Oaks, CA: Sage.

____. (1996a). Communication and community on Internet Relay Chat: Constructing communities. In Peter Ludlow (Ed.), *High noon on the electronic frontier: Conceptual issues in cyberspace* (pp. 398-411). Cambridge, Massachusetts: MIT Press.

____. (1996b). Informed consent in the study of on-line communities: A reflection on the effects of computer-mediated social research. *The Information Society, 12*, 169-174.

____. (1996c). Text-based virtual realities: Identity and the cyborg body. In Peter Ludlow (Ed.), *High noon on the electronic frontier: Conceptual issues in cyberspace* (pp. 323-345). Cambridge, Massachusetts: MIT Press.

____. (1999). Hierarchy and power: Social control in cyberspace. In Peter Kollock & Marc A. Smith (Eds.), *Communities in cyberspace* (pp. 107-133). London: Routledge.

Rheingold, Howard (1996). A slice of my life in my virtual community. In Peter Ludlow (Ed.), *High noon on the electronic frontier* (pp. 413-436). Cambridge, Massachusetts: MIT Press.

Rice, Ronald E. (1989). Issues and concepts in research on computer-mediated communication systems. In James A. Anderson (Ed.). *Communication Yearbook, 12* (pp. 436-476). Beverly Hills, CA: Sage.

Short, John; Williams, Ederyn & Christie, Bruce (1976). *The social psychology of telecommunications*. London: Wiley.

Silver, David (2000). Looking backwards, looking forwards: Cyberculture studies 1990-2000. . In David Gaunlett (Ed.), *Web.studies: Rewiring media studies for the digital age* (pp. 19-30). London: Arnold.

Sproull, Lee & Faraj, Samer (1997). Atheism, sex, and databases: The net as a social technology. In Sara Kiesler (Ed.). *Culture of the Internet* (pp. 35-52). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.

Sproull, Lee & Kiesler, Sara (1986). Reducing social context cues: Electronic mail in organizational communication. *Management Science, 32*(11), 1492-1512.

____. (1991). *Connections: New ways of working in the networked organization*. Cambridge, Massachusetts: MIT Press.

Sproull, Robert F. (1991). A lesson in electronic mail. In Lee Sproull & Sara Kiesler (Eds.), *Connections: New ways of working in the networked organization* (pp. 177-184). Cambridge, Massachusetts: MIT Press.

Tepper, Michele (1997). Usenet communities and the cultural politics of information. In David Porter (Ed.), *Internet culture* (pp. 39-54). NY: Routledge.

Tomas, David (1995). Feedback and cybernetics: Reimaging the body in the age of the cyborg. In Mike Featherstone & Roger Burrows (Eds.), *Cyberspace, cyberbodies, cyberpunk: Cultures of technological embodiment* (pp. 21-43). London: Sage.

Turkle, Sherry (1995). *Life on the screen: Identify in the age of the Internet*. NY: Touchstone.

____. (1997a). Constructions and reconstructions of self in virtual reality: Playing in the MUDs. In Sara Kiesler (Ed.), *Culture of the Internet* (pp. 143-55). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.

____. (1997b). Multiple subjectivity and virtual community at the end of the Freudian century. *Sociological Inquiry, 67* (1), 72-84.

Utsumi, Yoshio (2001). Message by Secretary-General, ITU on World Telecommunication Day, 17 May 2001. Available: http://www.itu.int/newsarchive/wtd/2001/Message.html

Walther, J. & Burgoon, J.K. (1992). Relational communication in computer-mediated interaction. *Human Communication Research, 19*(1), 50.

Williams, Frederick; Rice, Ronald E. & Rogers, Everett M. (1988). *Research methods and the new media*. NY: Free Press.

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[1] The digital bits that together contain a message on the Internet do not all go along one route in transmission. Instead, the bits containing the message are broken up into packets, each travelling on its route to the destination, where the packets assemble to become the message. This manner of transmission has a direct implication on controlling the flow of information and the charging of Internet communication.

[2] Hypertext is the organization of information units into connected associations that a user can choose to make. The hypertextual quality on the Internet gives the reader much greater freedom than other media to choose what to receive and in what sequence to receive the material.

[3] The US Federal Networking Council announced in a resolution of 24 October, 1995 the official definition of the Internet (Federal Networking Council. Available http://www.hpcc.gov/fnc/Internet_res.html).

[4] December (1996) identified six modes of message distribution on the Internet:

1. point to point, e.g. electronic mail
2. point to multi-point, e.g. electronic mailing lists, Listserv
3. point to server broadcast – where a single user sends a message to a server, which then makes the message available to any user with appropriate client software, e.g. IRC. The server may broadcast the incoming message to one or more other servers in a message propagation scheme, such as in Usenet news
4. point to server narrowcast – where a single user sends a message to a server, which then makes the message available to only a specific group of users, e.g. systems like MUDs that require passwords
5. server broadcast – a server that stores information and makes it available to any user with an appropriate client, e.g. a Web site
6. server narrowcast – a server that stores information and makes it available to only a specific set of authorized users, e.g. a Web site that charges users for access to its information.

[5] The first MUD, called Multi-User Dimension by its designers Richard Bartle and Roy Trubshaw, was a computer game consisting of "a database of textual descriptions of a fantastic world of the swords and sorcery genre" and appeared in 1979 (Reid, 1995). It was accessible through telneting to a host computer. Since then, many similar programmes have been designed, and the more generic name, Multi-User Domain/Dungeon/Dimension, has come about. In short, MUDs are networked, multi-participant, user-extensible systems (Reid, 1995).

MOO, which stands for MUD, object-oriented, is a MUD that is programmed with a language that allows players to send conversation statements by keying certain combinations of strokes that refer to players and objects. These are examples of available feature objects on an MOO called MediaMOO (Doheny-Farina 1996, p. 63-4):

"*ghug<player>*". Sends a quick hug of greeting to the specified player.

"wv<player>". Delivers a friendly, long-distance wave to <player>.

[6] IRC is an Internet chat application that allows people who are logged onto the same computer server at the same time to conduct almost real-time exchange by typing in textual messages. Chat (also called conferencing) servers are divided into "rooms," each of which are meant for "conversation" on a particular topic. Chat is conducted on World Wide Web sites and proprietary online services.

[7] The number of women in the core group and volunteers varies as some leave and others are invited to join. In September 1999, there were 4 core organizers and 9 volunteers (author's interview, 21 September 2000), and in December 2000, there were 7 in the core group and 18 volunteers (statistics provided by Queer Sisters core organizer, 28 December 2000).

[8] After "Inside the Web" (http://www.InsidetheWeb.com) closed down on 5 March 2001, the Queer Sisters moved its bulletin board to "Voyager Info-Systems", after a brief lodge at another bulletin board service.

[9] The record was automatically provided by the free software available from the "Pollit.com web service" (www.pollit.com), which was used in the survey.

[10] The survey targeted at all bulletin board participants. On 1 August 2000, I posted identical messages in Chinese and English on the bulletin board to invite responses to the questionnaire, the Chinese and English versions of which were lodged on two Web sites and accessible by clicking on the links given in my messages. Response to the questionnaire was monitored and invitation messages were posted from time to time. When response to the questionnaire declined to very low, I posted a message on the board on 13 September 2000 that the survey had finished. One hundred and two valid responses were received.

[11] With agreement from the Queer Sisters organizers, I announced at the group's monthly meeting on 29 August 1999 that I would study the use of the Internet by the group. In the months that followed, I read the texts on the board as an unobtrusive observer until the end of the survey.

[12] Following McLaughlin et al.'s (1997) block sampling strategy, my content analysis used two blocks of messages from 1-28 September 1999 and 1-28 July 2000. Message categories were information, relational, task, expression, sharing, advice, discussion, management, intrusion, and others. A total of 603 messages were analyzed.

[13] Respondents could report multiple goals in that question.

[14] A message that carries the poster's feelings or views, not addressed to anyone in particular, and that attracts replies is classified as a sharing message. A similar message that does not draw replies is categorized as an expressional message.

[15] After the survey period, individual interviews were conducted with willing board participants until the data yielded were saturated.

[16] Relational messages are used by the poster to address particular board participants for interpersonal liaison. They normally bear the names of both the poster and addressee(s). Where only one of the names is given, the method of address must give enough cues for the other party to be identified. Occasionally, no name of either the poster or addressee is given, but if the message draws an expected reply, then the message is categorized as a relational message.

[17]Apart from observing the bulletin board, I also observed, with consent from the group's organizers, 10 offline QS activities through participation between 29 August 1999 and 27 August 2000.

[18] Eleven board participants, 5 core organizers and 2 volunteers of QS were interviewed.

[19] "Tongzhi" is a transcription from the Chinese term for "comrade," which communists often use to refer to people who share the same ideals and commitments. The term "tongzhi" was appropriated by members of the gay community in Hong Kong before the 1997 political changeover to Communist China to refer to members in the community. The meaning of the term has since expanded to include at least lesbians as well.

[20] Drawing on Erving Goffman's role theory, Meyrowitz (1986) considers that people present idealized "onstage" versions of themselves in public but maintain an informal "backstage" versions of themselves in private.