GROUP COMMUNICATION AND FORMATION ON THE INTERNET

by

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In this thesis, different types of group communication on the Internet are presented and a two month empirical study conducted analyzing the two main types of group communication: asynchronous and synchronous. A message board and a MOO- style chat room were connected to a medium-volume web site called Stop Abuse For Everyone. The chat room was used very rarely. The message board was well-used right after it started, and after about a month, postings began to trickle off. Neither form of communication seemed to form community or group identity, but the message board was fairly effective as a form of group communication. The study suggests that the difference in utilization of the two different communication types could be attributed to the content of the web site and the goals of the persons visiting it. Asynchronous methods of communication seem better suited for exchange of information and ideas, while synchronous forms of communication serve as a casual form of socializing.

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1. INTRODUCTION

How effective are chat rooms and message boards for group communication?

> Most people are attracted to the Internet not as a place to read news or to shop, but as a place to relate to other people who have similar interests (Seltzer, 1995).

In May of 1996, I started a group called Stop Abuse For Everyone (SAFE). Stop Abuse For Everyone, as the name implies, is a group that aims to stop relationship violence and abuse of any sort. In particular, it concentrates on domestic violence against straight and gay men and lesbian women, because services for these groups have been so sparse.

After the group started, I set up a web page (at http://ursula.uoregon.edu/~jarubick/safe) that provides information about relationship violence and battered men. Initially, only a few visitors wandered onto the page, but after I registered the site with the major search engines, visitors started to pour in. A year later, more than 7,000 visitors have seen the SAFE web page.

The most intriguing part of the web page was the contacts and relationships that developed from it. I regularly correspond with reporters, psychologists, ministers, and students from all around the world about domestic violence, and I am a part of a network or community of people that are concerned with the subject. It was fascinating to watch these relationships form online, and, as a consequence, I developed an interest in group formation and communication on the Internet.

As Richard Seltzer states in the above quotation, what draws people to the Internet, for the most part, is to connect with other people. E-mail is probably the most popular use of the Internet, and is likely what convinces the majority of people to acquire Internet access. E-mail is, however, a person-to-person form of communication, and not designed for group interaction.

Programmers and designers have invented various ways of communicating as a group on the Internet: mailing lists, Usenet, IRC (Internet Relay Chat), chat rooms, MUDs (Multi User Dungeons), and MOOs (MUD Object Oriented). All of these are designed to enable group communication; however, little thought has been given to the effectiveness of these different mediums. The mentality behind the construction of each of these types of group models has been "if we build it and it is good, then people will use it." Little has been done to evaluate where and how each form of communication is effective, and to examine how groups are formed with these modes of communication on the Internet.

This thesis introduces the various forms of group communication on the Internet, focusing in particular on a message board and a MOO-style chat room, which are representative of the two major styles of group communication presently available on the Internet: synchronous and asynchronous.

1.1 Synchronous and Asynchronous Group Communication

Synchronous communication is analogous to conversation. A group of people talk with each other in real-time, and respond to each other's typing on the screen. Examples of this type of communication are chat rooms, IRC (Internet Relay Chat), MUDs (Multi-User Dungeons), and MOOs (MUD Object

Oriented). Similar to conversation, synchronous communication tends to be spontaneous, and a communication that depends on responses and collaborative conversation.

Asynchronous communication is more similar to letter-writing or note writing. The thoughts are composed, rather than spontaneous, and the thinking is more structured. The intent of asynchronous communication is often to convince, persuade, or inform. It often involves a deliberate exchange of information. Examples of asynchronous group communication are Usenet, e-mail mailing lists, and message board systems.

1.2 Research Questions

The question this thesis will attempt to answer is "How effective are chat rooms and message boards for group communication?" Chat rooms are synchronous, and message boards are asynchronous. In the course of this thesis, I will implement both of these forms of communication, advertise their existence on the SAFE web site, and compare the response the two forms of communication elicit.

I will compare the two methods of group communication using the following research questions:

1. *Which form of group communication (chat rooms or message boards) will people prefer to use?* I will measure this by the number of visits to the chat room and the message board, the number of characters created in the chat room, and the number of postings on the message board.

2. *Which forms of group communication will draw people back more often?* I will measure this by the number of repeat visits to the message board and the chat room.

3. *With which form of group communication will people interact more?* I will measure this according to the number of conversations on the chat room, and the number of replies to previous postings on the message board.

4. *Through which form of group communication will people become better acquainted with other group participants?* I will measure this by means of a questionnaire to both the participants of the message board and the chat room.

5. *Which form of group communication will be more enjoyable for the participants?* I will measure this by a self-administered questionnaire.

6. *Which form of group communication will encourage group formation more?* This will be measured by all of the above criteria. Specifically, the form of group communication that has people interacting more often, has the participants know each other, and draws people back more often will point towards a form of group communication that encourages group formation. The literature review gives an explanation of the importance of these factors in group formation.

7. *Will either form of group communication foster the growth of an online community?* Maltz, in Customary Law and Power in Internet Communities, points out that a "sustainable community requires continuity, and the

sharing of public conversation space" (undated). I will measure whether each builds online communities by measuring the return rate of visitors to the message board and chat room.

1.3 Outline of the Thesis

Different models of group communication on the Internet are valid for different purposes. For example, MUDs offer an enjoyable environment for group game-playing. However, I will be concentrating on what is effective for a group interested in conversation, support, and discussion about domestic violence.

Because this thesis aims to study two types of communities: a chat-room-based synchronous community and a message-board-based asynchronous community, it is useful to understand how groups form, how they stay cohesive, and what factors influence their development. Understanding these points will also help to design the message board and chat room to minimize extraneous factors that would hinder users from visiting the message board and chat room. This understanding should help to make comparison between the two forms of group communication more useful and accurate.

Thus, the first half of the literature review in Chapter 2 will be drawn from social psychology, and discuss these questions. The second half of the literature review will be a description of the different forms of group communication on the Internet, including the chat room and the message board, but also highlighting the different variations. Because there are so many hybrids of synchronous and asynchronous forms of group communication, this will help show both the range and similarities within both synchronous and asynchronous group communication.

Next, I will describe the chat room and the message board in greater detail, followed by a description of the implementation and data collection techniques used in this study. I will then show the results of the study, and conclude with an analysis of the data.

2. LITERATURE REVIEW

Because this thesis attempts to create two groups, a logical question to ask is "What makes a person feel like they belong to a group?" To answer this question, I will first review some of the social psychology literature on group identity and membership. Then, after looking at the difference between a group and a community, I will examine the differences between face-to-face communication and virtual/online communication, and see how that affects group identity. I will conclude this section with a discussion of the different forms of community on the Internet: Internet Relay Chat (IRC), chat rooms, MUDs, MOOs, USENET, and online mailing lists.

2.1 Groups: Identity, Formation, and Communication

Social psychologists have described group identity and its causes in several ways. Bouas and Arrow (1996) sum up these views:

> Existing perspectives on group identity can be grouped in three general categories: (1) those that emphasize interdependence, common fate, and collective interests (a *behavioral* or *experiential* component); (2) those that emphasize cohesiveness and the development of interpersonal bonds among group members (an *affective* component); and (3) those that emphasize awareness of the group and identification of oneself as a group member (a *cognitive* component) (Bouas and Arrow, 1996, p. 155).

The relative importance of each of these categories can vary depending on the dynamics of the group, but looking at them all together can be useful to understand why people identify themselves with a group (Bouas and Arrow, 1996).

There is much more to group formation than group identity, however. The question still remains of how groups and communities form in the first

place. McGrath defines small group formation as "the emergence of a functionally interconnected whole from a set of elements" (McGrath, Arrow, and Berdahl, forthcoming). Groups may form for many different reasons, but the pressure or force that initiates them can be divided into several different kinds. McGrath identifies four different general forms of groups: concocted groups, founded groups, emergent groups, and circumstantial groups (McGrath et al, forthcoming).

Concocted groups are groups that are deliberately planned and created. For example, a work group in an organization is a concocted group. A founded group is formed when a several individuals link up with other people who agree on a common purpose. An example of this would be a neighborhood watch group. An emergent group is a group that emerges spontaneously out of already existent relationships. Friendships are often formed in this way. Finally, groups that arise out of unexpected environmental situations are called circumstantial groups. An example of this would be a group of people stranded in a subway car together (McGrath et al, forthcoming).

The message board and chat room, if successful, will be examples of founded groups, because the users are not forced into their situation (as in a concocted group), the relationships are not already present (as in an emergent group), and the relationship is not haphazard (as in a circumstantial group). Knowing that the SAFE groups will meet the definition of founded groups is important, because they can then be compared directly with other founded groups.

Several factors can make group formation more likely. Closeness in a social network can be a good indicator of future ties among people (McGrath et al, forthcoming). Unfortunately, the visitors to the SAFE web page will not

have this pre-existing social network. Also, groups are more likely to form when "a change in the environment opens up new opportunities, and at the same time, either severs existing ties or reduces the demands of existing groups for people and resources" (McGrath et al, forthcoming). The SAFE groups could be said to be taking advantage of a new opportunity, but the visitors are likely to not have severed any previous ties or demands, unless they have just left an abusive relationship. They actually may have an already existing set of demands that will prevent them from participating in the new SAFE groups. For example, an abused man may not feel like he can read messages from the message board when he is at home and his wife is awake.

The members of a group can also join for different reasons, and this is important to note when forming these groups. The leaders in the group may participate to fulfill a personal need for power and status, or they and the other members may participate out of an interest in a project the group will undertake, or a benefit that being in the group can provide (emotional, social, or monetary, for example) (McGrath et al, forthcoming). The goals of the group can affect why people participate. For example, there is a large difference between someone participating in a counseling group and someone participating in a bomb squad. In the bomb squad, the group formation is very task oriented, while in the counseling group, the emphasis is on the interpersonal connections and the relationship with the group (McGrath et al, forthcoming).

The chat room will probably focus more on developing interpersonal connections than the message board. One reason this may be true is that people introduce themselves in chat rooms, and talk about themselves. On message boards, it is less common for people to talk about their own personal

experiences, especially from the very beginning. People on message boards do not necessarily exclude personal experiences from their conversations. I have seen personal postings on message boards before. However, for the most part, chat room conversation tends to be much more personal than message board communication. This is a large difference between synchronous and asynchronous communication.

Generally, people are more inclined to join groups with people who share their own values and opinions (McGrath et al, forthcoming). In the long run, diversity is beneficial for a group and allows for more flexibility, but the cost of this is a longer start-up period (McGrath et al, forthcoming). Based on my own subjective observation of the SAFE web page visitors over the last year, the visitors represent a diverse population of students, academics, psychologists, abuse victims, and friends of abuse victims. This will result in a longer start-up period, which, given the short time period of this experiment, suggests the usefulness of a future study that will observe group communication on the Internet for a longer duration than the two months of this study.

2.2 Online Communities

All groups are not necessarily communities. Webster's defines community as "a society of people having common rights and privileges, or common interests, civil political, etc. or living under the same laws and regulations" (Webster's, 1979). The important parts of community are the social aspects and the element of continuity which a group does not necessarily possess. A study of *The Well*, an online message board system, defined community as a "set of ongoing social relations bound together by a common interest or shared circumstance" (Michalsky, 1995, p. 44).

The ultimate goal of the SAFE groups is to form two separate communities. The most essential element of community is continuity, and to measure whether or not the message board and chat rooms have achieved any level of community, it will be necessary to measure the continuity of interaction. This thesis will measure how often people return to interact in the SAFE groups, on the assumption that continuity in a group implies that the group is a community. In the design of the chat room and message board, I will also try to encourage people's continued participation in the SAFE groups.

2.3 Online vs. Face-to-Face Group Communication

Online communication is such a new form of communication that it does not offer a lot of comparisons to earlier forms of communication. Because face-to-face group communication is familiar, comparing face-to-face and virtual communication will help us understand the strengths and weaknesses of this new medium, and help us design our virtual groups as well as possible.

The primary difference between computer-based groups and in-person groups is that computer-based groups tend to be less flexible but more stable than in-person groups. If the environment does not vary much, the structure of the group will be very solid and stable, but computer-mediated groups will not deal well with sharp or even large gradual changes. Arrow found that computer-mediated groups with high membership fall into a very stable but rigid structure if the membership did not change too much at the beginning. Presumably, any sort of complication and fluctuation at the onset could keep the computer-mediated groups from forming into a stable structure (Arrow, 1997, p. 75).

A face-to-face group will survive changes in the group structure that computer-based groups will not. Face-to-face groups are slightly more flexible than computer-based groups:

> Whatever structure emerges in a group's first interaction will persist whether or not it is optimal, or even satisfactory, for performance. Moderate changes in the environment will have no effect on group structure. However when a shock to the system jolts the group out of its usual fixed pattern, an abrupt and radical restructuring will occur. The new structure that emerges will then persist unchanged until the next crisis (Arrow, 1997, p. 78).

As an example, consider a neighborhood watch group that gradually adds members. The structure of this group will not change significantly, because the change is gradual and "moderate". However, if a new apartment complex was built in the neighborhood and the membership doubled, then this could be a potential "jolt" to the group, and the group may end up having "abrupt and radical restructuring". If this same neighborhood watch group were computer-based, the group would try to keep the original structure, despite the large changes in group membership. Only after a large breakdown would the computer-based neighborhood watch group modify to fit its new environment. Face-to-face groups will deal more gracefully with changes, such as group membership, than computer-based groups (Arrow, 1997, p. 78).

The stability of computer-based communication likely arises from the difficulty of establishing and changing the group's structure. Computer-mediated group members identify less with their groups than face-to-face groups (Bouas and Arrow, 1996, p. 153), and the communication is often slower and inhibited by the difficulty of learning the new medium.

One thing to note, however, is that all of this research on computer-based groups was done on synchronous groups concocted by the experimenters. Thus, the results of these studies might not have direct

relevance for the message board. However, it does suggest a pattern of structure for computer-based and face-to-face groups that might extend to asynchronous computer-based groups as well.

For the SAFE groups to acquire a stable structure, then, the most critical time will be at the formation of the group. During this time, Also, it will be important to strive for high membership stability in the SAFE groups. If members shift in and out, or the group's stability is shaken up for some reason, the group will probably not establish a stable group structure.

2.4 Computer-Mediated Group Communication

Next, we will present the different models of group communication and community currently available on the Internet.

2.41 Asynchronous Communication: Usenet

Usenet is a vast forum on the Internet, composed of thousands of different topics that people can discuss. The amount of information going through Usenet probably qualifies it as one of the largest exchanges of information on the planet. The amount of activity on Usenet, and the thousands of newsgroups there, testify to the amount of interest people have in Usenet. Maltz describes Usenet in this way:

> The most prominent of cybercommunities on the Internet is called Usenet. Usenet is a hierarchy of conversation areas called "newsgroups." In each of these newsgroups, users discuss topics by sending a message to the group and reading responses. In many of these newsgroups there is sufficient continuity and cohesion that each can be considered a genuine and stable cybercommunity (Maltz undated).

There are thousands of these newsgroups, filled with discussion and information about various topics. For example, comp.lang.java is a discussion group about the Java programming language,

soc.culture.african.american discusses issues affecting African-Americans, alt.drinks.jolt is an area where people talk about Jolt Cola, and so on. Some of these groups are inane, some scholarly, some informative, and some social.

A person "posts" a message to a newsgroup, and this message then is sent to news servers all over the world. These news servers are computers that collect all of these posted messages and display them when someone requests it. If a person browses a newsgroup, they will see a "thread" in the conversations, which means that messages that are about similar topics are linked together. People who browse these places regularly will get to know frequent posters. It is possible to "lurk" in a newsgroup — always reading but never posting any messages. Knowledge of the members of a group is important for group cohesion (Arrow interview 1997, February 28), although it is often impossible to know who is lurking in a newsgroup, readers can develop a sense of group membership by knowing the frequent posters.

Usenet newsgroups are founded groups. For someone to form a new newsgroup, they must find other people to support the creation of the new group, and submit it to an open vote on the Internet (an exception is the alt newsgroups). The types of conversation can vary a lot depending on the newsgroup. Some newsgroups do develop interpersonal communication (for example, the alt.support.* groups may), and some newsgroups are formal and have no interaction at all (for example, some newsgroups are strictly for information dispersal and not for conversation at all).

2.42 Asynchronous Communication: Online Mailing Lists

Another area on the Internet where communication takes place among groups is online mailing lists. The concept of a mailing list (often called a Listserv or Majordomo list) is fairly simple. Anyone with access to e-mail is

able to participate in the conversation. The person who starts a mailing list sets up a program on a computer connected to the Internet. The computer maintains a list of people that belong to the list. People who want to join the list can write an e-mail to the computer in a specified format, and the computer will automatically add them to the list. In a similar fashion, the people on the mailing list can take themselves off of this list. Any time a person on this list mails an e-mail message to the central computer, the computer will reflect this message to all of the people on the list. When someone replies to your message, it too goes back to all of the people on the list. In this way, a dialogue is possible, and conversation can continue for extended periods of time, people can get to know each other, and a group identity can even grow out of the communication.

A person who is on the mailing list is like a listener in a conversation. They will receive the e-mail conversation and can read the conversation as it progresses. If they choose to participate in the conversation, then they can write their own e-mail message to the mailing list.

There are many variations to what I just described. There does not actually have to be a central computer, and a list manager can manually keep track of who is on the list and who is not. Lists can be closed off so that people have to be invited or have to be approved before they can join a list. Lists can be moderated, so that all the messages have to go through a moderator before they actually get posted to the mailing list. But generally, a mailing list is an e-mail based conversation with a fixed or slowly changing set of people, usually on a specific topic of interest.

Usenet news groups and mailing lists are similar and actually can even overlap. Some news groups are reflected on mailing lists, so that members of

the mailing list get copies of all the postings to the news group. The reverse is also true — postings to the mailing list are reflected onto the newsgroups.

2.43 Synchronous Communication: MUDs and MOOs

MUDs (Multi User Dungeons) were originally developed as a form of online gaming. They are a completely text-based adventure game. In this game, each person that logs into the MUD assumes a persona (for example, a female ogre warrior), with a set of attributes (how the person looks, and how strong, quick, and intelligent they are). The programmers set up a world of connected rooms, which have various objects, obstacles, and monsters in them. As the players move around in the rooms, collect treasure, and kill monsters, they become more experienced and powerful as players. They can cooperate and team up to kill a difficult monster, or they can duel each other. There may be a form of currency. There is also a rich form of communication. The players can talk with each other, and nod, grin, laugh, grimace, hug, wince, etc... at each other.

When a player or participant connects to a MUD, they give one-line commands to the main computer (server) to tell their player what to do. The computer parses and interprets the commands and informs the player as changes happen in the environment. Thus, if a player is in a room, they can "look" around the room and they can "inspect" objects or other players in the room. While they're in the room, other players or monsters may enter, and people may engage in conversation or fighting. Many MUDs also have elaborate spells, like "Teleport", "Heal", and "Invisibility" which teleport the player, heal the player, and make the player invisible to others, respectively.

MUDs are a form of role-playing, and often closely resemble games like Dungeons and Dragons. There are a wide variety of genres the game may

take place in, and the focus of each MUD is different, with some MUDs focusing on killing, and others on cooperation and problem-solving. The overall focus, though, is having fun with other people. Social contact is a central part of these games.

MUD-based groups can be emergent and circumstantial. Some MUDs have guilds or clans that players eventually can join. The clans look out for each other, and share information, weapons, and magic with each other. Often, the members of a clan will help out a member that is in trouble. This type of group is emergent, because the clans, rather than being founded, tend to evolve out of the shared experience of being a player in the MUD. Relationships can also be circumstantial, however. If a player happens to come across another player that is losing a battle against a dragon, for example, a makeshift alliance may be made that can last even after the dragon is finished off. Players can team up to beat a certain area of the MUD, or they can just team up for a brief fight. For this reason, MUDs are both emergent and circumstantial. They are also very task-oriented, for the most part.

MOOs (MUD Object-Oriented) are one of the offshoots of MUDs. MOOs typically involve more conversation than MUDs, and their purpose is usually more on conversation and communication than tasks, such as killing and questing: "Its most common use, however, is as a multi-participant, low-bandwidth virtual reality" (Curtis, 1996, p. 1).

One aspect of MOOs that differentiates them from MUDs is the presence of complex objects. For example, it is possible to create a paper object that can be folded into a paper airplane and thrown in a room. The airplane, according to how it is programmed, could then fly around the room for a few minutes and then crash into a wall and end up as a broken paper airplane. The objects can often be quite sophisticated, and this makes a MOO a rich

environment. With enough programming, the participants can interact with their environment a great deal.

Participants in some MOOs have developed online communities of sorts. Dibbell (1993) discusses how several players were "raped" online on LambdaMOO, the MOO operated by Xerox Parc (located at telnet:lambda.parc.xerox.com 8888). The victims of this assault felt extremely violated, and the rest of the LambdaMOO participants felt outraged. They discussed at great length what to do about this and how to prevent future assaults. Dibbell was one of the observers in the MOO at the time, and his comment was that this was truly a community. The members of the MOO was actually setting up a system of self-governance, almost a simple type of government. McGrath would probably define this type of group as a founded group.

2.44 Synchronous Communication: IRC and Chat Rooms

In some ways, IRC (Internet Relay Chat) and chat rooms, two similar technologies, are similar to real-time versions of Usenet newsgroups. As on Usenet, there are groups that you join to participate in a conversation. Groups in IRC are called channels, and rooms in chat rooms.

The primary difference is that the conversation is not a composed message which other people respond to. On IRC, the unit of conversation is a line of text, as shown in Figure 2-1.

```
/join #pix
*** irc-2 (~jarubick@ursula.uoregon.edu) has joined channel #pix
/who #pix
#pix     kamera   H  ~jarubick@ursula.uoregon.edu (Jade)
#pix     Mem      H  ~Mmr@host1.msp.com (figure it out)
#pix     url      H  kali@ind-0007-19.id.net (Katherine R)
#pix     ride     H@ jd@fn-ppp47.ls.net (tony b)
<ride> kamera age sex
> 24 M
<Mem> 15 female
<ride> what kind of pics wanted
<ride> url getting it
> Sorry just messing around
<ride> its agood 1
<Mem> hey
```

Figure 2-1

In this figure, I *joined* a group, looked to see *who* was in the group, and then started participating in the conversation. A person named <ride> asked me my age and sex immediately after I logged in, and I replied 24 M.

Thus, the people in a room can type in a line of text at a time, and read what everyone else has written. This allows for a conversation that can proceed fairly naturally, provided the participants can enter the text into the computer with enough ease to allow the flow of conversation to continue. IRC can be fairly arcane and complicated for the uninitiated. If you are not using a client program (like Palace or Homer), the interface can be daunting. Figure 2-2 illustrates what the user is presented with when logging into an IRC session.

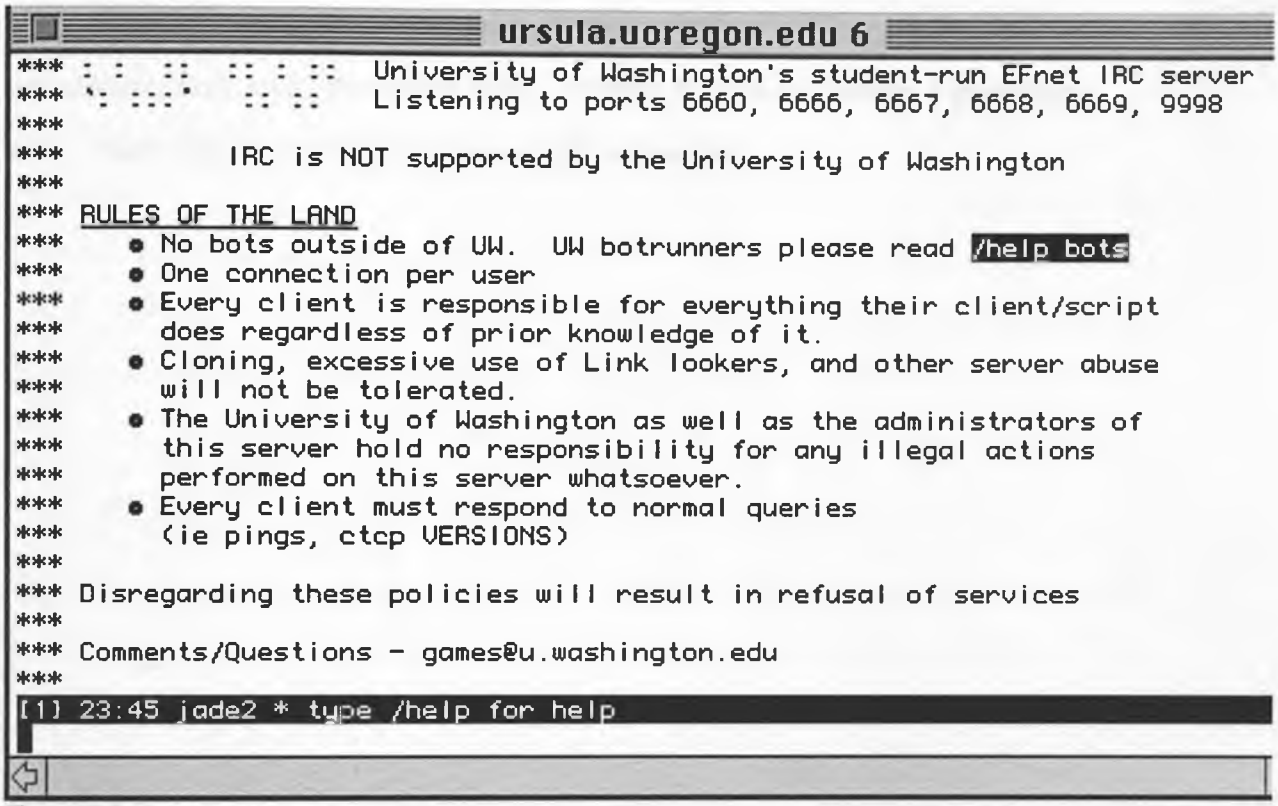


Figure 2-2

The immediacy of IRC is its greatest appeal. A channel can have a small or large number of participants. In the larger groups, and on many of the online service providers' (such as American Online and Compuserve) chat rooms, the discussion often seems disjointed. Several conversations can be happening at the same time, and it often appears to resemble a room at a party or social event, with smaller groups of people clustering off to have their own conversations.

Chat rooms have been very successful for companies such as America Online, and are very popular. People can consume great amounts of time on IRC and in chat rooms, and they seem to enjoy socializing online, meeting and talking with people they have come to know through their online interactions. I know people who have started relationships with others that they met on IRC, and I know one couple that married after becoming acquainted on IRC.

For the most part, chat room participants are looking for communication and interrelatedness, rather than for solving a particular task. Also, the form of group is usually emergent.

3. PROGRAM DESCRIPTION

The two types of group communication, synchronous and asynchronous, are completely different types of communication. In order to test which form of Internet communication is more effective for communication and group formation, I set up one of each: a MOO style chat room and a message board. The following section describes each in great detail.

3.1 Chat Room — "SafeHouse"

The chat room was built around a MOO (MUD Object Oriented) developed at Xerox Parc, called LambdaMOO. This MOO is written in C and is still operational at the time this thesis was written. It is accessed from the SAFE home page (http://ursula.uoregon.edu/~jarubick/safe). The MOO consists of the code for the MOO (the server) and a database taken from the original LambdaMOO. The database contains information on all of the objects in the virtual reality, including all of the programming for the objects and their descriptions, as well as help information, basic commands, and information to help create the environment for MOO programmers. The database starts out at 2143Kb, and the MOO program, or executable, is 919Kb. The database will gradually grow as more players, objects, and rooms are added to the MOO.

Adding rooms and objects is the job of the "Wizard", or MOO programmer, and requires a significant time investment. The MOO has its own programming language that Wizards can use inside the MOO environment. The object programs are object-oriented, and can inherit the properties of already existing objects. For instance, as the programmer, it is possible to create a "schedule book" that is based on an already existing

"notebook" object. The schedule book would have most of the properties of the notebook. Thus I could "write" in the notebook and "erase" entries in the notebook, but at the same time, I could change or add the properties of the schedule book — for example, maybe the schedule book could remind me of an appointment an hour beforehand.

As might be deduced, verbs are associated with objects. If a programmer creates a new object, the programmer must also create most of the verbs that participants can do on that object. If a programmer makes a "cup of coffee", the programmer also needs to make sure to program in what will happen when the player "drinks" from the cup of coffee. Perhaps the "drink" program will change the name of the cup of coffee to an "empty cup". In this case, the act of drinking from a cup of coffee will result in an empty cup.

Once the program is set up, it is accessible from any computer that is connected to the Internet and has a Telnet program. The address for SafeHouse is zfishstix.cs.uoregon.edu 7777, meaning port 7777 of Zfishstix. The program runs constantly as a server program, and all the programs that connect to it act as clients.

3.2 Message Board

The message board is accessed through the SAFE home page (http://ursula.uoregon.edu/~jarubick/safe) using any web browser, although posting requires a browser that supports forms (as almost all browsers do) such as Netscape Navigator 2.0 or later. The main web page is accessed from the Stop Abuse For Everyone home page. As Figure 3-1 shows, directions for the use of the message board are shown at the top of the page, readily accessible to any newcomers, and previous messages are shown at the bottom

of the screen. Any message that is a reply to another message is indented underneath the original message. The date that the message was posted is displayed after the title of the posting.

At this point, the user can click on any of the messages to read them, or click on the Post Message button on the bottom of the screen. If the user clicks on the Post Message button, then they are presented with same screen as Figure 3-2. The name and e-mail address sections are both completely optional, as is explained in the directions page. The Check Here option allows users to have e-mail messages sent to them when another person responds to their messages. The buttons at the bottom of the screen, Post Message and Clear Message, are for the user to post the message they compose, or clear what they have written and start over.

If the user instead decides to read a message and clicks on one of the messages, the message will show up, similar to Figure 3-3. The user can then read the message and, if they choose, reply to the message (Figure 3-4). If the user would like to privately respond by e-mail, they can click on the e-mail address (providing that an e-mail address was given by the poster of the message). Notice that links can be embedded inside of a message to other places on the Internet. In this example, on Figure 3-3, I wrote a link that users can click on to go to the main Stop Abuse For Everyone (SAFE) homepage.

This interface was developed with the assistance of the Human Computer Interaction group in the Computer Science Department at the University of Oregon. I adopted as many of their suggestions as I could, with the goal in mind of reducing any factor which could distract the visitor from easily using the message board.

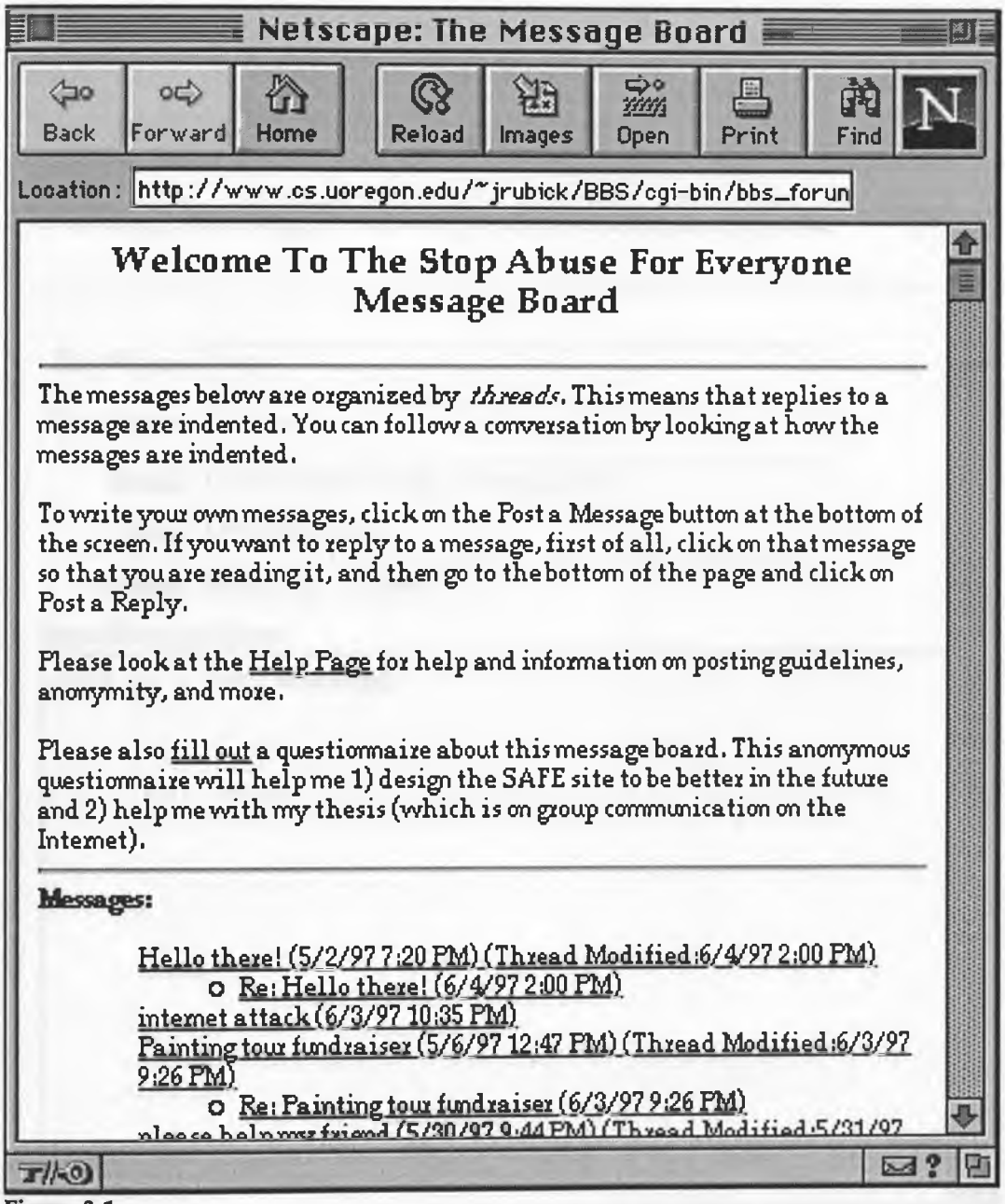

Netscape: The Message Board
Back
Forward
Home
Reload
Images
Open
Print
Find
Location: http://www.cs.uoregon.edu/~jrubick/BBS/cgi-bin/bbs_forun
Welcome To The Stop Abuse For Everyone Message Board
The messages below are organized by threads. This means that replies to a message are indented. You can follow a conversation by looking at how the messages are indented.
To write your own messages, click on the Post a Message button at the bottom of the screen. If you want to reply to a message, first of all, click on that message so that you are reading it, and then go to the bottom of the page and click on Post a Reply.
Please look at the Help Page for help and information on posting guidelines, anonymity, and more.
Please also fill out a questionnaire about this message board. This anonymous questionnaire will help me 1) design the SAFE site to be better in the future and 2) help me with my thesis (which is on group communication on the Internet).
Messages:
Hello there! (5/2/97 7:20 PM) (Thread Modified:6/4/97 2:00 PM)
Re: Hello there! (6/4/97 2:00 PM)
internet attack (6/3/97 10:35 PM)
Painting tour fundraiser (5/6/97 12:47 PM) (Thread Modified:6/3/97 9:26 PM)
Re: Painting tour fundraiser (6/3/97 9:26 PM)

Figure 3-1

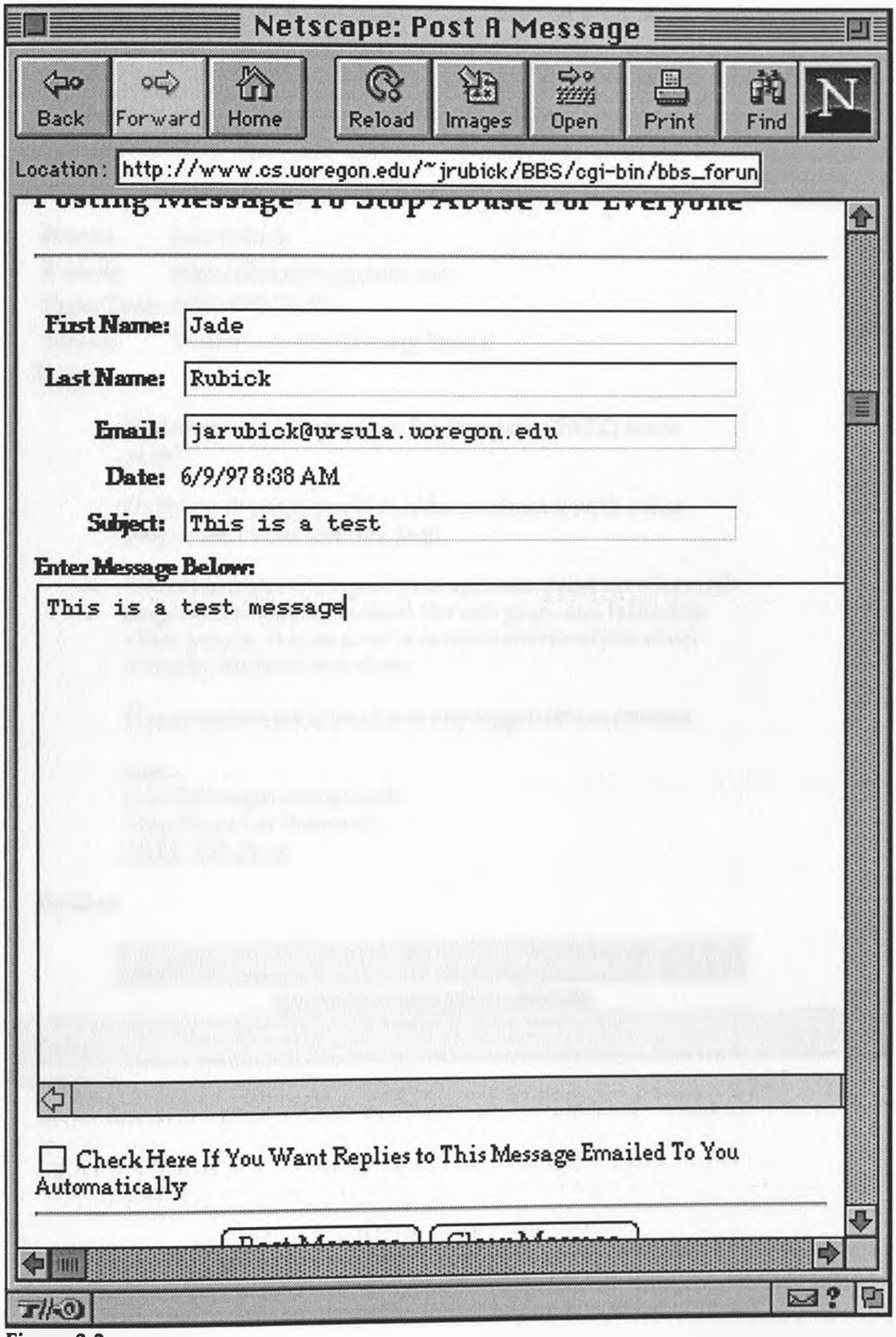

Netscape: Post A Message
Back
Forward
Home
Reload
Images
Open
Print
Find
Location: http://www.cs.uoregon.edu/~jrubick/BBS/cgi-bin/bbs_forun
First Name: Jade
Last Name: Rubick
Email: jarubick@ursula.uoregon.edu
Date: 6/9/97 8:38 AM
Subject: This is a test
Enter Message Below:
This is a test message
Check Here If You Want Replies to This Message Emailed To You Automatically

Figure 3-2

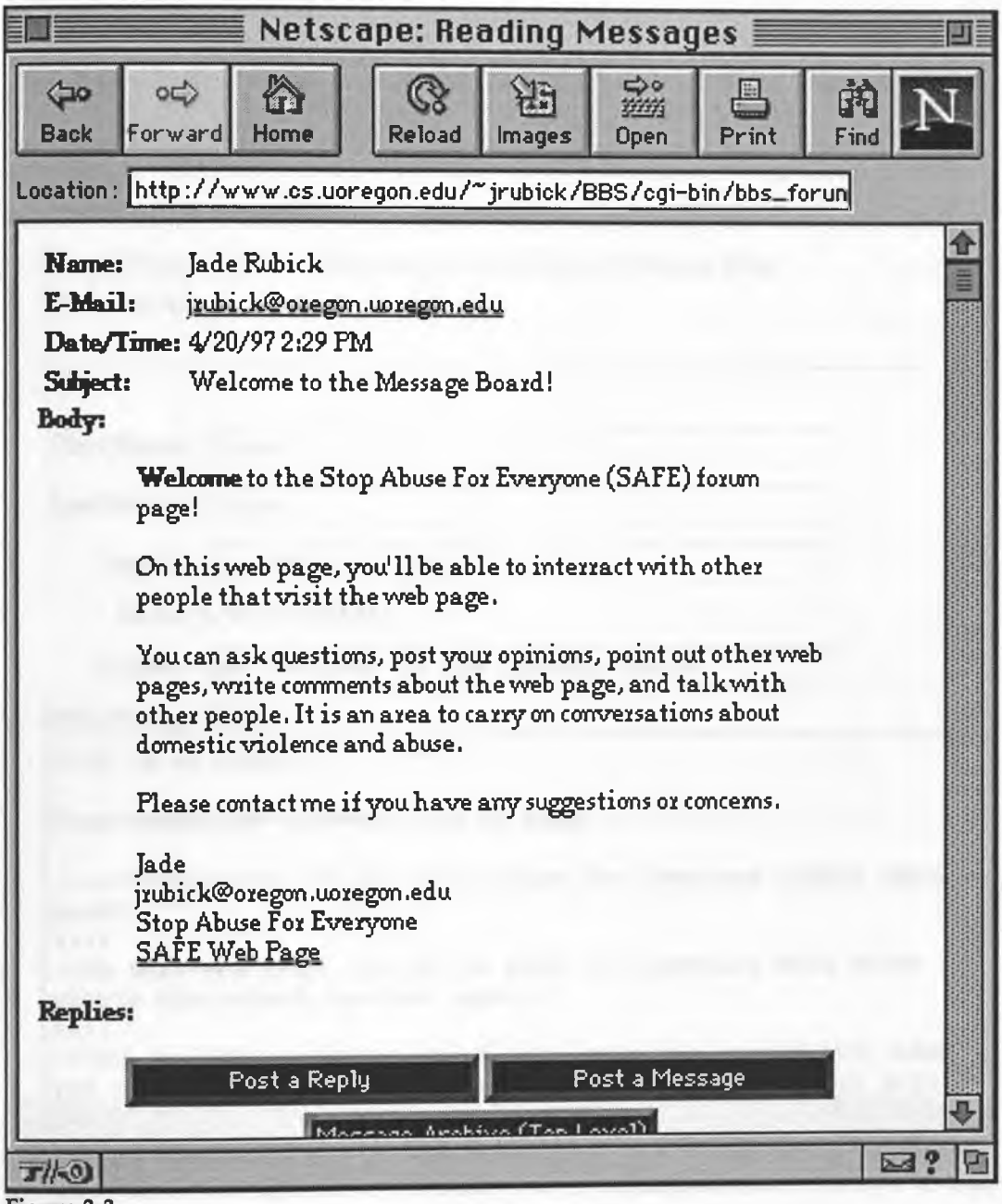

Netscape: Reading Messages
Back
Forward
Home
Reload
Images
Open
Print
Find
Location: http://www.cs.uoregon.edu/~jrubick/BBS/cgi-bin/bbs_forun
Name: Jade Rubick
E-Mail: jrubick@oregon.uoregon.edu
Date/Time: 4/20/97 2:29 PM
Subject: Welcome to the Message Board!
Body:
Welcome to the Stop Abuse For Everyone (SAFE) forum page!
On this web page, you'll be able to interract with other people that visit the web page.
You can ask questions, post your opinions, point out other web pages, write comments about the web page, and talk with other people. It is an area to carry on conversations about domestic violence and abuse.
Please contact me if you have any suggestions or concerns.
Jade
jrubick@oregon.uoregon.edu
Stop Abuse For Everyone
SAFE Web Page
Replies:
Post a Reply
Post a Message

Figure 3-3

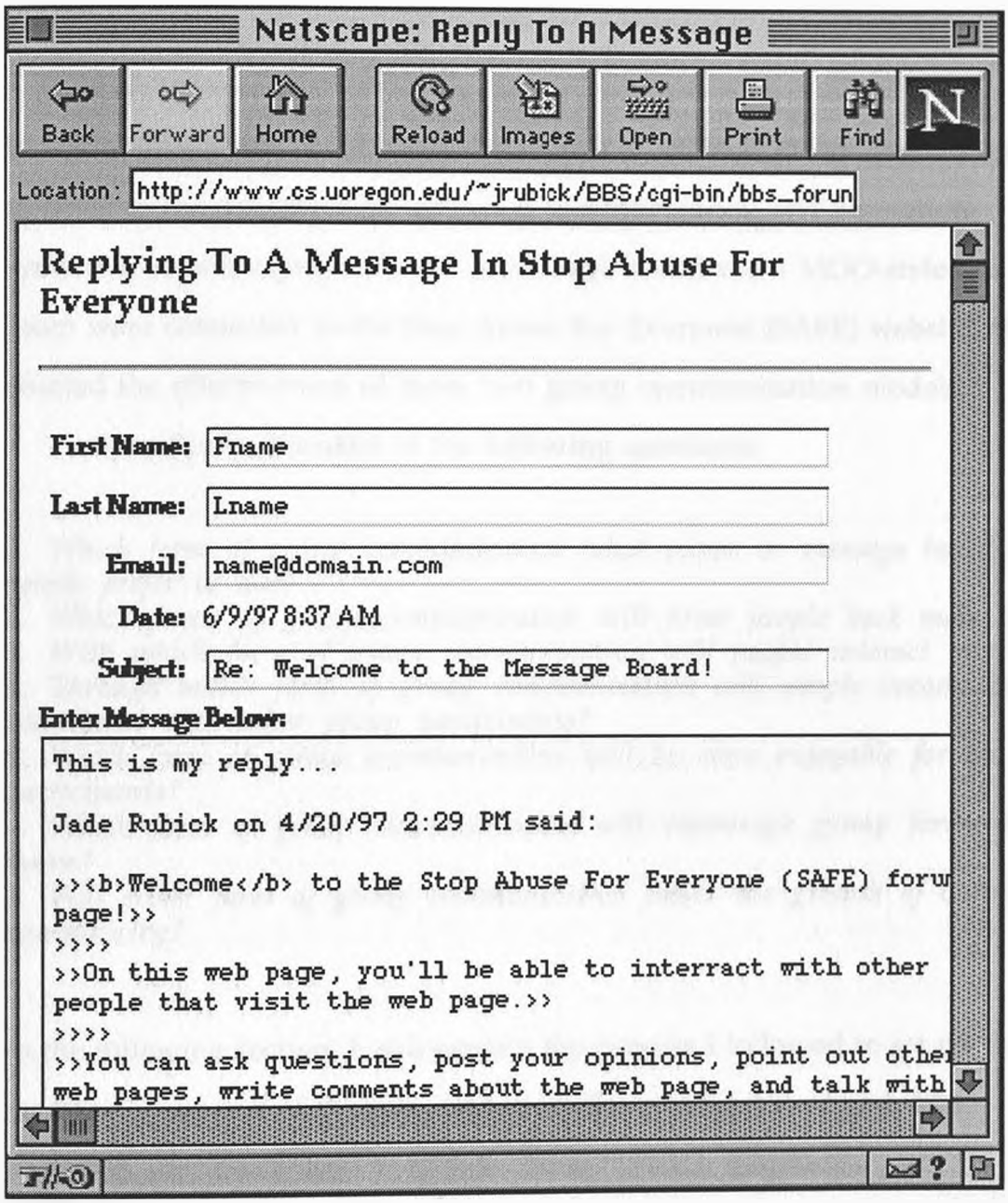

Netscape: Reply To A Message
Back
Forward
Home
Reload
Images
Open
Print
Find
Location: http://www.cs.uoregon.edu/~jrubick/BBS/cgi-bin/bbs_forun
Replying To A Message In Stop Abuse For Everyone
First Name: Fname
Last Name: Lname
Email: name@domain.com
Date: 6/9/97 8:37 AM
Subject: Re: Welcome to the Message Board!
Enter Message Below:
This is my reply...
Jade Rubick on 4/20/97 2:29 PM said:
>>Welcome to the Stop Abuse For Everyone (SAFE) forum
page!>>
>>>>
>>On this web page, you'll be able to interract with other
people that visit the web page.>>
>>>>
>>You can ask questions, post your opinions, point out other
web pages, write comments about the web page, and talk with

Figure 3-4

4. THE STUDY

In this empirical study, I studied two types of Internet group communication to observe the development of group communication and formation: synchronous and asynchronous. A message board and a MOO-style chat room were connected to the Stop Abuse For Everyone (SAFE) website, and I studied the effectiveness of these two group communication models.

Specifically, I looked at the following questions:

1. *Which form of group communication (chat rooms or message boards) will people prefer to use?*
2. *Which forms of group communication will draw people back more often?*
3. *With which form of group communication will people interact more?*
4. *Through which form of group communication will people become better acquainted with other group participants?*
5. *Which form of group communication will be more enjoyable for the participants?*
6. *Which form of group communication will encourage group formation more?*
7. *Will either form of group communication foster the growth of online community?*

In the following section, I will explain the process I followed to set up the message board and chat room, and show the questionnaires and data collection methods I used to answer these research questions.

4.1 Chat Room Program Implementation

I created the chat room using a MOO obtained from Xerox Parc's FTP (file transfer protocol) site (ftp://parcftp.xerox.com/pub/MOO/). The software is public domain. There are several different versions of the software and the

database file used by the program, and I downloaded version 1.8.0p5 of the MOO and the 02Feb97 version of the database.

I set up the chat room on the Human Computer Interaction group's computer, Zfishstix. To set up the program, I

1) ran the configuration program "configure"

2) edited the config.h file to make sure the options were set up correctly for Zfishstix and the University of Oregon's network system.

3) compiled the MOO.

At first, the program would not compile correctly, but after reloading the source code from the FTP site, the installation worked smoothly.

After the program was set up, the next step was to design the internals of the chat room — the environment that the visitors would interact with. This was a very important decision. Many of the visitors would presumably be people with first-hand experiences with domestic violence. The difficulty in choosing an environment or theme for the chat room was compounded by the diversity and range of possible environments. The chat rooms could be a small town in a forest, several rooms in a high-rise building, or a house. It could even be completely fantasy-like — a castle on top of pink clouds, for example. The environment could have a large impact on what type of experience visitors would have and could impact whether they would feel comfortable interacting with other people there. The environment was also important because part of the purpose of setting up the chat room is to decide on what is effective and what is not effective about chat rooms in general. If the environment hinders people from using the chat room, then I would not learn anything about the effectiveness of the chat rooms themselves, other than the fact that the environment hindered people from using it.

First of all, I conducted informal interviews with about ten people, including architecture students, psychology majors, and user interface specialists from the Computer Science department. The questions I asked them were, "What type of an environment do you feel most comfortable talking to strangers in?" and "What makes a person feel comfortable in their environment?" After receiving a lot of recommendations on how to design a comfortable environment, I decided on a beach cabin as the theme for the chat room.

The beach cabin was designed to be cozy and comfortable — the type of place that people would want to talk in. It is dimly lit, but not dark. The coffee machine in the kitchen is set there because people tend to talk more over food or drink. The chairs are comfortable and present in every room of the SafeHouse. If the visitors feel claustrophobic, they can go out to the beach. The basic room descriptions are listed in Figure 4-1, and the tutorial rooms are listed in Appendix A.

Room Descriptions:

Entrance Way

You are in the entrance way to a cozy beach cabin. Behind you, to the south is the sandy beach, and to your north, you see a warmly lit living room. If this is your first time, type tutorial.

Kitchen

The kitchen holds a dark wooden table with chairs clustered around it. You can go back to the living room through the hallway to the east. (the coffee maker is kept in the kitchen, usually, and would be displayed as well)

Living Room

The living room centers around a large fireplace. The room seems crowded with comfortable chairs and two large couches. The room is lit by some warm lamps in the corner and the fire in the fireplace. You see a hall leading to the kitchen on the west, a den to the north, and the entrance way on the south.

Den

This actually looks like a library, except it is so comfortable. The dim lighting hides the titles of all the books lining the walls. A desk sits in front of a small window. Several plush cozy-chairs are circled around. This looks like a great place to relax. The living room lies to the south.

Beach

The surf pounds the sandy beach. This beach is an alcoved area, with cliffs rising on both sides. This area seems sheltered, but a light breeze runs in from the ocean. The salty air carries seagulls through the sky. You can go north back into the cabin.

Figure 4-1

I also pared down the commands as much as possible to make it easy for the user to acclimate himself to the environment. The default introductory screens and information screen (that is shown when the user types news, as prompted when they first log in) were both fairly technical and

confusing. I pared down the commands to just a subset of the commands available, because the full functionality of the MOO is not necessary for someone who just wants to talk. I then edited these introductory messages to make them more understandable to people who have never used a MOO before.

Then, I set up a web page to link in from the Stop Abuse For Everyone homepage to the SafeHouse chat rooms. Figure 4-2 illustrates text of the webpage (http://ursula.uoregon.edu/~jarubick/ safe/MOO.html).

SafeHouse: Chat Rooms

You've probably heard people talk about chat rooms before, and perhaps you've tried them yourself. SafeHouse is a house of chat rooms — several chat rooms linked together. You can use SafeHouse as a place to actually meet and share experiences with other people whose lives have been touched by domestic violence. Whether you are the person who is abused, or you know someone who is in a similar situation, SafeHouse is an area for you to talk with other people and learn from their experiences.

The SafeHouse chat rooms are available because I am doing my thesis on group communication on the Internet, and I'm comparing chat rooms and message boards. So please complete a SafeHouse Survey (http://www.cs.uoregon.edu/~jrubick/BBS/MOO_questionnaire.html) after you have tried it out. It takes less than five minutes, is completely anonymous, and will help researchers understand and design better methods of communication in the future. If you have any questions or concerns about this, feel free to contact me (jrubick@cs.uoregon.edu) or my thesis advisor (douglas@cs.uoregon.edu).

To use SafeHouse, you must have a "telnet" program on your computer. If you'd like to try to connect to SafeHouse, select the link below. If you have telnet, and your web browser (like Netscape) is set up right, clicking on the link below will allow you to connect to the SafeHouse.

Enter the SafeHouse: telnet zfishstix.cs.uoregon.edu 7777

The SafeHouse will not be very interesting unless other people are on. Jade will be on almost every evening around 9:00 Pacific time. If you go into the SafeHouse, you can leave a note for everyone else on the Message Board, and say when you plan to connect again. People can make appointments in this way.

Please note: please be courteous and respectful towards the people you interact with on SafeHouse. The people you are talking with are real people. Please help to make SafeHouse as comfortable a place as it can be.

If you have any suggestions, concerns, or complaints, please either talk with me (Jade or Wizard) on SafeHouse, or e-mail me at jrubick@cs.uoregon.edu.

Figure 4-2

4.2 Message Board Program Implementation

A CGI (Common Gateway Interface) script is a program that can be run when someone accesses a web page. For example, if I write a CGI program that displays the time, then when a person accesses a web page with that CGI program, they will have the current time printed on their screen. CGI

programs are very common on the World Wide Web, and they are used for all sorts of purposes, Message Boards being one of them.

Selena Sol maintains a website that contains a great number of public-domain CGI scripts. This website, currently located at http://selena.mcp.com but soon to move to http://www.extropia.com, is where I acquired the code for the message board system used on the Stop Abuse For Everyone (SAFE) page.

The scripts themselves are written in Perl, a computer language. To set up the scripts, the server must not only have Perl installed, but the protection levels of the HTTP (Hyper Text Transport Protocol) daemon's (a small program that runs constantly on a computer) security level must be set so that it allows programs to read from other programs while executing. This is necessary because Selena's Message Board reads from other source files in order to execute, and on some systems where security is very important, this is not allowed by the HTTP daemon.

After downloading the program, following the setup instructions resulted in the program working fairly smoothly. The most complicated part of the process was setting up the file permissions. It took several days to figure out exactly how to set them up, because the documentation for the message board is not very specific or helpful about the installation process.

After the program was working, I modified the code to customize the appearance and display of the message board. The Human Computer Interaction group, specialists in user interfaces, also informally examined the message board and made many suggestions to make the interface as unobtrusive as possible for the user. I implemented as many of the suggestions as possible, and the end result is shown in Figure 3-1.

1. *Which form of group communication (chat rooms or message boards) will people prefer to use?*

Measure: number of visits

The log file from the MOO shows when each participant logs into the chat room and when they log out. This is helpful because it shows how often people logged into the MOO, how often they came back, and how long they stayed in the chat room before leaving. We can compare the number of visits to the chat room to the number of visits to the message board, and thereby judge which form of group communication people prefer to use.

The message board also logs all of the visits to each page. As a result, the log files from the chat room and the message board can be easily compared to see which is used more often.

On a secondary level, we will be able to judge the effectiveness of the chat room based on the number of characters created in the chat room and whether or not the visitors has described themselves in the chat room. If the person has described themselves, then they have demonstrated a mastery of the basic commands of the chat room, and they have spent some time following the tutorial and learning the commands.

2. *Which forms of group communication will draw people back more?*

Measure: repeat visits

The log files will show the number of repeat visits, so I will use this information to evaluate which form of group communication draws people back more.

3. *With which form of group communication will people interact more?*

Measure: number of conversations (chat room), number of replies (message board)

In the chat room, overlapping log-in times in the log file represent times when more than one person is in the chat room. Because SafeHouse is so small, I will assume that if more than one person is in SafeHouse, they are conducting a conversation. Using the log files from the chat room, I will count the number of conversations. On the message board, I will count the number of replies to previous messages, which represent an interaction.

4. *Through which form of group communication will people become better acquainted with other group participants?*

Measure: Questionnaire, question 5.

I will measure this by means of a questionnaire to both the participants of the message board and the chat room (see Figure 4-3 and 4-4).

5. *Which form of group communication will be more enjoyable for the participants?*

Measure: Questionnaire, questions 7 and 7b.

I will measure this by a self-administered questionnaire (see Figure 4-3 and 4-4).

6. *Which form of group communication will encourage group formation more?*

Measure: Level of interaction (number of conversations for the chat room, number of replies for the message board), knowledge of other group members

(questionnaire, question 5), and drawing people back (repeat visits to the web site or to the MOO).

7. Will either form of group communication foster the growth of online community?

Measure: repeat visits

The log files will show the number of repeat visits, so I will use this information to evaluate which form of group communication draws people back more.

4.4 Data Collection: Questionnaire

I placed two questionnaires on the web page for people to fill out, one for the message board and one for the chat room. A sample question is shown in Figure 4-3. As can be seen, the user can select from multiple choices using the standard web browser interface.

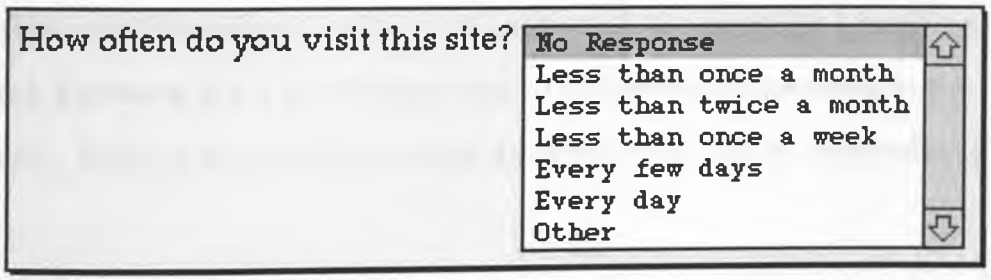


Figure 4-3

The full text of questionnaire is shown in Figure 4-4, and the entire questionnaires, with all the choices available, are shown in Appendix B (the actual page is available at http://www.cs.uoregon.edu/~jrubick/BBS/BBS_questionnaire.html).

1) Gender:

2) Age:

3) How many visits have you made to the SafeHouse?

4) How often do you visit this site?

4b) If you wrote other in the last question, please indicate why

5) Approximately how many people do you know in the SafeHouse?

6) Do you feel like you're participating in a group:

6b) If you have any comments about the previous question, please write them here:

7) How was your experience participating in the message board:

7b) If you have any comments about the previous question, please write them here:

8) Is this your first time to fill out this questionnaire?

9) Please write any addition comments about this questionnaire or the SafeHouse:

Figure 4-4

The questionnaires for the chat room and the message board are almost identical, but there are a few differences to reflect the differences in the mediums. Both of the questionnaires are shown in full in Appendix B.

5. RESULTS

5.1 Finding: Subjects Preferred to Use the Message Board

During the two months of observation, the cumulative number of visits to the chat room was fifteen, or twenty-eight including partial log-ins, where the user does not connect to a player. The reason the partial log-in figure is important is that a person can connect to the chat room and check whether anyone else is present without connecting to their player (a "full log-in"). Thus, the twenty-eight figure is probably fairly accurate. When this is contrasted to the 201 cumulative visits to the main message board page (see Figure 6-1), it is clear that many more visits were made to the message board than the chat room. During the two months of observation, there were 1503 visits to the main web page, so this means that about one in 7.5 visitors went to the message board and about one in 30 visitors went to the chat room (because the chat room started up a week and a half later than the message board did.)

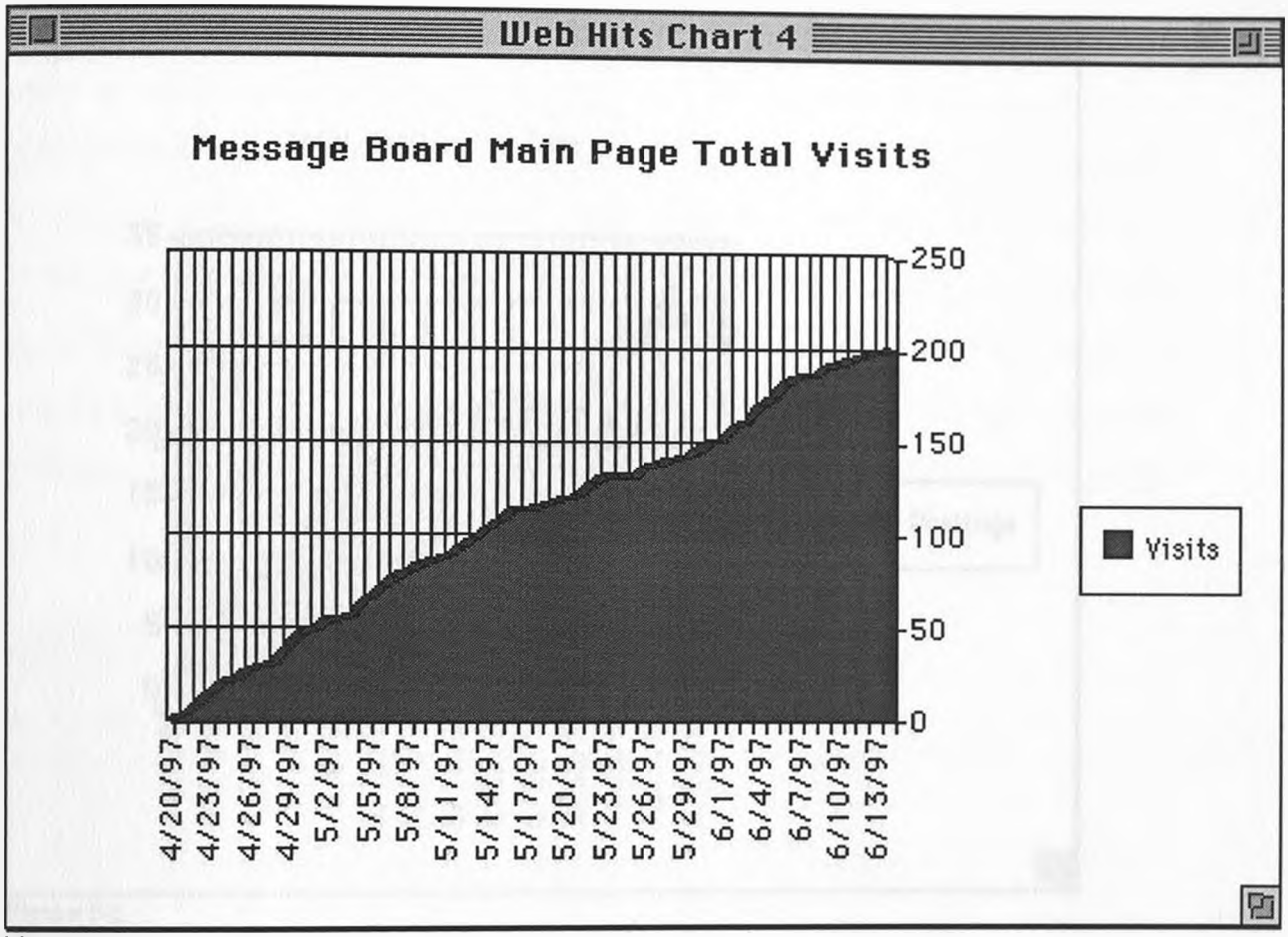


Figure 5-1

There were only nine characters created in the chat room, including one pre-created guest character. Of these nine characters, only one logged in more than once. Three of the eight characters progressed far enough through the tutorial and the learning of the chat room to describe their own characters. These people likely either lost interest or could not understand the technology and environment.

There were thirty-two postings for the message board (see Figure 5-2).

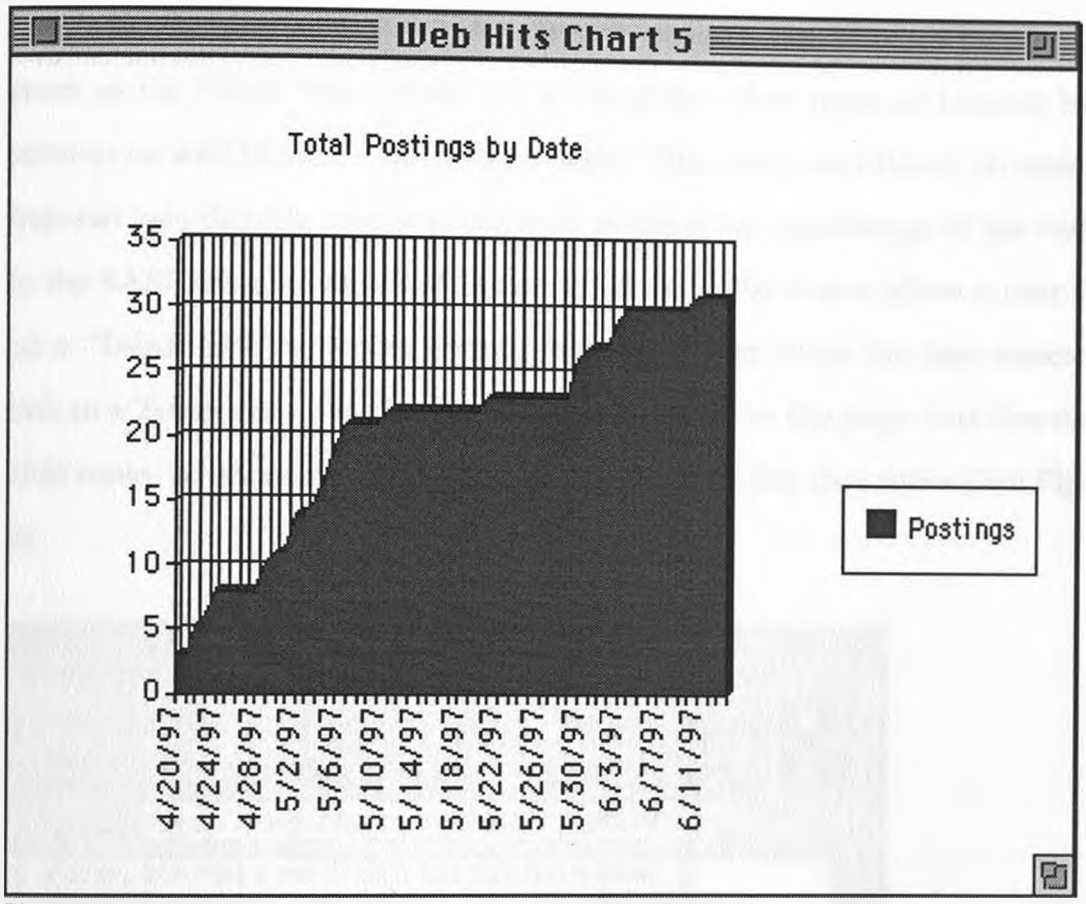


Figure 5-2

There were many more visits to and use of the message board system than to the chat room. This suggests that users preferred to use the message board much more than the chat room. The postings and character creation statistics are not conclusive or meant to be compared to each other, but they serve to show further that the chat room was not used as much as the message board.

There are a number of possible reasons for this. First, one major difference between the two implementations is that the chat room needs to be accessed by a Telnet program, while the message board system is accessed by a web browser. Two of the questionnaire respondents mentioned this as a reason they did not use the chat room. Because the visitors to the SAFE website are visiting by means of a web browser, it may be easier to look at the message board than to visit the chat room.

However, studies have shown that users of any Internet based service (such as the World Wide Web) use most of the other types of Internet based services as well (Kraut, et al, 1996, p. 286). This study was based on residential Internet use, though, and it is difficult to tell what percentage of the visitors to the SAFE groups were residential. Also, most browsers allow a user to click on a "Telnet link" to automatically load up Telnet when the user selects a link to a Telnet site. I added in this type of a link to the page that describes the chat room, so users should be able to easily enter the chat room (See Figure 5-3).

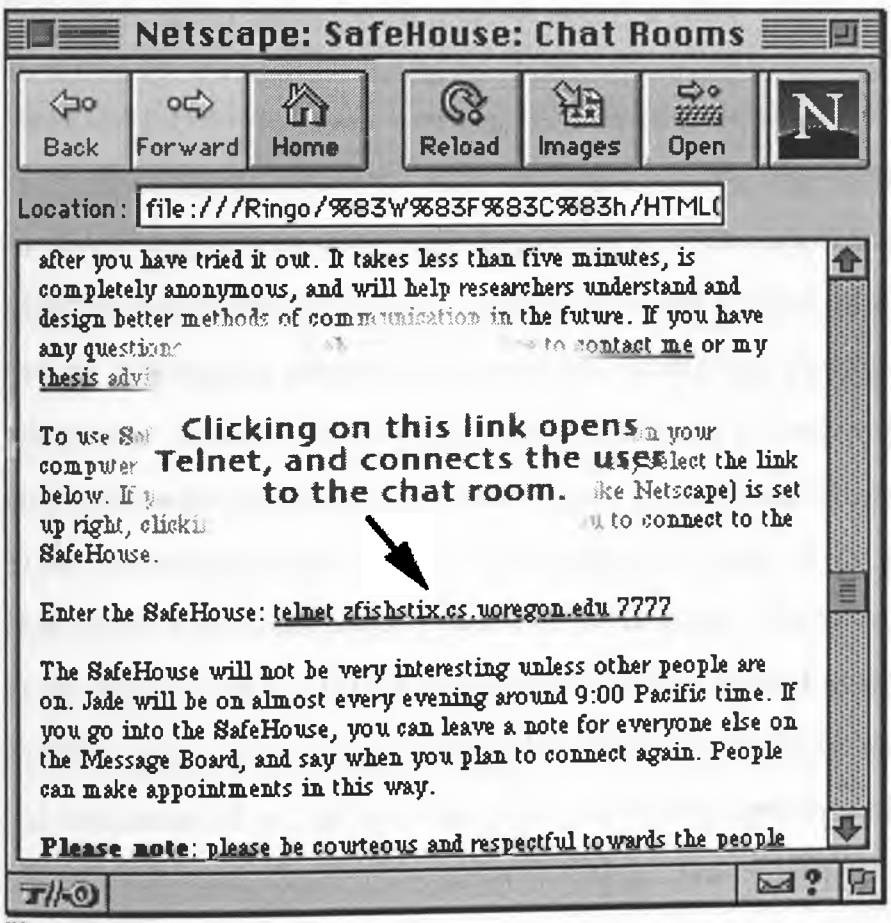


Figure 5-3

Another possible reason for people feeling more comfortable on the message board than the chat room is the nature of the participants. First of

all, the participants may have felt more comfortable in the message board environment because the interaction is more distant and safe (in the same way that writing a letter is different than talking on the phone). This may be especially valid considering that many of the participants are abuse victims, and concerned with their privacy and anonymity. Although both mediums of communication were publicized as anonymous, the message board may feel more anonymous than the chat room, because the user is not immediately talking with anyone. For people setting up web site services, this suggests that the type of users may be a very important factor in whether or not a service (such as a chat room or message board) is used or not. Perhaps the chat room would have been more successful if the participants were conversational and looking for human connections.

Perhaps in addition to the feeling of safety, the motivation for visiting the SAFE homepage is of most importance. If the participants were motivated to come to the web page by a desire to find information, they may not be looking for personal connections with other people in similar situations. Visitors to the SAFE web page chose to look at the page on the chat room seventy-nine times (see Figure 5-4) versus 201 times (see Figure 5-1) for the message board. Of the seventy-nine visits to the web page about the chat room, only nine people chose to participate. Because visitors would not know they needed a Telnet program until they looked at the web page about the chat room, this suggests that the visitors to the SAFE web site were simply not as interested in using a chat room as the message board.

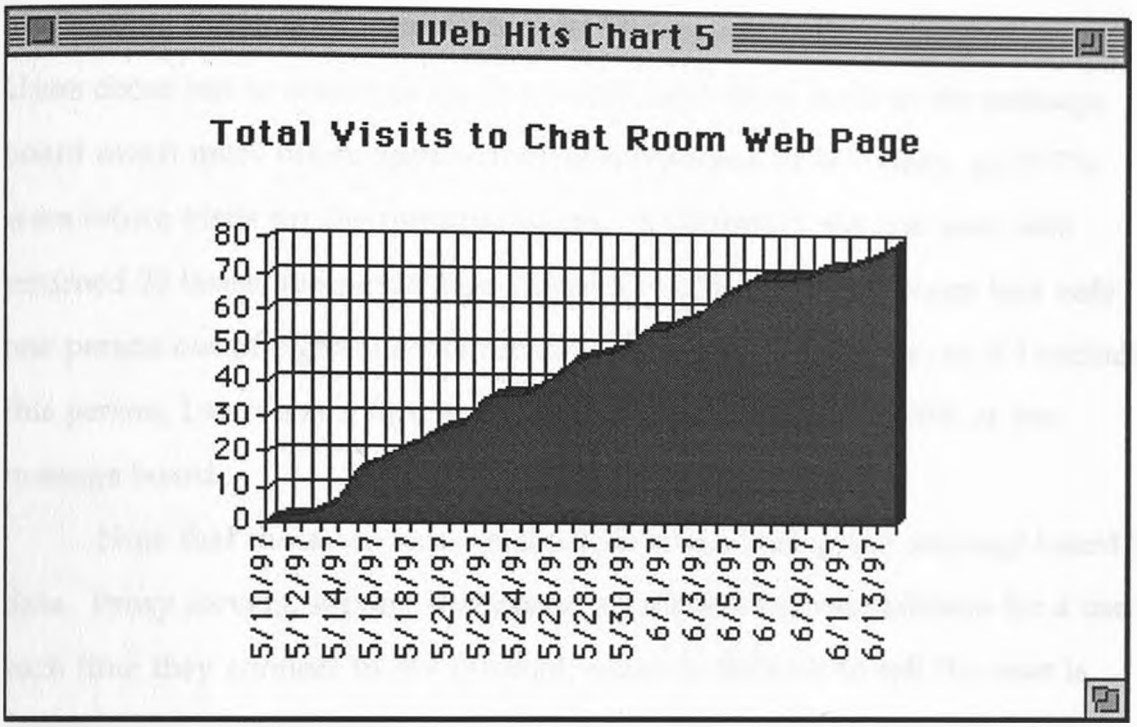


Figure 5-4

Also, The message board is more suited for information exchange, and this may have biased the visitors towards using the message board. The message board works better for information exchange because it is asynchronous. As a result, the information is permanent (the visitor can visit the web page at a future time and get the same information again, while with a chat room, the information must be written down before it disappears, because chat rooms do not store any history), and also the information can be exchanged asynchronously, so it is not necessary to find someone who is using the computer at the exact same time.

Thus, studying the composition and motivation of visitors to a web site may be an important step before implementing any sort of group communication technology on the Internet. In the same way that a market study is important for a business, perhaps a user study and an analysis of the people who will be using the group communication is critical for the success of the group communication method.

Users chose not to return to the chat room, and came back to the message board much more often: approximately forty-three of 167 visits, or 25.7%, were return visits for the message board. If I subtract out one user who returned 23 times, the percentage drops to 14.0%. The chat room had only one person out of eight (12.5%) return even for a second time, so if I exclude this person, I arrive at a figure of 0% to compare with the 14.0% of the message board.

Note that there are some difficulties in analyzing the message board log data. Proxy servers, servers that create a different Internet address for a user each time they connect to the Internet, make it difficult to tell if a user is returning for another visit or if they are actually a different person. For example, America Online, a popular online service, uses a proxy server. If User A comes to the message board, the address that will be logged into the log file may look like this: www-ao2.proxy.aol.com. The next time they log into the message board, their Internet address may look like this: www-tj22.proxy.aol.com. It is impossible to tell whether this user is a return visitor or another person entirely. For this reason, I excluded America Online from my calculations of return visitors, and made the assumption that less popular ISPs with proxy servers represent return visitors. America Online was the only major Internet service providers (ISPs) that appears in the log files and uses proxy servers.

One of the eight participants of the chat room returned multiple times. This person returned a total of seven times after the first time. I talked with this person on the chat room the first time he logged in, and we talked for about half an hour. One of the disadvantages of the chat room is that the chat room is synchronous, so people must be on at the same time to make the chat

room interesting. In addition, a certain critical mass of participants is necessary. LambdaMOO, the most successful MOO ever, has over 6000 users, and at any time there are usually at least ten to twenty people on at a time. In retrospect, it seems optimistic to expect that a group of much less than that could reach a critical mass so that people would have an opportunity to talk with each other often. It would take about 4000 people, perhaps, to have two four-people conversations going on at once, based LambdaMOO's rates.

Chat Room First Log-in Times

6:13:30 AM
9:29:51 AM
12:38:47 AM
1:23:33 PM
3:21:22 PM
5:21:55 PM
7:38:58 PM
7:55:24 PM
8:43:49 PM

Figure 5-5

The log-in times for the first visits (Figure 5-5) and all visits, including partial visits (Figure 5-6) did not concentrate on a particular time of the day very much. There were three visits that were between 7:00 and 9:0 PM, which is not too surprising considering that I advertised on the web page that I would log in at 9:00 PM Pacific time every night. However, the distribution of the times is pretty broad, and not concentrated heavily on the time I said that I would be on. Because of the scarcity of users, this may not be conclusive, but it does suggest that the critical mass required to set up a chat room may be considerable, because the time that people log-in is distributed.

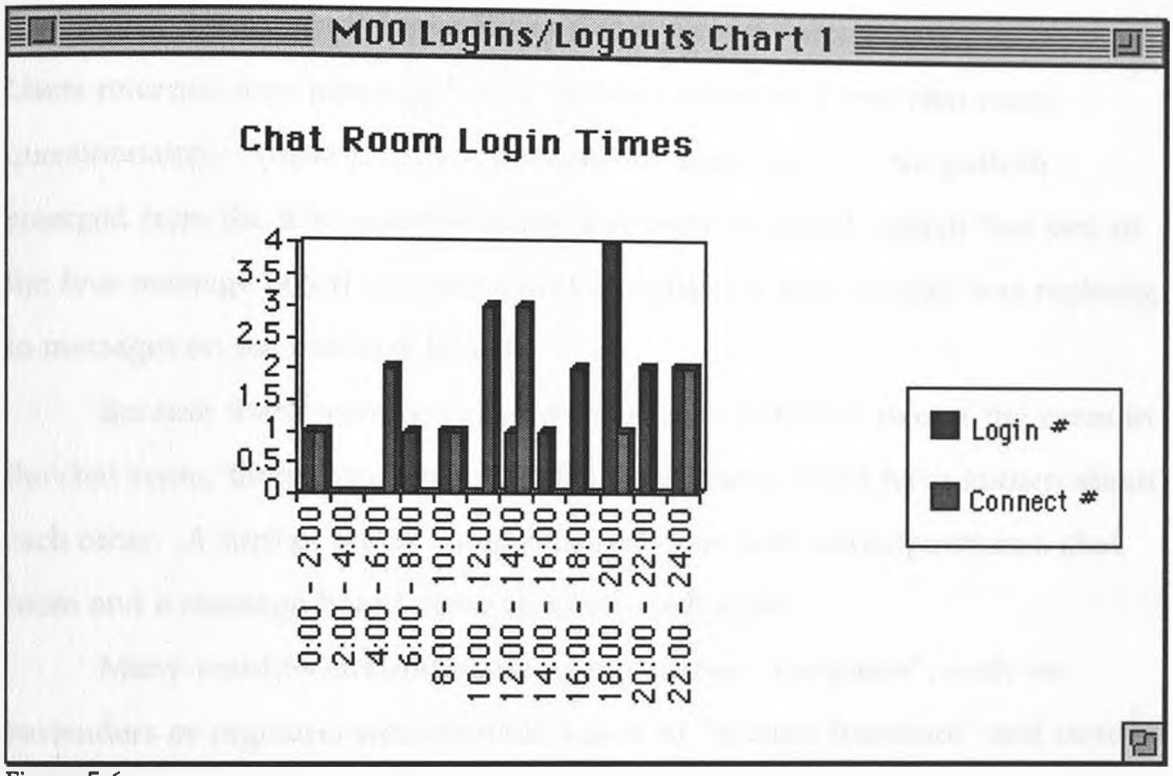


Figure 5-6

5.3 Finding: Subjects Interacted More on Message Board

Thirteen of the thirty-two messages (40.6%) on the message board were replies to previous messages, and the only conversation in the chat room was between myself and a user. This user was the only user to return to the chat room after his first visit — he returned seven times. Thus, the amount of interaction on the message board was considerable, regardless of my own participation, and the interaction in the chat room was negligible. It is hard to say how much interaction the chat room would have once the critical mass of participants was reached, or had I been able to participate more. Most of the interactions on the message board were dyad relationships -- one reply to another persons' posting.

5.4 Finding: Uncertain if Users Knew Other Group Participants

Users returned four message board questionnaires and two chat room questionnaires. These results are therefore inconclusive. No pattern emerged from the few questionnaires that were returned, except that two of the four message board questionnaires complained that nobody was replying to messages on the message board.

Because there were not any conversations between two of the users in the chat room, there is no way that the participants could have known about each other. A further study could measure how well participants in a chat room and a message board come to know each other.

Many real-life environments have "anchor characters", such as bartenders or regulars, who provide a sort of "human furniture" and comfort for a location and group. The lack of these anchor characters probable had a negative impact on the people who came by.

5.5 Finding: Uncertain Which Form of Group Communication Users Enjoyed

It is difficult to tell which form of group communication the participants preferred because of the scarcity of replies to the questionnaire.

5.6 Finding: Uncertain if Either Encourage Group Formation

Of the two communication mediums, given the two month time period of the study, the message board was clearly much more successful, almost by default. It is difficult to say if the chat room could have become more popular or successful. The message board was probably more successful because of its asynchronous method of communication and because the users were motivated to come to the SAFE website out of a desire to acquire and

exchange information. Perhaps a larger base of users would have resulted in better results for the chat room.

A possible solution to the critical mass problem for the chat room would be to use a section of another MOO, such as LambdaMOO itself, as a chat room. The advantage of this would be that there is a world of people outside of the group that is meeting that could hold the interest and help train the users in the new environment. The difficulty of this is, however, that the user must learn how to use the MOO well. The SafeHouse was a completely pared down version of the MOO, designed to be as simple as possible. Learning to use the original LambdaMOO might be too complicated for a user that just wants to easily be able to talk with someone. Having a great number of people to talk with, however, could be a good reward and motivation to learn, however. LambdaMOO has around 6000 members.

Although the message board was more successful, this does not necessarily mean that the message board encouraged group formation. Exchange of information and returning to a website do not necessarily constitute group formation. Because the questionnaire response rate was so low, it is hard to say whether people considered the message board to be a group, knew the other participants, and saw a common goal or purpose with the other participants — all necessary for group formation (Arrow, 1997 interview). This question remains unanswered by this thesis.

5.7 Finding: Neither Significantly Fosters Online Community

Although there are many other measures that are important to measure community, a history and consistency is vital to differentiate a group from a true community. The chat room clearly lacks this consistency, because with one exception, no visitor returned.

The return rate for the message board was about fourteen percent, leaving out the user who checked the message board very frequently. This rate suggests that there is a group of people that return to the web site fairly consistently. However, during the two month period, forty-five percent of those returning only returned once. This leaves about 7.7% of the visitors who returned several times, and many of these people only returned twice. Although it might seem that many of these people are "web surfing", analysis of the log files suggests that many of the people who come to the web page were searching for information specifically about abuse.

The fact that visitors returned at all is pretty significant, given the random and haphazard nature of the World Wide Web. However, this consistency is probably not enough of a core group to serve as a foundation for a possible community. Community requires a great deal of consistency and history. Thus, although the message board clearly is appealing to some of the users, it did not represent the construction of a community.

A longer study could have shown different results, but because the beginning of a computer-based group's formation is the period that is most critical, it is likely that it would not have made much of a difference if the study had been much longer. It is difficult to tell, though, because the research that was drawn from was from asynchronous computer-based groups only.

6. SUMMARY AND CONCLUSION

This study shows the strengths and weaknesses of synchronous (chat room) and asynchronous (message board) types of group communication, and highlights some of the difficulties in setting up a successful form of group communication for a web page. It also has discussed the potential of group and community formation on the Internet.

The study's findings were as follows:

1) Subjects preferred to use a message board / asynchronous form of communication than a chat room / synchronous form of communication
2) The message board had a better return rate than the chat room.
3) Subjects interacted more on the message board than in the chat room.
4) It is unclear whether participants knew of the other members that were participating in the chat room or message board.
5) It is unclear which form of communication the participants enjoyed using more.
6) It is uncertain which form of communication better fosters encourages group formation.
7) Neither type of group communication significantly fostered online community.

There is ample room for future work in this area. A study that spans more than two months would be very useful to give perspective to the long term growth and usage of these forms of communication. It might show what happens once a chat room does reach a critical mass. A study that measures people's impressions and feelings towards the group they participate in would also be invaluable. A study which controls for the founder's participation in the concocted groups he founds would also be useful. In this study, I took a passive role in the beginning development of the groups — even for the chat room, I was not on enough to interact with all of the participants. Perhaps a more active role would have resulted in different behavior of the participants.

APPENDIX

A. Entry and Tutorial Rooms

Log-in help message:

If this is your first time, you need to "create a character." To do this, you need to choose a name and a password. This name doesn't have to be your real name, but it can be. Choose any name that you like, and a password that you'll remember. For this example, I'll use a name Dog and a password bone, but I suggest using a better password. Type:

create Dog bone

After you've connected, type `tutorial' for more help, or use `help' for more specialized assistance..

If you already have a character, type connect name-of-character password

to connect. If you want to use the guest account, you can type connect Green

@who just to see who's in the SafeHouse right now.

@quit to disconnect, either now or later.

Please email bug/crash reports to jrubick@cs.uoregon.edu

Welcome Room

Welcome to the SafeHouse! This tutorial will teach you how to get around in this environment. First of all, we would like to clean up how things look on your screen a little. Type: @wrap on to turn on word-wrapping. This will make your screen look better.

In this room, you will learn the basics of movement. The SafeHouse is a small cabin, with separate rooms that you can talk in. To move from room to room, you can enter the direction that you want to go. This will usually be something like north, south, east, and west. You can abbreviate these directions as n, s, e, and w. You will know which directions you can go by reading the description of the room you are in.

The exit to this room is to the east. Please move on to the next room of the tutorial.

Conversation Tutorial

The whole purpose of SafeHouse is conversation and it is very easy to say something in the SafeHouse! Type: say my first word. Everyone else will see that you said "my first word". That's all there is to it!

If you want to abbreviate it, you can use " instead of say. Thus you would say: " my first word, and everyone would read that you had said "my first word".

Great! So now let's say you would like to smile, or bow to someone. How do you do that? You type: emote smiles and if your name is Zeus, then they will see: Zeus smiles. This is useful for doing things like sitting down (emote sits down), bowing (emote bows gracefully), and the like. Emote can be abbreviated `:', so you can type: :grins cheerfully, and other people will see: Zeus grins cheerfully.

Congratulations! You've said your first words! Exits are to the west and north. To continue with the tutorial, go to the north. To review, go west.

Description Tutorial

Now type "look at me". In the SafeHouse, you can look however you want, and even decide what gender you would like to be.

Type: @gender male or @gender female or @gender neuter, depending on your preference. This gender doesn't have to reflect your true gender, but it helps the SafeHouse refer to you the way you would like.

You also can describe how you look. Type: @describe me as a friendly person, looking slightly bewildered. and press return. SafeHouse will say, "description set". Now type: look at me. You've set up your appearance. You probably want to set your description right now. It doesn't have to describe how you really look, so be creative if you want.

Exits are to the south and north. Go north to continue with the tutorial or south to review.

Password and Help Tutorial

If you decide that you want to change your password at any time, you can type @password oldpassword newpassword

For example if your old password was frog! and you wanted to change it to horse!, you would type @password frog! horse!

If you need help at any point, you can type help to get assistance. Also, you can ask other people for help, and you can write e-mail to jrubick@cs.uoregon.edu.

Exits are to the south and continuing the tutorial to the west.

Conversation Tutorial 2

When you 'say' something, you are talking to everyone in a room. What if you just want to say something to one person in a room? Well, you can whisper a message to them. Try typing this: whisper "hello" to me In this case, you're just talking to yourself, but if there is someone else in the room, they will get the message from you.

What do you do, though, when someone is in a different room and you want to talk with them? You can page them! Type: page me The player then will know where you are, and that you would like to talk with them.

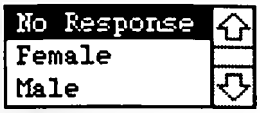
If you want to know who is currently in the SafeHouse, type: @who

To quit the tutorial type exit, otherwise you can review the tutorial by going east.

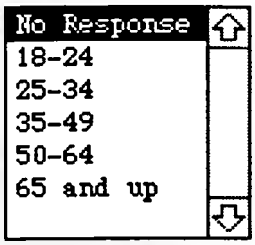
B. Complete Questionnaire Questions

The following are the complete questionnaire questions, showing all the possible options, for both the message board and the chat room questionnaires:

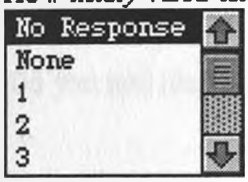
Gender:



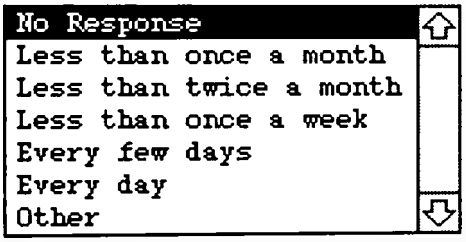
Age:



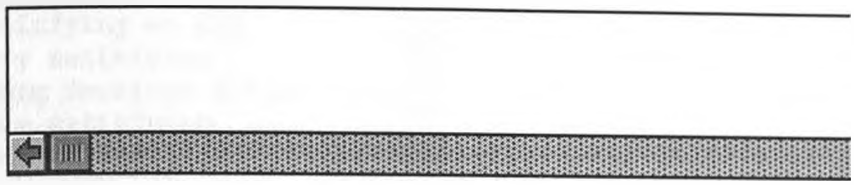
How many visits have you made to the SafeHouse?



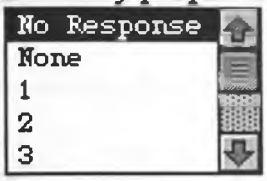
How often do you visit this site?



If you wrote **other** in the last question, please indicate why

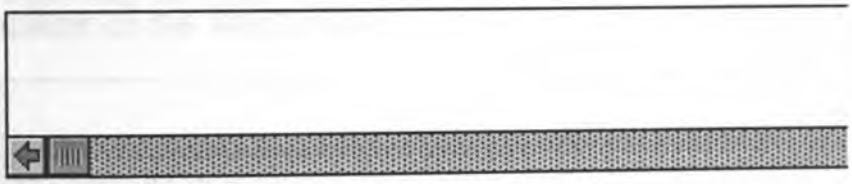


Approximately how many people do you know in the SafeHouse?
Please estimate:

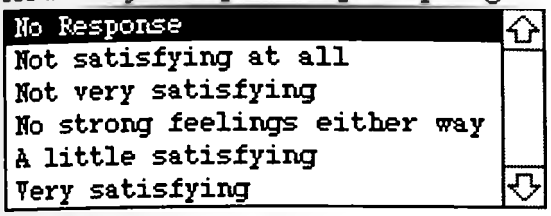


Do you feel like you're participating in a group:

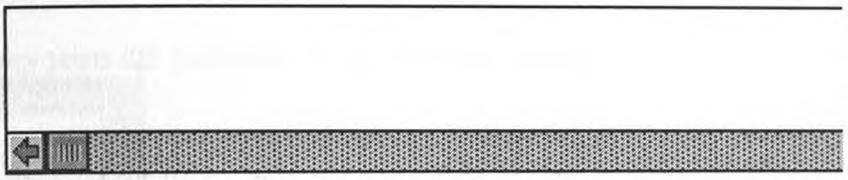
If you have any comments about the previous question, please write them here:



How was your experience participating in the message board:

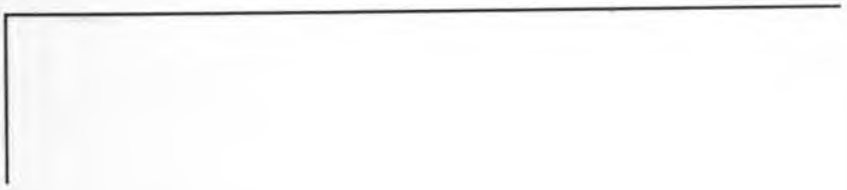


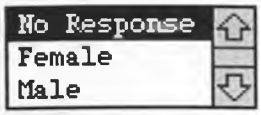
If you have any comments about the previous question, please write them here:

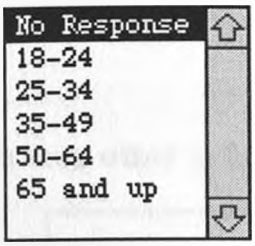


Is this your first time to fill out this questionnaire?

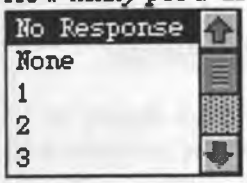
Please write any addition comments about this questionnaire or the SafeHouse:

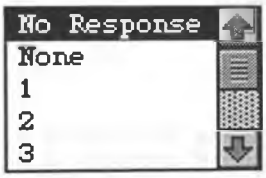


Gender: 

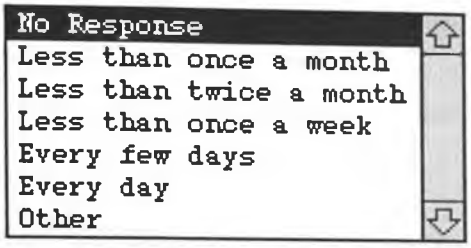
Age: 

How many posts did you make to the message board?

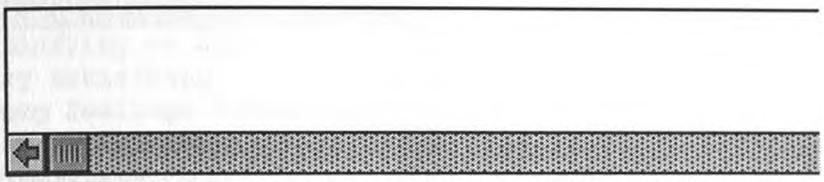


How many visits have you made to this site? 

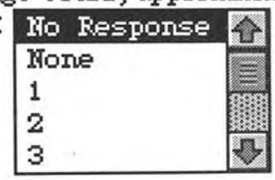
How often do you visit this site?



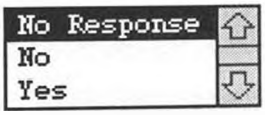
If you wrote **other** in the last question, please indicate why



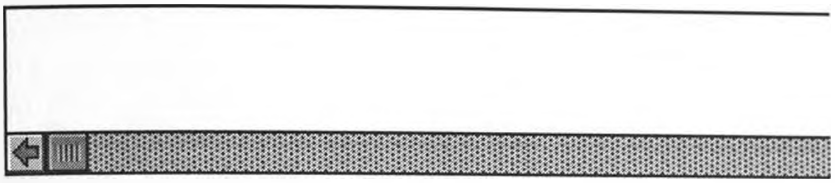
Of the people that post messages to the message board, approximately how many do you recognize? Please estimate:



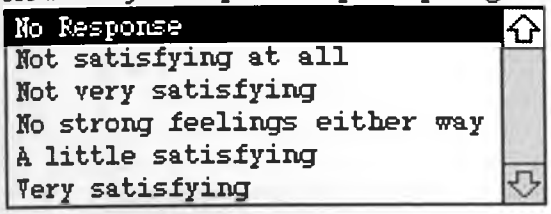
Do you feel like you're participating in a group:



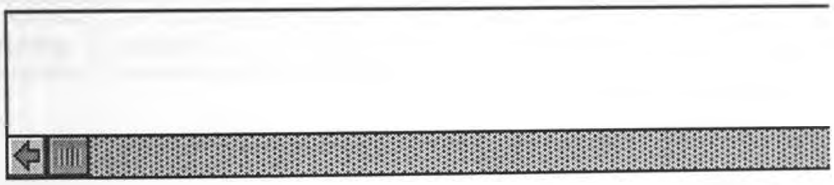
If you have any comments about the previous question, please write them here:



How was your experience participating in the message board:

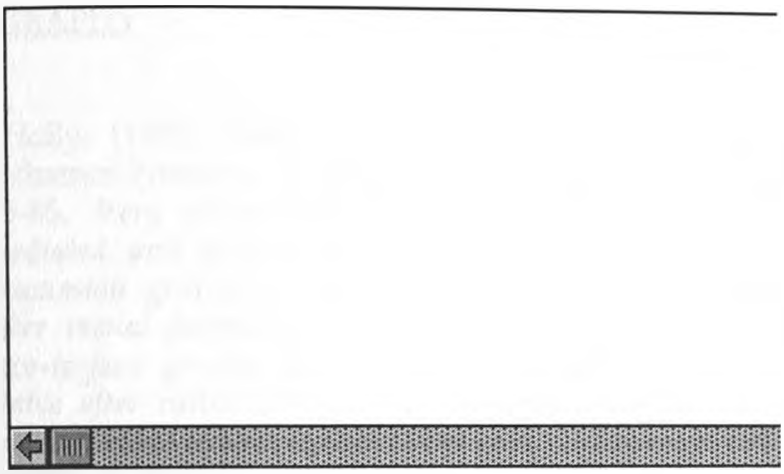


If you have any comments about the previous question, please write them here:



Is this your first time to fill out this questionnaire?

Please write any addition comments about this questionnaire or the message board:



Thank you for your time!

send survey | clear all responses

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Barlow (and others) about differences in the media of TV and computer networks, and methods of dispersing information.

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Zone Coaster Chat Room. http://www.zonecoaster.com/cgi-bin/chat.pl?logon *Contains scripts that can be used for online chatting, and several web based chat rooms. Also has Perl scripts that allow you to set up a web page that users can add their own links to, giving them some interaction with the web page.*