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Womantalk Goes On-line:

The Use of Computer Networks in the Context of Feminist Social Change

by

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B.A., University of Washington, 1981

M.A., Simon Fraser University, 1987

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ABSTRACT

Although some studies have focused on human aspects of computer networking, gender has not been central to analyses of users of computer networks. In addition, virtually all studies of human interaction via computer have focused on the use of computer networks in business, professional or educational settings. They tell us little about issues which might arise in the use of computer networks for the discussion of women's issues, or the use of computer networks for social change work.

Through a discourse based analysis of four computer networks that have been used in the context of feminist social change, this thesis documents women's past use of computer networks in the context of feminist social change. By focusing on the social circumstances surrounding the development of computer networking systems, the relationship between computer network structure and message structure, who the participants in network discussions are and what they talk about, and the group processes on each of the four computer networks, it becomes clear that social biases are reflected in the design and development of computer networking systems.

Although computer networks have been used successfully by women as a vehicle for personal change, material presented here suggests that the adoption of computer networking systems by women's groups will present many challenges. Successful use of computer networking systems in an alternative organizational structure may require centralized decision making and job specialization, both of which are in conflict with the normal practices

of feminist collectivist organizations.

Computer networking technology, as it exists is likely to be of limited use to women's organizations. In order for women's organizations to benefit from computer networking technology, they will have to engage in an iterative participatory design process, in which social goals and users' non-credentialed knowledge are valued equally along with technical efficacy. This design process can provide an excellent opportunity for women's organizations to clarify their operating procedures and social goals.

DEDICATION

In memory of

Margaret Lowe Benston
1937-1991

The best lessons in life are like a good song. They take you by surprise, and you can never forget the words. Over the years the words take on new significance, new meanings. Maggie, I can still hear you singing.

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Supervising an interdisciplinary thesis places unusual demands on a thesis committee. These were compounded by the illness of Margaret Benston, who remained on my thesis committee until a few months before her death. My committee members, Liora Salter, Robert Anderson and Arlene McLaren worked with me under extremely difficult circumstances. That events which should have been traumatic (comprehensive oral exams) were instead stimulating lively discussions, reflects well on my committee members.

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INTRODUCTION

Public figures as diverse as Tony Benn (a former British Minister of Technology) (Ruthven, 1983) and Timothy Leary (Leary, 1984) have argued that computer communications technology will provide the means for an effective, participatory, democracy. Benn argued that the emerging computer communication technology could "be used to inform citizens about government activities, to allow them to exchange opinions, and to make it possible for them to play a more direct role in decision making" (Ruthven, 1983, p. 57). An advocate of open government, Benn focussed on the ability of emerging computer networking technology to support a two-way flow of information between citizens and the government. Along with Leary (1984), Gabree (1984) and others, Benn argued that computer networks would widen the range of comment and opinion easily available to the general public (Ruthven, 1983). Computer networks were seen as having the potential to render political decision making more democratic (Gabree, 1984).

As the use of personal computers has increased and computer networks have become more widespread, so too have claims about the liberatory potential of computer networking technology. Computer networks were viewed early in their evolution as convivial and participatory, and antithetical to the dominant uses of electronic communications media that were centrally controlled (Rossman, 1979). Described as a "communications

medium that can be shared by all" (Knight, 1983, p. 123), some viewed computer networks as a challenge to conventional hierarchies of control (Rossman, 1979).

McCullough (1991) points out that as the cost of personal computers have declined, resource-poor community groups engaged in organizing for social change have become the unexpected beneficiaries of computer technology. Computer networks, viewed as having the potential to "make a horizontal cut through the standard vertical organizational chart" (Brilliant, 1985, p. 174) are particularly appealing to social change organizations, which are frequently structured and managed non-hierarchically.

At the same time that they acknowledge that computer technology is embedded in political, economic and cultural structures of domination, Downing, Fasano, Friedland, McCullough, Mizrahi and Shapiro (1991) argue that computers "can now be appropriated into organizing for progressive social change" (p. 8). These assertions are supported by popular views of technology (Balka, 1986; Bush, 1983) which suggest that technology is neutral and value free, and that how it is used determines if it is good or bad.

Popular debates about computer networking technology suggest that it ought to meet a diverse array of needs, including those of women's organizations dedicated to feminist social change. In theory, computer networks ought to be consistent with the democratic, decentralized, participatory structures of women's organizations dedicated to feminist social change. Theory suggests that computer networks should be accessible to a wide range of women, and that they can enhance the flow of information between members of women's organizations, as well as between organizations.

Even though the use of computer networks has become increasingly

popular in the last decade and research concerned with both women and technological change and the social implications of computer networking has proliferated, neither the use of computer networks by women, nor the use of computer networks in the context of feminism have to date been subjects of study. The research reported here addresses these omissions through an examination of the use of computer networks by women and men who have consciously pursued the use of this technology to communicate about women's issues and feminism.

THEORETICAL BACKGROUND

Kramarae (1988) points out that women's speech and technology are richly interconnected, and that technological processes have lasting impacts on women's communications. She argues that all technological developments can usefully be studied with a focus on women's interaction, and points out that all technological practices (including the processes of innovation, creation, production, maintenance and use of technology) affect the ways, places and content of talk, writing and publishing in a feminist context. For Kramarae, social relations can be considered to be organized and structured by technological systems. Among the questions she poses are: what cultural assumptions about these technologies are present in women's interaction? How do our descriptions and understanding of talk differ once we consider technological practices? What are the technological fixes or solutions that women apply and that others apply to women's lives? In a broad sense, the research presented here attempts to address Kramarae's questions in relation to the use of computer networks for communication about women's issues and feminism.

Investigation of this topic is, by nature, multi-disciplinary. In

studying women's use of computer networks in the context of feminist social change, several areas of theory that are seldom considered together are relevant. For example, theory concerned with technology as a social phenomenon is seldom considered in the context of feminist social change. Both bodies of theory are essential to developing an understanding of how feminists and social change activists have come to consider computer networks in their social change work, as well as in explaining the processes that occur as computer networking technology is adapted to meet these ends.

In analyzing the use of computer networks for feminist communication not only are many areas of theory relevant, but in addition many theoretical conflicts are brought into sharper focus. Early theory about the interaction of technology and society (for example, Ellul, 1967 and Mesthene, 1970) introduced general concepts that were widely adopted in debates about the interaction of technology and society. Although these works played a significant role in the development of more recent theories about technology and social change, they were not grounded in lived experience. As scholars began conducting case studies of technological change (for example, Braverman, 1974; Noble, 1979 & 1984), alternative theoretical positions began emerging. As women began to identify and assess the impacts of technological change on women (Benston, 1983a & 1983b; Smith, 1983), theory began to appear that suggested that technology plays a role in organizing social interactions in general, and gender relations in particular (Bush, 1983; Gay, 1986). This notion challenges popular views of technology and locates technology in a social context, and at the same time suggests that social values and social bias are built into the process of machine design.

Franklin (1990) reminds us of the processes that produce social bias

of technological systems in her opening to the 1989 Massey Lectures, where she develops the analogy of a house to describe technology:

> Technology has built the house in which we all live. The house is continually being extended and remodelled. More and more of human life takes place within its walls, so that today there is hardly any human activity that does not occur within this house. All are affected by the design of the house, by the division of its space, by the location of its doors and walls (Franklin, 1990, p. 11).

In much the same way that people design houses that play a role in ordering social interactions, Franklin suggests that technology contributes to the organization of social interactions. Although this position is gaining in popularity, there are few examples on which to base this assertion, and even fewer examples that show us how this occurs. The material presented below is theoretically important in that it brings the debates outlined above into sharper focus, and provides a detailed example through which theoretical claims about technology can be examined. In addition, the material presented here underscores the importance of technology as a women's issue.

Although there is still little data about how women's groups are using computer networking technology, the material presented below about how individuals have come together via computer networks to discuss women's issues raises important questions about the use of this technology within the alternative structures of women's organizations. Concern with how women communicate in groups has been a popular topic since the emergence of the contemporary women's movement (Bunch, 1974 & 1987; Egan, Gardner & Persad, 1988; Freeman & Macmillian 1976; Freeman, 1976). Although there are surprisingly few written accounts that explore the extent to which theory about interaction in women's groups has been applied in practice, this issue is important both theoretically and socially.

If technology plays a role in organizing social interactions as Kramarae (1988), Franklin (1990) and others suggest, then the adoption of computer networking technology by women's organizations may contribute to the complexity of social interactions in these organizations. Returning to Franklin's analogy, in adapting computer networks women's groups are in a sense remodelling their offices. However, in the absence of any information about the use of computer networks in the context of feminist social change, the processes that constitute remodelling are proceeding despite a lack of understanding of building design and construction. For women's organizations interested in computer networks, the material presented below is comparable to a theory of building design and construction for architects.

In order for women's organizations to benefit from using computer networking technology, additional information about how this technology organizes social interactions may prove invaluable.

OVERVIEW OF THESIS

In a general sense, this research was undertaken with the intention of gaining insights that would be useful to women's organizations considering the adoption of computer networking technology for group work. Although ideally this should have been addressed by looking at women's groups that were using computer networking technology, the combination of few such examples and the ethical issues related to access to these groups prevented such an approach. In light of these limitations, this research began with the identification of computer networks that were being used for discussing

women's issues and feminism.[1] Among the questions addressed below are: how are women using computer networks in the context of feminism? Who are the people engaging in feminist dialogue via computer networks, and what do they discuss? Is there a relationship between the structure of computer networks and the types of communication that occur on-line? When discussing women's issues and feminism via computer, what does group process look like? Can individual women and women's groups use computer networking technology for feminist social change?

These issues are addressed below through three types of material: introductory material (part A), data analysis (part B), and theoretical material (part C). Introductory material is presented in chapters two, three and four. Data is presented and analyzed in chapters five, six and seven. Theoretical material pertinent to this study is presented in chapters eight and nine. Conclusions appear in chapter ten. Each chapter is described briefly below.

Chapter two presents introductory and historical material intended to familiarize the reader with both how computer networks work, and the historical circumstances surrounding the development of computer networks. The technical material in chapter two was collected through a combination of personal experience, conversations, and computer books. Historical information about the social and technical environment that computer networking evolved from came from a combination of popular books, early computer magazines, responses to queries left on computer networks,

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[1]The criterion used to determine whether or not a computer network was being used to discuss women's issues and feminism was the identification of either a network or a group using a network as fulfilling this end, by the participants of those networks and groups.

computer network promotional material, and personal communication.

In reading about computer networks one seldom finds a conceptual overview of different types of computer networks and the different forms of communication supported by this technology. Perhaps as a consequence, the relationship between the structure of computer networks and the types of communication each network structure supports has been left largely unexplored. Novice network users often fail to grasp the notion that not all forms of computer mediated communications are possible given the use of a particular computer networking system. In using computer networks as a case study that theoretical claims about the nature of technological systems can be examined through, a conceptual overview of computer networking technology is essential.

Although many studies of technology are rich in technical detail, little attention is typically given to material that allows readers to construct an understanding of the social environment surrounding the development of technology. Without information on the social context in which technology is developed it is impossible to examine theoretical claims that social biases are built into technological systems. Although there is an enormous amount of written material available about computer networks, the socio-historical information presented in chapter two was very difficult to locate, and is undoubtedly incomplete. It is included because without it, it is impossible to examine what role, if any, social factors played in the development of computer networking technology.

Chapter three begins to chronicle the use of computer networks by individuals and women's groups to discuss women's issues and feminism. The material presented in chapter three comes from several sources. Participant observation was used extensively to collect data. Two types of information

were collected via computer network. First, historical information about the origins of computer networks and network participants' characterizations of these networks were found in text on the networks themselves. Second, in cases where information was vague or incomplete, messages were placed on computer networks requesting clarification or additional information, that network participants voluntarily supplied. In some cases it was possible to communicate via computer network, telephone, or face to face with network founders, who readily supplied information. In many cases information about the use of computer networks by women's groups was gained through active involvement with those groups, that usually took the form of informal discussions of organizational plans to use computer networks, and included facilitating hands-on workshops for those groups. A small portion of the material contained in chapter three came from publications.

Chapter three serves three functions. First, it provides an historical perspective of the use of computer networks in the context of feminist social change. Second, it introduces the computer networks and groups included in this study. Third, through brief discussions of computer networks that have both succeeded and failed, and that were either used or intended to be used in the context of feminist social change issues addressed in greater depth in part B are identified. Chapter four is the final introductory chapter. It provides an overview of this research, describes how this study was done, and why the particular approach presented here was chosen.

Part B (chapters five, six and seven) discusses the networks and groups included in this study in depth. It presents data from the networks studied and contains the bulk of data analysis. It is based on two types of data: actual transcripts of computer network discussions, and empirical analysis of portions of those transcripts. The transcripts of communication

that occurred via computer network are presented exactly as they appeared on the computer screen during data collection, with the exception that line numbers were added in the text for referencing, and the typeface that appears on paper differs from those one sees on a computer screen.

Part B is organized around three related themes: the anatomy of computer network messages (chapter five), who the participants in on-line dialogues are (chapter six), and group function and process (chapter seven). In organizing material around these related themes we begin to gain a sense of how computer network structure is related to the structure and perhaps content of computer messages. We learn who the participants are and how they gain access to the networks they use, and we begin to gain a sense of what processes and themes bring these individuals together as groups. The material presented in part B begins to address the questions outlined above, and presents an extensive data set that accomodates the examination of theoretical claims outlined above.

Part C (chapters eight, nine and ten) present theoretical material about feminism and social change, and gender, technology and social change, respectively. Chapter eight addresses the evolution of the contemporary women's movement and its relationship to other social change movements, and explores a notion central to feminism: that theory and practice should be inextricably linked. Feminism is examined as a series of three related sets of relationships: those that occur on an individual level and between individuals, those that occur when women work for social change within groups, and the relationship of feminist groups to the state apparatus. The material in chapter nine provides a theoretical starting point for identifying issues that might arise as women's groups increasingly utilize computer networking technology to meet group communication needs.

Chapter nine addresses popular attitudes towards technology, women and technological change, labour perspectives on technological change, the concept of social bias in machine design, cooperative design of technological systems, and the relationship of technology to communication and social change. The material in chapter eight provides the backdrop for an in depth discussion of whether or not technology is socially biased, and considers pragmatic issues related to designing technological systems.

In chapter ten conclusions are presented. Theoretical conflicts concerned with technological change are addressed with reference to the analysis presented in part B. Finally, issues related to the adoption of computer networks by women's groups are examined, drawing the data and theoretical material together.

METHODOLOGICAL OVERVIEW

This work was begun with the intention of investigating the interaction between a group's communication needs, the group's process and the software and/or computer networking system selected to meet a group's communication needs. It appeared that such a focus would address the broader question of whether or not computer networks could effectively be used as an organizing tool in the context of feminist social change. In light of both theoretical material suggesting that technology was socially biased rather than neutral and value free, as well as the long standing concern within the women's movement with group process, it seemed conceivable that in adopting computer networking technology women's groups might somehow be engaged in translating the theory that technology is socially biased into concrete practices.

Although this set of issues remains the broad context through which

this study of computer networks has been approached, the lack of attention given to women's use of computer networks in general, and in relation to social change in particular necessitated research of a more exploratory nature than had initially been anticipated. After it became apparent that very few women's organizations were actually using computer networking technology, the emphasis of the study shifted. It had become apparent during an initial period of exploration that computer networks were being used extensively for discussions about women's issues and feminism. Since it was not possible to investigate whether or not women's groups were incorporating the social bias theory of technology into practices surrounding the adaptation of computer networks, and it was clear that computer networks were being used extensively by individuals to discuss women's issues and feminism, the goals of the study were recast in terms of individuals.

Built into the initial focus of the project on group use of computer networking technology was an assumption that groups would have an explicit communicative goal that in some way would contribute to the organization of interactions amongst group members. When the focus of the project moved from organized groups to individuals who came together as groups through computer networks, the assumption that an explicit communicative goal, shared by network users, needed to be questioned. The focus of the research shifted to determining what bound users of feminist computer networks together as groups, and what processes (if any) related to the technology they used came to bear on their communication.

Because so little was known about the use of computer networks in the context of feminist social change the first task was to determine how individuals were using computer networks to talk about women's issues and feminism, and identify what they were talking about. Central to this task

was the collection of transcripts that documented on-line interaction of individuals that became groups through the computer networks included in this study. The transcripts were examined from a number of perspectives that yielded evidence of a complex and subtle relationship between the processes surrounding the design of computer networks, the structure of those networks, and the form and content of communications that occurred via those networks.

Based on the material presented below I will argue that social bias is built into the process of designing technological systems, and that this has important social consequences. We need now to focus our attention on developing new processes for designing technology. In addition, if computer networks are to be used successfully by women's groups those groups must not only engage in new design processes, but must also make explicit the values they exist to promote, and incorporate these into the design of computer networking systems. Among the issues women's groups will need to address are access to computers, group structure and the distribution of power within and between groups.

In analyzing the transcripts of computer mediated communication included in this study the notion of discursive practices and an ethnomethodological approach were central. Ethnomethodologists undertake the investigation of the social organization of the world of daily life, as it is encountered in mundane experience. For ethnomethodologists, the key to understanding social structure is in the processes of converting taken for granted understandings of the social into their theoretical derivations (Sharrock & Anderson, 1986). Although a multiplicity of techniques are practiced by ethnomethodologists, Smith's (1987, 1990a & 1990b) analytic approach that evolved in part from ethnomethodology was particularly well

suited to investigating the use of computer networks for the discussion of women's issues and feminism.

Smith (1990b) argues that text is a means of access to the relations it organizes. Texts are situated in and structure social relations. Treating text as a constituent of social relations encourages the researcher to investigate the social organization of its production, as it is a prior phase in the social relation. One can begin an inquiry where people are, and explore the actual practices that engage people in the relations that organize their lives.

In conducting a detailed analysis of the practices network users engage in that constitute communicating via computer network, one can begin by analyzing the text they produce. From this text it is possible to uncover the underlying assumptions of those who use these systems, and the limits and potential of their efforts.

Smith (1990b) advocates looking beyond text for evidence of the social relations that resulted in the production of specific texts. In looking at computer network transcripts, an understanding of the social organization of computer networks is an essential component in developing an understanding of the taken for granted world network users encounter in their everyday production of computer network transcripts. This is one of the reasons this piece begins with an account of how computer networks work.

Additional justification for beginning this account of the use of computer networks for the discussion of women's issues and feminism is also found in Smith's (1990b) work. In discussing ethnomethodology Smith argues that background knowledge of social structures brought to the research process by the researcher are typically treated as an unexplicated resource in standard sociological accounts. The researcher's understanding of social structures is "always necessarily 'present' in the description, and the

description depends upon it though does not explicate it." (Smith, p. 118, 1990b).

The process of describing social phenomena transforms the way a setting is understood. Readers can not easily discern which aspects of a description are inherent to the social organization of that setting, and which aspects are embedded in the understanding of social organization held by the describer. Only when the describer makes her background knowledge of social structures explicit does it become possible to track back through a description to that background knowledge of social structures. Smith (1990b) argues that it is this hidden presence that we are trying to find out. Inclusion of the material presented here in chapters two and three that explains how computer networks work and how they were developed is intended in part to make explicit the background knowledge of social structures that the descriptive analysis in chapters five, six and seven is based upon.

The research cycle follows a circular path from theory to the construction of models, concepts and hypotheses that are tested in particular settings. Tools are developed, observations are made, data are collected and analyzed, results are described and generalized into explanations, that form the basis for predictions, policies and practices (Marshall & Rossman, 1989). Research both derives from existing theories and may, depending on the results, challenge existing theories. The theoretical material presented here in chapters eight and nine about feminism and social change and technology and social change provides a context for the analysis included here, and acts as a starting point for the articulation of new theoretical debates about the role of computer networks in the social change process, and the issues that may arise as women's groups begin to adopt this technology.

SIGNIFICANCE OF RESEARCH

The importance of this study lies in the contributions it makes in four areas. First, this is the first book length manuscript to address the use of computer networks for feminist social change. This work is unique in its focus on women. Second, material presented in chapters two and three begins to document aspects of both computer networks and women's use of computer networks that have to date been unchronicled. Third, this study is rare in that it is neither entirely pragmatic nor theoretical, but rather attempts to bring theory and practice about the use of computer networks together in an accessible format. Finally, this work makes important contributions to the expanding body of literature concerned with women's lives and technological change.

The material presented below will be useful to anyone interested in using computer networks as a vehicle for social change. It will also be of interest to scholars and activists concerned with social dynamics related to technology, and particularly the interplay of technology and gender. Finally, the material presented here will be of interest to women's organizations considering the adoption of computer technology in general, and computer networking technology in particular.

CHAPTER 2:

COMPUTER NETWORKS (I): AN INTRODUCTION

COMPUTER NETWORKING SYSTEMS DEMYSTIFIED

When computer networks work properly, users can pass information quickly and inexpensively between geographically dispersed locations. Depending on how a computer network is structured and used, it can meet communication needs that are often handled by telephone answering machines, the postal system, community bulletin boards, bathroom walls, board rooms, radio talk shows, and living rooms filled with friends.

Computer networks, in a general sense are a combination of hardware (the parts of your computer equipment you can see and touch), and software (also known as programs; a set of instructions, or recipes that tell your hardware what to do, but are intangible in the sense you cannot touch them), that are physically organized in a particular way. Computer networks can be accessed through a simple personal computer that has a modem (a special piece of hardware, that allows computer signals to travel over phone lines) attached to it, a phone jack nearby, and is using a computer communications program, that can be obtained free.

At least one computer that is a part of a computer network must have

a special kind of communications program, that allows it to act as a host[2] computer. A host computer coordinates the activities of computer users who call into it. It receives mail and forwards it to the appropriate place, provides a place for a database to be stored, and so on. The host computer can be a five hundred dollar personal computer, a fifty thousand dollar computer at an institution such as a university, or a computer that falls in between.[3]

Since the concept of computer communications networks was introduced several forms of computer networking have emerged. Most forms of computer communications (e.g., electronic mail, computer bulletin boards) revolve around the idea of sending messages from one computer to another, or from one user of a computer to another on the same system. These applications use similar hardware and software, and, not surprisingly, overlap exists in the provision of these services.[4]

A computer network links two or more computers in different locations. One computer sends signals to a device called a modem, that is attached to or inside the computer. The modem changes the signals so they

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[2]I have used the term host here, as it is commonly used in literature about computer networking. However, in discussing feminist computer networks, hostess, or a non-gendered term may in fact be more appropriate.

[3]More detailed information about hardware and software required for computer networking is available in Appendix #1.

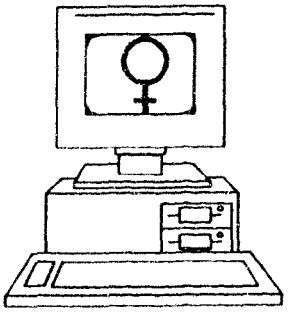
[4]When computer networking first emerged, the range of services available on a given type of computer network was very much tied to the type of computer hardware (i.e. mainframe or microcomputer) that served as a node. However, as the price of computers has fallen and microcomputers have become more sophisticated, many early distinctions are blurring. Many of these terms are still in common use, although the distinctions on which they were based are no longer accurate.

can travel over phone lines, and then sends the signals over phone lines to another modem. The second modem converts the signals back to computer signals and passes them along to computer number two. This process is fast, and if special phone lines designed for computer communications (called value added carriers) are used to send out of town messages, it can cost less than long distance telephone calls. Figure 2.1 (p. 21) presents a graphic view of the components of a computer network. Figure 2.2 (p. 23) presents a graphic view of the process of communicating via computer network.

Computer networks can be put to several uses. Mail that would normally be sent through a postal system can be sent via computer. This is called electronic mail, or e-mail. Computer networks can be used as community bulletin boards, where public notices of all sorts are posted. Along similar lines, computer conferences consist of messages or postings on a particular topic that, unlike early computer bulletin boards, are organized and linked. Another function of computer networks is document transfer. A document as small as a letter or as large as a book can be created on a personal computer, and sent over a computer network to another location where it can be transferred to another computer, and read. Finally, data bases available through computer networks allow people in different locations to share resources such as bibliographies and mailing lists.

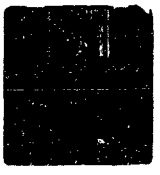
ARPAnet (discussed below) introduced electronic mail, (Licklider 1979 p. 112). In the strict sense of the term electronic mail refers to sending mail from one computer to another, where it is received by one or more people who have been specified by the sender. Like most mail sent through the postal service, it is private. Electronic mail was available only to subscribers of commercial computer networks and users of private (e.g., corporate) networks and networks that were not geographically dispersed until 1978,

Figure 2.1: Components of a Computer Network



Computer or Terminal:

A computer can be used to perform tasks on its own (i.e. word processing). A terminal can only be used for entering and receiving data in a communications system.

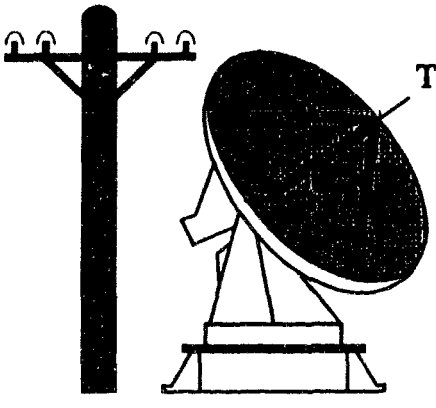


Communications Software:

A series of instructions which tells the computer what to do. Among other things, communications software tells a modem what to do.

Modem:

A device that translates signals generated by a computer to signals that can travel over phone lines, and translates them back at the other end.



The Telephone System or a Data Carrier Network:

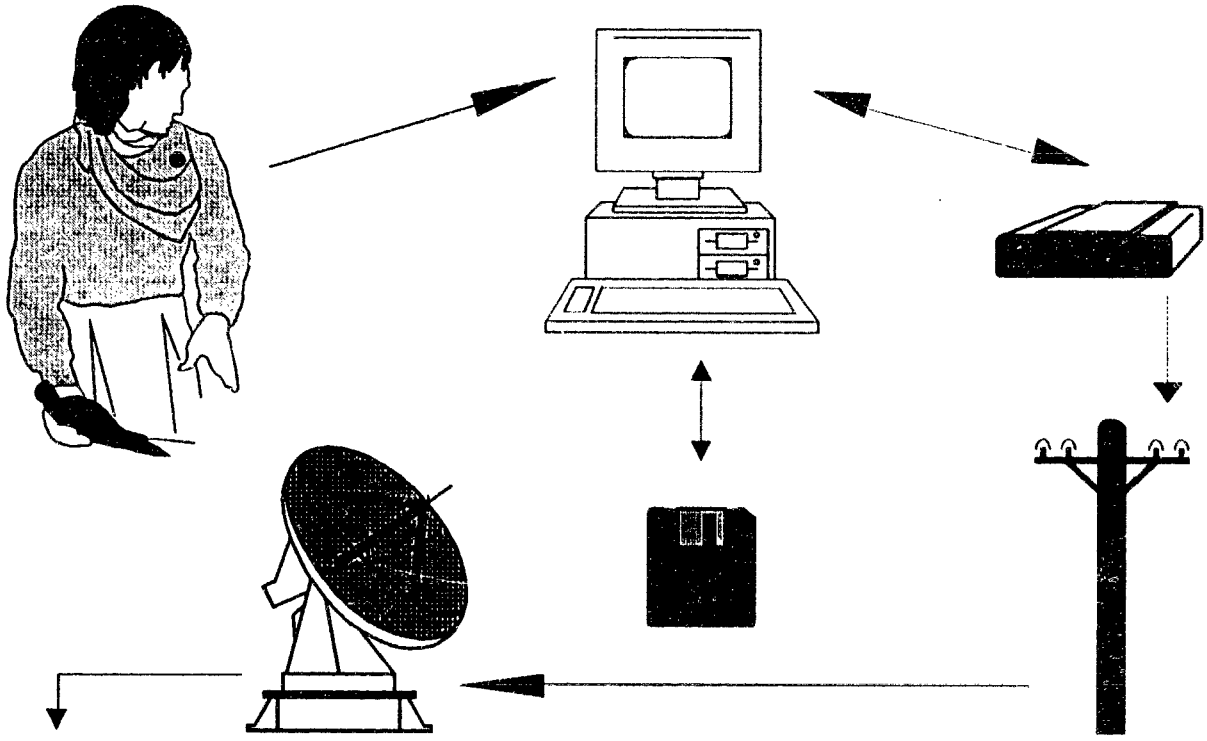
Carries electronic traffic. Regular phone lines or special lines designed for data transmission can be used.

People:

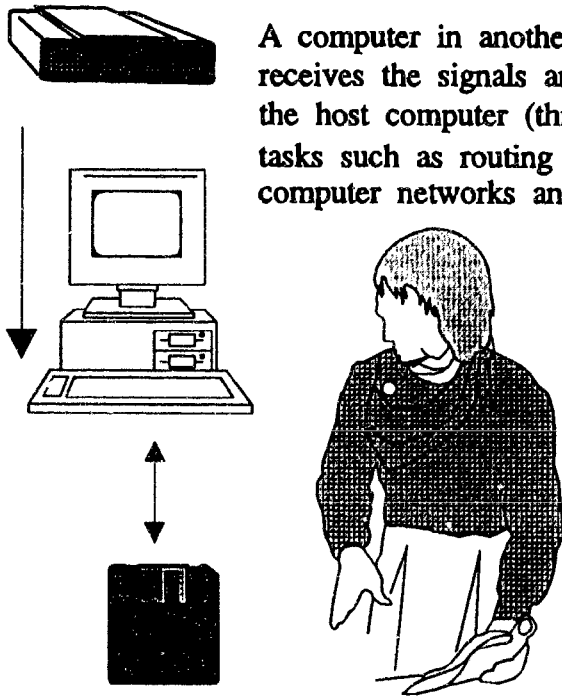
Someone on the other end to communicate with. Often engaged in trouble shooting when things don't work properly.

Figure 2.2: The Process of Communicating via Computer

A person tells a computer to find the commmunications software, and initiate contact with the modem. Next, through the software commands are sent to the modem, which result in a call being placed. The modem converts the computer's signals so they can travel over local, long distance or data lines.



A computer in another location acts as a host. After a modem receives the signals and converts them to computer signals, the host computer (through communications software) performs tasks such as routing electronic mail, passing messages to other computer networks and so on.



A person at the other end can read her mail when it arrives, or at a later time.

when two computer hobbyists introduced the first computer bulletin board system (Christensen & Suess 1978, p. 150).

Computer bulletin boards (BBS) were designed to exchange messages and computer programs. Initially they were devoted to computer hobbyists, who left messages about equipment for sale, technical problems and solutions, and exchanged "public domain"[5] or free software. As bulletin boards have evolved, their uses have become more varied. A growing number of BBS are focusing on professional or business interests, and hobbies other than computers. Bulletin board topics cover everything from the sale of adult merchandise and dating, to posting the latest news released about AIDS. Unlike other forms of computer networks, using BBS is generally free of charge. The costs of starting and maintaining BBS are paid for by the sysop, short for "system operator" (Manning, 1984, p. 8). Though present day bulletin board systems often allow users to send and receive private messages, their primary function is for the exchange and dissemination of public information.

Computer conferencing was first developed in 1970 under contract to the U.S. Office of Emergency Preparedness, that was responsible for reporting and disseminating information about President Nixon's wage-price

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[5]Computer networks were introduced to the public in the seventies by two computer hobbyists, who set up a computer bulletin board for the exchange of technical information, hints, and the sale of used equipment. They developed the first computer communications program publicly available, and distributed it for free. In keeping with their spirit, as well as their concern for public access, several other communications programs have since been developed by hobbyists, and circulated free of charge or on a donation basis. Computer programs developed in this manner are called public domain programs, shareware or freeware.

freeze. The conference system that resulted consisted of the computer counterpart of the telephone conference call, and an "on-line filing system" that stored topic specific messages that could be read and commented on by everyone who had access to the system (Meeks 1985, p. 169). Although some computer conferences are carried on in "real time," (e.g., all participants are connected to the "host" or central computer simultaneously, and messages are read and responded to almost instantly) this is less common than conference systems that allow participants to send messages to the host computer where they are stored, read, and commented on by others later.

The term "computer conference" refers to a collection of messages related to a particular topic, that remain available for an extended period. Typically a computer conference includes information about who reads and contributes to the messages, and a brief description of the topic. One feature that seems to distinguish bulletin board systems from conferences is the extent that messages are organized and the communication is structured. Conference messages tend to be more topic specific than bulletin board messages, and tend to read more like a conversation. Conference messages are often linked or cross referenced. In contrast, bulletin board messages tend to read like a bulletin board of not-necessarily related information.

Commercial communications networks available to the public typically include electronic mail, bulletin boards and conferencing, and on-line searching of data bases that contain a variety of newspaper and magazine articles, reference materials and advertisements. In addition, one network allows subscribers to carry on individual and group conversations in real time by simulating a CB radio. Subscribers also can review airline schedules for all airlines and book reservations on selected airlines, and order merchandise from selected stores.

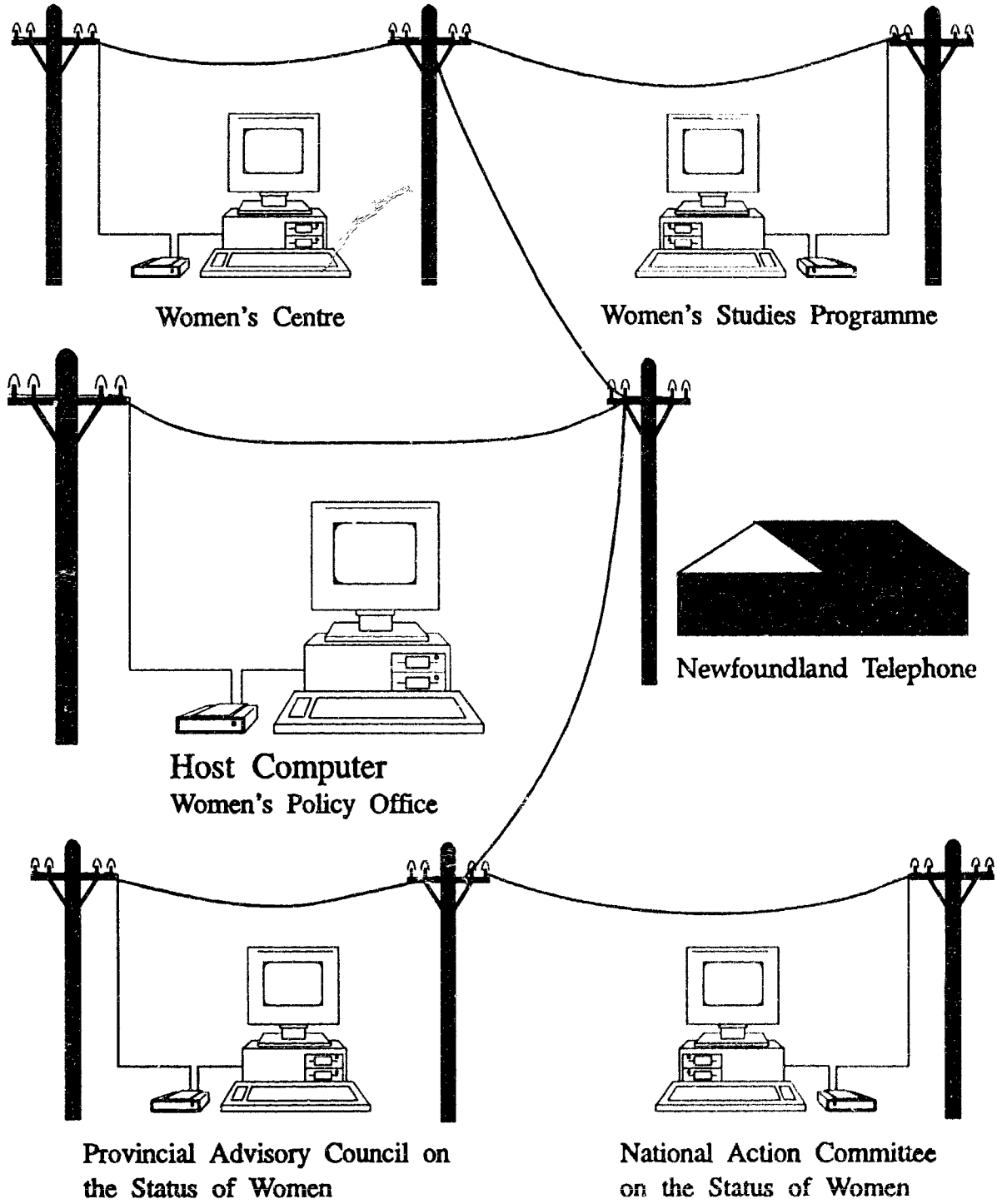
TYPES OF COMPUTER NETWORKS

As mentioned earlier, computer networks link two or more computers in different locations. The way that these computers are connected can be called the physical structure of the network. Although a range of services (electronic mail, bulletin boards, conferences, document transfer, and data bases) can be provided through computer networks, the specific services available on a particular computer network reflect social and economic decisions made about what hardware, software and physical structure are used to make up that particular network. In considering the use of computer networks for feminist community organizing, it is important to understand how social decisions affect the type of computer network, the range of services available, and ultimately, what communication and organizing options are potentially available.

Computer networks can be designed to be local, primarily serving people in a geographic area who can make local calls to the host computer (see figure 2.3, p. 26). Computer networks designed to meet local needs are typically computer bulletin board systems, that are run out of someone's home or small business on a personal computer. They are most often free of charge, (except if you call one that is out of town). This type of system is called a single node local system. The computer acts as a central node, and is responsible for passing messages between communicators.

Computer bulletin board systems are a common type of single node local network. Most bulletin boards allow users to 'post' and read public messages, send private messages (electronic mail) to one or more people specified (who also use that bulletin board), put documents on the host computer (known as uploading) or get documents from the host (downloading). Many bulletin board systems allow users to search the host

Figure 2.3: Local Single Node Network



Users at different locations in a local calling area connect to a host computer through the local phone system. Once connected to the host computer, users at all locations use software on the host computer to send and receive electronic mail and upload and download files. Users outside the local calling area can make long distance calls to the host computer.

computer for names of other bulletin board users, and some bulletin boards allow users to search public messages for a phrase specified, allowing users to locate information of interest more quickly. Although recent developments have resulted in bulletin boards that are similar to conferences, in general, computer conferencing is not available on bulletin board systems. Bulletin boards typically do not accommodate databases.

Although most bulletin boards serve people in a local area, there is a growing network of bulletin boards that 'talk' to one another, exchanging messages between computers in different locations. This type of computer network is a multi-node system, where each node is responsible for passing on messages sent to it by an adjoining node. If one could see this happen, it might resemble the child's game of leap-frog.

Perhaps the largest public (non-institutionally based) network of this sort is called Fidonet. It includes over one thousand bulletin boards worldwide. This makes it possible to call a bulletin board in Vancouver, and put a message on it for someone in Ottawa. (To do this, one needs to know the 'address' of the bulletin board in Ottawa). In the middle of the night, the computer in Vancouver automatically calls the computer in Ottawa, and deposits the message there. If all goes well, the message can be read the next day by the intended recipient. It has been estimated that the cost of sending messages in this manner is about twenty two cents per message. To cover these costs, Fidonet bulletin board operators typically charge an initial sign-up fee of five to fifteen dollars.[6]

Although the first multi-node bulletin board system (called PCNet)

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[6]From Fidonet computer conference (#86) on the Source Information Network, entry # 2, June 1988.

became operational in 1978, the idea for Fidonet and other bulletin board systems that are part of multi-node networks is usually credited to experience with a university/institutionally based computer network called Usenet, developed in 1979. De'Marrais (1984) refers to Usenet as an administrationless volunteer-maintained computer network of information anarchists. Thousands of multi-user computers (computers that allow several people to use the same computer simultaneously) located primarily in universities and scientific institutions use the same software (Unix), and regularly pass messages between nodes. It is possible to send mail from any unix system to any other unix system, providedz one knows the address of the destination system. Messages are sent in a leap frog fashion from one node to the next, until they reach the desired destination. Often calls made between two adjacent nodes are local calls. When two adjacent nodes are further apart than a local calling area, the cost of passing messages between nodes is absorbed by the institutions where the nodes are located.

To use Usenet and similarly structured systems, one composes a message, determines how it must be routed and sends the message. If the routing is wrong in any sense, the message gets sent back and the sender must again attempt to determine how it should be routed. With this type of computer network, a user at any given institution may have access to a wide range of services such as bulletin boards,[7] databases or computer conferences. However, users in other institutions who are communicating with someone through this type of network are not likely to have access to the full range of services that the local user does. These resources can only be

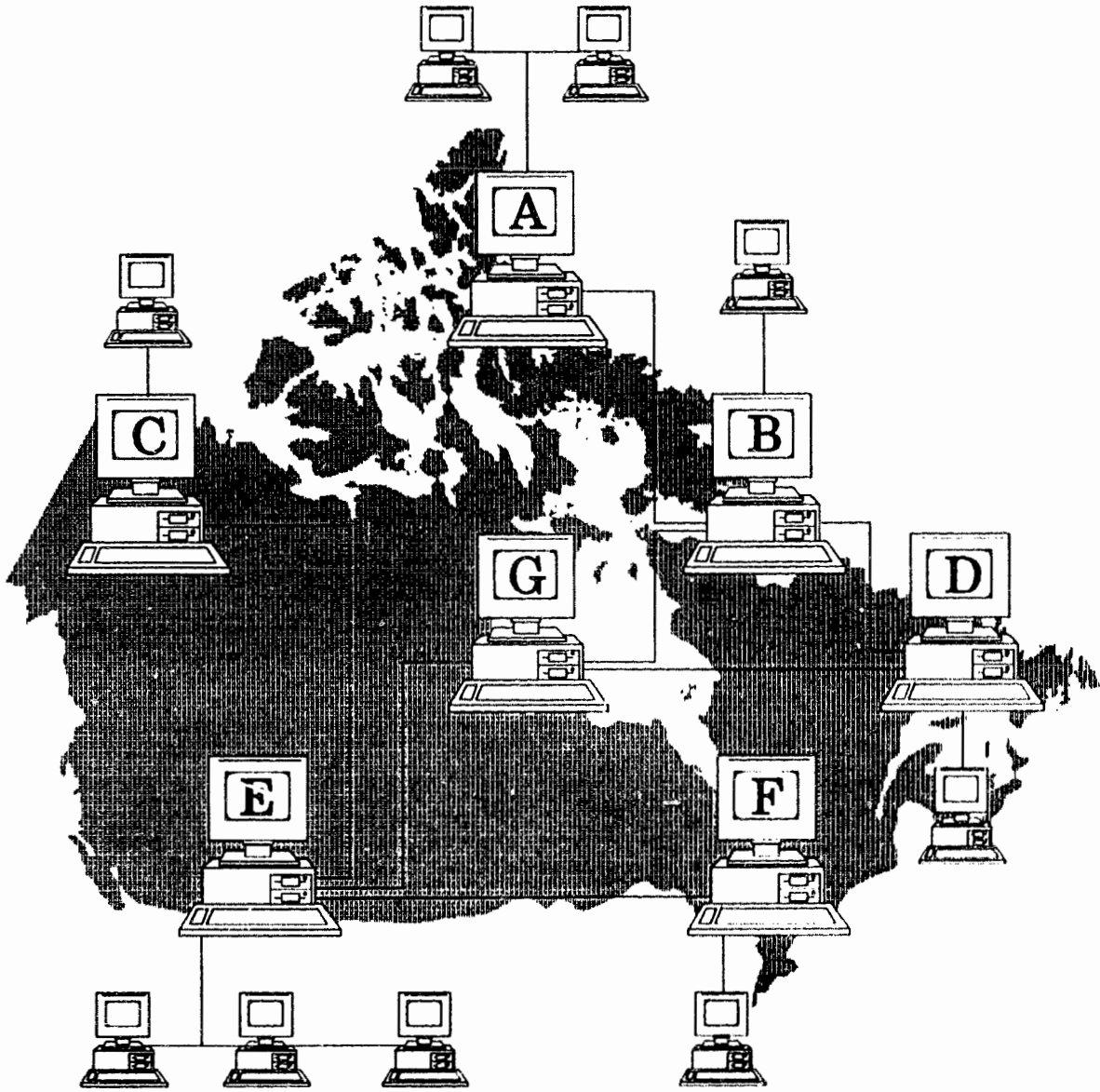
[7]Here I use the term bulletin board in its more common useage: a random rather than organized grouping of messages.

used by people with direct access to that particular computer. Consequently, the only type of computer networking that can occur on a multi-node network such as Fidonet or Usenet is electronic mail. However, a few interesting variations of electronic mail have sprung from this type of system.

Imagine four hundred people in different locations who have not met in person, but have a shared interest such as women's issues. If these four hundred people are all at institutions with computers, they could form a mailing list. A location would be designated as a central location, where all interested parties could send messages relating to women's issues. Someone at the central location would compile these messages (leaving them as is or editing them), and then send them out in a bundle to the other three hundred ninety nine people on the list (see figure 2.4, p. 30). Although I call this type of communications "bundled electronic mail," in the context of Fidonet, it is often called "echo-mail." Bundled electronic mail can be public, in the sense that it can be read by anyone (the 400 people can send it to 400 others, and so on), or it can be private: that is, distributed to a smaller group of people who agree not to forward messages. This is how some of the first feminist computer networks (many are still in existence) operated.

A major problem with multi-node systems is the routing of messages. To send public messages, the routing to the central computer must be known. Private messages are sent directly to the desired individual, rather than the central address for the mailing list. Just to put this in perspective, when this study began, one friend's address was tekig4!kimh@tektronix.uucp; another friend's address was ehall%rondo@RAND_UNIX.ARPA. There was little in the way of convention when it came to computer addresses, and, if the address was wrong (capitalization, syntax or punctuation) the message was returned. Recent technical developments (Internet and new message transfer

Figure 2.4: Wide Area Multi-Node Network



Users connect to a local node and use the electronic mail software running on their local node to send and receive messages. It is possible to send messages between most nodes. The address from one node to another reflects pathways between those nodes. To run a bundled E-mail group, one node (i.e. G) is designated as a host node. Mail from all nodes is sent to that node, bundled and redistributed. Some nodes (i.e. E and B) forward mail to other nodes.

protocols) have fixed, but not eliminated addressing problems. To make matters more complicated, if one computer specified in the routing (address) changes its connections to other computers, (this sometimes happens without warning) a new address must be determined. The major advantage of a multi-node network is that it usually costs participants nothing to send messages thousands of miles away.

So far, the types of computer networks addressed have been local and wide area computer networks that are low cost or free, but do not accommodate computer conferences or databases. The computer networks that do accommodate conferences and databases are typically single node wide area systems, usually run commercially for profit. People who use these systems can generally call a central host computer from anywhere in North America, over special telephone lines called value added carriers, or data carriers (see figure 2.5, p. 32). Value added carrier lines are designed especially for computer use, and are billed at a lower rate than voice phone lines for long distance. To take advantage of value added carriers in Canada,[8] a special line must be installed where the host computer is located, at a cost of around $2,500.00 (Personal Communications, John Bradley, October 1988).

Although local and multi-node bulletin board systems are usually run on small, relatively inexpensive computers such as those we are beginning to

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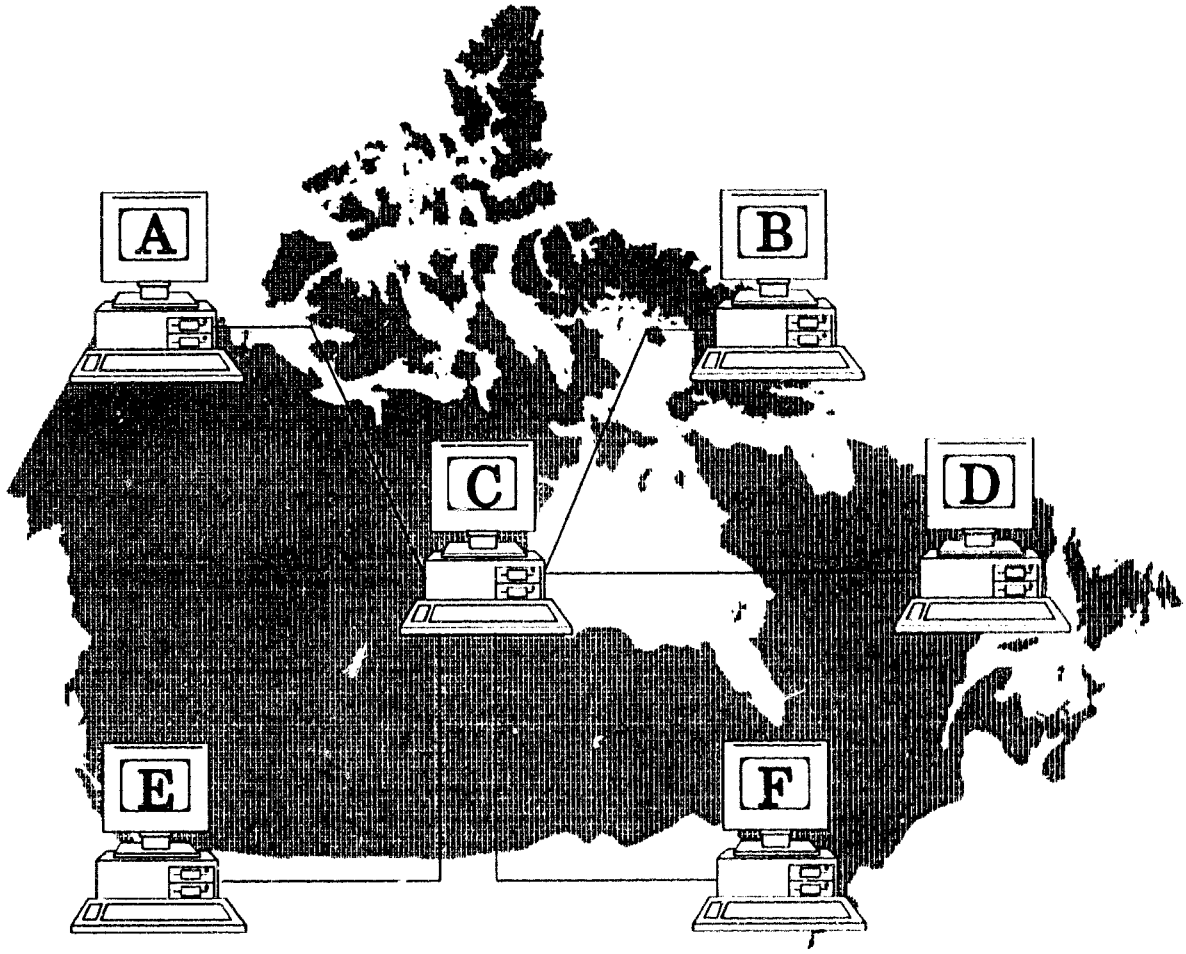
[8]In the U.S., one of the major value added carriers began a service called PC Pursuit. The service was targeted towards microcomputer hobbyists, who can use the data carrier lines for an unlimited amount of time in the evenings for a flat fee of twenty five dollars per month. Canada's major value added carrier has begun making its services more accessible. It is possible that Canadians will soon have a service such as PC Pursuit available.

Figure 2.5: Wide Area Single Node Network



Users at all sites place calls (through regular long distance phone lines or data lines) to node C. Once connected to node C, users at all sites use software on the computer at node C to send and receive electronic mail, participate in computer conferences, search databases and upload and download files.

see in women's centres, commercial computer networks are run on larger more expensive computers. One difference between the smaller and larger computers (these differences are blurred as personal computers become more sophisticated) is that the larger computers allow several people to use them simultaneously. They may also have the additional space for storing information that is required for computer conferencing and databases.

In addition to the types of services discussed so far, mainstream commercial computer networks also offer home shopping, stock market and sports information, electronic encyclopedias, newspapers and magazines, and a variety of other services. Network users are charged an initial sign up fee and a per minute usage fee, and occasionally, a monthly minimum. A computer network can be organized in this fashion (a single node wide area system), but run on a non-profit basis, as is true of PeaceNet. Information exchange is targeted towards a different population from the commercial networks, and non-profit operation substantially reduces costs.

A Brief History Of Computer Communications Networks[9]

Although the first computer network was not operational until 1968-69, in some senses the development of computer networks can be traced back to 1959, when development of the world's first time-shared computer system began at the Massachusetts Institute of Technology (MIT). Before the development of time-sharing, large, expensive computers could only work on one task at a time. The result was that computer time had to be booked

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[9]In reading this section and the next, it is perhaps useful to keep in mind that microcomputers became available in kit form in 1975, and in a fully assembled ready to hook up form only in 1977. The first commercial computer program designed for a personal computer and an inexperienced user was introduced two years later (Blissmer, 1985).

ahead, and turn-around time for completed tasks was slow. Computer networking made no sense prior to the development of time-sharing, as the act of sending or receiving information would have tied up the entire computer system.

The project to develop time-sharing took place between 1959 and 1962 and resulted in a working model of a time-sharing system known as the Compatible Time Sharing System (CTSS). The project was funded by the United States Office of Naval Research and the Advanced Research Project Agency (ARPA), that was housed within the Department of Defense. Although other time-sharing systems were under development then, the CTSS development yielded new goals and standards for the development of time-sharing systems. In keeping with the military interest in this technology, the goals of the CTSS project included the development of sophisticated control over user access to the system (including files on the system), and an automatic cost accounting system for billing customers (Denicoff, 1980). Before this time computer use had been informally restricted (if at all), and access to the work of others on the computer was unhindered (Levy, 1984).

In 1963, a decision was made to extend the time-sharing research project at MIT. The expanded project, known as MULTICS[10] had as its goal the explicit definition of the desirable features for a time-sharing system, and the construction of a system that would incorporate these features. Bell Labs with ARPA became both a funder of and participant in the MULTICS project that took place between 1963 and 1968. It yielded a reliable computer that

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[10]MULTICS stood for Multiplexed Information and Computing Service (Denicoff, 1979, p. 372).

could simultaneously support the activities of between forty and fifty users. The success of the MULTICS system helped prove the viability of time-sharing computers; by the end of 1968, over forty commercial time-sharing computer system were in operation in Washington D.C., in the United States (Denicoff, 1980).

During the same period, Paul Baran, working at the RAND Corporation under contract to the U.S. military developed a method of transmitting data called packet switching. Packet switching breaks information sent through a computer terminal into numbered packets, and transmits them in bursts over a web-like data network. The packets are reassembled as complete messages at the receiving end. Each packet can travel many different routes, and packets can be sent several times. Packets are sent over the first open path, which could be a straight line or a large circle. The result is that messages can be sent over a computer network, even if over half the network is down (Baran & Emerson, 1979). Value added carriers (such as Datapac in Canada and Telenet and Tymnet in the U.S.) are commercial packet switching networks. Although the concept of electronic networking is usually attributed to L.G. Roberts of ARPA, who in 1968 defined networking as a set of autonomous, independent computer systems, interconnected to permit resource sharing between any pairs of systems (Denicoff, 1980), it appears that the U.S. military may have been working on this project before 1968.

The concept of electronic networking, as conceived by Roberts was based "on the hope that science itself would profit, that real improvements in scientific achievement could result from greater human-to-human computer communications among researchers working in similar areas" (Denicoff p. 373, 1980). However, in discussing packet switching (the first computer

network developed, ARPAnet was also the first packet switching network), Baran and Emerson (1979) argue that the goal of packet switching "was not to improve the state of the art of computer communications networking, but to assure military survivability" (Baran & Emerson, p. 30, 1979).

With the joint mandate of creating an ARPA network between ARPA sponsored university and think tank research centres that would employ the new technology for research concerned with furthering network development, and demonstrating that the global cause of better science would be enhanced through the networking philosophy, development of the ARPA network began. Staff from a private firm (Bolt, Beranek & Newman), the Stanford Research Institute, Lincoln Labs (at MIT), UCLA, and the University of Utah joined to work on the ARPA network (Denicoff, 1980).

The concept of an electronic network became a reality in 1968-1969, when four University computer systems were linked, producing the first wide area multi-node computer network. Electronic mail could be sent between individuals working on different computers in different locations. By 1975, the ARPA network had developed to a system of fifty host computers with 38 sites in the continental United States and Hawaii, and connections in Norway and England. In 1976, management and maintenance of ARPAnet was transferred to the United States Defense Communications Agency. The same year, more than ten commercial firms were marketing computer networking services to corporate clients (Denicoff, 1980).

ARPAnet was not the only computer communications effort to grow out of the United States military in the late sixties and early seventies. At the same time that development and implementation of ARPAnet was occurring, the U.S. Office of Emergency Preparedness (OEP) in the Executive Office of the President formed a Systems Evaluation Division (SED). The

SED engaged in operations research, that was directed towards the development of computer tools for managing emergencies. One SED project involved the exploration and use of Delphi polling and forecasting, carried on between users in different locations connected to the main OED computer via computer terminals and phone lines.

Without any formal authority to do so, a programmer working for the SED (Murray Turoff) suggested to another programming group in the OEP that some changes should be made to the OEP computer system. These changes resulted in the possibility of implementing an on-line Delphi poll. Again, lacking formal authorization Turoff began to implement an automated version of Delphi polling on the OEP computer system. The system was implemented in about six months, the work towards its completion being carried out between official tasks (Hiltz & Turoff, 1978).

In the spring of 1970 an experiment with the computerized Delphi system began. For seven weeks twenty people from around the United States engaged in on-line structured discussions, before members of the OEP found that not only was their computer system being used for unauthorized purposes, but it was being used by people outside the Washington D.C. OEP. Amidst organizational and political struggle, the experiment with the computerized Delphi system was allowed to run to its end, for a total of thirteen weeks. Turoff was publicly reprimanded, however his superior unofficially provided him with the resources to continue work on the project (Hiltz & Turoff, 1978). This experiment appears to have been the first example of a single node wide area computer network, where software was provided for more structured communications than electronic mail.

In 1971, when the U.S. president instituted a wage-price freeze, a real need arose for a system such as the one on which Turoff had been

working. Additional work was carried out on the previously developed computerized communication system. The new system, called EMISARI (EMISARI stood for the Emergency Management Information System and Reference Index) was used to coordinate communications between the federal and regional OEP offices during the wage-price freeze. Development of EMISARI continued after the wage-price freeze. New features included an incident reporting system called IRIS (used to alert branch offices about incidents such as violence during a strike), and features that allowed data on the system to be interrelated. The system was used subsequently by the OEP for monitoring and managing crises, including the voluntary petroleum allocation program (commonly known to Americans as the gas crisis), and a truckers' strike. The SED and OEP were eventually dissolved, and their functions were taken over by newly created departments, that still use the system to manage the American public (Hiltz & Turoff, 1978).

Between 1968 when ARPAnet first began, and 1976, other computer networks were implemented in a variety of institutional settings. Notable among them was a system similar to the EMISARI system, designed by Bell Northern Research (a wing of Bell Canada), and implemented on their mini-computer. A unique feature of this system was its bilingual user interface. Upon accessing the system, users could indicate a preference for French or English dialogue with the computer. Subsequent questions or choices were presented to the user in the selected language. However, once text was entered into the system, it remained untranslated (Hiltz & Turoff, 1978).

Also built on the early Delphi/EMISARI model was the Institute for the Future's FORUM computerized conferencing system, begun in the early seventies. The Institute for the Future initially focussed on real-world trials of computer conferencing and the development of methodologies for

monitoring computerized communications. In addition, they engaged in the evaluation of the strengths and weaknesses of emergent computer communications technology (Hiltz & Turoff, 1978). By 1979, the system developed at the Institute for the Future was being managed by a corporation as a business network (Kliener & Davis, 1979).

Finally, the Electronic Information Exchange System (EIES) began operation in October, 1976. With funding from the National Science Foundation in the United States, EIES was organized by Murray Turoff, who left his previous military employer after departmental reorganization occurred (Hiltz & Turoff, 1978). EIES quickly gained a reputation as "probably the most influential [system] in developing social contexts in which people will find each other through computers" (Kliener & Davis, p. 117, 1979). Access to the EIES system (EIES was the site of perhaps the most extensive analyses of users of computer systems) was granted on an application basis. Limited funding was available for a three month trial period; otherwise, "people with a reasonable idea about using the system" (Kliener & Davis, p. 117, 1979) could purchase membership slots for sixty-six dollars a month, plus an hourly use fee. Or, for one hundred thousand dollars, groups could buy the hardware to create their own EIES system, with software and maintenance costs extra (Kliener & Davis, 1979).

The Use Of Computers For Social Change Work

Around the same time ARPAnet became operational, Lee Felsenstein met Jude Milhon and Efrem Lipkin in Berkeley, California. All three were both computer programmers and activists. Although they had differing beliefs about the extent that computers could be used in the context of activism, they began a discussion on the topic that lasted for several years

(Levy, 1974; Interview with Lipkin & Milhon, June 23, 1988). By 1971, Felsenstein had begun working with a group called Resource One, that was part of a larger group called Project One (an umbrella organization of Bay Area groups involved in fostering community activism).

Project One had been started by an architect-engineer to meet three social goals. First, it was to act as a mechanism for giving unemployed professionals something to do with their skills. Second, it would help the community, and third, it would contribute to dissipating the aura of elitism and mysticism surrounding technology. The Resource One collective (only one of several projects housed in the Project One warehouse in San Francisco) consisted of people who believed "that technological tools can be tools of social change when controlled by the people" (Levy, p. 164, 1984). Resource One had convinced the Transamerica Insurance Corporation to lend an unused time-sharing computer to the group, so the group could engage in an ambitious combination of projects including gathering alternative mailing lists, conducting computer education, embarking in economic research projects, and demystifying computer technology for the public.

Although the Resource One computer had been intended to serve the community, anyone wanting to use the machine had to plead their case before the Resource One collective. This failed to promote the hands-on experience Felsenstein had hoped for. At around the same time Felsenstein became disenchanted with the bureaucracy of the group, Efrem Lipkin (who had been alternately working and living in New York and California since initially meeting Felsenstein a few years earlier) resurfaced in California and got involved with Resource One. Lipkin shared many of Felsenstein's feelings about how ineffectively the Resource One computer was being used. He began thinking about taking computer power to the streets, and got

Felsenstein hooked on the idea. The result was that Resource One formed an offshoot of Project One with some funding from that project (Levy, 1984). Initially, the computer remained at Project One, and was accessed through terminals in Berkeley. Eventually the off-shoot project acquired its own computer in Berkeley, which became the Community Memory Project (Clement, personal communication, August, 1991).

Community Memory advocated community based information centres rather than computer terminals in private homes. They also criticized the commonly found vertically organized computer systems (designed primarily for the delivery of pre-selected information) in favour of programs accommodating horizontal flows of information between users, as well as system managers and system users (Creative Computing, 1975). In 1973 a three terminal Community Memory system was implemented and kept running for fourteen months. Terminals were located in a Berkeley music store, a "hippy" hardware store, and a library in the Mission (a poor area of San Francisco). Anyone was free to place messages on the Community Memory system, or seek information from it (Athanasiou, 1985). Messages on the system were indexed according to key words by authors, and could be located by key words by subsequent readers.

San Francisco's Community Memory was not the only computer project of the time based on activist ideals. A similar project (sometimes called INFACT) was implemented in Vancouver, British Columbia between 1973-1975. Similar to the San Francisco project, in Vancouver terminals appeared in a public library and a community information centre. Unlike the San Francisco project, the Vancouver Community Memory was run on a university computer, with time donated by the university. Although the Vancouver implementation was more problematic than the California

implementation, the range and breadth of items entered into the system was similar to the U.S. implementation. Both experiments were ended because of problems with computer support. In Vancouver, the donated computer time ran out, and project funding (that covered rent and personnell) ended. In California, the project was halted[11] because it was felt that the computer it was originally run on could not support the type of expandable, modular, inexpensive system the designers had originally envisioned (Emerson, 1978).

Another project aimed at bringing computers to the people was the People's Computer Company. In October of 1972, a small "for profit" programming company in San Francisco called Dymax published the first issue of The People's Computer Company Newspaper, based on the model of the Whole Earth Catalogue. The success of the paper led to a non-profit spin-off of Dymax called The People's Computer Company (PCC), that included the publication of the PCC paper, and the operation of a computer centre in a Menlo Park, California shopping mall. PCC ran classes and offered off-the-street computing for fifty cents an hour to anyone who was interested. When microcomputers appeared on the commercial market, PCC provided free information to prospective buyers. A group of volunteers connected with PCC developed and organized PCNet in 1978. PCNet was the first wide area multi-node computer network catering to personal computer users.

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[11]Depending on the source consulted, San Francisco's Community Memory either disbanded after the initial project in 1975 (Athanasiou, 1985) and reformed with many of the original members as well as some new members "years later," or, never really ended (Emerson, 1978). Independent of which is true, Community Memory, as of this writing, exists in Berkeley, California, with some of the original members.

EXPANSION OF COMPUTER NETWORKING

Turoff (1978, xxix) wrote that the first computerized conferencing system was created in 1970, "and the use today is limited to tens of organizations and a few thousand people." Just over a decade later, one commercial computerized networking service alone reported five hundred thousand subscribers (Gerber, 1989). Clearly, computer communications and networking technology has been both rapidly diffused and adapted in North America.

Although ARPAnet introduced electronic mail, use of ARPAnet was restricted to people at U.S. military funded sites for many years. Electronic mail was available only to people at ARPA sites and subscribers of single node wide area computer networks such as EIES and users of private (e.g., corporate) networks until nineteen seventy-eight. The introduction of the first commercially available microcomputer in 1975 (Levy, 1984), and the development and free distribution of computer bulletin board software in 1978 (Christensen & Suess, 1978), hastened the adoption of computer networking technology.

By the early nineteen seventies, a predominantly (if not entirely) male cultural phenomenon known as 'hacking' had evolved in North America (Levy, 1984). Levy traces the term to a student club at the Massachusetts Institute of Technology (called the Tech Model Railway Club, or TMRC) in the late nineteen fifties, referred to "a project undertaken or a product built not solely to fulfill some constructive goal, but with some wild pleasure taken in mere involvement" (Levy, p. 23, 1984).

During the nineteen sixties, many TMRC members shifted their attention away from hacking model railway equipment, and instead became absorbed in the world of computer hacking. Many of these students became

obsessed with computers (a common result of this obsession was to flunk out of MIT), and were hired to work on projects such as the development of time-sharing computers and ARPAnet. Eventually students would be nudged out of MIT, relocating to other parts of the country (particularly California), where they kept in touch with friends at MIT via ARPAnet. As this happened, the term 'hacking' began to assume a universal meaning of sorts, referring to obsessive behaviour with computer equipment (Levy, 1984).

By the early nineteen seventies, many people who had worked in the military, government, scientific, and engineering environments (including academia) had been exposed to computers. Many of these people were anxious to have greater access to computers than their work environment afforded, and many of them were hackers. Before 1971, when the first microprocessor chip was marketed commercially, the cost of building or marketing a computer for home use was prohibitive. With the availability of microprocessors (microprocessors are in a sense the backbone of microcomputers) the potential of building a small computer existed.

Although many hackers experimented with building small computers for personal use between 1971 and 1975, it was a small company in New Mexico that produced the first successful commercially available microcomputer. MITS (MITS stood for Model Instrumentation Telemetry Systems) had begun as a model rocketry company, moved into test equipment, digital clocks, and small microchip based calculators. When companies such as Texas Instruments entered the calculator market and manufactured their own chips, MITS was left close to bankruptcy. As MITS approached bankruptcy, MITS' founder, who had worker with computers while in the Air Force, speculated that the introduction of a commercially available personal computer (in kit form) could save his company.

Simultaneously, an editor of Popular Electronics magazine was looking for a cover story that would get him a raise; the two met, and an advertisement for MITS' Altair computer in kit form (the Altair at the time only existed as a prototype) appeared on the January 1975 cover of Popular Electronics (Levy, 1984).

Although MITS expected to sell only four hundred kits in the first year (at a price of three hundred ninety seven dollars for a basic kit), within three weeks of the appearance of the article in Popular Electronics, MITS had repaid all debts and banked a quarter of a million dollars. Once an Altair kit had been obtained from MITS (MITS remained back ordered for over a year), the user had to figure out how to put several bags of parts together. The parts were not pre-tested and sometimes did not work; soldering and a great deal of innovation were required. Once a kit was put together, computer programs were entered by switches in a base eight number system (there was no keyboard). If the program ran correctly lights on the front blinked back in base eight; there was also no display screen. Finally, when the machine was turned off, everything was lost (Levy, 1984).

Although the Altair was a commercial success, several people realized its limitations. Almost as soon as it appeared various people began designing microcomputers that would be more useful. One of the next computers to enter the market (also in kit form) was the Sol, designed by Lee Felsenstein. Unlike the Altair and others, the Sol was a complete computer, with a built in keyboard and a display screen (Levy, 1984). In 1976, three companies (Apple Computer, Radio Shack and Commodore) either announced or made available completely assembled personal computers (Blissmer, 1985).

Two months after the Altair was introduced a meeting was held in California that resulted in the formation of the Homebrew Computer Club--

the first computer user's group in North America. Its function was to bring people building computers together to exchange information, ideas and to help with projects (Levy, 1984). Members quickly found that it was also a good place to exchange computer parts and software, that at the time were not commercially available for microcomputers. Three years later, computer clubs had sprung up all over North America, alongside the growing microcomputer market. Although complete microcomputers were available, their use was still limited very much to computer hobbyists and hackers. Each machine that came out required its own software. Software was often written by the end user, or obtained free from another owner of the same brand of computer.

To generate material for a computer club newsletter, Ward Christensen came up with the idea of creating a computerized bulletin board.[12] Like the face-to-face computer club meetings, it was intended to serve the needs of hobbyists and hardware enthusiasts (Christensen & Suess, 1978). Before the advent of microcomputer bulletin board systems, computer to computer communications took place between two large time-sharing computers (ARPAnet), or between a terminal and a large time-sharing computer (such as EMISARI or EIES). Access to such systems was restricted, and control of communications was centralized. Although decentralized computer communications systems were possible prior to the development of microcomputers, with the exception of Community Memory,

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[12]Although Kleiner and Davis (1979) refer to an article about PCNet (a network for Commodore PET computers), and Christensen and Ward (1978) also mention PCNet, Townsend (1984) credits Christensen and Ward with the first microcomputer bulletin board system.

none had been implemented. The introduction of microcomputer based bulletin board systems accommodated the development of a non-profit non-institutionally based computer communication network.

In 1977, an article in a personal computing magazine[13] explained plans for PCNet; a personal computer network that would be decentralized, with no central switching computer. The author of the article explained that this was a political decision, as decentralized networks are harder to control (Kliener & Davis, 1979). Caulkins (who organized PCNet) saw it as a way of "increasing the 'grassroots' communications bandwidth-- the amount of information flowing between people under their direct control, unmodulated by larger organizations with various axes to grind or sell" (Athanasiou, p. 43, 1979).

The resulting network, PCNet, was a nationwide electronic mail system for Commodore Pet personal computers. PCNet appears to have been implemented sometime in 1978 after the introduction of Christensen's and Suess' computer bulletin board in Chicago.[14] PCNet was run by a committee of volunteers through the People's Computer Company (Kliener, 1981). Kliener notes that by 1981, other programs had begun to appear that were built on the same model, but using different rules for moving messages

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[13]The article, by David Caulkins appeared in the October-November 1977 issue of Personal Computing, that appears to have been a short lived publication that didn't make it into many libraries. Mention of the article is found in Kliener and Davis (1979), along with mention of another article by Caulkins which appeared in Co-Evolution Quarterly, sometime prior to 1979.

[14]Very little information exists about PCNet. It appears to have ceased operation sometime after 1981. This was probably related to the fact that it was designed for Commodore PET computers, which saw a decline in sales as other personal computers were introduced commercially.

between computers. Although the PCNet committee was attempting to set standards for this type of network, they appear to have failed.

The idea of a network based on the PCNet model spurred the development of similar systems, including many that outlived the original PCNet. Another early implementation of this idea was the CBBS, standing for the Community Bulletin Board System. CBBS (still in operation) was described in 1979 as an electronic mail system that "allows short messages to be easily distributed within a local area" (Athanasiou, p. 42, 1979). In 1979, CBBS had been implemented in eight U.S. cities (Athanasiou, 1979).

Based on a concept of decentralized networking similar to that articulated in relation to PCNet, Usenet (probably the largest computer network in the world) did not spring from the desire to bring computer access into the home. Instead, Usenet grew out of workplace access to a computer system (Unix) that was developed in a largely unorganized fashion by hackers who constantly modified the system. Usenet was originally conceived as a research project by two workers in Bell Labs in 1969. Throughout the 1970s Unix was licenced almost exclusively to universities, since AT&T was prohibited from competing in the commercial computer business (PC Week, 1988). Perhaps consequently, Unix has never been supported by AT&T as a profit-oriented product (Waite, 1987).

Unix is based on the notion that the best way to meet a computing need is to add a few simple, general commands (Franklin, 1987). When several simple commands are combined, a sophisticated task can be accomplished. However, in order to be useful, the user must rely on extensive knowledge of both the commands and how they work together. Consequently, Unix has a reputation of being technically sophisticated at the expense of user friendliness. Successful use of Unix depends on memory, rather than

intuition (Waite, 1987). Its user interface is not well suited for anyone who is a non-programmer. Unix development appears to place the convenience of system developers above the convenience of users. Many of the difficulties with Unix derive from the environment surrounding its development: "a research environment in which each researcher who needed a command just wrote it. There were no standards committees or formal reviews before a command could be installed on the system" (Franklin, p. 21, 1987). Compounding difficulties, beginning in the late 1970's funding for development work on the Unix system was granted to the University of California at Berkeley. This led to additional system incompatibilities (Franklin, 1987).

In 1979, another important development occurred in relation to Unix. Two graduate students at Duke University (in North Carolina) decided to try hooking two Unix based computers together, to facilitate the exchange of information within the Unix community. A third student from the University of North Carolina wrote what has become known as the news (or netnews) software, that forms the keystone for Usenet (Spafford, 1991a). Unix news software provides ways for users to access, read and send messages (called articles) anywhere using the unix news software.

Development of Usenet has proceeded very much like earlier development of Unix; it is constantly modified by programmers. In 1980 the news programs were rewritten and made publicly available, free of charge. In 1982, the programs were again revised to accommodate a better organization of topical newsgroups and the growing number of sites receiving unix newsgroups (Anderson, Costales & Henderson, 1987). By 1984, the increasing volume of mail had become problematic. This led to the addition of a feature that would allow moderated newsgroups, inspired by ARPAnet

mailing lists (before this time all usenet content was unmoderated). In 1986, another revision of netnews made possible a revised naming structure for newsgroups. Developments since 1986 have focused on how users reading usenet news can 'process' the material they receive over the network (Gilmore & Spafford, 1991). In other words, recent changes have been focused on a user's ability to select and manipulate what they see and how they see it. By 1987, over five thousand sites were participating in Usenet, with over one hundred fifty thousand readers. Most sites are in North America. However Usenet is growing in Australia, Asia and Europe (Anderson, Costales & Henderson, 1987).

Unlike most personal computer based bulletin board systems or commercial computer networking services (see below), Usenet is not controlled by a single person or group who establishes policy and rules for use, and maintains the message base and equipment. Usenet requires no membership screening, no dues, and boasts little organization. Often described as a grass roots network based on controlled anarchy, the costs of running Usenet are absorbed by the institutions where Usenet sites are located. Usenet is viewed as a valuable source for the dissemination of knowledge, and an aid to researchers (Anderson, Costales & Henderson, 1987).

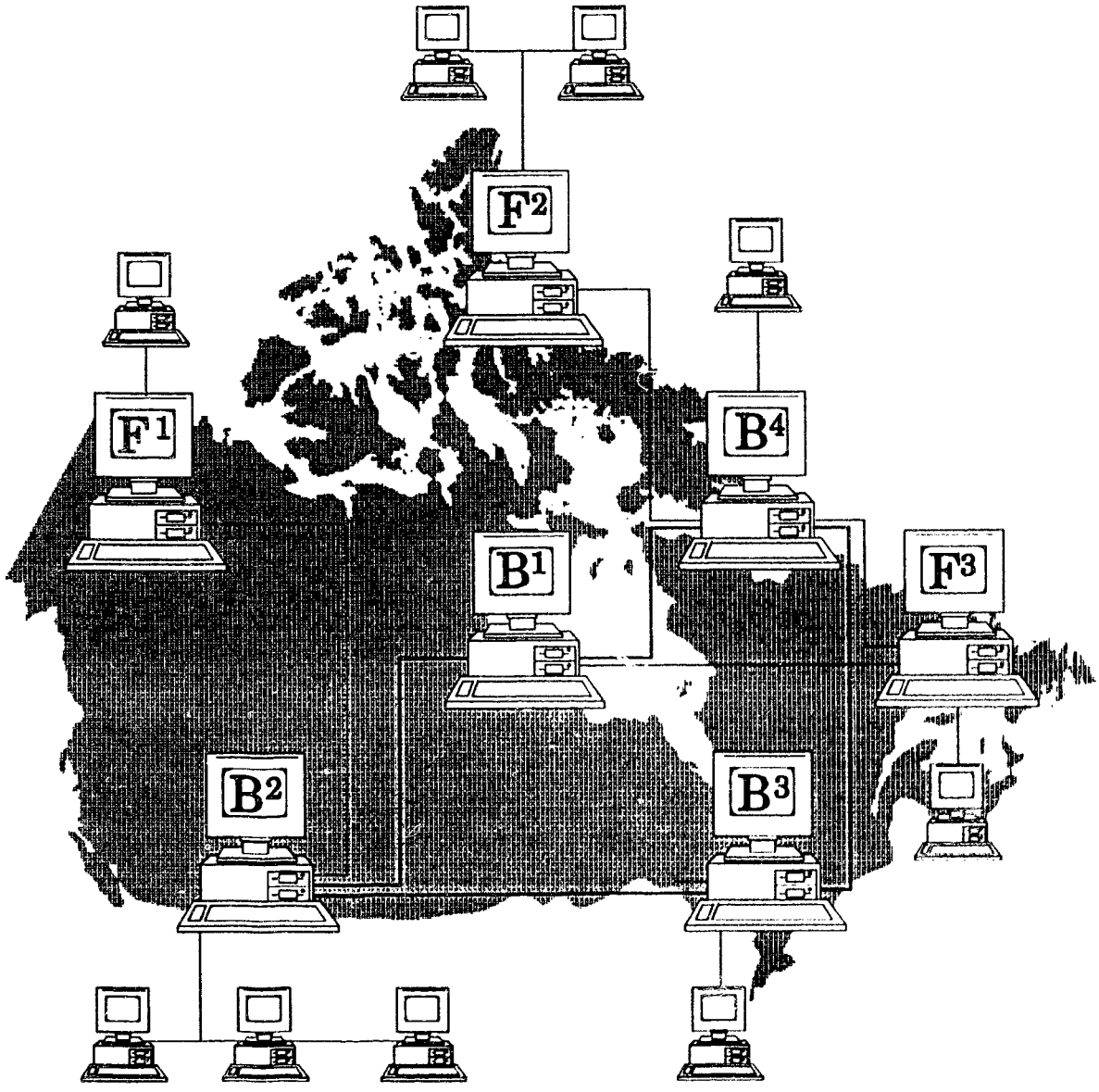
Usenet can be thought of in terms of a series of layers. Users at an institution are connected to a computer running the netnews software through a variety of methods, including a direct physical connection, cables, a modem and phone lines, or a local area network. The next level is a network (such as ARPAnet or UUCP, that is similar to ARPAnet but designed specifically for Unix machines) that manages the transfer of message files between sites. The netnews software (designed to run with

minimal attention) manages the tasks associated with moving information between various sites throughout the network. Although theoretically a given batch of messages could be sent directly between any two machines in the Usenet system, this would be both costly and slow if every site had to send articles to every other site. To avoid these constraints, each Usenet site communicates only with selected nearby sites (Anderson, Costales & Henderson, 1987).

Some sites, called backbone sites, act as a regional clearinghouse for batches of messages. They collect messages posted from nearby sites, receive messages from at least two other backbone sites, and forward news from their region to at least two other regions. Backbone sites feed the messages collected from other sites to local sites, where they are topically organized into newsgroups (specified by the author), or distributed into individual mailboxes. Each backbone site eventually receives messages from all over the network. (Anderson, Costales & Henderson, 1987). Figure 2.6 (p. 52) provides a graphic view of Usenet organization. Unlike bundled e-mail, where messages can be chronologically ordered by a moderator, Usenet newsgroup articles appear at each node in an order that reflects the time required for a given message to travel from its point of origin to its destination.

Although the software that keeps Usenet working was designed to minimize centralized organization and control, over the years several conventions have evolved with Usenet's growth that keep the system running more or less smoothly. Users at any site are free to create or distribute newsgroups, however backbone sites are also free to forward or reject any newsgroup. On a network-wide basis, a number of general operating principles that cover everything from general guidelines for message structure (netiquette) to the procedure for starting a newsgroup or altering a

Figure 2.6: Wide Area Multi-Node Network (Usenet)



Nodes marked with the letter B are Backbone sites. Nodes marked with the letter F are feeder sites. All small computers represent local sites. Backbone sites collect messages from nearby sites, recevive messages from at least two other backbone sites, and forward messages to at least two other backbone sites. They also feed messages from other sites to nearby feeder and local sites. All backbone sites eventually receives messages from all over the network. Users at all sites use similar software. Message are received in a different order in all locations.

newsgroup's content are determined through a voluntary polling procedure.

A few newsgroups exist for administering the network. Among the topics covered in these are proposals for new groups, proposals to alter groups, discussions about how to reduce 'noise' on the network, proposals for network organizational changes (such as the new group naming hierarchy introduced in 1986), and groups where results from votes are made publicly available.

Statistics about the network itself (for example, which groups are receiving the most message traffic, who on the network is contributing the largest quantity of messages) are automatically collected and posted regularly. Participation in these newsgroups is much like participation in a co-operatively run organization where the membership at large is welcome to attend management meetings, but not required to do so.

The content of Usenet newsgroups is varied. A complete listing of newsgroups available through Usenet, (with one group listed per line) produces nineteen pages. A naming hierarchy for newsgroups incorporates the type of group, general topic, subtopic, and specific topic, or alternately, a geographical area and institutional interest. Types of newsgroups include groups dedicated to discussion of computers, science and technology, recreation, arts and leisure, Usenet news, society and social issues, free-wheeling high volume discussions, and a miscellaneous category for topics that fall between the cracks. Discussions cover every imaginable topic from rumors, job postings, inquiries about people on the network (a high-school friend found me this way), discussions about Nepalese culture, Jewish culture, women, men, gay sexuality, anything about computers, political theory, pets of all sorts and so on. Usenet provides something for everyone.

Another approach to providing "something for everyone" via computer

network, like Usenet, began in 1979. At the annual New York Computer Fair, the Telecomputing Corporation of America (a subsidiary of Digital Broadcast Company, one of the most heavily capitalized corporations in the history of the United States) unveiled The Source. The Source was the first home-terminal consumer information network put on the market in the United States (Kleiner & Davis, 1979). Often cited as the most ambitiously promoted commercial computer network, The Source was a commercial single node wide area network. It was run on a timesharing computer system in Virginia, and was initially available to its commercial subscribers through a value added carrier on evenings and weekends. Initial costs to users were $2.75 to $4.25 per hour, plus value added carrier charges and an initial sign-up fee of one hundred dollars (Kleiner, 1981).

The Telecomputing Corporation had a difficult time launching The Source. Townsend (1983) identifies several reasons for this. First, the idea of a personal information utility had never been tried with a broad base of subscribers. With only a half million personal computers sold in the United States in 1979, the user base was insufficient to support The Source. Compounding difficulties associated with an uncertain market, in its first year The Source experienced a number of problems. Response time on The Source was slow in comparison to other electronic information systems such as EIES, that was supported in part by the U.S. federal government.

In the fall of 1980, The Source was purchased by The Readers Digest Association. Reader's Digest poured millions of dollars into The Source. Reader's Digest added new features (many of these features had been promised but never delivered), and issued a new user's manual. In 1982 a new computer system capable of supporting two hundred and fifty thousand users was introduced. By 1983, there were forty thousand subscribers to The

Source. Access to The Source was available around the clock for twenty to twenty-five dollars an hour during prime time, and seven to fifteen dollars an hour during off-peak hours. Users also paid a monthly ten dollar minimum, and an initial one hundred dollar sign-up fee. In addition, many value added services (such as stock market quotes) were available at additional cost. Subscribers were required to provide a valid credit card number for direct billing (Townsend, 1983).

The Source provided a range of services that fell into four general categories: communications, business, personal, and news. Specific features included electronic mail, electronic conferencing, bulletin boards, computer user groups, newsletters, an electronic equivalent to a CB radio, stock market and commodity news, business commentaries, games, shopping, electronic quizzes and drills, movie, book and restaurant reviews, a database of UPI articles, computer programs (oriented towards business uses), airline information, and several other types of information (Townsend, 1983). All information in The Source's databases was chosen by the company, with some of it paid for by advertising. News services were censored "only because of irresponsibility of editors" (Kleiner & Davis, p. 116 1979) in terms of four letter words claimed The Source's management, who kept records of how much each piece of information was called up, but not who was calling for what (Kleiner & Davis, 1979).

By 1989, The Source was on the verge of bankruptcy. In July of that year, The Source ceased operation, and transferred its users to CompuServe Information Service, another commercial information utility that had enjoyed a more modest beginning in 1979. CompuServe began as an inhouse data processing centre and with the availability of timesharing computers moved into the computer service industry, selling time to commercial clients. To

facilitate this end goal and to avoid the difficulties associated with depending on another commercial enterprise for the provision of packet switching services, before entering the home information and personal computer market CompuServe had developed its own packet switching network. CompuServe became a publicly held company in 1975. In 1978, commercial electronic mail services were introduced to CompuServe's timesharing clients (Gerber, 1989).

Shortly after The Source began operation in 1979, CompuServe Information Service (CIS) began offering bulletin boards, databases and games targeted to computer hobbyists in twenty-five cities served by the CompuServe packet switching network. Unlike The Source, CompuServe did not allocate much money initially to advertising. CIS used its own packet switching network (this kept users' costs down), and was not dependent upon revenues generated from its personal computer users (Gerber, 1989).

By 1980, CIS was accessible to its four thousand customers twenty-four hours a day. The subscriber base reached ten thousand a year later, perhaps reflecting a marketing arrangement between CIS, Tandy Computer and Radio Shack. Also in 1981, electronic mail became available through CIS, and CIS became available in Canada. In 1983, an on-line mall was introduced. By 1984, CIS had one hundred thousand subscribers, and a year later CIS boasted two hundred and fifty thousand users. In 1987 CompuServe expanded its services to Japan, and by the time it acquired The Source in 1989 it had become the largest commercial computer information service in the world, with a half million users. Services had grown to include one hundred and eighty special interest forums, news, weather, sports and flight information, access to several newspapers and magazines that could be searched for keywords, an electronic version of a CB radio, and a variety of

other services.

Like The Source, CIS charges by the hour. However, with its orientation towards hobbyists it entered the market with lower initial and hourly charges. Initially, Canadian users could only gain access to CompuServe through a Canadian packet switching network (Datapac) that tied into the CIS packet switching network. Users paid an additional eight dollar per hour fee for use of Datapac (Kleiner, 1981).

The extent that the content of information is controlled on CompuServe varies with the type of information. Some services (such as databases of newspaper articles, stock market quotes) that provide a one-way flow of information and can be thought of as similar to other forms of broadcast information appear solely at the discretion of CompuServe management. Information that appears in areas set aside for two-way or forum communications (such as bulletin board areas, public file areas and forum or conference areas) where anyone can be the supplier or consumer of information are moderated by a sysop. Sysops are required to view new messages and files submitted to CompuServe regularly, and pull messages with objectionable content, typically meaning profanity. In addition, sysops are instructed to recycle the message base every two to three days, with new material replacing old. File space associated with each conference or special interest area is limited. This forces sysops to employ criteria to guide the removal of files. These criteria are typically unknown to users (Interview with CIS sysop).

Although any individual, group of users or organization is free to propose the formation of an on-line forum (computer conference), CompuServe management retains the right to decide whether a proposed forum will appear as part of CIS. Decisions reflect both projected revenues

and the extent that the proposed forum is viewed as consistent with CIS' current marketing strategy (S. Wycoff, personal communication, February 9, 1988). When a sysop needs to be replaced, CIS (rather than other sysops in the forum, or the forum's users) determines who will fill that position (Interview with CIS sysop). When CIS agrees to allocate space to a forum, the person or group proposing the forum enters a contractual arrangement with CIS. Usually, a small percentage (such as five percent) of revenue generated by use of a forum is paid to the head sysop of that forum. Sysops are given free access to the forum they help manage (S. Wycoff, personal communication, February 9, 1988).

Issues Arising From The Development Of Computer Networking Technology

Although there are several other computer networks in existence today, (including other bulletin board systems, multi-node bulletin board systems, networks that consist of bundled electronic mail distributed through packet switched networks, and non-profit networks oriented towards groups), all have evolved from the technical and social climate outlined above.

Although most literature neglects to address the social and technical climate that supported the growth of computer networking technology, when the circumstances surrounding the early development and use of this technology are considered, several interesting issues emerge that beg further consideration. Issues warranting further consideration include the relationship of the physical structure of computer networks, access to different forms of communication, the extent that computer networks are accessible in different locations and to a variety of interest groups, and the extent that forms of computer networking today are related to the social goals and circumstances that surrounded the development of networking

technology. Finally, now that computer networking technology has progressed past its infancy, how has it matured? Is it growing and changing in ways that were anticipated by its developers? Are there ways that the social circumstances and social goals that informed the development of computer networking technology still influence its use?

Computer networking emerged first from large, heavily capitalized institutions. Early experimentation at the U.S. OEP under the direction of Turoff produced interesting experiments in new forms of structured communication, such as Delphi polling. Although there have been several experiments that investigated new forms of communication via computer, we know little about the processes of communication that occur via computer network outside the business, research, governmental, and educational sectors. Given the available technology, what forms of communication are occurring in the social change sector, and in particular, what form is communication taking between women concerned with feminist social change?

Throughout the development of computer networking, a struggle over control that began with hackers' resistance to the development of the CTSS in the early 1960s has continued. The notion that computer networking technology should be widely accessible was central to the development of the Community Memory Project, INFACT, PcNet, Fidonet and Usenet, and more recent computer networks such as PeaceNet, Solinet and the Web. To what extent has the desire for a widely accessible, minimally controlled computer networking system been realized? Does the physical structure of a computer network influence accessibility, use and participation? What does this mean for women?

The history of computer networking can be characterized by two

opposing goals (the use of technology to enhance control of the populace versus the use of technology to liberate the populace) that informed the development of computer networks. With little written about the social circumstances surrounding the development of networking technology, we have seldom questioned what relationship (if any) present day ideas about and uses of computer networking technology have to the social goals and visions that informed the development of this technology. And, we have little sense of how communicative processes are managed on computer networks designed explicitly to be difficult to manage.

Finally, other than applauding hackers for their contributions, we have largely failed to consider how technophoria has entered into the processes surrounding the design, development and use of computer networks. Chapter three provides a brief historical overview of the use of computer networks by women in the context of women's issues and feminism, Several of the issues outlined above are briefly discussed in chapter three, and are discussed at greater length in part B as well.

CHAPTER 3:

COMPUTER NETWORKS (II): AN OVERVIEW OF WOMEN'S NETWORKS

WOMEN'S USE OF COMPUTER NETWORKS: BACKGROUND

As women's exposure to computers has increased, and greater numbers of women and women's groups have gained access to computer equipment and knowledge, women in North America have begun to incorporate computer networks into their visions of the future, and to use them in their organizing efforts. Although both U.S. and Canadian women's groups have begun investigating communication via computer, and several women's computer networks exist, present use of computer networks by women's groups is limited. It is nonetheless useful to consider the reasons that women's groups are exploring the use of this technology.

A RATIONALE FOR USE

The range of services available on computer networks can in theory aid women's organizations in a variety of ways. For example, cost often acts as a constraint in feminist organizing, limiting the size and frequency of mailings, travel, and long distance phone contact with other organizations, and between members of national organizations. Electronic mail (travelling much faster than surface mail) can be used for memos, letters, brief messages and documents. Computer bulletin boards can be used to get time dated information out to large numbers of people who have access to appropriate computer equipment quickly and inexpensively. The use of electronic mail in

combination with computer conferencing can reduce both the need for face-to-face meetings and travel costs. Unlike communicating by phone, communicating via computer networks does not require the people communicating to be simultaneously using the communication channel.

In addition to cutting communication costs and decreasing the amount of time required for communication, computer networks potentially offer other advantages related to community organizing. When several different organizations are sharing one computer network, the potential exists easily to share information between organizations. Organizers of PeaceNet, a non-profit global computer network (accessible from seventy countries) dedicated to peace have found that through the use of PeaceNet organizations have become aware of the activities of other organizations (Personal communications with Mark Grahm, PeaceNet staff, March, 1988).

Computer networking can increase alliances between organizations, and greater awareness of other organizations' activities can lead to increased cooperation, and reduce the duplication of organizing efforts between organizations. Computer networks that reach beyond the geographic area normally served by an organization can potentially be used to increase the size of an organization's constituency, through improved outreach. Computer networks can potentially be used to decentralize decision making in an organization by improving communication with members in areas such as the Canadian North, whose voices are often under-represented in provincial and national women's organizations. However, Rubinyi's (1989) findings from a two year study of seventy-two community based nonprofit organizations in the United States, that began with the groups' initial adoption of computer technology in 1982, identifies geographic inequities in relation to computer networks, and suggests that groups that were more successful in utilizing

computer technology were more likely to have a centralized decision making process. Many women's groups do not conform to this model.

Although any organization could potentially benefit from improved communication via computer network, women's organizations (typically under funded and under staffed) are somewhat rare in the magnitude of their need for a less costly and more timely communication system. Women's organizations are also somewhat rare in that they are frequently managed horizontally rather than vertically. Despite Rubinyi's (1989) findings, computer networks continue to appeal to women's organizations as a potential solution for a variety of communication difficulties. Although instances where women's groups have used computer networks are limited, several computer networks designed to meet the needs of individuals communicating about women's issues and feminism exist.

WOMEN'S COMMUNICATION GOES ON-LINE

Like many aspects of women's history, the details surrounding women's early use of computer networks are quite vague.[15] The earliest uses of computer networks in the context of feminism began in the early 1980s,

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[15]In efforts to obtain information about women's early use of CompuServe Information Service, I posted messages to individuals who either were active in the current discussion of women's issues in the men's and women's issues section on CompuServe, or were known to have been active in the predecessors to this section, the women only section. Messages were posted January through April 1988. In efforts to obtain information about net.women and net.women.only on Usenet, I posted messages to several groups, including soc.women, news.news, news.groups and news.misc and misc.wanted. Requests for information generally resulted in one or two messages, which were often followed up with more specific requests. Virtually all information was vague. For example, "when I started reading the net [in 1983] net.women was already around. My guess is that it started in the real Early Days (Austern, 1990b)."

prior to 1983. They were Net.women, a Usenet news group, and the women's section of the Issues Forum on CompuServe.

NET.WOMEN AND THE EVOLUTION OF USENET NEWSGROUPS DEDICATED TO WOMEN'S ISSUES

Discussion of women's issues and feminism on Usenet first occurred in the Net.women newsgroup. Constant dissatisfaction with that group led to the formation of several spin-off newsgroups, including several that are still in existence today. Groups that grew out of Net.women include Net.women.only, Sappho, Talk.abortion, Soc.feminism and Talk.rape. In addition, proposals for other related newsgroups (such as Soc.gender-issues) failed to come to fruition.

Net.women began in 1982 or 1983. It was an outgrowth of Net.singles (Gregbo, 1991), a newsgroup for single people (Gilmore & Spafford, 1991). Some discussions pertaining to women and relationships occurred in Net.singles, and a place other than Net.singles was deemed necessary for the discussion of these issues (Gregbo, 1991). Woods (1991a) points out that in those days, with only a few hundred sites on the Usenet network, all that was required to begin a new newsgroup was a little discussion in what was then called Net.news.groups, and someone willing to send a newsgroup. (In contrast, current procedures for starting a newsgroup are outlined by Woods (1991b) in a three page article available through Usenet. Procedures include a call for a discussion, an extended voting period, and posting and verification of vote results. Vote results must fall within specified guidelines to result in the formation of a new group.) Net.women appears to have been somewhat controversial from the start, and remained a confrontational arena of communication throughout its existence.

Net.women was available to all Usenet users. Generally, this meant

women and men in universities and scientific/technical institutions in North America. In the days of Net.women (along with all other Usenet groups, Net.women had its name changed in "the 'Great Renaming' in 1986" to Soc.women (Woods, 1991a)), women working in scientific and technical professions were perhaps more isolated than now. Women sought contact with others who shared their circumstances.

"Flaming" has been central to the evolution of Usenet newsgroups dedicated to the discussion of women's issues and feminism. "Flame is the Usenet term for an article that essentially involves an opinion held so strongly and fanatically that its author seems to be shouting rather than communicating" (Anderson, Costales & Henderson, 1987, p. 274,). By 1983, dissatisfaction with the 'flaming' in Net.women had led to the formation of a new Usenet newsgroup called Net.women.only. Although only women were supposed to post messages to the Net.women.only newsgroup, access to that group was unrestricted (Woods, 1990a).

Often referred to as the "experiment" (Haviland, 1991; Wood, 1991), Net.women.only was not moderated (the provision for moderated groups had not yet been added to Usenet), and according to Woods' recollections, "the net was eighty-five percent male and there was no way to enforce this restriction, it was a dismal failure" (Woods, 1991a). Austern (1991a) comments that when he began using Usenet in 1983, Net.women.only "was quite moribund," and Travis (1991) in recalling 1984 comments that "Net.women.only was a joke even then, with an extraordinarily high signal-to-noise ratio."

Although Net.women appears to have grown out of general discussions in Net.singles, the demand for Net.women.only seems to indicate that women attempted to create a place for newsgroup participants to express ideas and feelings, and discuss issues of concern to women in a

supportive environment. Participants often describe this as creating an electronic women-space, or an electronic sisterhood (Femail transcripts, 1991). Despite repeated attempts to foster such an environment via the Usenet computer network, all attempts at creating such an environment with unrestricted membership on the Usenet network have been characterized by heated debates, widespread antagonism, and a constant search for alternatives.

Despite difficulties associated with unmoderated newsgroups dedicated to the discussion of women's issues on Usenet, several other unmoderated newsgroups formed on Usenet over the years, in addition to moderated newsgroups available through Usenet and other networks. Soc.women still exists (many of the comments above were solicited through a message submitted to Soc.women). Net.women.only appears to have "lingered on until the Great Renaming" (Austern, 1991a) in 1986. Among the spin-offs of Net.women and Soc.women are Soc.men, Talk.abortion, Soc.feminism, Sappho, Talk.rape and a failed attempt to form a group called Soc.gender-issues (Ockerbloom, 1991). Ockerbloom reflects on the formation of Soc.men, and the attempt to begin Soc.gender-issues:

> there was some tension about the discussion of men's issues and gender-issues from a male viewpoint in soc.women, which prompted a call for the new group [soc.men]. The soc.misc threads [groups of messages] were quite successful, and the new group appeared in late spring or early summer [of 1987]...soc.gender-issues (an attempt in 1988 to separate out general gender-related discussions from issues more specific to

men or women; did not get enough votes to be created).[16]

Sappho is an unmoderated bundled mailing list that provides a forum and support group for gay and bisexual women. Membership screening prevents men from "listening in" (Spafford, 1991b). Many women who previously read and participated in Net.women and Net.women.only are active members of Sappho (Usenet transcripts, 1991; Femail transcripts, 1991).

By 1986 use of Usenet had increased tremendously. A number of new newsgroups had formed, and the volume of messages posted to all groups had increased dramatically. The increase in variety of Usenet newsgroups combined with the higher quantity of Usenet messages made it more difficult for network participants to locate information of potential interest, and determine the most appropriate newsgroup or newsgroups for posting messages. In response to these problems, a new newsgroup naming scheme was introduced on Usenet. Among the innovations introduced with the renaming scheme was the talk prefix. The talk prefix is used to identify groups likely to be high volume in terms of both number of articles and heat of debate (Anderson, Costales & Henderson, 1987). Talk.abortion and Talk.rape were created to remove unwanted controversial debates (e.g., about whether or not there is a biological basis for rape) from Soc.women, and to decrease the quantity of material appearing in Soc.women.

Soc.feminism is a moderated newsgroup that began in 1989

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[16]All quotes taken from interaction that occurred via computer network, as well as all portions of transcripts of computer network interaction that are reproduced in part B are reproduced exactly, including the repetition of typographical errors. In the interests of readability, the convention of indicating when a grammatical error has occurred in the original has been omitted.

(Ockerbloom, 1991). Several Soc.women participants had attempted to discuss feminism in that group, and found that their comments drew a large number of antagonistic messages. Dissatisfied with the confrontation surrounding basic assumptions of feminism that occurred in Soc.women, Soc.feminism grew from a desire to create an on-line environment where feminism was accepted as a starting point. One of the rationales provided for making Soc.feminism a moderated group was that the very existence of moderators would discourage potential participants from investing time in reactionary and hasty responses.

Moderators for Usenet newsgroups are nominated by network participants, and voted into their positions by network participants who choose to follow discussions in the administrative newsgroups. Usually several people act as moderators for a single group. When a message is submitted to a moderated group, one of the moderators receives and views the message and decides whether or not the content of the message is consistent with the group's mandate. If the message is deemed appropriate by the moderator, the message is forwarded to the moderated newsgroup. In the event that a message submitted to a moderated group is deemed inappropriate, the message is not forwarded to the group. If the author of a contentious message feels he or she has been slighted in this process, he or she may resubmit the message to a different moderator after a specified period of time has elapsed. Because each moderator may interpret a group's mandate differently, often a message rejected by one moderator is forwarded to the group by another moderator.

Soc.women and many of the feminist Usenet groups that have since appeared seemed to grow out of conscious attempts to provide a place for participants to express ideas and feelings and discuss issues of concern to

women in a supportive environment. Despite the long history of women attempting to use the Usenet network to meet these needs, Usenet newsgroups dedicated to communication about women's issues and feminism continue to be among the most problematic examples of the use of computer networks for communication about women's issues and feminism. The number of repeated attempts to secure Usenet resources to meet these needs raises a number of issues warranting further examination.

Usenet, described as "a voluntary association of people who commit some of their time and computing resources to the free exchange of news" (Henderson, p. 53, 1987) is based on the premise that an open access network with few rules of operation will meet the widest range of needs. However, as Henderson points out, the lack of centralization Usenet is based upon has both strengths and weaknesses. Henderson suggests that the greatest strength is that with the exception of moderated newsgroups, Usenet is uncensored and free of political pressure. One of the issues raised by the use of Usenet for the discussion of women's issues is whether or not open access and lack of centralization are enough to ensure that women's communication needs are adequately met. And, although it is often stressed that participation in Usenet discussions is voluntary, free and unrestricted, an issue that arises as women attempt to use Usenet as well as other computer networks is whether or not network structure acts as a filter in determining group membership.

THE FEMAIL MAILING LIST

One of the more successful and enduring alternatives to Soc.women is the mail-feminist (often referred to as the femail of feminist) mailing list. By February of 1984, several women felt that Net.women was not meeting their

needs, and were both sufficiently frustrated with Net.women and apparently, sufficiently confident that computer mediated communications could meet some of their needs, that a moderated group was set up to be distributed through network carriers other than Usenet.

The formation of Femail began when an electronic questionnaire, about starting a new feminist computer networking group, was posted on Net.women by a frustrated network user. The questionnaire ellicited opinions about whether men should be included, whether the list should be restricted, and whether it should be moderated. Based on questionnaire responses, the new list, mail.feminists began as a public mailing list with the thirty eight electronic questionnaire respondents (eight of whom were men) as participants, along with three others. Some participants on the new mail.feminist list continued to follow the dialogue on Net.women and others stopped; all seemed to share a vision of a place to communicate about women's issues that was different from Net.women (Femail transcripts, 1991).

In response to a message in the first batch of mail.feminist, asking participants why they sought an alternative to Net.women, many dissatisfactions with Net.women were voiced: it was offensive, chaotic, the discussions were boring and endless, and women's opinions were treated as dumb, stupid, or ignorant by men. One woman had grown tired of debating assumptions she took for granted. Some women sought electronic communication with others that would not be accessible to their bosses and co-workers, as was (and is) the case with all of the Usenet newsgroups

(Femail transcripts, 1991).[17]

These comments speak to a need for women to have and control their own communications space, where the circumstances and conditions shared as women can be explored. Despite the difficulties women experienced with Net.women, and other networks since, mail.feminist and other forms of computerized communications have for many served as electronic consciousness raising (CR) groups or support groups, as well as sources of information on feminism.

In moderated bundled electronic mail groups such as mail.feminist, women explore issues in their lives, speaking from their own experiences, along the lines of CR groups of the sixties. Topics of discussion on mail.feminist include what it's like to be raped, explorations of the concepts of marriage, motherhood, discrimination, sexual harassment and sexism, discussions about contraception, sexual orientation and more. Women write about menopause (in one message, the recipe for a high calcium menopause diet was included). In another message a woman recounts the process of deciding to surgically become a male to female transsexual, after living for several years as a transvestite. She encourages other male to female transsexuals on the network to drop her a line, and welcomes questions from others about transsexuals (Femail transcripts, 1991).

Often contributors to the Femail group will describe a dilemma, (I'm not really sure I'm in love with my fiance..., or, how do I juggle the issues of motherhood and career?) and solicit feedback from other list participants. Women write back with feedback and suggestions concerning the travails of

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[17]The unrestricted readership of Usenet news groups is a social decision, supported by technical design.

life. Unlike CR groups, these groups allow men, as long as they share the assumptions of the group about women and women's abilities and roles (these are periodically posted), and refrain from flaming (Femail transcripts, 1991).

It is interesting to note that although mail.feminist is not public in the sense that Soc.women is (messages have to clear the moderator to be included in a mailing), there is little control over where the list is distributed. Although the moderator distributes the list only to those people registered as participants in the group, there is no way to control what the registered participants do with the list. Several messages appear in the mail.feminist transcript that indicate that an unregistered person has been reading the bundled mail messages for a few years, and gone unnoticed until they felt compelled to submit a message.

The Femail mailing list is still in existence today. However, some users receive messages sporadically (e.g., every few weeks or months), as pathways between forwarding nodes and the addresses of those nodes change. Some Femail participants receive mail regularly. In the lifetime of the group there have been three or four moderators. Moderators have stepped down when relocation to a new city or new job has resulted in loss of access to the resources required to administer the group. In addition, taking leave from the paid labour force has resulted in a loss of access to the group for one moderator and several group members. With each new moderator, paths from the central node to group participants must be reconstructed. Each time this has happened, the flow of information between group members has been interrupted.

One of the issues raised through an examination of the Femail mailing list has to do with the extent that the presence of a moderator can

minimize conflict on a distributed multi-node network. Interestingly, although the Femail readership is at best slightly more restricted than that of Soc.women, it appears that the mere absence of direct attacks on individuals ensured by a good moderator who rejects nasty messages (or an assumed anonymity related to the media), appears to allow members of the mail.feminist speech community to take risks (that are potentially just as damaging as they would be had messages been posted on Soc.women). Although moderation does appear to affect the membership in on-line speech communities (through a process of overt, rather than covert exclusion), and it appears to contribute to the maintenance of communicative norms at the same time it loosely shapes the content of communication, it does not actually protect group members from the hazards of bundled electronic mail; rather, it may merely insulate and filter message readership and consequently lower the probability of inflammatory or damaging attacks by other network users.

Although leaving access to computerized communications unlimited clearly brings with it its own set of problems (power struggles along gender lines, little control over topics, lack of security etc.), it brings discussions about feminism within 'earshot' of many who otherwise might not contemplate the range of issues debated. For many of the women working in non-traditional areas in academe and industry, bundled electronic mail provides access to other women in similar situations who face similar dilemmas. In a sense, the availability of computer networking technology has stimulated the formation of the group; access to the technology has resulted in an opportunity to communicate. Another issue requiring further examination is the role that moderators play in establishing and maintaining group norms. We know little about the relationship of moderators to the groups they moderate, and even less about the processes the moderator and

the group engage in to ensure that participants in a group have access to the types of communication they desire.

THE COMPUSERVE INFORMATION SERVICE

Mailings such as mail.feminist, like other forms of mass communication, only reach and appeal to some people. Primarily available to those with institutional ties, not all who have access to public bundled mail find it useful. Another approach to meeting women's communication needs electronically has been through the allocation of space to discuss women's issues on wide area commercial computer networks. The earliest effort along these lines was the women's section (for women only; it was originally a sub-topic of the National Issues and People Special Interest Group that was later renamed the Issues Forum) available to subscribers of the CompuServe Information Service (CIS).

The women's section on CIS began officially when Pamela Bowen submitted a proposal to CompuServe in late 1982 or early 1983 proposing the formation of a women's forum. Prior to Bowen's proposal to CompuServe, several women who had met through the on-line CB (an on-line version of a CB radio) "were gathering every Saturday night and 'scrambling' for private chats. That was not satisfactory, however, because men kept sending /talk requests and interrupting" (Bowen, 1991a).[18] When Bowen initially submitted the proposal for a women's forum, she was told by CompuServe that there were not enough women on-line to justify it. Bowen commented in 1988 that "they still say that, but I say that's a bunch of balogna because most families have one account, and that account is usually in the husband's

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[18]"/Talk" is the name of the CompuServe command that invokes private communication within the CIS CB simulator software.

name, even if the wife spends much more time on-line, so there's no way CompuServe's demographics can pick that up" (Bowen, 1991a).

Despite CompuServe's refusal to begin a women's forum, they did consult Georgia Griffith, who was (and still is) the head sysop of the Issues Forum. Griffith agreed to have one section of her forum used for women's issues; Bowen became sysop of the women's section and the assistant sysop of the Issues forum. Griffith hoped that if the section was popular enough it could branch into a separate forum. Many CompuServe Forums had in fact followed this pattern of development (Bowen, 1991a).

Once the women's section of the Issue's Forum had been established, many of the women who had been "gathering" on the CB on Saturday nights moved to the new women's section (Bowen, 1991a). In addition to one-to-one electronic mail, one-to-many electronic mail (referred to on CIS as a topic specific bulletin board area, but similar in practice to what other networks call conferences) and document transfer, the women's section featured weekly 'real-time' conferencing, analogous to a voice conference call where several geographically dispersed participants could communicate simultaneously with a barely noticeable time delay. In addition to discussing issues in the bulletin board area of the women's section, participants during weekly real-time conferences either "chatted" amongst themselves, or talked to an invited guest speaker about a wide range of women's issues. Bowen (1991b) recalls that about twenty women regularly participated in the women's section, and five or six women regularly participated in the weekly conferences.

I remember the women's section as an active discussion area (I "visited" it occasionally in late 1985 and early 1986). It was closed sometime in late 1986 or early 1987 (Casal, 1991a) after a few weeks where participation was low. Casal, who was an assistant sysop of the men's and

women's issues section in 1988 (an area originally set up for mixed gender discussions about women's issues that "WAS dominated by men and was eventually renamed the Mens/Womens section" (capitalization in original; Casal, 1991b) recalls that although the women's conferences were regular weekly events for at least three years, in the last few months of the section, she and Griffith "had trouble getting even ONE woman to come...In the end [they] had to open the conferences to men also in order to have a conference at all" (Casal, 1991c).

There were likely many things that contributed to the eventual end of the women only section of CompuServe. Bowen (whose participation ended with her resignation as the assistant sysop of the issues forum (Bowen, 1991a)) speculates that low participation in the women's section was related to the diversity of its participants:

> I think part of the problem is that women who are here are online for different reasons. A lot are computer technical people who want to download programs or whatever. Some are like me -- I'm basically very shy, but am a good writer and good typist, and those skills are magnified in this medium. And some just like to hang around CB and chat with all kinds of people (Bowen, 1991a).

In addition, both Bowen (1991b) and Van Gelder (1991) indicated that as they spent less time in the women's section, they spent more time elsewhere on CIS. In both cases, increased use outside of the women's section was directly related to professional work.

Van Gelder's (1985) description of the women only section conveys the sense that it was both a busy (widely used) and intimate place. However, previous participants in the women's section mentioned cost as a constraint to women's use, and speculated that the women only section failed to generate levels of profit acceptable to CompuServe. One member of the

women's section reported (when it still existed) spending three hundred dollars in one month on CompuServe, without realizing it until the bill came (CompuServe transcripts, 1991). Casal (1991b) raises some important points in relation to gender and the economics of using CIS:

> Cost is certainly a factor. We have had several users who have dropped out because money became tight in their households. A few drop out when they move to areas where there is no node and use would involve long-distance access fees. But I have noticed that, whereas most of the men who have to quit because "money is tight" tend to return after a while, women are more likely to drop out altogether. This is true even when the women were very active participants (Casal, 1991b).

Unfortunately, one can only speculate at this point about the relative importance of the reasons given for lack of participation in the women's section, as the women who were active in that area are in most cases no longer involved with its descendant, the men's and women's issues forum. Upon signing on to CompuServe in the fall of 1990 after an absence I noticed that the men's and women's section had been renamed "Between the Sexes."

Unlike either Usenet or the Femail mailing list, CompuServe is accessible to the general public. Access to both Usenet and Femail is limited to workers in certain types of workplaces. In contrast, access to CompuServe is tied to one's discretionary income, rather than place of employment. Consequently, CompuServe draws a distinctive audience that we know little about.

CompuServe, like the Femail mailing list is moderated. However, moderation of these groups occurs in very different contexts. CompuServe moderators have entered into a contractual relationship with CompuServe management, who are responsible for generating profits. In contrast, Femail moderators are accountable to their group and need not concern themselves

with the revenues generated by the communication they oversee. One of the issues that arises in an examination of the use of CompuServe for the discussion of women's issues and feminism has to do with the extent that the centralized management of CompuServe and its existence as a profitable business comes to bear on the communication that occurs on that network.

THE WOMEN'S BULLETIN BOARD SYSTEM

The Women's Bulletin Board system (WBBS) was conceived of in 1985, and began operation in 1986. Unlike most computer networking services, the system was proposed and started by nine women from the social change community, rather than the computer bulletin board community. These women discussed the formation of the WBBS via a computer network, and after selecting the hardware and software for the WBBS, spent two months learning their way around the system before publicly announcing it through flyers and mailings to women's groups and contacts in the New York City women's community, in April of 1986. Founders of the WBBS anticipated that potential users might lack the knowledge to use a computer network with little assistance. In an effort to eliminate this barrier, one of the co-founders of the Women's Bulletin Board system in New York City reports that she has provided extensive support for potential users of that system, including on-line (via computer) help, hard copy (in print on paper) help and in person help (Interview with Angela Leucht, November, 1988). This has no doubt contributed to the success of the Women's Bulletin Board System.

The founders' initial goals were to provide a bulletin board for organizing around women's issues and to share information between women's groups. The bulletin board allows users to send electronic mail to

other users, post public messages on a variety of topics of concern to feminists, and upload and download files (document transfer). Unlike most bulletin boards in operation in the mid-1980s (that did not easily accommodate the organization of messages), the Women's Bulletin Board is split into twenty seven posting areas, each set aside for a different set of topics. Consequently, the public messages posted on the Women's Bulletin Board read more like a computer conference than a bulletin board, and users can more quickly locate information of potential interest, and can avoid some topics altogether. Among the existing bulletin areas are areas for action alerts (time dated public notices), discussions about women and AIDS, parenting, recovery from sexual abuse, recovery from alcohol abuse, general women's issues, notices about conferences, as well as areas for teenagers, women of color, and groups that wish to have restricted (rather than public) communication.

Several things distinguish the Women's Bulletin Board from other bulletin boards and computer networking services. The Women's Bulletin Board was begun and is currently run by a group, rather than an individual. This is a dramatic contrast to most bulletin boards that are run by an individual, who often thinks of the board as an extension of their house, or as their kingdom (WBBS transcripts, 1991). In contrast, group management of the system was a major factor in selecting software for the Women's Bulletin Board. Unfortunately, women's groups have not used the WBBS as much as was anticipated. One of the co-founders attributes this to the software that she feels was not designed for, and does not really accommodate group communications. Another co-founder felt the largest obstacle to the board's use by groups is that most women's organizations (in the U.S.) do not have computers, and those that do often do not have modems (Group Interview,

November 1988).

The Women's Bulletin Board has avoided many of the problems that have plagued other attempts to provide an electronic women's meeting place. Although women users of other computer networks frequently complain about having their views attacked by men, about having continuously to struggle to keep the 'conversation' focused on women (women on CompuServe once held a real time conference about how to deal with these issues), and report boredom at debating basic assumptions (that men should help change diapers, that day care needs to be more accessible), newcomers to the Women's Bulletin Board frequently comment on the congenial atmosphere that characterizes that system.

One social innovation that may have contributed to the often commented upon atmosphere of the Women's Bulletin Board system was the introduction of a section of the bulletin board called the Battleground. When discussions become debates, the moderator of the area where this transition occurred moves the controversial messages to the Battleground; an area of the WBBS set aside specifically for controversy. This seems to create a safe feeling in the other discussion sections, and at the same time makes participation in controversial discussions optional, rather than mandatory.

Despite these strengths, founders of the Women's Bulletin Board have at times been discouraged with the changes that have occurred over time. All but three of the board's original moderators and sysops, all of whom came from the social change community, have left. They have been replaced by women who have come from the bulletin board community, and one co-founder feels that these two communities do not often see ideas or process in the same way (Interview with WBBS Co-founder, November, 1988).

In the fall of 1990, the WBBS was temporarily out of operation. The

modem used to operate the WBBS had been damaged when lightening struck the building where the WBBS was housed. A few of the sysops had left the WBBS, and founders were seeking new people to replace them. Founders were also looking into the acquisition of new hardware and software to run the WBBS on. Though weary, WBBS founders still felt that the WBBS was a valuable community resource that could contribute to the New York City women's community.

Unlike the other networks discussed so far, the WBBS was developed by lay people who maintained an awareness of the unique needs of non-technical women users throughout the implementation of the WBBS. The WBBS was the only network that was run by a restricted group, and the only network accessible to users outside of their workplaces who had little disposable income. The initial founders of the WBBS were well versed in the politics of women's organizations and community organizing. Perhaps the most notable issue that arises from the study of the WBBS is whether these factors led to a discernible difference in the character of communication that occurred on the WBBS (this is addressed in greater detail in chapter seven).

THE AMAZON LINE

Another approach to providing a computer mediated discussion area for women via a commercial computer network was attempted by two women in Toronto. The service, named the Amazon Line, was scheduled to begin operation late in 1985. As of early 1988, it was still not quite off the ground, though its founders had not given up hope. The Amazon Line, it was hoped, would allow women throughout Canada to quickly exchange information relevant to feminist social change. The Amazon line was to be run on a university computer, that sells computer time and storage space to

individuals and groups with no university affiliation. Software was available that would allow public and private electronic mail, as well as time-delayed and real-time computer conferencing. Locating the Amazon Line on a university computer system meant that out of town users could gain access to the system via value added carriers.

Founders of the Amazon Line targeted their service (slated to cost an initial signup fee around fifty dollars, a monthly minimum between ten and fifteen dollars and a twelve dollar per hour fee ("Computer link", 1985)), towards professional women. When asked what factors they felt had kept the Amazon Line from flourishing, two points came up. First, they found that many of the women they had hoped to attract did not do their own typing, but rather had secretaries who typed for them. They were attempting to introduce computerized communications to a population that did not have a direct need for it. Adoption of their service by the desired population would have required a change to existing working patterns. Secondly, they found that at the time the service was publicized (1985), many women still did not have access to the knowledge required to use it. The Amazon Line's founders anticipated developing an educational strategy to accompany the re-introduction of the service. In the meantime, women's access to equipment has improved, and many women have gained experience and confidence with computers (Personal Communication with Pat Hacker, February, 1988).

THE CANADIAN RESEARCH INSTITUTE FOR THE ADVANCEMENT OF WOMEN

All of the attempts to create and maintain women's electronic communication space that have been discussed so far have been either oriented towards individuals, or in the case of the Women's Bulletin Board, oriented towards groups in general, rather than a single group and its

specific communication needs. The Canadian Research Institute for the Advancement of Women (CRIAW) has engaged in the process of developing a computer networking system to meet that group's needs. CRIAW was among the first women's organization in North America to actively adopt computer communications in efforts to reduce the communication difficulties associated with a national organization.

Members of the organization (a diverse group of women inside and outside of academia in both English and French speaking Canada) began discussing computer networking early in 1987. Around that time, a few of the women who had access to institutional computers began exchanging messages electronically. In November of 1987, hands-on training was provided for board and committee members. Since that time, the executive and some members of the board have been brought on-line (Assheton-Smith, 1988).

With board members located from the Yukon to the Atlantic provinces, it was hoped that electronic mail would reduce the amount of time required between information exchanges, as well as the expense associated with long distance phone charges. Other somewhat longer term goals for beginning a computer network include facilitating the work of individual groups within the organization and making resources (such as bibliographies) more accessible to members of the organization. From CRIAW's initial discussion of computer networking there was an awareness that the technology lacked standardization and that there would be many problems to overcome. In addition, beginning with the first discussion of computer networking at an executive meeting in 1987 there was an awareness that adoption of networking technology could create a two-tiered organization, with women who lacked access to mainframe computers, who

were in rural areas (and lacked access to a value added carrier) and/or working in community groups less able to participate in an on-line communication process. Even though CRIAW was aware that it wanted to build an open communication structure (rather than one that intensified elite processes), the organization did not initially address whether or not there might be differences in access to an electronic communications system based on the preferred language of the speaker (Assheton-Smith, 1988).

A decision was made to first attempt to get CRIAW's executive communicating via computer. Even though access to and familiarity with computers varied a great deal amongst members of the executive, and no real budget for the project existed (repeated attempts were made to secure external funding to launch the project), in Assheton-Smith's words, "as frequently happens in women's work, we had to determine how to make our 'real' situations work, patching together our anarchic realities" (Assheton-Smith, 1988 p. 4). Since several of the executive board members were institutionally based and a few had begun exchanging electronic mail, a decision was made to build on institutional access to equipment, and at the same time secure access to the system for non-institutionally based executive board members. This meant in some cases providing access to equipment (such as modems) and in other cases securing access for board members to donated university computer accounts. Additional efforts were made to familiarize board members with the intricacies of computer networking technology (Assheton-Smith, 1988). In 1988, I spent a week in the CRIAW office in Ottawa working with the office staff around computer networking.

Between 1987 and 1989 CRIAW confronted many problems related to computer networking. Some of these problems have been solved, and others remain unsolved. Several problems arose in the initial hands-on workshop

conducted for CRIAW in 1987. These included an emphasis on IBM compatible computers (several of the board members had Apple Macintosh computers and found it difficult to relate the material presented to their situations), the fact that the workshop was unilingual, and workshop presenters were unfamiliar with computer access in Quebec as well as the availability and intricacies of French-language software. With almost no budget, no capacity to purchase needed equipment and no in-house computing talent CRIAW Board members began communicating via computer. At that time, three women had university access to a mainframe (though each of them accessed their local mainframe through a unique combination of hardware and software), and two potential participants (one in Inuvik and one in Montreal) had access to computers, modems and software, but lacked access to a mainframe computer that would allow them to communicate with anyone else on the Board (Assheton-Smith, 1988). A number of difficulties arose.

The three women with access to university mainframes began communicating relatively quickly, despite problems they encountered related to addressing and computer break downs. When Carl ton University offered to donate additional computer accounts to CRIAW (one was already in use by the office staff in Ottawa) a decision was made to use those accounts to provide the non-university women in Inuvik and Montreal with access to other communicators. The Carleton computer was not only difficult to learn and use, but Carleton computing staff also lacked information that CRIAW needed. Finally, the Carleton computer had built-in limitations that made it impossible for CRIAW to easily distribute messages to all potential participants. Although the board member in Inuvik had an account on the Carleton mainframe, there was no datapac node in Inuvik. This meant there

was no straight forward way for the woman in Inuvik to access the Carleton computer without spending large amounts of money on either long distance telephone charges or charges incurred from accessing the Carleton computer via a costly commercial network (Assheton-Smith, 1988). CRIAW staff members at times found it difficult to meet their day-to-day work obligations as they struggled to master the new communication system.

To their credit, CRIAW board members have continued to use computer networking to meet some of their communication needs. The early years of experimentation and a lack of availability of funding to further develop the organization's ability to communicate via computer have led CRIAW to revise their expectations.

CRIAW's use of computer networks raises several issues related to access, and brings these complex issues into sharper focus. Perhaps more than any of the computer network implementations discussed so far, CRIAW has attempted to facilitate communication via computer between several distinct (and at times overlapping) groups of people. Among the differences CRIAW has attempted to transcend via computer network are linguistic differences, geographic distances, differential access to resources (e.g., by providing some potential participants with modems and/or access to university based computer networks) and differences in knowledge related to computer networking. Their use of computer networking in an organizational context has hinted at issues related to additional demands being placed on staff members, and the possibility of computer networking in an organizational context leading to a redistribution of staff responsibilities.

THE AMERICAN ASSOCIATION OF UNIVERSITY WOMEN

Another women's organization that has attempted to meet some of its

communication needs via computer is the American Association of University Women (AAUW). AAUW, like CRIAW is a national organization. Unlike CRIAW, membership is only open to women with University degrees. AAUW's interest in computer networks and the social impacts of technology dates back to the early 1980s. Interest in computer networking technology resulted in a hands-on computer networking workshop for members of the Idaho chapter of AAUW in 1986. Although it appeared for a few years that AAUW's interest in computer networking was waning, in December of 1989 AAUW began offering computer networking services through an arrangement with The Source (a large commercial computer network).

Although the AAUW National Office has its own mini-computer that was donated by the Digital Equipment Corporation, in meeting their computer networking needs, they negotiated an agreement with The Source; when The Source was acquired by CompuServe, the agreement was transferred to CompuServe. Perhaps one of the factors that led to AAUW's decision to use The Source was the concern AAUW staff members expressed at having the office swamped with information requests, and the desire to keep their in-house computer system from being overloaded. They had envisioned a computer system that would allow AAUW to drop information onto the network, but would prohibit network users from passing information back to the AAUW office via computer network. As originally conceived, the system was intended for AAUW leaders, who would be trained to use it. If successful, the computer network would be open to the general membership.

The board of AAUW (perhaps because they lacked a general understanding of computer networks) was hardly involved in decisions related to implementation of the computer network. One member recalls that the proposal to use The Source was presented as an either/or issue to the

Board. The Board did not discuss the proposal in analytical terms. A member commented that it was just sort of doomed from the beginning. By the time the network was introduced in December of 1989, the notion of developing a core of competent, trained users had been lost. The system was introduced to the entire membership at once. Like the Amazon line, AAUW had failed to provide training or information about what computer networking required in terms of hardware, software, or access. By June of 1990 The Source had been acquired by CompuServe, and only ten people were using CompuServe to communicate with other AAUW members (Personal Communication, Sara Harder, May 1991). By the fall of 1990 any visibility AAUW might have had on CompuServe had vanished. CompuServe management was unaware of AAUW's use of that network, and a keyword search for AAUW users in the CompuServe directory produced no results (personal experience).

Although all of the factors that contributed to the failure of AAUW's efforts are unknown, it is plausible that one of the factors that hampered their efforts was the sale of The Source to CompuServe. It is possible that the initial announcement that AAUW members could communicate via computer encouraged some AAUW members to acquire access to computers and/or the expertise to connect to a computer network. The process of acquiring computer equipment, gaining a sense of how it works and beginning to use it for computer networking often takes an inexperienced user a year or longer. It may be that by the time some users were ready to connect to The Source, it had vanished. Although anyone who had an account on The Source was given a complimentary account on CompuServe at the time The Source was sold, potential Source users would not have known that AAUW's networking resources had been transferred to CompuServe. AAUW's experiences with computer networking suggest that an issue warranting further consideration

is who owns the resources that support a group's on-line communication (this issue is addressed again in parts B and C).

CONCLUSION

Many other instances of the use of computer networks in the context of feminism exist. Since this study began, several other networks have begun to offer women's services (such as the Well run by the Whole Earth Catalogue), and a few bulletin boards have catered to a feminist audience (such as the Jane Addams Bulletin Board in Chicago, and the FidoNet feminist echo-mail conference). During the period of the study the Canadian Union of Public Employees (CUPE) began a computer network called SoliNet. SoliNet (available on a fee for service basis to other unions and individuals) has a women's section that operates on an invitational basis. In addition, regional and national women's groups in Canada are beginning to consider computer networking as an alternative to conventional modes of communication. Among the groups who have held workshops for their general membership about adapting computer neworking technology are CRIAW/Newfoundland, the B.C./Yukon Association of Women's Centres, and Women in Trades and Technology. Some board members of the National Action Committee on the Status of Women are currently communicating electronically via a computer located in Toronto. In addition, members of other groups such as the Vancouver Status of Women and Edmonton Status of Women have begun to discuss the use of computer networks in those organizations. The Canadian Women's Studies Association is beginning to investigate creating a computer network to facilitate communication between women's studies programs in Canada. Clearly, interest in using computer networking technology is high amongst feminist organizations.

The adoption of computer networking technology by women in the context of feminism has been varied. In some cases, such as Net.women and the women's section on CompuServe, access to computer networking technology allowed women who had not previously met to discuss their feminist concerns with a wider, and in some cases more diverse, audience (see Bowen, 1991b and Van Gelder, 1991). In other cases (the Femail mailing list, Soc.feminism), having determined that computer networking could accommodate debate about feminist issues, women acting as individuals have attempted to establish the circumstances that will allow them to explore similarities and differences women experience as a group. Efforts have been made to enhance the information flow to local women's communities (the WBBS) as well as nationwide (the Amazon Line). Finally, women's organizations (CRIAW and AAUW) have attempted to use computer networking technology to enhance inter-organizational communication, and can see the potential of employing this technology to enhance communication amongst members of the organization.

In recounting a partial history of the use of computer networks by women in the context of feminist change, several issues emerge. First, computer network structure in a general sense helps define the nature of interaction that can take place between communicators. Second, access to networking technology does not ensure that an environment suitable to the exploration of feminist issues will exist. Third, the existence of a computer network does not ensure that it will be used; women's lack of familiarity with the technology involved constrains its adoption by women. Computer networks can place new demands on workers in organizations that have adopted networking technology. Finally, geographic, economic and linguistic differences can reinforce, rather than diminish, power inequities when this

technology is used in an organizational setting. Although these issues have been addressed previously by feminists and researchers investigating issues related to women and technological change, we still know little about how these issues play themselves out in an environment of computer-mediated communication, and even less about how to bring these issues to resolution.

CHAPTER 4:

THEORY AND METHODOLOGY IN THE INVESTIGATION OF COMMUNICATION VIA COMPUTER

Gregory and Carroll (1978) identify three aspects of a language event: the substantial, the formal and the situational. The substance of language refers to its transmission. Transmission can be either phonic (audible sounds) or graphic. The formal aspect of language refers to patterns in language (such as grammar and vocabulary) that make language meaningful and understandable. Finally, the situational aspect of language refers to the relevant extra-textual circumstances (both linguistic and non-linguistic) of a language event or text. Halliday refers to this as "the environment in which text comes to life" (Cited in Gregory and Carroll, p. 4, 1978). In a broad sense this study is concerned with the interaction of the substantial and situational aspects of language or communicative events concerned with women's issues and feminism that occur via computer networks, and the social relations that produce these communicative events.

Although computer networks can and are being used to facilitate community organizing in the women's movement, their value as an organizing tool is not guaranteed simply as a function of their use. Social and technical choices are made during the design and implementation stages of computer networks that ultimately determine the value of computer networks as an organizing tool in the context of feminism and other forms of social change. In order to understand why some attempts to use computer

networks have failed, why others have succeeded, and the limitations and strengths of computer networks in the context of social change, the investigation of computer networks presented here begins with an in depth look at the relationship of network structure (a non-linguistic situational aspect of the communicative event) to the form of communication occurring on four different types of computer networks.

THE RELATIONSHIP OF COMPUTER NETWORK STRUCTURE TO COMMUNICATION POSSIBILITIES

Although it is often assumed by novice users of computer networks that the use of any computer networking facilities will accommodate a full range of electronic communication options, this is in fact not the case. Each physical network structure supports a different array of communication options, and within any given category of computer network structure (for example local single node computer bulletin board systems), implicit and explicit social decisions appear to affect membership in speech communities that exist on-line, as well as the communicative norms that evolve and are maintained on-line (see Part B).

In understanding this phenomenon, it is important to recognize that the design and implementation of computer networks is a complex process, embedded in the larger context of society. In some senses, this process itself determines how individual women, feminist and other social change organizations use computer networks in the context of social change work. Similar to Franklin's (1990) analogy of a house built by technology in which we all live, our actions affected by its design, the analogy of computer networks as a party is useful in illustrating how social choices interact with technical decisions to produce a computer network that supports some forms of communication and not others.

In comparing computer networks to a party, the place a party is held (for example a room or building along with the furniture in it) can be thought of as analogous to the physical structure of a computer network. The format of the party (e.g. cocktail party vs. dinner party vs. potluck brunch) as well as who the hostesses choose to invite can be viewed as social characteristics, analogous to social decisions made about the computer network.[19]

If the room selected for a party has very formal furnishings, most guests will make some attempt to act appropriately formal. Similarly, if a party is held on a beach, a different mood is conveyed, and most guests will be inclined to dress and act more casually. In a similar fashion, decisions about what computer hardware and software are used for a network, and how the network is physically organized determine the types of communication possible, and set a stage for social interaction on computer networks. For any particular physical network structure, some things will be true, regardless of who the users are.

If users of a multi-node computer network (other than Usenet) decide they want to exchange thoughts on women's issues, participants at each node must decide on a common node to coordinate the distribution of messages coming in from all nodes. In contrast, if users of a single node wide area network (for example PeaceNet) wanted to have a discussion about women's issues, they might begin by deciding whether to have their discussion via a

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[19]Actually, decisions about the physical structure of a computer network, like decisions about where a party is held, are also based on social goals. In relation to computer networks however, the social nature of decisions about the physical structure of computer networks have been one step removed, with technical grounds being considered first, followed by social decisions of a narrower scope.

mailing list (similar to multi-node systems), a bulletin board (similar to a single-node local system) or a conference. Table 4.1 summarizes the types of communication possible for each of the network structures outlined above, along with the major strengths and weaknesses associated with each.

TABLE 4.1:
NETWORK STRUCTURES AND COMMUNICATION POSSIBILITIES: STRENGTHS AND WEAKNESSES

NETWORK TYPES	FORMS OF COMMUNICATION	STRENGTHS, WEAKNESSES AND ISSUES
Local Single Node	E-mail BBS File transfer Limited database Conferencing	Low cost to local users; high cost if out of local calling area; Relatively quick implementation but limited capabilities; Software usually encourages centralized control of content and does not support shared, collective or collaborative system management; System access is individualized; Control of content is ambiguous.
Wide Area Single Node	E-mail BBS File transfer Databases Conferencing	Possibility of using existing services may reduce implementation time; Wide range of services available; Higher costs to users result from use of value added carriers; Accessing system is more complex due to need to use value added carriers; If using commercial services, users may be unable to alter software to meet the group's needs, and users risk loss of access; Geographic inequities in cost of access; Control of the network and user support are external to the group.
Wide Area Multi-Node	E-mail Bundled E-mail Public Files File transfer possible	Low cost to users; Routing/addressing is complex and users are vulnerable to routing changes; Addressing problems increase with number of nodes; Participants get information out of sequence; Highly individualized access (often through institutions); Difficult to provide support; More difficult to control privacy.

When parties are thrown, many social decisions are made: whom to invite, whether children are welcome, whether alcohol is served, whether events are determined by guests spontaneously or are orchestrated by the

hostess and so on. Similarly, within the limitations inherent to whatever physical network structure has been chosen as the infrastructure for computer-mediated communication, many explicitly social decisions must be made. For any communication act, decisions must be made about whom to include, and in some cases (a mailing list or computer conference) whether the information exchange should be moderated or unmoderated. If a decision is made to form a moderated group, criteria for the moderator to follow must be determined.

If a group's goals are simply to explore a set of issues with people who are geographically dispersed a multi-node mailing list such as those available on Usenet might be an appropriate solution. Or, if the potential to have structured discussions between several people on specific issues is desired, (computer conferences) along with access to resources such as databases containing bibliographies and mailing lists, a single-node commercial system might be most appropriate. This is the type of service the founders of the Amazon Line, (from Toronto) hoped to provide, and supporters of the CompuServe Information Service Women's section attempted to ensure.

If the main goal of organizing efforts is to increase the information flow between individuals and/or organizations in a single city, a single node computer bulletin board system might be most appropriate. The Women's Bulletin Board system in New York city attempts to serve this function for that city's women's community. Or, if encouraging daily communication between board members and committee members of a nationwide women's organization (many of whom have institutional access to computers), is desired, a private multi-node mailing list might be most appropriate. The Canadian Research Institute for the Advancement of Women (CRIAW) has

taken this approach to meet their short-term goals.

The structure of computer networks can be seen as an extra-linguistic situational aspect of communication that occurs via computer networks. The importance of the relationship between computer network structure and the forms of communication that take place on particular computer networks is only one set of complex relationships that become evident through an in depth examination of the text produced through computer-mediated interaction. Other questions that can be addressed through an analysis of text resulting from network based communication include how are women using computer networks in the context of feminism? Who are the participants that come together to form groups through computer networks, and what are they talking about? What is the nature of the communication processes that are occurring on-line, and is it related to network structure? What kinds of group processes occur in this social context? What are the norms of communication, and how are they enforced? Is access (open, restricted, etc.) related to the content of communication events?

When considered alongside other studies of computer networking, this study is unique in terms of the questions it asks and issues it addresses. This focus necessitated the atypical theoretical and methodological approach adapted here. Justification for the discourse-based analysis of computer networks derived from Smith's (1990a & 1990b) approach- outlined in chapter one and used here- is rooted in the exploratory nature of the study, the scope of questions asked, the social context being investigated and the limitations inherent to investigating complex social processes through quantitative survey instruments. Probably the most significant of these factors was the exploratory nature of the study.

QUALITATIVE METHODS: AN OVERVIEW

Qualitative methods provide an alternative theoretical approach to the social sciences in general, and sociology in particular. Anderson (1987) points out that a qualitative approach to social science research is a much less conventional approach than is quantitative research. Although in quantitative research there is general agreement on what the major methods should be and how they relate to theory building, in qualitative research there is considerable variation in what is considered permissible, and in the rules that connect evidence to theory. Quantitative sociology revolves around the principle of objectivism; qualitative sociology springs from the principle of subjectivism (Denzin, 1978). In order to understand why qualitative approaches to sociology have emerged, it is useful to identify some of the criticisms qualitative social scientists have made of traditional, or quantitative approaches to social science.

Qualitative social scientists identify at least four flaws inherent to the quantitative approach to social science. First, during the early stages of any discipline or theory, narrow, rigorous, pre-defined research methods are inappropriate because they hinder the possibility of discovering new aspects of a situation, that may not be measurable or analyzable using quantitatively based methods. Second, conventional research designs, data collection and analytical methods are not adequate on their own for the study of human activity, because traditional approaches often examine a problem in an acontextual way, and human activity occurs in specific contexts.

Third, the positivist approach to social science research cannot easily generate explicit alternatives to its assumptions and perspectives. Rather, it only accommodates the identification and falsifiability of alternate explanations within its framework. Fourth, the quantitative approach to

social science has many practical and policy limitations. For example, although a quantitative approach may indicate that variance occurs, it does not explain why that variance occurs. However, the cause of variance may be of crucial importance to a policy maker (Williams, Rice & Rodgers, 1988).

In keeping with these criticisms, qualitative social scientists argue that the study of human life should be viewed as an interpretive (rather than objective) science. The causes of human behaviour are not found in objectified attributes, but rather in meanings held by individuals. The job of the qualitative sociologist therefore, is to make those meanings explicit by interpreting the social actions of others (Anderson, 1987).

Where quantitative research demands that the researcher maintain a certain detachment from the object of study (Addelson, 1983; Anderson, 1987), qualitative research demands that the researcher develop an empathetic understanding of the subjects of study, that is possible because the researcher acts as both analyst and object of study. The qualitative researcher must practice the 'natural attitude' (interpreting experiences and bringing them into consciousness) first as a native participant in a situation, and then as a critical observer of that situation; the qualitative sociologist is concerned with the social construction of meaning, and this process can only be fully understood when a researcher participates in the social construction of meaning, and then critically reflects on the processes that have occurred (Anderson, 1987).[20]

There have been numerous criticisms of the widely held view that

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[20]For an extended discussion of qualitative sociological research, and how it differs from quantitative sociological research, see chapter nine of Anderson, 1987.

science is neutral (Arditti, Brennan & Cavrak, 1980; Addelson, 1983; Easlea, 1980; Gorz, 1976; Rose & Rose, 1980). These arguments are not as significant here as the implications of this assumed neutrality. It is useful to consider how the notions of objectivity and subjectivity play themselves out in the context of social science research.

Addelson (1983) points out that the goal of science is to contribute to the growth of knowledge, through new scientific discoveries. As a culture, we believe that the methods of science are rational, and, if used correctly, will yield objective knowledge. Addelson argues that science is supposed to be different from religion, metaphysics and superstition because its methods require criticism, testing, and falsifability. We view science as a source of rationality in a chaotic world (Arditti, Brennan & Cavrak, 1980). Science is the pursuit of laws, that are valid irrespective of their discoverer. The facts and laws of science we're told, have an immutable character; the speed of light is the same, regardless of who measures it (Rose & Rose, 1980).[21] Typically, scientists assume that because there is only one reality there can only be one correct understanding of it, or one correctly described truth (Addelson, 1983; Anderson, 1987).

Scientists view the world in a sense as a patterned puzzle. Once the correct pattern is discovered, the puzzle can be solved. The world is out there, and the job of the scientist is to discover truths, intrinsic to that world, that explain how it works. From the scientist's point of view, the world can be explained in terms of a complex series of causes and effects, which are obtained by the scientist through the use of systematically applied objective

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[21] For a condensed discussion of the evolution of the natural sciences, see Rose and Rose, 1980. For an extended discussion of objectivity in the sciences, see Easlea, 1980).

techniques. Such is the conventional wisdom about science. It is from this conventional wisdom, that the dominant paradigm within the social sciences has emerged- that of quantification.

Denzin (1978) maintains that the discipline of sociology is, and has been overwhelmingly quantitative in orientation. He attributes this conceptualization of sociology to the assumption that all sciences are quantitative, cumulative, and statistical in nature. Williams, Rice and Rodgers (1988) outline several assumptions that are inherent to the quantitative (or positivist) view of the social sciences. Among them are that the scientific method is appropriate for most topics of inquiry; that the goal of inquiry is to identify causal relationships; that the basis for analysis can be experienced by the human sense, and, as such, speculation and nonmaterial forces are not acceptable evidence; that the process of science is value free, and its foundations are mathematics and logic; that the focus of study is a real, objective world, and that the basis for credibility in research is the ability to replicate research results in similar circumstances.

Within the discipline of sociology Denzin (1978) argues, this has been expressed in terms of a quantitative view of social structure, social process and research methodology. It led to a model of causal analysis that stresses the effects of independent variables on dependent variables in rigidly structured experimental situations. As Anderson (1987) points out, the use of quantitative methods in the social sciences is a quest for universal generalizations which will describe the characteristics, practices, causes and consequences of human behaviour. A common assumption about the use of scientific methods is that characteristics of the researcher (such as class background, gender and ethnicity) will not influence the results of the research process.

One consequence of this emphasis on objectivity is the separation of theory from practice. Gorz (1976), in writing about the class character of science and scientists, argues that in science (and the rest of dominant culture) the development of theory has been divorced from practice, and from ordinary people's lives and needs. This is perpetuated in the training of scientists as well (Gorz; Addelson, 1983). Science, Gorz argues, has been submitted to the same division of labour as production work. As a consequence, the production of scientific knowledge has been submitted to the same hierarchical division of labour and fragmentation of tasks as the production of other commodities. One person might define a problem, others might test hypotheses, or work on a small component of a larger problem and so on.

Finally, the production of scientific knowledge is seen as not only value free, but completely independent of the end uses of research (Hubbard, 1979). For the natural scientist, the goal of the research process is the discovery of scientific knowledge; the job of the scientist is to discover rules - he or she is unconcerned with their ultimate use.

For feminists engaged in research, this concept is problematic. Feminism is by definition about social change. The undertaking of research from a feminist perspective is inherently non-neutral and influenced by values. Eichler (1987) points out that feminist research can be defined as any of the following: research that is informed by a commitment to social justice for women, research that exposes prevailing sexist bias, research that creates unbiased alternatives and/or constructs reality from a female perspective. Feminist research is concerned minimally with providing accurate information about women and women's lives. Smith (1987), critical of the treatment of women as objects of study within sociology, advocates an

alternative sociology, and suggests that a "feminist mode of inquiry might then begin with women's experience from women's standpoint and explore how it is shaped in the extended relations of larger social and political relations" (p. 10). To the extent that this goal informs one's articulation of a problem as well as the range of questions asked, the end uses feminist research will be put to influence the methods employed in feminist research.

Clearly, the ends research are put to *do* have implications for research design in general and the selection of research methods in particular. The interest in computer networks in business settings has led to research concerned with cost justification and implementation of computer networks. The interest in computer networks in scientific and research environments equates high use of computer networks with their utility, yet fails adequately to identify from the users' perspective what that usefulness is. In both of these situations, the end uses of research and the scope of questions asked are inextricably tied together. And, in both cases, questions concerning content of communication, the meaning held by participants and the function of the communicative events falls outside of the scope of inquiry.

Despite general criticism of quantitative methods, and criticisms of sexism in social science research by feminist scholars, the commonly held belief that scientific methods (including those employed within the social sciences) are neutral and value free has contributed to the absence of research concerned with the meaning, content and function of computer mediated communications, as well as research concerned with the use of

computer networks by women to discuss women's issues and feminism.[22] In light of my interest in investigating the use of computer networks by women engaged in discussions about women's issues and feminism, and the absence of previous work that addresses these issues, the research presented here is by necessity of an exploratory nature.

RATIONALE

It is commonly argued that qualitative methods are well suited to exploratory research (Marshall & Rossman, 1989; Kirby & McKenna, 1989; Anderson, 1987). Eichler (1987) additionally points out that qualitative methods are particularly appropriate for exploring subjective experiences when little is known at the collective level. In these instances, no reasonable decisions can be made about which are the most important variables to collect information about. An absence of basic knowledge concerning the phenomenon under study makes the formation of hypotheses difficult, if not impossible. For these reasons, in conducting this study, I have employed a combination of qualitative methods, including a textually based or discourse analysis of text generated through the use of computer networks, participant observation, and, to a limited degree, interviews.

With an extensive review of previous research concerned with computer communication complete (Balka, 1987), data collection (designed to identify the types of networks in use and the range of uses related to women's issues and feminism) began. Observation during the data collection

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[22]See chapter nine for a discussion of quantitative research about computer networks. For an extended critique of problems found in previous quantitative research about computer networks see E. Balka (1987). Sins of Omission: Social Bias in Research About Computer Networks. Unpublished manuscript, Simon Fraser University 1987.

process suggested there might be a relationship between computer network structure and the content and style of communication that occurred on-line. This relationship became the focal point of the study.

DISCOURSE ANALYSIS

Many authors writing about discourse analysis (Stubbs, 1983; Todd & Fischer, 1988) argue that sociology is concerned with social action. Social action in turn is linked to language. And, as Todd and Fisher (1988) and Kramarae (1981) point out, each theory of social action has ramifications for the construction of gender. The observation made by Stubbs, as well as Todd and Fischer, that theories of social action are linked to how we understand language, and the related observation that theories of social action imply theories of gender, are central to an analysis of the use of computer mediated discourse by feminists and other advocates of social change.

Discourse analysis means many things to many people. In a general sense discourse analysis refers to the examination of issues related to language, communication, and social action. It includes the sub-fields of propositional and syntactical analysis (part of what Gregory and Carroll (1978) refer to as the formal aspect of language), speech act theory, sociolinguistics, content and conversational analysis, and writings on the relation of language to the formation of consciousness and ideology. Recently scholars interested in artificial intelligence have begun examining and writing about discourse in search of theory to guide the development of computer systems that mimic human communication.

Although here discourse analysis is defined as the study of the relationship of language and communication to social action, a great deal of material about discourse analysis fails to explicitly address how language

and communication are related to social action. Consequently, it is often difficult to see how writings in each of the sub-fields above are related to one another.

Some writing deals with discourse analysis as a method or technique, and focuses on issues such as how to collect and code data. Other material presents discourse analysis as a model or theory of communication and focuses on the interpretation of data (written and/or spoken language). Finally, some work is concerned with language in a more global or abstract sense, as a process that is both influenced by and reproduces class and/or gender based social relations (see for example Smith, 1990b).

To confuse matters even more, discourse analysis is studied and used for many different purposes. This leads some authors to focus on linguistic rules and syntax (the production of language), while others focus on discursive styles and patterns in efforts to demonstrate how men and women communicate differently. In the latter case, the end goal of demonstrating gender-based communication differences might be to argue that women are inferior to men, or it might be to argue that language contributes to the oppression of women.

All of these factors combined suggest that several issues should be addressed in any study where discourse analysis is incorporated. First, it is useful to distinguish between theories or models of discourse, and discourse analysis as method or technique. Within the former category, one might additionally address the relationship of language to social action or reality, as well as the relationship of language to gender construction. The failure of most work on discourse analysis to make explicit these relationships has made it difficult to ascertain the theoretical perspectives underlying techniques for discourse analysis and to determine what the practical

implications of models of discourse are.

When the relationship of language and communication to social action is placed in the foreground, one can begin to understand why some authors focus on linguistic rules and others focus on types of discourse, or language as a process that reproduces social relations. In addition, this approach allows us to see that implicit to all theories of social action are theories of gender, and that communication is central to the production of gendered selves (Todd & Fischer, 1988). In discussing the relationship of language to social action, it is possible to see how authors writing from different perspectives view the relationship of language and communication to gender.

Theories Of Social Action And Gender

Todd and Fischer (1988) credit Parsons as the dominant theorist of the structuralist-functional position within sociology. His normative theory of social action (that explicitly addressed gender), argued that society was held together by norms, values, and consensus. Norms were seen as governing action in a direct and unproblematic way. Male and female roles were different: men were instrumental, women expressive. Gender roles are seen as acquired through complex gender socialization, where language is an unaddressed background resource. For Parsons, the world he described was as it ought to be (Todd & Fischer, 1988). This theory suggests that roles might change if norms and values change, but lacks detail about how such changes might occur. Theories of social action that subsequently emerged, such as symbolic interactionism and ethnomethodology in a sense responded to some of the limitations of the structuralist-functional view of social reality.

Symbolic interactionists proposed a process that explained how

individuals acquired a sense of self. For symbolic interactionists, a sense of self is acquired in interaction with others, and language is the medium of acquisition. Enholm (1980) outlines three assumptions of symbolic interaction theory, originally formulated by Herbert Blumer: "(1) we act on the basis of meanings; (2) meanings arise out of our social interaction; and (3) meanings are handled in, and modified by, an interpretive process which we use in dealing with stimuli" (p. 124). Where Parsons saw gender roles as somewhat fixed (men were instrumental, women expressive), for symbolic interactionists, given that the self is acquired in interaction (within a normative context), the potential for greater flexibility in gender roles exists. Gender roles do not follow directly from social norms.

For ethnomethodologists, one's sense of self (and one's social reality) is also in a sense acquired (or accomplished) through interaction. However, unlike symbolic interactionists, ethnomethodologists focus on the normative environment as a topic of study (Todd & Fischer, 1988). Within an ethnomethodological perspective, "instead of using talk to make sense of other phenomena, talk itself is the phenomenon of study" (Painter, 1980 p. 135). Communication is viewed as an ongoing process that constitutes social reality; social reality can exist only through communicative work. The acquisition of gender is seen as a process that occurs through interaction with others, as individuals learn to take for granted what others do in relation to gendered roles (Todd & Fischer, 1988; Smith, 1990b). Gender identity is accomplished.

Although each of these theories differs in the position language is accorded in relation to social action, and in terms of how gender is understood, the three theories are similar in that all focus on individual behaviour as the unit of social change. In addition, for both symbolic

interactionists and ethnomethodologists, the focus of analysis is on language. In contrast, marxist and marxist-feminist scholars have focused on the larger social context within which these interactions occur, and in doing so, focus on change as a wider social process. For Marxists, western capitalist societies can be characterized by a division of labour, hierarchy, and class domination. All are requirements for a smooth functioning capitalistic society. Marxist-feminists add to this that patriarchy is another inter-related system of oppression that structures both men and women's lives. Capitalism and patriarchy are both attributed roles in the formation of consciousness and sexist, gendered behaviour. Language is viewed as an active force, inseparable from ideological, economic, and political contexts.

Theory And Practice: The Link Between Theories Of Action And The Practices Of Discourse Analysis

Many people writing about and employing discourse analysis as a method fail to make their assumptions about the relationship of language to social action explicit. It is nonetheless useful, even in rudimentary form, to link the theories of action to the practices of discourse analysis.

Wooton (1975) points out that one controversy facing sociologists stems from how sociologists deal with what people say in naturally occurring situations. This controversy "centres around the question of whether it is more accurate and useful to determine the meaning of what we say independently of the particular context in which it is said" (Wooton, p. 14). Wooton has identified one of the more important features of discourse analysis in practice; that is, how the social context that communication occurs within is treated within the methods or techniques of discourse analysis.

If we return briefly to the structuralist-functionalist theory of social

action, we can recall that within that theory of action language is relegated to the role of an unaddressed background resource in relation to role (including gender role) socialization. Little attention is focused on the relationship of language to the social context it occurs within. Similarly, certain areas of research and practice (for example, content analysis[23]) that fall under the general heading of discourse analysis address language use somewhat independently of the social context in which it occurs. In the same sense that the structural-functionalist theory of social action is ambiguous about how norms and values change, content analysis is a technique for analyzing discourse that often neglects to address the social context or situational aspects of discourse. Although there is no direct link between a structuralist-functionalist theory of social action and quantitative content analysis, they neglect the situational aspects of discourse in similar ways.

Todd and Fischer (1988) identify two bodies of research that come under the heading of sociolinguistics. The second of these addresses linguistic rules associated with speech. Stubbs (1983; chapters 4 & 10), in his sociolinguistic survey of discourse analysis reviews syntactical and propositional analysis. Syntactical and propositional analysis focus on rules associated with the production and use of language, where the context or situational aspects of communicative events is not central to the analysis, although it considers context to a greater degree than quantitative content analysis.

Fishman (1972), in outlining issues in the sociology of language reviews what he calls descriptive sociolinguistics. Descriptive sociolinguistics

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[23]See Sumner, chapter three (1979) for a critique of quantitative content analysis.

attempts to identify generally accepted and implemented patterns of language use, usually within a social network or speech community. The logic of such an approach is that unless we can attain reliable descriptions of existing patterns of social organization in language, it would be impossible to ascertain how and why these patterns change or remain stable. This approach to sociolinguistics is similar to what Cameron (in Coates and Cameron, 1988) identifies as the quantitative paradigm within sociolinguistics. It is also similar to the first body of research Todd and Fischer (1988) identify under the heading of sociolinguistics: a body of research that demonstrates that people speak differently in different situations.

What Todd and Fischer (1988) refer to as the second focus of sociolinguistics, and Cameron names as qualitative sociolinguistics (in Coates & Cameron, 1988) is difficult to relate directly back to any single theory of social action outlined above. It places more weight on social context than quantitative sociolinguistics. Although some authors utilizing this second approach have merely identified differences in linguistic patterns, others have used the results of this type of sociolinguistic analysis as a starting point for discussions that can be linked back to a symbolic interactionist perspective.

If we return momentarily to symbolic interaction as a social theory, its connection with qualitative sociolinguistics becomes more clear. Enholm (1980), in discussing the implications of the assumption within symbolic interaction that we act on the basis of meanings, asserts that for symbolic interactionists, words are not merely signs of things, but names. "Their ascription to things, such as status, power, roles or group affiliations, gives meaning and determines what we do with regard to them" (p. 126). Further,

these names are not fictitious, but are observable reality; our ability to name and define our reality constrains our ability to act.

This is a point that resurfaces in many of the early writings concerned with women's use of language and sexism in language. The strategy it suggests (in Enholm's words "the appropriate place to concentrate on change is with symbols, the instruments that cause our problems and hold the promise of solving them") (1980, p. 127) also is frequently found in feminist literature on discourse analysis.[24]

Sociolinguistics (particularly qualitative sociolinguistics) considers the social context of language events more than propositional or syntactical analysis. However, speech act theory and conversational analysis[25] (occasionally considered to be part of sociolinguistics[26]) place even greater emphasis on the social context of communication than other methods for analyzing discourse that have been outlined above.

The correspondence between ethnomethodology and the method of analysis employed by ethnomethodologists is greater than between other models of discourse and methods or techniques chosen for analysis. Ethnomethodologists view talk as an ongoing process that a sense of social reality is accomplished through. Ethnomethodologists maintain that in

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[24]See for example (chapters of Berryman & Eman, 1980; Hill, 1986; Kramarae, 1981; Kramarae, Schulz & O'Barr, 1984; Spender, 1980 & 1984).

[25]Here conversational analysis is used in the sense ethnomethodologists use it, rather than the more generic sense (similar to content analysis) one occasionally comes across in discourse analysis literature.

[26]See note 2, page 12 in Coates & Cameron, (1988) for an example of authors who consider conversational analysis to be part of sociolinguistics.

relation to a constantly evolving social reality individuals in a sense learn how to interpret nonrandom events, so that it appears as if their performance is smooth. Some statements can only be interpreted in light of contextual information, that might include a specific social setting, the past experiences of a speaker (including past social interactions with others), or the relationship between these and other factors in a speech situation (Painter, 1980).

Although talk (communication) is central to an ethnomethodological analysis, the focus of ethnomethodological analyses is on how contextual information is drawn on by participants as they negotiate a sense of social reality through communicative acts. Rather than focusing on linguistic rules or patterns as does propositional or syntactical analysis, or attempting to document linguistic differences (sociolinguistics), ethnomethodologists focus on how background knowledge is drawn on in communicative acts to make interaction (and therefore social reality) non-problematic. For ethnomethodologists, the unit of analysis is typically either a speech act, or a conversation. Speech act theory looks at how language is used and the social action accomplished by its use. Conversational analysis attempts to identify patterns that occur in talk in a range of contexts.

The techniques for analyzing discourse that have been discussed so far have all focused on speech or language as the topic of analysis. However, another group of writings that falls under the heading of discourse analysis focuses, in contrast, on the ways institutional arrangements, or dominant cultural patterns (such as capitalism and patriarchy) influence language. For example Smith argues that

> texts are situated in and structure social relations...texts enter into and order courses of action and relations among individuals. The texts themselves have a material presence and are produced in an economic and social process which is part of a political economy (Smith, p. 162, 1990b).

Smith and others whose work is derived from a Marxist based tradition focus on how language both is created by and creates dominant cultural patterns. Although the practices of propositional analysis, syntactical analysis, sociolinguistics, speech act theory and conversational analysis all begin with an investigation of language, and consider context to varying degrees, Marxist based analyses of discourse in a sense start by defining or describing the context within which language exists, and only subsequently consider language within that context. In keeping with this perspective, chapters two and three began with a broad presentation of the social relations that surrounded the development of computer networks, and chapter five (the first of three chapters focusing on analysis) takes as its starting point computer network structure.

Although not particularly common, it is possible to combine two or more approaches to discourse analysis in investigating a single text or communicative event. Smith's work (1987, 1990a & 1990b) for example derives from both a Marxist and an ethnomethodological approach. Spender (1984) combines a symbolic interactionist/sociolinguistic approach with a feminist understanding of women's oppression in relation to patriarchy. Van Dijk (1985) points out that "economic and cultural dominance in communication is not only a macro-phenomenon, but also is actualized in the details of media texts and their uses" (p. 8). He argues that classical content analysis can be combined with a critical ideological analysis, and that all levels of analysis (from 'surface' properties of presentation to the underlying meanings of speech acts performed) need to be addressed.

A multi-faced approach along the lines advocated by Van Dijk has been used here. Smith's (1990b) notion that texts are constituents of social relations that offer access to institutional processes that govern our lives has been used to link computer network structure to the character of communication. Also central to the analysis presented in part B is the notion that we should focus on the mundane taken-for-granted aspects of communication drawn on by participants in a communicative event that allows them to make sense of the problematic. This focus on the taken for granted aspect of communication also directed my inquiry towards network technology. The explanations presented in part B are derived in part from my attempts, that began in 1985, to develop communicative competence within the world of computer networks.

ANALYZING COMPUTER MEDIATED DISCOURSE

Various types of discourse present different obstacles and opportunities to analysts. Spoken discourse, for example must be recorded and transcribed prior to analysis. The act of recording spoken interaction usually requires participant-observation. Participant observation has its own strengths and weaknesses. It can be difficult to control the quality of transcriptions, and, it is often difficult to convey tone and other important information in written analyses of spoken discourse. Computer-mediated discourse is easy to collect (by copying computer sessions to a disk and later printing them out), does not require transcription, and can be collected

without the knowledge of speakers.[27] The researcher can collect data and at the same time 'participate' in an on-line discussion, or observe it unknown.

Although these characteristics make computer-mediated discourse a nice source of data to work with, it is a somewhat problematic source of data in that it shares some characteristics with traditional forms of written discourse, and others with spoken discourse. The characteristics it shares with these two general forms of discourse vary from network to network and between speech communities.

Cameron (1985) argues that the term language blurs the distinction between speech and writing. Although linguistics often claim that speech is more basic than writing and that writing is merely a graphic representation of speech, in reality people's language use and linguistic practices vary (Cameron, 1985). Concerned with the same distinction, Stubbs (1983) points out that spoken language is constructed in real time, and written language is generally produced and edited at leisure. Stubbs argues that there are conventions against allowing real time pressures affecting written text to be present within the finished written product.

Stubbs' (1983) distinctions in fact do not work well for computer mediated communication. When communication occurs via computer network it is not at all uncommon for text to be unedited (particularly when the

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[27]With the exception of previously agreed upon private interactions, most computer-mediated discourse is public. Authors/speakers know they are being read/heard, but don't know in many cases exactly who is hearing. Computer text is a public phenomenon, analogous to a community bulletin board at the laundromat, letters to the editor of the local paper, or graffiti. With the exception of private discussion groups and one-to-one conversation, participants use computer networks with the knowledge that what they say is public.

'speaker' is unfamiliar with the computer system being used), and to mix stream-of-conciousness writing (much like one might find in a diary or letter to a good friend) with more formal written forms. In addition, some types of computer networks (computer bulletin boards, for example) seem to support a form of discourse that reads like a conversation where no interruptions take place. Warland (1989) describes a similar juxtaposition of standard English and oral English (where oral syntax is overlaid onto traditional written structure), in her review of a novel written by a Native Canadian. Computer-mediated discourse varies in form in relation to the network type and speech community involved, at times more closely resembling either written or spoken discourse. It is perhaps best viewed as a hybrid form of discourse. Identifying it as such encourages the use of techniques appropriate to both spoken and written discourse, and potentially encourages a broader interpretation of data.

PRACTICES

Formal data collection took place between January 1988 and December 1989. Transcripts of on-line communication were collected from four computer networks. The networks selected were chosen because they represented different physical network structures, and each had been in operation as a vehicle for the discussion of women's issues for several years. Although efforts were made to monitor all communication on the four networks for the first year, this proved problematic. The high volume of message traffic that occurred on Usenet, combined with my tenuous access to the Computer Science unix system at Simon Fraser University left me at odds with the system administrator over disk space. Five months after data collection began a major network reorganization occurred, and Simon Fraser

no longer received the FeMail mailing list regularly. The regular recycling of messages on CompuServe, combined with hourly access fees, limited collection of data from that network after research funds had been exhausted.

Due to the limitations identified above, as well as variations from network to network in terms of how long messages were available on-line (or in archival form) after they were written, the time span data covered varied from network to network. The data analyzed in this study is described in table 4.2, on page 119.

Attempts were made to collect data from two additional computer networks (both were bulletin board systems). One is a community based computer bulletin board system (BBS) in Ottawa (Alternet), and one is a feminist bulletin board in the United States (the Jane Adams BBS in Chicago). In both cases, technical difficulties prohibited data collection. In the case of Alternet, data transmission was repeatedly garbled. In the case of the Jane Adams BBS, although network discussion could be read while connected to the system, all attempts to capture the data to disk resulted in empty files. Despite these difficulties, I had over two thousand pages of data to work with.

Data consisted primarily of transcripts of computer network interaction. In all but one case the transcripts were collected through participant observation. In the one case where transcript data was not collected solely through participant observation, a complete transcript including all messages transmitted from the inception of the Femail mailing list in April 1984, through the date data was requested (mid January, 1988)

TABLE 4.2: DESCRIPTION OF DATA

Network	# of Messages	# of Participants	Data Collection Period	Dates Messages Spanned
Soc.women	650	258	January 20, 1988- March 12, 1988	January 14, 1988- March 12, 1988[1]
Femail	1339	349	January, 1988	Feb. 29, 1984- Jan. 1988
CompuServe	353	10	February 6, 1988- February 28, 1988	February 1, 1988- February 28, 1988
Women's Bulletin Board	2440	114	January 28, 1988- November 22 1988	March 1986[2]- November 20, 1988

[1]Although an examination of date headers in the sample showed forty-four different days, these messages were collected over fifty-two days. Because Soc.women messages are deleted from the host node regularly and technical difficulties (such as inadequate disk space on the host machine) result in the host node from time to time rejecting its messages, gaps exist in the sample. Data was collected over fifty two days, with no messages from eight days, and a low volume of messages on thirteen of the forty four days. Low message volume may indicate that not all messages were received for those days. Similar conditions are likely to apply to other Usenet sites receiving Soc.women.

[2]Working with a limited amount of storage space, WBBS sysops deleted some messages and left others available for readers. Most messages dating back to 1986 were primarily informational in nature. The bulk of messages available on the WBBS during data collection were written in 1987 and 1988.

was obtained on computer tape.[28] In all cases I acted as an overt participant-observer. The extent that I was visible as a participant and/or observer varied from network to network. In all cases (other than one-to-one electronic mail exchanges) the transcript data collected exists in the public domain.

Other sources of data include nine formal interviews conducted with individuals and one group interview of four people involved in designing, implementing and/or operating computer networks included in the study, as well as numerous informal face to face and electronic discussions. Formal interviews lasted from one to three and a half hours in duration, and were taped when informants consented. In two instances, archival records (meeting minutes from network planning meetings and electronic transcripts of network planning discussions) were obtained. Finally, though sparse, articles published in the mainstream and alternative presses supplemented other forms of data collection.

Data analysis consisted primarily of qualitative discourse analysis performed on paper copies of network transcripts. Each transcript was printed in a standard format. Data appeared on paper as it appeared on the screen, with the exception of line numbers in the left-most columns, and a large blank space on the right of every page, where comments were entered during coding. Coding categories emerged in an initial reading of the data, and coding and comments were added on the transcripts themselves during

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[28]In this instance, I had been a participant-observer on this network beginning in 1986, and continued acting in this capacity until network links changed and the list became unavailable to me, in May, 1988. Ed Hall, who operates one of the Femail nodes graciously supplied a tape archive of the data. John Bradley assisted in transfering it to a format that could be read by computers at Simon Fraser University.

subsequent readings. An index of each coding category for each network was constructed on index cards, and guided me back to relevant line numbers easily.

Analysis of the transcripts was enhanced through the use of computer tools available through Simon Fraser University's mainframe computer and the Computer Science Unix facility. The first of these tools is a text editor, that was used primarily to search for simple strings of text in electronic versions of the transcripts (for example message numbers). The second computer tool employed (the AWK programming language) was designed to facilitate textual pattern matching. Small programs written in AWK allowed me to do things such as search for all of the lines of a computer file that indicated who sent a message. The results were placed in new computer files and in some cases further analyzed. For example, for each network, a listing of all of the lines indicating authorship of messages was alphabetically sorted. It provided the basis for determining the gender composition of network contributors presented in chapter six. During preliminary phases of data analysis attempts were made to use the Oxford Concordance Program (OCP). It produces word counts and indices of words in computer files. After some preliminary trials the OCP was rejected because it was too slow, cumbersome and the results it produced were of questionable value.

PART B:

INDIVIDUAL USES OF COMPUTER NETWORKS

CHAPTER 5:

THE ANATOMY OF A MESSAGE: NETWORK STRUCTURE AND MESSAGE STRUCTURE

INTRODUCTION

A number of related factors combine and result in variations in both the structure and content of messages from network to network. Among these are the network structure (whether a network is a single node network or a multi-node network), the locations a network is accessible from (e.g., computer oriented workplaces or women's organizations), the software used to structure communicative exchanges between individuals who come together as a group on a particular computer network, and the individuals themselves.

Messages from different networks can be broken down into different components (chapter five). By focusing on these different components, we begin to gain a sense of how network structure and the software used to facilitate communication between individuals on a given network in a general sense organizes and structures communication. Focusing on message structure is a useful starting point in discussing the communities that computer networks are accessible from (chapter six), and differences in the content and style of messages, as well as variation in group processes that occurs from network to network (chapter seven).

By focusing first on the structure of messages from different computer networks and the relationship of message structure to computer

network structure, a sense of how these networks differ in feel, and how the content of messages varies from network to network begins to emerge. Many factors contribute to the personality or feeling of a computer network, and although the network structure and its relationship to the structure of messages is only one factor, it should become increasingly clear that other aspects of communication in these on-line groups are directly and indirectly related to network structure.

In discussing the form of messages from Soc.women, the Femail mailing list, the Men's and Women's Issues Section of CompuServe, and the Women's Bulletin Board System a complete message at the beginning of each section serves as an example of messages characteristic of each network. Excerpts from additional messages are used to illustrate variations that commonly occur within each general form.

THE SOC.WOMEN NEWSGROUP

The Soc.women news group is an unmoderated news group available at Usenet sites. In the message that follows (Soc.women Message 1, p. 125),[29] several distinct sections can be identified that appear to be somewhat uniform across Soc.women messages. These are headers (lines 516-526), attributions (lines 527 and 533), attributed text (528-532 and 534-536), original text (537-545), and the signature (lines 546-554). These components result from both the multi-node structure of Usenet, and features designed into the Usenet software.

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[29]Message numbers used here have been sequentialy assigned within this document in order to assist the reader in locating material. Line numbers of individual messages are taken dirrectly from data files. In most cases, with the exception of font, messages have been reproduced here exactly as they originally appeared during data collection.

Soc.women Message 1:

516. Path: fornax!ubc-vision!alberta!ihnp4!homxb!whuts!mtune!rutgers!husc6!necntc!rayssd!hxe
517. From: hxe@rayssd.ray.com (Heather Emanuel)
518. Newsgroups: soc.women
519. Subject: Re: Earthsea is Juvenile?
520. Message-ID: <1768@rayssd.ray.com>
521. Date: 19 Jan 88 17:58:42 GMT
522. References: <22867@cca.CCA.COM> <98900002@convexs>
523. Sender: hxe@rayssd.ray.com (Heather Emanuel @ Raytheon Company, Portsmouth RI)
524. Reply-To: hxe@rayssd.RAY.COM (Heather Emanuel)
525. Organization: Raytheon Company, Portsmouth RI
526. Lines: 36

527. Heather Rose writes:

528. > So, what I was thinking of doing would be to keep my name, my spouse keep
529. > his name, then give the boys his name and the girls my name. Then hopefully
530. > we recognize a lineage of females as well as the lineage of males. I guess
531. > the family as a whole could be recognized as the joining of two lines, one
532. > from the male, the other from the female. What do you all think of this?

533. And Doug Hosking responds:

534. > Personally, I think there are much more important things to think/worry about
535. > if/when I marry, I suppose the name issue will have to be addressed, but
536. > I'm not about to make a big deal of it...

537. As gently as I can:

538. Yeah, well *Heather* said she was worried about it *now*. This is a
539. prime example of what has been mentioned here as "trivializing a
540. woman's concerns." I know you do not mean this, but here it is.
541. Often, when we (the general "we") claim that subtle sexism is
542. everywhere, we are challenged to define it. So we define it, and we
543. are challenged to give "specific examples of when *I* do it."

544. So I'm giving a specific example.

545. By the way, Heather, I like your naming scheme.

546. --Heather Emanuel
547. hxe@rayssd.ray.com
548. {allegra,cbosgd,gatech,ihnp4,linus,necntc,raybed2,uiucdcs}!rayssd!hxe
549. ---
550. I do not think my company *has* an opinion, so the ones in this
551. article are obviously my own.
552. ---
553. "It's often said that life is strange, oh yes, but compared to what?"
554. -Steve Forbert

HEADERS

In Soc.women Message 1 (p. 125), line 516 displays the path the message has traveled from the usenet site where it originated, to the site

where it was read. Reading from right to left, hxe is the I.D. of the sender (how the sender is identified on the sending machine). Rayssd is the name of the sending machine, and each phrase separated by an exclamation mark is the name of another usenet site (a node name, representing a specific computer at a specific site) along the path from sender to receiver. Often there is little or no apparent connection between a site's name, and its function or location, (for example husc6). In other cases the connection is more apparent. For example, we can deduce that this message has traveled to and from computers at Rutgers University (rutgers), a computer in Alberta (alberta) and a machine at the University of British Columbia (ubc-vision) en route to where it was read (a computer at Simon Fraser University). The pathname is generated automatically by the software.

Line 517 of Soc.women Message 1 contains information about both where the message is from, and who it is from. Unless the sender indicates that an alias should be used in the From: header, the sender's I.D. (hxe), machine name (rayssd), and the node name (ray.com) are automatically supplied by the sender's network electronic mail software.[30] In this case, ray.com stands for Raytheon, a commercial organization, (indicated by the .com). Other organizational indicators include .edu for educational institutions, .mil for military nodes, .gov for government nodes, .uucp for a uucp network node and .arpa for an Arpa network node. Finally, unless the sender indicates otherwise, whatever name s/he has registered with the sending machine (if any) will automatically be appended to the end of the

[30]On Usenet, users wishing to send a message to a usenet newsgroup use software called the netnews software. Although the editing functions are the same if one is composing a message for a newsgroup or local distribution, the information supplied in headers is different.

From: header. In this case, the sender's name is Heather Emanuel.

Line 518 indicates which of the many Usenet newsgroups the message was sent to. When a message is composed using the news software, the sender is prompted about which groups the message should be sent to. It is possible to send a single message to several groups, (this is known as cross-posting). In the case of a cross-posted message (messages on Usenet are normally referred to as articles), the sender is prompted by the software to indicate the group any follow up articles should be posted to. Line 519 indicates the subject of the message, and is supplied by the sender. If the sender has indicated that the message is a response to a previous message, (the netnews software prompts the user for this information) the subject line will be read from the original message. However, like most items in Usenet headers, the sender can override the default or supplied information with information of their choosing. The software can be set to prompt the user about whether the message being composed is a summary. If the reply is positive, the user is prompted to fill in a summary line and/or keywords that describe the article. Had the sender of this message designated that it was a summary, a summary header line would follow line 519.

Lines 520 and 521 of Soc.women Message 1 (p. 125) contain information automatically supplied by the sending computer. Because the order of messages received by a reader on the Usenet network varies from location to location (in a general sense reflecting the distance from sender to receiver) and does not follow a particular order (e.g., chronological), each message must have a unique identifier that allows participants in a discussion to have a shared sense of what previous message is being referred to. This is accomplished by the information in line 520, that is generated by the sender's computer. Line 521 contains the date and time the message was

sent. GMT in that line refers to Greenwich Mean Time. Greenwich Mean Time is eight hours later than Pacific Standard Time, or five hours later than Eastern Standard Time. This message was sent from the Eastern Standard Time zone (Rhode Island) at nearly six p.m. GMT, or nearly one p.m. Eastern Standard Time. In other words, this message was sent at around lunch time in the sender's time zone.

Line 522 of Soc.women Message 1 (p. 125), contains the identification numbers of the messages this message refers to. The software for sending messages around Usenet prompts the user about whether this message is a response to previous messages. If the answer is yes, the user indicates the previous message or messages the outgoing message is a response to, and the reference numbers are automatically generated on the appropriate line. Lines 523-526 are generated by the sending computer, unless the sender either suppresses or alters the information. For example, a sender may choose to omit the sender and reply lines in the outgoing message, in attempts to reduce unwanted mail. Or alternatively, the sender may elect to supply an alias for the organization line, as well as any text appearing in parentheses in lines 517 and 523. Although the software is set up to explicitly allow aliases in these lines, particularly knowledgeable users are able to supply fictitious information for other header lines not normally accessible through the use of the alias command built into the software. Finally, line 526 is supplied by the sending machine. It allows a reader to see the length of a message prior to deciding whether or not to read it. In addition, if lines of the message are lost during transmission, it allows the reader to determine that this has occurred.

Lines 527-554 compose the text of the message. Usenet messages can be further broken down into attributions (lines 527 and 533), attributed text

(lines 528-532 and 534-536), original text (lines 537-545) and a signature (lines 546-554). Each of these message parts performs a specific function.

ATTRIBUTIONS AND ATTRIBUTED TEXT

Several factors contribute to the need for and convention of attributions and attributed text in Usenet news groups. First, because readers at different nodes receive Soc.women messages in different sequences, a common result is that a reader at a given site may receive a response to a message (a follow-up) prior to receiving the original (or parent) message. One group participant, referring to a hotly debated parent article notes this phenomenon in the opening line of a follow-up article:

Soc.women Message Excerpts 1:

4126. (yet to see the original, only cites get here)

Second, any given Usenet node may subscribe to over a hundred Usenet newsgroups. Usenet newsgroups generate a high volume of message traffic. For example, message traffic in Soc.women frequently generates in excess of one hundred full pages of messages per week. The combined volume of message traffic from all the newsgroups results in a need to delete newsgroup messages to make room for new messages on a regular basis (e.g., every three days). Consequently, if a reader has not read a newsgroup for a few days, by the time the reader joins the group again, it is possible that a message that generated a number of follow-up articles may have already

been purged from the reader's node.[31]

The combination of the reference header (line 522, Soc.women Message 1 p. 125), and attributed (or quoted) text together with an attribution assists a reader in creating or reconstructing a context for the original text contained in a follow-up message. Quoted text provides a context for replies by both showing "what points in the original [the sender] is concerned with and (2) by refreshing the reader's memory about what the original said" (Anderson, Costales and Henderson, 1987, p. 280). Typically, quoted text is preceded by a greater-than symbol (>). The software for responding to newsgroup articles provides an opportunity for the sender to include a copy of the original article in the follow-up, complete with greater-than symbols (Anderson, Costales and Henderson, 1987). These cues together can be seen as performing a function similar to when a newcomer joins a conversation in progress at a party, and requests that another participant in the conversation recount the pertinent details of the missed dialogue, so they can be heard for all those participating in the conversation.

Although some suggested guidelines exist that specify acceptable network conduct (netiquette) on Usenet (see for example Anderson, Costales and Henderson, (1987) for one of the few published accounts), these are often

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[31]One system administrator at a Usenet site describes this process: "Different newsgroups have different timeouts. For example, soc.women on our system times out in three days...There's a shell script that deletes messages that are, say 3 days old; the amount of time that you can keep something around is variable. You can set it on the system. Decisions are made pretty arbitrarily. High volume groups get dumped every couple of days. If it is useful or needed, it gets kept around longer. Somebody makes an arbitrary decision about what is useful or needed, and how long a newsgroup is kept around" (J. Dueck, personal communication, October 15, 1990).

inaccessible, particularly to less knowledgeable users.[32] Once located however, the Usenet articles about netiquette do offer some guidelines in relation to quoted text. Among these are the 50% rule; there should be "at least as many lines of your original material as there are lines of quoted material" (Anderson, Costales and Henderson, 1987, p. 281). Anderson et.al. (1987) point out that some versions of the netnews software have implemented the 50% rule, and automatically check the ratio of original to attributed material. However, they also point out it is relatively easy to cheat this mechanism by adding blank or nearly blank lines of text to a message. Another strategy used to cheat the mechanism that monitors messages for adherence to the 50% rule is to include filler lines. This leads to sections of messages such as the following:

Soc.women Message 2:

11565. no no no no no no no no no no no no no no no no no
11566. new new new new new new new new new new new new new new new new new
11567. taletaletaletaletaletaletaletaletaletaletaletaletaletaletaletaletaletaletale
11568. to to to to to to to to to to to to to to to to to to
11569. telltelltelltelltelltelltelltelltelltelltelltelltelltelltelltelltelltell

In addition to simple attributions and attributed text such as those in Soc.women Message 1 (p. 125), attributions can be complex, or nested.

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[32]For example, after I had both heard about and read about the existence of the series of articles on Usenet that address netiquette, I connected to my local node and began looking for the material. Although all published accounts I had read suggested the material I was looking for would be located in a particular place on my node (all nodes in theory share some principles of organization), the subdirectory (analogous to a file folder in a drawer) was not where it should have been. I began looking in other places for the subdirectory, and eventually found it. I eagerly went on to look at the contents of the subdirectory, only to find the subdirectory was empty. Ironically, the empty subdirectory was intended for new users. I eventually found the new user subdirectory complete with the information I wanted by gaining access to a different unix node, that was organized more along the lines of the published accounts I had read.

Soc.women Message 3, below provides several examples of nested attributions and attributed text.

Soc.women Message 3:

```
15538.  From: emneufeld@watdragon.waterloo.edu (Eric Neufeld)

15545.  In article <6717@sol.ARPA> ray@cs.rochester.edu (Ray Frank) writes:
15546.  >In article <5085@watdragon.waterloo.edu> emneufeld@watdragon.waterloo.edu (Eric Neufeld) writes:
15547.  >>In article <8121@eddie.MIT.EDU> ooblick@eddie.MIT.EDU (Mikki Barry) writes:
15548.  >>>In article <6631@sol.ARPA> ray@cs.rochester.edu (Ray Frank) writes:
15549.  >>>>Dear Sirs:
15550.  [...edited...]
15551.  >And Eric writes:
15552.  >>When I read Mikki Barry's first posting on the Dear Sir/Madam issue, I
15553.  >>thought it sounded like the power trip of an arrogant asshole. I am sure
15554.  >                                  **********
15555.  >>many of us know of a certain type of shithead who is utterly haughty towards
15556.  >                                  **********
15557.  >>her/his underlings, but grovels in front of her/his superiors.  In fact, Ray
15558.  >>Frank is trying to insinuate that Mikki is that kind of a person.
15559.  >>
15560.  >Beg your pardon Eric but I've never refered to Mikki on your level.  Calling
15561.  >people names is not usually my forte.  You say you now feel you were wrong
15562.  >and that's fine but do not try to make yourself feel better at my expense.

15563.  Apologies extended for anything I may have insinuated.  What I meant to say
15564.  was: my first reaction to Mikki's articles was furious-ness against what I
15565.  thought was very *arbitrary* activity....

15581.  [me again...]
15582.  >
15583.  >>I think Ray is wrong about the kind of person Mikki is.  First of all, Mikki
15584.  >>is no fool.
15585.  >
15586.  [ray now...]
15587.  >I do not know what kind of person Mikki is.  I've never met her. ...
```

Line 15538 is a header, indicating that this message is from Eric Neufield. Line 15545 (the first line of text in Eric's message) is an attribution, indicating that Ray Frank wrote a message (Ray 1) that Eric is quoting in the current message. Line 15546 is another attribution, indicating that in the message Ray 1, Ray quoted a portion of an earlier message of Eric's- (message <5085@watdragon.waterloo.edu>, or Eric 1). Line 15547 indicates that in the message Eric 1, Eric quoted Mikki Barry (Mikki 1). Line 15548 indicates that in the message Mikki 1, Mikki quoted Ray Frank (Ray 2). Line 15549 indicates that in the message Ray 2, Ray wrote the text "Dear

Sirs." The author of the current message (Eric) then omits some text (line 15550), and continues with an attribution from the message Ray 1, (line 15551) followed by attributed text from the message Ray 1 (lines 15552-15556). The text in lines 15552 -15553, line 15555, and lines 15557-15559 were originally included in the message Eric 1. Note that in each of these lines, there are two greater-than symbols beginning the line. Lines 15554 and 15556 however were added by Ray, in the message Ray 1. These lines begin with only one greater than symbol, along with line 15546, also authored by Ray.

The process of nesting attributions can be seen as analogous to a conversation that follows the form of "he said that she said," and so on. Another way of reading lines 15545-15562 of Soc.women Message 3 (p. 132) would be to say the following. Eric said that Ray said that Eric said that Mikki said that Ray said Dear Sirs (lines 15545-15549). Then Ray and others said some things that are omitted (line 15550), and then Ray said that Eric said (line 15551) the contents of lines 15552-15553, 15555 and 15557- 15559. Ray emphasized the terms arrogant asshole and shithead (lines 15554 and 15556) that were used by Eric, and went on to criticize Eric (lines 15560-15562) in relation to an apology he made to Mikki. Eric then reiterated his apology (lines 15563-15565), and in doing so indicated that he felt he had been misunderstood. In addition, he supplies an alternative explanation (in lines 15564-15565) for whatever it was he said in the first place that he believes was misinterpreted. Later in the message Eric again recounts additional segments of past exchanges. Having outlined the complex chain of attributions in lines 15545-15549 (and perhaps adopting a more personal tone in keeping with the intent or purpose of his message), he uses a less formal style of attribution in lines 15581 and 15586.

The message form of attribution-attributed text-original text appears to be unique to the logical structure of Usenet newsgroups, and the software that organizes the flow of communication within Usenet groups.[33] The phenomenon of nested attributions appears to be a good indicator of problematic discourse in Usenet newsgroups. This topic is addressed in greater detail in chapter seven, in a section titled "Contentions: Dealing with Disagreement On-line" (p. 211).

SIGNATURES

In Soc.women Message 1 (p. 125), lines 546-554 contain the message signature. Anderson, Costales and Henderson (1987) describe a signature as a concluding section consisting of a name, a phrase or two, possibly a disclaimer, and one or more network addresses and/or paths. The use of signatures gives the sender an opportunity "to show some personality, and to provide a corporate disclaimer if you feel one is needed" (Anderson, Costales and Henderson, 1987, p. 289). Although some versions of the netnews software prohibit signatures that exceed four lines, as this message and many others demonstrate, signatures in excess of four lines abound.

The signature in Soc.women Message 1 (p. 125), consists of a name

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[33]Although the social intervention of moderated Usenet newsgroups could lessen and/or eliminate this phenomenon, in moderated Usenet newsgroups that I have read on occasion this phenomenon is usually present. Because both the moderation of the group and the distribution of messages are decentralized (and supported by the netnews software), messages still arrive at different sites in different orders, creating a need for attributions. In addition, the availability of the feature in the netnews software that allows direct quoting and supplies the attributed text indicators (greater-than signs) and parent articles may reduce the likelihood of the evolution of alternative social norms. To investigate this claim, see Soc.feminism, a Usenet moderated newsgroup that began too far into the data collection period to include in this study.

(line 546), a usenet address (line 547), a path statement (line 548) that indicates a number of node names that the sender's node communicates with (allegra, cbosgd etc.), a disclaimer (lines 549-552), and a quote, that in this case is from a song. Signatures vary a great deal. Within the constraints of what can be accurately communicated over Usenet, graphics may appear in a signature. In addition, a signature may reflect the sender's alias. For example, the following signature is from a message whose author, named Josh, uses the alias Spidey.

Soc.women Message 4:

```
24168.    --
24169.     /\ Josh /\  <<<----    THIS HAS BEEN A MESSAGE FROM SPIDEY AND THE SPIDEY TEAM
24170.    //\\ .. //\\ Beauty is the purgation | Current SPIDEY TEAM headquarters:
24171.    //\(( ))/\\ of superfluities.       | jdia@cs.rochester.edu
24172.    / < `' > \   -- Michaelangelo       | ...{rutgers,cmcl2,decvax}!rochester!jdia
```

THE FEMAIL MAILING LIST

The Femail mailing list is a multi-node distributed mailing list available through a variety of networks and sites, including some Usenet nodes. Unlike Soc.women, Femail is a moderated group. In addition, although Usenet news software automatically allows anyone with access to Usenet nodes to automatically send messages to or receive messages from Soc.women as well as a number of other Usenet newsgroups, no equivalent feature exists for the Femail Mailing List. In contrast, all messages that are eventually distributed through the Femail Mailing List are sent to the group moderator. The moderator then edits the messages (e.g., removes headers), bundles them up and sends them to a number of individuals using different computer networks. These individuals may forward messages to other nodes in addition to reading them. Unlike Soc.women messages, in the absence of technical difficulties all Femail messages are typically received by all readers in the same order. These factors result in messages that differ in structure as

well as content from Soc.women messages. Femail Message 1 (p. 137) provides a starting point for a discussion of the differences between Soc.women and Femail messages.

HEADERS

Lines 18153-18160 of Femail Message 1 (p. 137) contain headers. Although the headers are in many respects similar to those in Usenet messages, there are some important differences. First, because all Usenet news sites use one of a handful of news software programs, regardless of what node a receiver reads the newsgroup from, the headers are more or less the same, and similar rules govern the information contained in those headers. For example, the possibilities of altering a number of Usenet header lines to include aliases is universal to all Usenet news reading software. In contrast, each Femail reader accesses the Femail messages from a local node. Each local node potentially has unique electronic mail software. Consequently, although one reader may receive messages with headers similar to those in Femail Message 1 (p. 137) below, another reader may receive messages that only contain headers indicating when a message was sent, who it was from, who it was sent to, and a message I.D. unique to the receiving system.[34] Similarly, although electronic mail programs at some nodes may allow readers responding to the group to use aliases in a number of headers, e-mail software at other nodes may allow senders to use aliases only in the "From:" header, and some e-mail software may prohibit the use of

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[34]A Femail message received at Simon Fraser University contains only these headers. In contrast, Femail Message 1 (p. 137) was originally received by Ed Hall at the Rand corporation, who graciously archives the messages from the Femail Mailing list.

aliases entirely.

Femail Message 1:

```
18153.  From: decvax!watmath!j
18154.  Received: by decvax.UUCP (4.12/1.0)
18155.  ?id AA29271; Thu, 12 Apr 84 01:59:17 est
18156.  Date: Wed, 11 Apr 84 10:22:22 est
18157.  From: decvax!watmath!jamcmullan (Judy McMullan)
18158.  Message-Id: <8404111522.AA22450@watmath>
18159.  To: decvax!randvax!edhall
18160.  Subject: Group Messages 1 to 6

18161.  February 29, 1984??Message 1

18162.  This is the inaugural message for the "feminist" mailing list.
18163.  I guess it is to be expected that it would be impossible to reach a consensus
18164.  of 38 people! The original proposal asked if this should be a
18165.  woman-only group or a feminist group (or some intersection set of those) and
18166.  a choice had to be made! Of the 30 women who responded, most either
18167.  didn't tell me their feelings or didn't object to having men in the
18168.  group. There were 6 women who really wanted men to be included and
18169.  17.women who really didn't want to have any men in the group. There
18170.  were 8 men who wished to be included. So, it was really rather
18171.  difficult to see any clear consensus. I have therefore made the
18172.  decision to include everyone who wanted to be in the group.

18173.  The first few respondents didn't care whether the group was moderated
18174.  but then I got about 1/3 who were in favour of it. So, mail your
18175.  submissions to me and I will forward them. Of course, if you wish to
18176.  make a private follow-up to a group mailing, you are always free to
18177.  do so.
18178.  Since everyone on the list has managed to send me mail, I think you
18179.  all know a valid address to me. I have signed my full mail address,
18180.  once again, in case you would like to refer to it. After this, I will
18181.  just sign "Judy" or something!
18182.  As moderator, I will not forward any non-constructive flames (esp.
18183.  from woman haters/fearers) but if I seem to be forwarding junk, please
18184.  let me know and I will tighten up my criteria for exclusion.

18185.  I would have liked to have some snappy first topic to include in this
18186.  mailing but I spent the afternoon deep in a fog of hacking and I do not
18187.  think my brain has emerged yet. Perhaps I will be brighter later in
18188.  the week.

18189.  --Judy McMullan
18190.  ...!{allegra|bunker|clyde|csin|decvax|hcr|
18191.  linus|sunybcs|syzygy|triton|utcsrgv|utzoo}!watmath!jamcmullan

18192.  ------------------------------------------------------------------------
18193.  March 2, 1984?Message 2 - from Sophie Quigley
```

Femail messages contain two types of headers. Although the process of getting messages around the Usenet network is totally automated by the Usenet software, the same is not true of Femail messages. Each time a batch

of messages is sent out to Femail readers, the moderator must either manually specify the exact address(es) where the batch of messages is going (line 18159), or program the sending computer to supply those addresses. Although Usenet messages jump from feeder machines to backbone sites, and on to other backbone sites, no such structure exists for Femail messages. Femail messages travel in a similar fashion to Soc.women messages, rather than passing from one machine to another nearby, Femail messages are more likely to pass through fewer computers along the way, with each jump being a greater distance. The analogy of a stream is useful here. Imagine crossing a stream by stepping from one rock to another nearby, until the stream has been crossed. This is how Soc.women messages travel. In contrast, an alternate method to crossing the stream is to attempt to jump directly from one bank to the other. This is how Femail messages travel.

The first type of headers in a Femail message (lines 18153-18155) indicate the movement of a message from one location to another. These lines are appended to the message during its transmission from where it was sent (a computer named wamath, (line 18153) that stands for Waterloo Math, at the University of Waterloo, in Waterloo Ontario), to where it was received. Line 18153 of Femail Message 1 (p. 137) contains an abbreviated From: header, indicating where the message was from, but not whom it was from. Line 18154 indicates when the message was received by the computer named decvax, via the Unix to Unix copy program (UUCP),[35] (the name of the software that handled the transfer of the message from Ontario to

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[35]When the Usenet news software is used to send soc.women messages it too relies on uucp. However, because the use of uucp is built into netnews software, the use of uucp is transparent.

California). Line 18155 indicates the I.D. used by the uucp (this is a shortened form of the message I.D. in line 18158) and the time it was received by the machine decvax. The question mark in the first column of line 18155 (as well as question marks in 18161) indicates that some text that was included in the message could not be properly translated by one of the computers that handled the message along its route from sender to receiver. Each question mark indicates one lost character.

The second type of headers are based on information that results from a combination of what is supplied by the original sender's node (for example the message I.D. and time the message was sent), and what is supplied upon the receipt of the message by the receiver's node. Line 18156 indicates when the message was mailed by the sender. Notice that the time in this message is expressed in Eastern Standard Time, the time zone where the sender is located. In line 18157 the sender's name was likely generated automatically by her node. Depending on both the electronic mail software at both the sending and receiving nodes however, a From: header may include only a pathname and I.D., leaving the sender's identity ambiguous in the absence of prior knowledge. Line 18158 is a message I.D.. It was generated by the sender's node. Line 18159 is the address the batch of messages was sent to. The receiver was Ed Hall, at the Rand Corporation. The information in the final header (line 18160) was supplied by the moderator, indicating the subject of the messages. In this case the subject was the first six messages of the Femail Mailing list.

Although not entirely evident from the Femail Message 1 (p. 137) (only one message of a "batch" of bundled messages was included in Femail Message 1), the headers associated with messages sent to the moderator for inclusion in the Femail mailing have been removed by the moderator. Only

the headings associated with the moderator's distribution of bundled messages to additional nodes are included. This means that unless a sender includes some information about a path to their node and their I.D. in the message text (as the sender has done in this case in lines 18192-18193), in the absence of a prior arrangement it is impossible to communicate directly with other Femail readers.

INDICATORS

Relative to Soc.women messages, Femail messages are much more difficult to characterize in terms of structure. Several factors related to the logical structure as well as the social structure of the Femail Mailing list (particularly the social decision to have a moderator, addressed in more detail in chapter seven) combine to make the convention of attributions and attributed text unnecessary in Femail messages. First, all readers (in theory) receive all messages in the same order. Second, the volume of material received by Femail readers is significantly less than that received by Soc.women readers - typically only a handful of pages per week.

The low volume of Femail mail relative to Soc.women mail is related to three factors. First, the act of sending a message to the Femail group is not as automatic as sending a message to Soc.women readers. The sender/participant in Femail must know the address and correct path to the moderator (often not available in message headers).[36] The equivalent information is automatically supplied to the sender/participant in Soc.women

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[36]Message headers contain a route from the last forwarding node to the receiver. Unless the batch of message was sent directly from the group's moderator to the receiver the headers do not indicate a return path to the moderator.

by the netnews software. Thus Soc.women participants face one less obstacle compared to Femail participants, in successfully submitting a message that becomes part of the group text. Second, the difficulty related to constructing paths and addresses to all potentially interested readers of the Femail mailing list somewhat limits the size of the Femail readership. Third, although Soc.women messages arrive daily and in a sense beg an immediate reply, Femail messages arrive perhaps weekly or bi-weekly (when everything is working smoothly). Since Femail messages are delivered to private mailboxes rather than public areas on the receiving computer, they are not subject to frequent automatic purges, as the soc.women messages are. Consequently readers may not be as compelled to respond immediately. The lower volume of Femail mail means a reader does not have to be familiar with and retain as much information in order to competently respond to Femail messages, relative to Soc.women messages. These factors together reduce the need to direct readers back through previous dialogue (one of the functions attributions and attributed text performs).

Finally, the absence of attributed text in Femail messages is related to the lack of uniformity in electronic mail software used to gain access to that group (not all participants use software that easily accommodates copying text from messages along with greater-than symbols) and the fact that designating a central node for message forwarding avoids the difficulties related to chronology inherent to Usenet. Participants in Soc.women all use different computers to gain access to Soc.women, and may use one of a handful of different computer programs to send an article to Soc.women. Despite this variation at the end user level, a level of uniformity exists amongst the different netnews programs. The coordinated uniformity of netnews programs that Soc.women participants send messages to that group

through ensures that in most cases, senders will be asked by the software if they would like to include attributed text. If the answer is affirmative, the parent message is supplied by the netnews software for editing by the sender. Through its structure the netnews software encourages the inclusion of attributed text. In contrast, participants sending messages to Femail gain access to that group through a variety of electronic mail programs, that have not been designed explicitly to foster the presence of that group or any other group. The electronic mail software used to access the Femail mailing list does not keep track of the message flow in that group, and hence does not query senders about messages being sent to that group. If a sender wanted to include attributed text in a Femail message, they would need to both possess the knowledge to move the desired text from an old message to a new message, and be willing to take the extra time to do so.

Although attributions and attributed text are nearly absent in Femail messages, mechanisms do exist to both indicate who the author of a particular message is, and to minimally contextualize that message. Lines 18161 and 18192-18193 of Femail Message 1 (p. 137) are what I call indicators. Line 18161 (as well as the beginning of line 18193) indicates the date the message was initially written. This allows a minimal anchoring to world events, and helps maintain the sense of chronology. Line 18192 is a separator, indicating the end of one person's message and the beginning of another person's message within a batch. Line 18193, as well as along with the date contained in the header locates the current message within the chronology of Femail messages and indicates who authored that message within the batch.

Unlike headers and the information contained in attributions in Soc.women messages (that is supplied from information in the headers),

whose parameters are set by the netnews software, the form and contents of indicators in Femail messages are supplied by the participants in the Femail mailing list group, the moderator, and the moderator in conjunction with the group. Excerpts from additional messages begin to illustrate both the other types of indicators used in Femail messages, and the processes surrounding the evolution of norms governing indicators in the Femail group. The following excerpts (labeled Femail Message Excerpts 1) on p. 143 contain additional indicators not present in Femail Message 1 (p. 137).

Femail Message Excerpts 1:

1301. Subject: Getting a PhD
1302. In reply to Sophie Quigley's message about choices:

1490. Subject: Re: Group Messages 27 to 35
1491. ?Re "womanspace": Ok, it seems that the concensus is that this
1494. ?Re: being mistaken for a secretary: Someone at Waterloo has a

2004. Re: Message 363...PhDs in math actually
2005. I just got the latest American Math Soc. Notices (==gossip carrier)and it
2009. Re: Message 371...discriminating in favor of women

In the excerpts above, three similar mechanism are used to cue Femail readers about the context of messages that combine to form the discourse of the Femail mailing list. Although these mechanisms perform a function similar to Soc.women headers, they are indicative of differences in narrative style of messages in the Soc.women and Femail groups (see chapter seven). In line 1301 of Femail Message Excerpts 1, the sender indicates the topic of her reply, and contextualizes it by indicating it is a response to a previous message by Sophie Quigley (line 1302). Along similar lines, the author of lines 1490-1494 indicates first that he is responding to a specific batch of messages (line 1490), and in opening lines to subsequent paragraphs (lines 1491 and 1494) indicates the topical context for his reply. A third variation on this theme is illustrated in lines 2004-2009, where the author indicates both the number of the message she is responding to, and the topic

of her response.

In contrast to Soc.women messages that more often than not follow the form of attribution, attributed text, original text (or a variation of this theme), and signature, Femail messages are more fluid in structure. They consist almost entirely of original text, and tend to convey the personal narrative preferences of their authors to a greater extent.

ENDINGS

Although signatures in Soc.women messages signal the end of a message and more often than not include computer addresses where the senders can be reached, the mechanisms for ending Femail messages are by comparison more varied. Some participants end messages with classic Usenet signatures that include a name, a phrase or two (the same phrase is typically appended to all messages), several addresses, and are graphically set apart for the rest of the message. However, like attributed text, this convention is rare in the Femail mailing group. More commonly, if electronic addresses are included in a message, they are simple (see Femail Message Excerpts 2 p. 145, lines 420-421), and may incorporate a personal closing comment (lines 569, 3417 and 8052). Many messages simply end, and others end with just the author's name, or in the case of lines 8053, 857 and 14244 of Femail Message Excerpts 2, occasionally a sender will sign a message in lower case, adding a personal touch. Although all of these things are possible within the Soc.women newsgroup, they occur infrequently. Femail participants appear to rely less on stock responses in ending messages, and more on the context of the message they are ending in composing their message endings.

One of the factors that undoubtable contributes to the casual message closures in the Femail messages is the evolution of norms facilitated in part

by the moderator, in relation to headers (see chapter seven). Femail Message 2 below, (that reiterates an earlier message from the moderator that was included in the third bundle of Femail messages sent out) indicates that the decision to strip messages of headers (and the related decision to limit one-to-one access to senders unless they consciously choose otherwise) occurred early in the group's formation process.

Femail Message Excerpts 2:

420. Marie Carey
421. ...seismo!carey

569. Thanx again ... Lynn T. Olson
570. tektronix!tekfdi!lynno
571. Tek Spectrum Analyzers

3417. From my heart,
3418. Patricia Collins
3419. {allegra|hao|ucbvax}!hplabs!pc

8052. Well, cheers for the time being,
8053. sophie

857. - rene
14244. ken perlow

Femail Message 2:

6854. January 30, 1985??Message 468 from the moderator

6855. Several people from the ARPA net are now receiving the feminist mail
6856. via Randy Trigg. It looks like they either didn't receive the introduction
6857. didn't really understand it. I would like to reiterate that my policy is to
6858. put the name of the person at the top of the article. If the person would
6859. like to see their return mail address published, they should put it the
6860. BODY of their article.
6861. I was not sure what name to use for Lianne and Lisa, above, so I did my best
6862. with what I had. Please remember, if you are signing with a name like Lisa,
6863. that there may be more than one Lisa contributing to the list. I attempt to
6864. differentiate, in the "Message xx from yy" line.
6865. Also, please do not ask me what Dave Schmitz meant by "this dl". I have no
6866. idea either. I do not edit them, just distribute them.

6867. --Judy McMullan

The removal of headers in Femail messages is in a sense the removal of cues; readers can not deduce the address of a sender from computer generated headers. The moderator's addition of a line to each message, (that

contains the date the message was sent, the message number and who the sender is), helps recreate the context lost through the removal of message headers. Unless they indicate otherwise, the site senders gain access to Femail from (usually a workplace) remains unknown. This process allows participants to contribute messages to the group, without leaving themselves open to personal attack via private electronic mail. This in turn may contribute to the more personal nature of Femail messages relative to Soc.women messages, and the more personal closures used to end those messages. These conventions are necessitated by the logical structure of the network (a non-Usenet multi-node network). It requires that a system for message distribution be chosen (in this case, distribution through a central node). In addition, both message distribution and the group's processes are facilitated by the moderator, reflecting a series of social decisions made by the group.

COMPUSERVE INFORMATION SERVICE MEN'S AND WOMEN'S ISSUES SECTION

CompuServe Information Service (CIS) is a single node wide area commercial network, accessible through value added carriers owned by CompuServe as well as other data line providers (such as GTE Telenet and Tymenet in the U.S., and Datapac in Canada). Contributors to Soc.women enjoy some uniformity in the software through which they access Soc.women messages. The multi-node nature of that network, combined with the lack of moderation of the newsgroup, results in a lack of message chronology and the need for attributions and attributed text. In contrast, Femail contributors gain access to that group's dialogue through a variety of electronic mail programs. Though also a multi-node network, because no mechanism for monitoring and controlling the flow of messages in Femail is built into

software participants use to access that group, the discussion requires that a single node be designated as a central node where messages can be submitted for inclusion in a chronological discussion. Each potential contributor to Femail must construct a path and address that will allow a message to travel from the sending computer to the moderator's computer. The moderator's computer receives the messages, and then bundles them up and sends them to group participants. Typically, access to the networks that participants of both Soc.women and Femail send messages through is gained at participant's workplaces. One way to think of this process is that in both cases, messages that make up the group dialogue are delivered to the person in the location where the person is.

In contrast, CIS users must gain access to the CompuServe computer through communications software on their computer, and usually one or more value added carriers before gaining access to the Issues forum (where the Men's and Women's discussion area was located). Once a user has gained access to the CompuServe computer, all users interact with the CIS computer through CIS software to read and compose messages. One way to think of this process is to imagine that messages that make up the group dialogues on CompuServe are delivered to participants at a post office; each participant travels a different path to get there (each participant has to contact the central node through value added carriers), but once they get there the surroundings are similar for all.

The centrality afforded by a single node network allows more flexibility in the type of information that can be easily accessed by users, and the types of communication that can occur. Although communication via multi-node networks handles messages reasonably well, making larger

documents or files easily accessible to all users is problematic.[37] In addition, multi-node networks typically do not allow users at different nodes to communicate in "real time;" that is, when they are all using the computer at the same time and communicating with each other with a barely noticeable time delay. The use of a single node network (such as CompuServe or the Women's Bulletin Board System) where all users are communicating via a central node adds the possibilities of one-to-many and many-to-many communication through large files stored on the central node, as well as real-time or simultaneous communication between multiple users. In addition, when all participants communicate with each other through a central node, the possibility exists for all users of that node to use the same database.

The nodes that users of multi-node networks access Soc.women and Femail through tend to be located in workplaces, that in many cases are directly or indirectly part of the computer industry. In this context, the process of communicating with a group tends to be a secondary, rather than primary function of the computer systems being used. In addition, the development of multi-node networks was based in part on the premises that communication with one's peers in other locations would boost productivity, that computer resources should be widely available, and that computer networks could contribute to democracy. Although communication via multi-node networks incurs costs, the costs incurred as a result of the existence of

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[37]Although multi-node networks do support file transfer, it is typically used in the context of one-to-one communication, rather than as a form of one-to-many or many-to-many communication. Despite the availability of some mechanisms that support one-to-many and many-to-many transfer of files on multi-node networks, this process is typically problematic.

Soc.women and Femail are borne by the institutions where access to these groups is gained. In contrast, the primary function of the computer and software CompuServe is run on is to encourage communication between individuals and groups, and at the same time generate a profit. CompuServe users are charged by the hour to use that service. The more heavily the service is used, the heftier the profit. Unlike the Soc.women and Femail groups, the existence of CompuServe in general, and the existence of various discussion areas in particular depends upon the successful sale of a product.

Typically, the computers serving as nodes for the Soc.women and Femail readers have a command driven interface: users type in commands, the computer executes them, and the user types in more commands. The software provides a minimal amount of information to assist the users, who must develop their knowledge of how to send outgoing and read incoming messages through a combination of reading manuals, talking to other computer users, computer support staff and through experimentation. Though the institutionally based computers through which participants gain access to Soc.women and Femail may provide access to a wide range of information, they primarily function as an information processing or management tool. The software is designed around the assumption that users will bring the knowledge required to interact successfully with the computer to their interactions with it. In contrast, CompuServe software provides a menu driven interface, that continuously provides menus of choices from which users select options. Users may select an area of the

computer to go to, or a task (such as composing electronic mail) to execute.[38] CIS users can find their way around that computer by simply using it; information about what is available and where to find it is accessible through the menu driven interface. The menu driven interface, by virtue of the time required to use it and the information it conveys helps sell CompuServe's product - use of time on its machine.

The first menu to greet CIS users alerts users to new features and services (see CompuServe Menu 1 on p. 151). However, before displaying these new features, the user is first reminded of CIS' copyright (lines 29-33), and then informed if they have electronic mail waiting (line 35). Line 38 begins the weekly What's New menu. The ampersand at the beginning of that line (as well as other lines), the Y and the j are generated by the the CIS computer; they probably indicate that a command has been automatically executed. Lines 41-54 display the array of options available to the user from that location on the CIS computer. Each line contains a number that a user can enter to move to the corresponding part of the CIS computer system.

Unless users issue direct commands that indicate which area of the CIS computer to go to after the What's New menu, they are moved into the top level menu (see CompuServe Menu 2 on page 152) after the What's New listing.

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[38]Once CompuServe users have learned their way around that computer, they can bypass menus by issuing commands. In addition, software exists that automates the entire process of signing onto the CIS computer, going to areas of interest specified by the user, downloading material in those areas and signing off. My discussion of CIS in the remainder of this section assumes that menus have not been bypassed or suppressed, and that users are not using software that entirely automates the process of using CompuServe.

CompuServe Menu 1:

```
29.  &   Copyright (C) 198
30.   8
31.  &  CompuServ
32.   e Incorporated
33.      All Rights Reserved
34.
35.   You have Electronic Mail waiting.
36.
37.
38.  &Y  JWhat's New This We
39.   ekY jNEW-1
40.
41.   Y&  1 Olympics '88 on CompuServe
42.    2 Winter Weekend in Waldenbooks
43.    3 Send CUPIDgrams with EasyPlex
44.  & 4 Comp-u
45.   -store Valentine Gifts
46.    5 New Access in 12 US Cities
47.
48.    6 Online Today Daily Edition
49.    7 CompuServe Community News
50.  & 8 Forum
51.  &Conference
52.    Schedules
53     9 Uploads: New Forum Files
54.   10 CLT Columns/Special Reports
55.   Y6 J
56.  &Enter choice !
```

(CIS.211)

To reach the area of CIS that previously contained the Women's Forum and later the Men's and Women's Issues Forum through menus, from the top menu a user would go to a communications/bulletin boards menu, then to a forums menu, then to the hobbies/lifestyles/health forums menu. Next the user would type in the number to move to the special interest forums menu, and from that menu would select the national issues and people forum. Finally, the forum menus (CompuServe Menu 3, p. 154) would be accessible.

Each of the selections listed in the CIS top menu (CompuServe Menu 2, p. 152) leads to a wide array of choices related to the listed topics. For example, by selecting the reference menu (line 196) one gains access to a

number of databases including the Academic American Encyclopedia, a database of government information (U.S.), and on-line versions of Consumer's Reports and Books in Print. By selecting news/weather/sports, (line 190) one can gain access to an Associated Press data base, and an on-line newspaper library, as well as sports and weather information. The communications/bulletin boards menu (line 189) provides access to the CB simulator, electronic mail, classifieds, a member directory, and customer service in addition to forums or special interest groups.

CompuServe Menu 2:

```
187.  Y&  1 Member Assistance (FREE)
188.      2 Find a Topic (FREE)
189.      3 Communications/Bulletin Bds.
190.      4 News/Weather/Sports
191.      5 Travel
192.      6 The Electronic MALL/Shopping
193.      7 Money Matters/Markets
194.      8 Entertainment/Games
195.      9 Hobbies/Lifestyles/Education
196.     10 Reference
197.     11 Computers/Technology
198.     12 Business/Other Interests
                    (CIS.90.1001)
```

Once a user reaches the CIS Issues forum menu (CompuServe Menu 3, p. 154), they may gain access to seventeen subtopics (lines 1118-1135). Once a selection is made, the user is moved to the functions menu (lines 1166-1177). This menu allows the user to specify what they'd like to do next. In addition to leaving a message, reading messages and entering the conference modes, users can enter the data libraries where they can upload or download a file, read bulletins about the issues forum (bulletins advise users of upcoming conferences, new files in the data libraries and so on), look up information about members of the Issues forum, or review instructions. User options (line 1174) allow the user to specify their preferences in relation to how much text is displayed on the screen at a time, subtopics to ignore or

read and so on.

If a user chooses to read messages, the read messages menu (lines 1179-1189 CompuServe Menu 3 p. 154) appears. Although the Usenet software allows Soc.women participants to read messages in an order specified by the user, (this might include forward, reverse, marked messages only, individual messages or scanning message titles), readers of Femail can only read the messages in the order they appear. Of the three networks discussed so far, CIS offers the greatest range of options regarding how messages can be read. In addition to the methods of reading messages available on Usenet, CIS allows users to read threads (line 1183).

A message thread is simply a number of messages that are topically related. If message threading were not available in the CIS software, messages related to all of the subtopics included in a forum would appear together, forcing readers interested in only men's and women's issues to read through (or scan the titles of) all of the messages related to all seventeen subtopics in the issues forum before finding and reading the messages of interest. Message threading is handled automatically by CIS software. When a sender responds to a previous message, the response is added to the current thread. Sysops can break a thread into two or more subtopics, however the software does not currently permit sysops to join two or more subtopics into a thread (CIS Sysop). Message threading not only allows related messages to be read in the order they were written in, but also permits readers to skip entire groups of messages that do not interest them.

CompuServe Menu 3:

```
1115.   &Y JSUBTOPIC SELECTION
1116.
1117.
1118.    1 Peace/Foreignpolicy
1119.
1120.    2 Political Issues
1121.    3 Individualism
1122.    4 Freethought Issues
1123.    5 Men/Women's issues
1124.    6 Parenting Issues
1125.    7 RESNA Issues
1126.    8 Handicapped Issues
1127.    9 General Issues
1128.   10 Paranormal Issues
1129.   11 VersaBraille et al.
1130.   12 Mutual Aid Selfhelp
1131.   13 Adoption Issues
1132.   14 Defense Issues
1133.   15 Ethics/Human Rights
1134.   16 Security Issues
1135.   17 Election '88
1136.    N Add new subtopics
1137.
1138.   &Enter choice !

1164.    Y JThe Issues Forum
1165.
1166.    FUNCTIONS
1167.
1168.   & 1 (L) Leave a Message
1169.    2 (R) Read Messages
1170.   & 3 (CO) Conference Mode
1171.    4 (DL) Data Libraries
1172.    5 (B) Bulletins
1173.    6 (MD) Member Directory
1174.    7 (OP) User Options
1175.    8 (IN) Instructions
1176.
1177.   &Enter choice !
1178.    2
1179.    Y JREAD MESSAGES
1180.
1181.   & 1 (RF) Forward
1182.   & 2 (RR) Reverse
1183.    3 (RT) Threads
1184.    4 (RS) Search
1185.    5 (RM) Marked
1186.   & 6 (RI) Individual
1187.    7 (QS) Quick Scan
1188.    8 (BR) Browse
1189.   &Enter choice !
1190.    1
```

(CIS.214)

CIS readers can also search for messages by subject, sender or receiver (line 1184). A quick scan (line 1187)[39] produces a message number, a subject or thread name, the section number and subtopic area the message or thread belongs to, and the number of replies to the original message, if any. Browsing (line 1188) produces similar information to quick scans, however it also queries the reader about whether they would like to read, or skip the message text. Once a CIS user has moved through the multi-layered menus and found the Men's and Women's Issues Forum, chosen a method for determining which messages to read, and selected a message to read, a message will appear. It might look something like CompuServe Message 1 on p. 156.

Lines 2157-2165 of CompuServe Message 1 are headers. The specific headers that appear reflect the message selection method chosen by the reader. In this case, the message was read via the browse command. Lines 2157-2160 are generated by invoking the browse command. Lines 2161-2165 are headers included in the actual message. Line 2157 indicates the forum message number, and the title of the thread. This line is computer generated, with the thread title taken from the subject line (2163) that is supplied by the sender. Line 2158 indicates the section of the larger forum the message or thread belongs to. Line 2159 indicates the number of messages included in the thread, and line 2160 prompts the user about whether or not they would like to read the full message text. The CIS computer generates lines 2157-2160, with the exception of the response to the prompt (the y in line 2160).

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[39]This feature was made redundant in a later version of the CIS software, which incorporates a better message organizing scheme.

CompuServe Message 1:

2157. #133440 Feminist vs Libber
2158. S 5 / Men/Women's Issues
2159. 19 messages
2160. Read? (Y or N) ! y
2161 #: 133440 S5/Men/Women's Issues
2162. 04-Feb-88 11:04:49
2163. Sb: #Feminist vs Libber
2164. Fm: Scott 76266,2273
2165. To: Sysop Elvira Casal 72247,3505 (X)

2166. A believer in Women's Lib (which I will call a "libber" to save space,
2167. and the way I often refer to myself-lest you see it as a slur), accepts that
2168. women have been unfairly treated in our society, often oppressed and degraded,
2169. and believes in liberating women to more fully share in our society, and
2170. liberating men to better accept this necessary and proper state of affairs.
2171. This to me is the road to true equality, to freeing BOTH sexes from the bonds
2172. and shackles of our own ignorance and stupidity.
2173. By contrast, a feminist is precisely that, a believer in a "women's
2174. movement", something that is antithetical to a libber. From what you say, I
2175. would suspect that you are closer to my definition of libber than feminists,
2176. though I accept that I may be somewhat presumptive in my analysis. I reject
2177. feminism as a sexist ideology, completely opposed to all that I believe in,
2178. particularly because it offers no role for men, other than as negative role
2179. models, or a sort of castradi auxiliary. Libbers, by contrast, are of all
2180. sexes, and in fact the very essense of what a libber is DEMANDS both sexes be
2181. involved, something that is often explicitly rejected by feminists. May I
2182. suggest considereing the difference between say, Andrea Dworkin (feminist,
2183. though a somewhat extreme example), and Judy Goldsmith (a somewhat feminized
2184. libber). Other examples of feminists include Elly Smeal and Molly Yard, while
2185. some libbers might include Grace Hopper or (to some extent anyway) Gloria
2186. Steinem.
2187. Any comments?

2188. 2 Replies

2189. *** More ***

2190. Enter command, N for next
2191. message or <CR> for menu !n
(CIS.207)

Lines 2161-2165 of CompuServe Message 1 are contained in the actual message. Line 2161 indicates the message number, section of the forum it belongs to, and the name of that section. Line 2162 indicates the date and time the message was sent. Since all participants are communicating through the CIS computer that acts as a central node, the time and date attached to the message reflect the time zone of the CIS computer (Eastern Standard Time). We have no idea where the sender is

located. If he was located in the Eastern Time Zone, he sent the message at the time indicated on line 2162. If he was located in the Pacific Time Zone, he sent the message at around eight in the morning, pacific standard time. Given that CIS is accessible from many locations throughout the world, he could have sent the message at eleven at night.

Line 2163 is the subject line. When a CIS user indicates they are replying to (or composing) a message, the forum software queries the sender about whether they are replying with the same subject, or composing a message with a new subject. If the sender indicates they are composing with a new subject, they are queried further to enter a brief subject line. Line 2163 indicates who the message is from. The information on that line is supplied by the CIS computer. Upon subscribing to CIS, each user is given a unique identification number. In an absolute sense, the CIS computer knows users by number, rather than names. The number is the sender's I.D. number, analogous to a Soc.women or Femail address. No indication of a path to the sender is required, since all participants are communicating through the same node (accessed through value added carriers or the regular phone system), rather than by leap frogging their messages from computer to computer to reach the desired destination. The name attached to line 2164 is the name the sender indicated when prompted to join the forum where this message appeared. The sender might have joined other CIS forums under different names. If someone wanted to reply to a message via e-mail, in light of the fact that different names can be used in different forums, the I.D. number attached to the from line is the best way to contact a participant.

Finally, Line 2165 indicates to whom the message was sent, and whether the recipient has read it. Although the message indicates it was sent to an individual, the fact that it was sent via the forum software (as opposed

to electronic mail software) makes it a public, or a one-to-many form of communication. Had the sender intended it to be a private message, they probably would have sent it through electronic mail. In the context of computer communications, e-mail is understood to be a private, or one-to-one form of communication. When one sends a message via the CIS forum software, the name of the author of the last message read by the person composing a message is automatically supplied on the To: line of the message being composed. This probably helps keep the dialogue moving, to the extent that people may be more likely to respond to messages addressed to them than general messages, or messages addressed to others. The X at the end of line 2165 indicates that the recipient has read the message.

Lines 2166-2187 of CompuServe Message 1 (p. 156) constitute the body or text of the message. Unlike Soc.women messages, there are no attributions or attributed text. And, unlike Femail messages, there are no indicators. In contrast to both of these groups, CIS forum message text is free of mechanisms used to cue readers in relation to the subject or chronology of messages. This is in large part due to the fact that single node networks accommodate a greater organization of material (in this case into message threads) making these mechanisms unnecessary. The context is supplied by the organization of messages into threads. This is only possible on a single node network.[40]

Although line 2187 can be thought of as a closing (it does in a sense indicate the end of the message), again it differs from the mechanisms used

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[40]Actually, the moderator of a multi-node network such as Femail could organize messages into threads. However, because there is no support for threading at the software level, an inordinate amount of time would be required to thread messages, making it impractical.

to end both Soc.women messages and Femail messages. In Soc.women, signatures exist at least in part to indicate a path to the author. No such mechanism is necessary on a single node network where an I.D. is all that is needed to get a message from sender to receiver. Although in a multi-node moderated group such as Femail, a time delay between when messages are sent and received often results in new topics being introduced to the group, a time delay between when a messages is sent and when it is read on CIS does not detract from the continuity of the dialogue (new message threads are begun). In a sense this makes closure less necessary. Frequently, CIS forum messages simply end, or, along the lines of CompuServe Message 1 (as well as lines 2300-2303 and 1506-1508 of CompuServe Excerpts 1 below), they may end by posing a question. Finally, if a message is ended with the name of the sender (lines 1507, 1530 and 1364 of CompuServe Excerpts 1 p. 159), in contrast to both Soc.women and Femail messages, even the inclusion of names at the end of a message appears to be quite simple.

CompuServe Excerpts 1:

2300. nary clauses based on sex! (grin to you too). P>S> Has
2301. there been any discussion on a recent court decision overthrowing the
2302. &limitation on Boy
2303. Scout leaders to being male?
(CIS.214)

1506. shown as mothers, grandmothers, teachers and other "caregivers." How much of
1507. this is justified by a "portrayal of reality" and how much is unconscious
1508. sexist bias? /Elvira/
(CIS.207)

1530. the fourth. --Elias
(CIS.207)

1364. Bob
(CIS.214)

Returning to CompuServe Message 1 (p. 156), lines 2188-2191 are supplied by the CIS forum software. Line 2188 indicates how many responses the current message generated. Lines 2189-2191 prompt the user to either

hit the n key for the next message, or the carriage return (<CR> in line 2191) to return to the previous menu.

THE WOMEN'S BULLETIN BOARD SYSTEM

The Women's Bulletin Board System (WBBS), like CompuServe is a single node network. Unlike CompuServe, it is run on a small personal computer system located in someone's home. It can only accommodate one caller at a time, it is not run for profit (using it is free, assuming one incurs no long distance charges to access it), and is not widely accessible via value added carriers.[41] Although CompuServe offers callers access to databases, real time communications, an electronic mall and more, the WBBS offers callers access to private electronic mail, public message exchange areas similar to CIS forums, and public files. Most significant, the WBBS exists solely to promote dialogue between women and about women, via computer communications.

Like CompuServe users, WBBS users typically gain access to the WBBS through a microcomputer and a modem. Though some users may gain access to the WBBS via value added carriers, or in some cases the regular long distance phone system, most users gain access to the WBBS by making a local call in the New York City calling area. Though some users appear to

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[41]When the WBBS began, it was not accessible at all via value added carriers. However, late in 1987, one of the two major value added carriers in the U.S. (GTE Telenet) realized there was money to be made from opening access to their services to computer bulletin board users. Telenet began to offer its services in the evenings and on weekends for a flat monthly rate to non-commercial users in a half dozen major U.S. cities, including New York City. This allowed residents of the other major cities served by PC Pursuit (the name given to the cut rate evening service) inexpensive access to the WBBS.

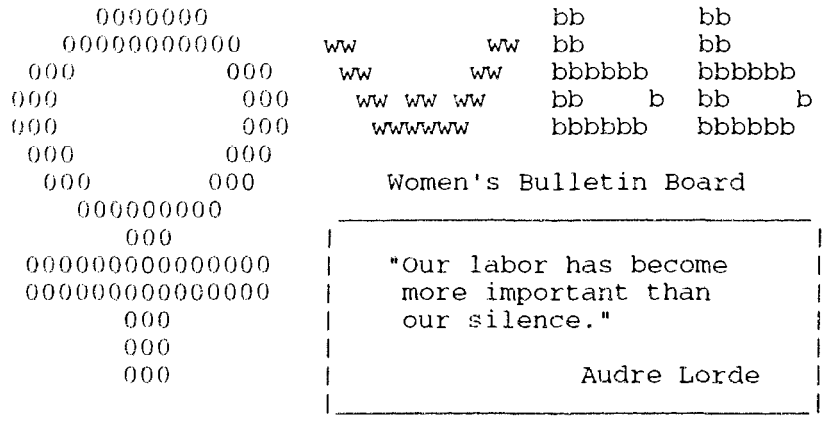
gain access to the WBBS from work, most appear to access it from microcomputers at home. Unlike CompuServe and the institutionally based computers through which access to Soc.women and Femail is gained, there are no books or manuals that describe how to use the WBBS. Like most computer bulletin board systems, users learn their way around the WBBS computer via trial and error. Once a user has successfully gained access to the WBBS, they can copy a list of commands and print it out on a printer in their home or office. Although some guidance is offered to users in the form of menus, unlike CIS, menus play a minor role in directing the user around the Women's Bulletin Board System.

When a user successfully calls into the WBBS, they are greeted by the WBBS logo (p. 162). It immediately indicates to the caller that this computer bulletin board is dedicated to women's concerns. Upon initially calling the WBBS, all users are given a temporary I.D., and informed through a bulletin that they should send a message to the WBBS sysops containing their full name and address, phone number and information about how they heard about the WBBS and how they hope to use it (all of this is considered confidential) in order to receive a permanent account. With a temporary account, several areas of the system are inaccessible.

After receiving the initial signon bulletin, any other bulletins left by the WBBS sysops appear on the reader's screen. Bulletins inform users of changes to the WBBS, alert users to potential problems, and solicit input from users from time to time when decisions need to be made. Next, if a user has electronic mail waiting, they are automatically moved to the e-mail area of the WBBS; otherwise, they are moved to the board and files area of the WBBS, to board 1, the Guest/Comments board. Unlike CIS, no menus offer options for the user to select. Instead, there is only a prompt.

89. 1 Guest/Comments board>

Women's Bulletin Board Greeting:



At the prompt, anyone unfamiliar with computer bulletin boards is likely to stare at their screen for a time, wondering what to do next. A seasoned computer bulletin board user is likely to type either the word help, or a question mark. On the Women's Bulletin Board, typing either the word help or a question mark at a prompt will result in further guidance in using the on-line help facility, or a brief listing and explanation of commands. From here, a user can learn the commands for both moving around the WBBS, and reading and composing messages.

The WBBS is made up of twenty-seven separate areas for messages (see List of Women's Bulletin Board Areas on p. 164).[42] This organization is similar in structure to the CIS forums, that are organized into sub-sections. The most significant difference between CIS forums and the WBBS is that although only one sub-section of one CIS forum was dedicated to women's

[42]Each area is described in chapter seven, in a section titled Organization of the Women's Bulletin Board System and Message Content (p. 260).

issues, the entire WBBS is dedicated to women's issues. In addition, although a great deal of the computer bulletin board software today allows message threading similar to message threading available on CompuServe, the software that organizes WBBS messages does not permit message threading, but rather, only allows a simple referencing of messages.[43] In the absence of message threading, the division of the WBBS into sub-sections or separate boards allows a greater topical organization than is typically possible with a multi-node network such as Soc.women (on Usenet). A mechanism exists in the WBBS software to indicate that a message is related to a previous message. However, it affords less topical organization than message threading.

Regardless of which board one is inspecting, the commands for reading and sending messages are the same. To move from one board to another, from a board prompt, one simply types b (for board) and the number of the board to which they wish to move. From a given board prompt, only the messages in that area can be read. Similar to CompuServe, WBBS readers enjoy a fair bit of flexibility in terms of how they actually read the messages that together form the dialogue on any given board. For example, a WBBS

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[43]The lack of provision for message threading was a topic of discussion on the WBBS, on B1. See chapter seven, Women's Bulletin Board Excerpts 7, p. 264. The reasons that message threading are not available on the WBBS are both simple and complex. One reason is that the WBBS was run on a donated older model computer, that can only run older software. Within the range of software available to run on the WBBS computer, a decision was made to use the TeleMaster bulletin board software because it was the only software available to run on the WBBS computer that allowed more than one sysop to administer the board from a location other than the keyboard directly attached to the WBBS computer (Group Interview, New York City, November 25, 1988). Founders have plans to replace the WBBS computer with a more current model.

reader can read all messages on a board non-stop, read only messages posted since the user last logged on, scan message titles by number, date, last logon date or last message read. From within a board, a sender has the option of either sending a private reply to the author of a previous message, or a public reply to all readers of that board.

List of Women's Bulletin Board Areas:

3556. 1 Guest/Comments board/files
3557. 2 Action Alert board
3558. 3 Women's Issues board/files
3559. 4 Technical Help board/files
3560. 5 ArtNews/Reviews board/files
3561. 6 Holistic Health board/files
3562. 7 In.Fem.Tech board *(later named Women News Wnews board)*
3563. 8 Women of Color board
3564. 9 Events Link board
3565 10 Research/Policy board/files
3566. 11 Modern Life board
3567. 12 Fifth Estate board/files
3568. 13 The Story board
3569. *(boards 14, 15, 16, 17 and 26 are used by groups,*
3570. *they are accessible only to members of those groups).*
3571. 18 Battleground board
3572. 19 Pen Tangle board/files
3573. 20 Teen TC board
3574. 21. The Lounge *(accessible to women only, by request to the sysop of the Lounge)*
3575. 22 Ageism & Aging board/files
3576. 23 Mom's Apple Pie board/files
3577. 24 Mixed Media board/files
3578. 25 The Survivor's board/files
3579. 27 Women and Aids board/files
(WBBS1; italics added for clarification).

Compared to the other networks discussed so far, WBBS messages are most similar in structure to CompuServe messages. Lines 1384-1386 of Women's Bulletin Board Message 1 (p. 165) contain headers. When composing a message, the user is prompted to enter a title, that is then added to the title line (line 1384). The second number on the title line indicates the total number of messages on that board. The first of the two numbers in parenthese indicates the number of the message being read. In the event that a message being composed is a response to a previous message, it is indicated with an /r at the beginning of the title line (see line 896 of Women's Bulletin

Board Message Excerpt 1, p. 165). Like CIS, the date and time that appear on line 1386 are the date and time in the time zone where the WBBS is located.

Women's Bulletin Board Message 1:

```
1384.   Title: League of Women Voters (245/254)
1385.   From: Marcy Rehner Cornell (ID=657)
1386.   Date: Sat Feb 27 14:58:30 1988

1387.   Has anyone had any experience with the League of women Voters, good or bad,
1388.   that they can share? I want to become politically active, but am not sure
1389.   of the best way of starting. Does anyone have any suggestions?
            (WBBS3218)
```

Women's Bulletin Board Message Excerpt 1:

```
896.    Title: r/Politics & Modems (7/254)
            (WBBS3218)
```

The information on the From: line (1385) is supplied by the software, based on the information supplied by the user upon initially calling the system. Once it has been entered, the user can not alter it. The I.D. number on line 1385 is generated by the computer. I.D. numbers are generated sequentially; the lower the number, the longer the author of a message has been using the WBBS. Since the message software assumes that any messages posted through it are public messages, there are no headers to indicate a message has been received. The concept of a physical bulletin board, where notices are posted to all readers is reflected in both the message structure and the participants' use of the WBBS.

Like CIS messages, attributions and attributed text are rarely, if ever seen on the WBBS. All readers can view messages in the order that they were sent. This reduces the need for conventions that contextualize specific comments within the broader dialogue. However, another type of attribution (that I call references) can be seen in some WBBS messages. Unlike Soc.women, Femail, or CIS, users of the WBBS often place messages on the

WBBS for other people who want specific information from the WBBS community, or may want to pass on information of specific interest to the WBBS community. Occasionally when this happens, the person who is putting the message on the WBBS on behalf of someone else will indicate that this is the case (see Women's Bulletin Board Message 2, p. 167). Lines 1584-1586 contain the WBBS headers. Line 1587 is the reference, indicating that the following material was requested by someone other than the person identified in the From: line of the current message. Lines 1588-1590 are the headers generated by the Chelsea Bulletin Board computer, where the message was originally sent from Puyallup to Barbara.

Like CIS messages, signatures and paths are both unnecessary on the WBBS since all callers are accessible on the WBBS. For the most part, WBBS messages simply end, without so much as the name of the author at the end. Like CIS messages, relative to Soc.women and Femail messages, WBBS messages are relatively simple in structure. The physical structure of the network, with its central node negates the need to quote earlier messages, or indicate (as the Femail moderator does with separators, and Femail participants do by including a reference to a batch of messages, a specific message or a topic) to whom or in reference to what a message is intended.

CONCLUSION

Alexander argued in 1974 that the organization of space in cities affected our behavioural patterns, and the role opportunities available to us. He viewed culture as a set of standard situations, each of which specified certain roles and allowed limits of behaviour for the people in those roles. Central to Alexander's analysis was the notion that spatial patterns played

an important part in human interaction.

Women's Bulletin Board Message 2:

1584. Title: Request for Info (253/254)
1585. From: Barbara Krasnoff (ID=45)
1586. Date: Sat Mar 19 13:00:02 1988

1587. This is posted at the request of a woman who contributes to Chelsea Square bbs:

1588. From PUYALLUP Msg #24747 "MAIL"
1589. To BARBARA KRASNOFF Fri Mar 18, 1988 11:45am (0:09)
1590. "Private"
1591. ---
1592. Seems I recall you're co-sysop on a women's bbs. I'm looking for a piece
1593. of info that someone there might know about (though I'm notlooking for
1594. a whole new BBS to call). Here's what I want to know. Before I moved
1595. to New York, I always gave old clothes, household goods, whatever, to
1596. battered women's sheltersH p. Always figured everything could
1597. always be put to use directly, by someone who needed it - since those
1598. women so often are starting over with next to nothing. But since I've
1599. come to NYC, I haven't know where I could donate such things. Could
1600. you find something like that out for me? I'd sure apprcciate it!!
1601. (I've got the spring cleaning bug. (Plus, I'm throwing a pretty big
1602. party next month, and I want to clear out all the spare "stuff" I can
1603. in the meantime.)

Computer networks can potentially transcend communicative barriers related to geography and distance. When they work correctly, they allow people to communicate quickly, and in some instances inexpensively. The material in chapter two indicated that computer networks are organized in particular ways that vary from network to network. Computer networks provide opportunities for people to communicate by linking telecommunications equipment together (computers and terminals, telephone and data lines) in different patterns (e.g., wide area central node networks or wide area multi-node networks). The specific physical pattern, or form a computer network takes results in different sets of what Alexander would call standard situations, that linked together constitute culture.

By focusing in this chapter on the link between two often taken for granted aspects of computer networks (network structure and message structure) we began to see the emergence of patterns in different aspects of

communication that vary from network to network. For example, differences in information contained in message headers reflect differences in the physical structure of networks. Soc.women headers include a unique message I.D. from the sending node and references to related messages, but do not convey to the reader precisely where a given message falls within the larger dialogue as Femail messages, CompuServe messages, and Women's Bulletin Board messages do. The greater ordering of messages on CIS and the WBBS is possible because all users are sending and receiving mail through the same host node. Although Femail users send and receive messages through multiple nodes, the greater ordering of Femail messages relative to Soc.women messages is possible through the designation of one node as a central node, with related tasks accomplished by a moderator.

Alexander (1974) argues that variation in physical patterns in cities leads to differences in the types of standard situations available to people in a culture, and that different situations offer people different role opportunities. In the case of computer networks, variation in network structure and form appears to lead to differences in the types of communicative situations available for participants. Evidence of these differences is found in the discernible patterns in message structure and narrative style that occur on specific networks, but vary from network to network. For example, attributions and attributed text (elements of message structure) are common only to Usenet newsgroups. They are indicative of a narrative style that is logical and rational. The combination of the physical structure of Usenet and software that organizes communication within Usenet newsgroups presents participants with not only the opportunity to easily create attributions and attributed text, but also the necessity to use attributions and attributed text. Attributions and attributed text contribute

to the rational, logical narrative style characteristic of Soc.women messages. The predominance of Usenet structure is expressed in the prevalence of attributions and attributed text, that create a set of standard situations for Soc.women participants.

In choosing to communicate about women's issues and feminism via a particular type of computer network, group participants are selecting systems that support some forms of communication, and not others. Benston (1988), building on earlier work by Dixon (1974) points out that technology can "be seen as a 'language' for action and self-expression with consequent gender differences in ability to use this language" (Benston, 1988 p. 14). Benston argues that the computer networking systems that are widely available are not the only ones that could have been created, given existing levels of technical possibility. Other computer networking systems might have been developed had system designers had different objectives. In the case of technology, one must use the available tools and techniques in attempts to carry out particular actions; actions are constrained by the technologies that are available. The 'language' for social action provided by available technologies must be understood "as one that imposes limits on what can be 'said.'" (Benston, 1988 p. 19). Many actions or expressions of self are not possible if a supporting technology is not available. As new technologies are developed, our vocabulary for action changes (e.g., enhancements to Usenet software accommodated the possibility of moderated groups), but does not necessarily expand (e.g., even though Usenet groups can be moderated, the software does not support chronological sequencing of messages, so the need for and predominance of attributions and attributed text persists).

From the material that was presented in this chapter, it should be

clear that each network produces messages that are structured in particular ways related to the specific physical structure of a given computer network. Although the structure of messages may be secondary, or taken for granted in the computer network design process, it should be clear that in choosing one type of network structure over another, we are implicitly making decisions about the forms of communication that will be available on the resultant computer network. In the next chapter it will become clear that at the same time we are specifying the form communication will take through our selection of a physical structure for a computer network, we are making decisions (usually implicit in our selection of a network structure) about who will be able to participate in on-line discussions about women's issues and feminism.

CHAPTER 6:

PARTICIPANTS: WHO'S OUT THERE ANYWAY?

INTRODUCTION

When people communicate face to face, a number of processes take place that allow people to assess others with whom they are communicating. When people meet, they meet in a physical place (work, school, the park) where often a role is suggested by the context of the meeting. For example, upon meeting another woman at the University, one could fairly safely assume that she was either a student, a faculty member, or a staff member. Upon meeting someone in the park, one would be likely to ascertain something about them from observing the activities they participate in relative to that location. Although what is ascertained about someone in an initial face to face encounter may or may not be correct, it at least acts as a starting point for assembling a context that communication within which another person occurs. In face to face encounters, in addition to place, the people with whom one communicates further contribute to creating a context through visual and non-visual cues. An often commented upon aspect of computer mediated communication is the absence of cues afforded by both place and observation of others involved in a given communicative exchange.

In some respects, computer mediated communication is similar to communicating via telephone. However, when communicating via telephone (excluding 1-900 or commercial party lines and specialized services), often face to face communications have occurred previously, or phone contact has

an explicit purpose (e.g., making an appointment). Both of these circumstances help contextualize the communication. Another important aspect of communicating via telephone is that the acoustic dimension of the phone (intonation and background noise) helps to contextualize communication. This dimension is absent from communication via computer network. Although communication via computer network may occur between people who have previously met, and/or whose communication occurs for an explicit purpose (such as asking a technical question or setting up a face to face meeting), when individuals come together to discuss a topic such as women's issues or feminism via computer, often they have not met face to face, and the context afforded by well defined purpose is often ambiguous at best. Communicators lack many of the clues about their communication partners that are in other forms of communication provided through place, visual, and acoustic cues. Consequently, when people come together via computer to discuss women's issues, they often know little or nothing about one another.

In the absence of visual and acoustic cues, one learns about the people with whom they are communicating through a variety of mechanisms, that appear to vary from network to network and group to group. In describing the participants of the Soc.women newsgroup, the Femail mailing list, the CompuServe Men's and Women's Issues Section and the Women's Bulletin Board system, what one learns about participants and how one finds these things out varies. These variations reflect differences in network structure and social norms, and appear to contribute to differences in message style and content from network to network. For each of the networks discussed access to the network, the gender composition of group participants and how they present themselves to other group members is discussed.

THE SOC.WOMEN NEWSGROUP

Information about Soc.women participants can be gleaned from a number of sources, each of which yields a different type of information. Message headers provide a source of information about participants' points of access into the Usenet system, where they work, and often, in the absence of unusual circumstances or the use of aliases, the gender of message authors.[44] Signatures, along with aliases provide a glimpse into participants' sense of humor. To a certain degree, message headers make it possible to determine what time of day messages were sent. Information of a more personal nature about participants is sparse in Soc.women messages. If it exists at all, it is often included incidentally in message text.

WORK AND ACCESS

Reading Soc.women headers gives one a sense that Soc.women contributors mostly gain access to Usenet and Soc.women from their workplaces, (mostly businesses and corporations engaged in computer related work, and science and applied science departments of universities). Though readership of Usenet is worldwide, most contributors are in the United States. The organizational affiliations listed in Soc.women headers read like a combination of Who's Who in Corporate and Academic America, and a contest for aspiring stand-up comics. In three weeks of Soc.women messages, participants from over seventy businesses and over fifty universities contributed messages. In addition over forty different organizational aliases were used, and at least seven people gained access to Usenet through

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[44]For an example of where this is not the case, see the discussion in the section titled Messages About Network Structure (chapter seven, p. 222) concerning Mark Ethan Smith.

computer bulletin boards and commercial services offering electronic gateways to Usenet.

Among the corporations and businesses that served as points of access for Soc.women contributors were Apple Computer Inc, AT&T Bell Laboratories (twelve sites), Bell Communications Research, Boeing Computer Services AI Center, Citicorp, Computer Corp. of America, Data General, Data Resources/McGraw-Hill, Digital Equipment Corporation, Fujitsu America Inc., General Electric (two sites), Hewlett Packard (4 sites), InterACT Corporation, McDonnald Douglas, Microsoft Corporation, Pacific Bell, Philips Laboratories, Rand Corporation, Raytheon Company, SRI, Sun Microsystems and Tektronix Inc. (2 sites). The two known contributors from Canada gained access to Usenet via the CRC in Ottawa, and Bramalea Software Inc. in Bramalea, Ontario.

Among the universities and colleges that contributors to Soc.women gained access to that group through are Carnegie-Mellon, Columbia, Cornell, Dartmouth, Emory, Georgia Institute of Technology, Michigan State, MIT, New York University, Northwestern, Old Dominion, Princeton, Purdue, Rutgers. San Diego State, Stanford, Ohio State, Pennsylvania State, University of Texas at Austin, University of Chicago, University of California (Berkeley and Santa Cruz), and the universities of Chicago, Delaware, Maryland, Pittsburgh, Southern California, Wisconsin (Milwaukee) and Yale University.

Although both message headers and text indicate that most contributors with university access to Soc.women work in the sciences, occasionally participants in other academic areas contribute messages to Soc.women. Among those in the sample were the School of Education (UC Berkeley), the Division of Social Sciences (UC Santa Cruz), and the

Extralegal Explorations Department of the University of Chicago. Canadian contributors in academia gained access through the University of Toronto, the University of Saskatchewan, University of Waterloo, and Acadia University. Finally, a small number of contributors gain access to Soc.women and other Usenet groups through computer bulletin boards and commercial services that either use the Usenet software, or have gateways (connections) to Usenet. Among those listed in the sample were Chinet - Public Access Unix (two sites), OZ BBS (Dallas, Texas), The Big Electric Cat, The Portal System (TM), The Unix(R) Connection BBS (Dallas, Texas), and the Whole Earth 'Lectronic Link in Sausalito, California.

From these headers, one gains a sense that Soc.women contributors are well educated, and those who are no longer students are likely to work at high paying jobs in the computer industry, or in academia. Depending on the stock of knowledge that a reader draws on in contextualizing contributors, the headers above might evoke images ranging from 'computer nerds' to 'members of corporate America' to 'peers'. A look at the organizational aliases users substitute for their default or system generated organizational affiliations however is likely to evoke a different set of images.

Among the organizational aliases included in the Soc.women sample were the Big "D" Home for Wayward Hackers, Bosco Gang Chocolate Center, Breakfast Antiphonies, caen, Cheeseheads United, Dea Ex Machina, Franklin's Tower, Fresh Pond Kollege of Packet Switching Knowledge, Garnet Gang Gems of Wisdom, Inc., Ivory Tower, Legion of Dynamic Discord, Not Really Records, Purple People Inc., QQQCLC, Slobbering Systems, Inc., SOWHAT -- Stop Oppression Without Hardly Any Trouble, Syd Barrett Cabal & the Unnamed Conspiracy, The Cat Factory, The Church of the Holy Starship, The Daisy Hill Puppy Farm, The Electric Otter Sushi Bar, The

Expressway to Yr. Skull, The G. Yac Logic-Chopping Company, The Institution for the Temporarily Intelligent, The Lab Rats, The Leaning Tower of Patterson Office, The Muppet Show, The Poto Mitan in the Houmfor, The Throne of Blood, The Whizzo Chocolate Company, The Wild, Chunky, Spunky Planet of Mary Lou Retton Clones, The Zets, Three Initial Corporation, Trailing Edge Technology, Unwed Wombats With Comfortable Shoes (Tarot Poker Division), Wonder Willi, Golfing Groundhog Figurine Mfg. and Zehn and The Art of ATE.

Some of these aliases may be puns on corporate names. For example, The G. Yac Logic-Chopping Company is an alias for Geac, suppliers of library computer systems. Others, such as Three Initial Corporation may be used to keep contributors out of trouble with their employers. One contributor expresses this with a disclaimer that ends his message:

1087. DISCLAIMER: My employers would shoot me if they knew I was writing this stuff.

Finally, aliases such as Trailing Edge Technology (perhaps an alias for Leading Edge Technology, a computer manufacturer) may be a statement about what workers think of their employers. Some aliases (such as The Daisy Hill Puppy Farm and The Wild, Chunky, Spunky Planet of Mary Lou Retton Clones) refer to popular culture. The Daisy Hill Puppy Farm is where Snoopy in Charles Shultz's Charlie Brown cartoon was born, and The Wild, Chunky, Spunky Planet of Mary Lou Retton Clones is a reference to the Bloom County cartoon. Some aliases are simply whimsical and some may cause readers to question the mental stability of their authors (e.g., The Expressway to Yr. Skull).

Based on an examination of times included in Soc.women headers (in cases where the geographical location of a contributor is known), it appears that participants are to a large extent submitting messages to Soc.women

during normal business hours. Popular times for submitting messages appear to be mid-morning, around lunchtime (1:00 p.m.), and mid-afternoon. Occasionally messages are submitted in the early evening, suggesting that contributors are either working late (this is a frequent occurrence in the computer industry), or have computers at home through which they gain access to their work-based Usenet systems.

GENDER COMPOSITION OF SOC.WOMEN CONTRIBUTORS

By examining names found in Soc.women From: headers, and by referring to message text for clues about the authors' gender in the event of gender-neutral names (such as Chris, Pat, Jessie) or aliases, the gender composition of Soc.women contributors can be estimated, along with message sending patterns. In the Soc.women sample, out of a total of two hundred and fifty eight contributors who contributed a total of six hundred fifty messages over forty four days,[45] sixty three percent of the contributors were men, twenty seven percent were women and the gender of ten percent of the contributors could not be determined. Just over half of the messages were authored by men, and just over forty-four percent of the messages were authored by women. The gender of the authors of slightly over five percent of the messages could not be determined (see Figure 6.1: Gender Composition of

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[45]While an examination of date headers in the sample showed forty-four different days, these messages were collected over fifty-two days. Because Soc.women messages are deleted from the host node regularly and technical difficulties (such as inadequate disk space on the host machine) result in the host node from time to time rejecting its messages, gaps exist in the sample. Data was collected over fifty two days, with no messages from eight days, and a low volume of messages on thirteen of the forty four days. Low message volume may indicate that not all messages were received for those days. Similar conditions are likely to apply to other Usenet sites receiving Soc.women.

Soc.women, on p. 179).

THE PRESENTATION OF SELF: PERSONAL INFORMATION

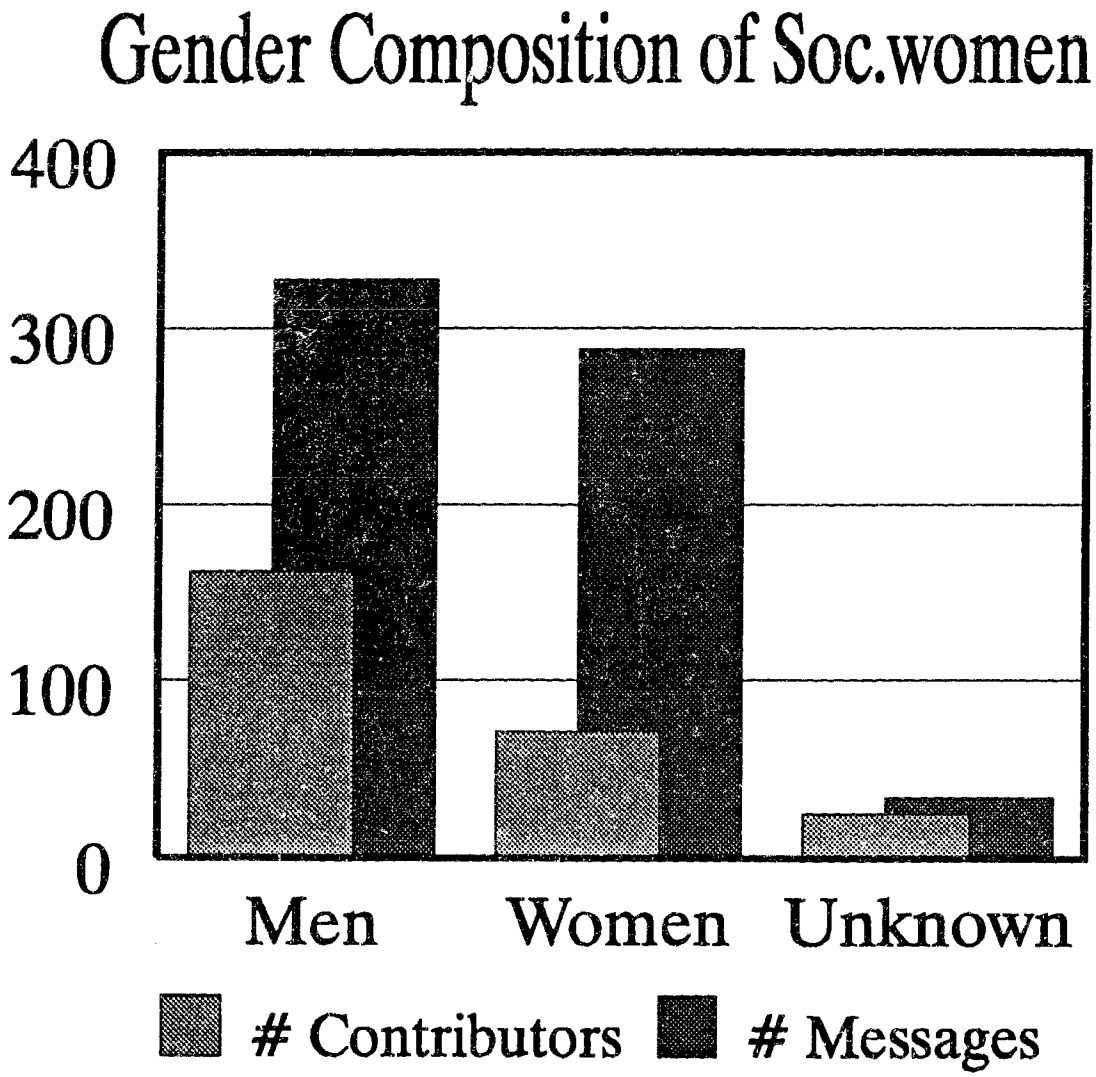
From reading Soc.women, one learns very little about the personal characteristics and demographics of that group's contributors. The personal attributes of contributors that Soc.women readers come to know about or assume are often gleaned from message text, where they are included as an incidental, or secondary feature. For example, in Soc.women Message 5 (p. 178) that was titled "Re: Snow White and the Black Woman," the author refers to a previous message (line 5580) authored by Adlai (line 5578). In the previous message, Adlai had apparently assumed that the author of the current message was a white woman. In lines 5581-5582 the author of Soc.women Message 5 corrects this misconception, by pointing out she is a non-white lesbian.

Soc.women Message 5:

5578. Well, Adlai, I'm glad it cheers you up -- really I am -- but,
5579. unfortunately, I'm a cynic at heart and I have to point out that
5580. your previous message mentioned that the bulk of your responses
5581. have been from minorities. I'm no exception, being a minority
5582. by race, sex and gender preference. I happen to know where you're
5583. coming from, and I have the unhappy feeling that it's almost
5584. impossible for most straight white upper-middle-class folks, particularly
5585. males, to relate to your concerns. Damned if I know how to rectify
5586. that. I know a number of women who are able to make the connection
5587. between their oppression as women and my oppression by race, sexual
5588. preference, whatever, but it's hard. I'd love to figure out how
5589. to draw analogies that will make it clear to those in the privileged
5590. parts of society where the rest of us stand.

Through a similar process, in Soc.women Message 6 (p. 180), readers learn through attributed text that Mikki Barry is in a position where she receives resumes (lines 7645- 7651). The author of Soc.women Message 6 then points out (presumably based on earlier Soc.women messages) on line 7652 that Mikki Barry owns her own company.

Figure 6.1:



	Men	Women	Unknown
# Contributors	162	71	25
# Messages	328	288	34

Soc.women Message 6:

7644. In article <8054@eddie.MIT.EDU> ooblick@eddie.MIT.EDU (Mikki Barry) writes:
7645. >
7646. >I throw away at least 10% of resumes and other correspondance that
7647. >addresses me as "Dear Sir". I do not waste time giving them a reason
7648. >for their rejection, since they obviously did not waste time finding out
7649. >to whom to send the resume.
7650. >
7651. >Mikki Barry

7652. Dear Mikki Who Owns Her Own Company: (as we are so often reminded)
7653. Why do not you throw away 100 percent of the resumes and other correspondance
7654. that begin their salutation with "Dear Sir"?

Another way that readers gain a sense of who Soc.women participants are is through contributors' use of personal information as a mechanism for establishing that they are speaking from an authoritative position on the topic at hand. In Soc.women Message 7 (titled Re: AMEX and sexism), the attributed text (lines 4792-4794) refers to an American Express application received by Lynn Gold that was apparently mis-addressed. In lines 4796-4797 of Soc.women Message 7, the author of that message tells us how she makes a living (as a data entry operator) before asserting that the improperly addressed application might have been the result of end of the week carelessness, rather than sexism. Personal information is used as a mechanism for establishing her credibility in relation to her assertion.

The author of Soc.women Message 8 (titled Re: Fairy Tales), also presents personal information in the context of establishing authority. The fairy tale debate appears to have begun when a contributor made a comment about sexism in fairy tales. Another contributor then encouraged the author bothered by sexism in fairy tales to lighten up. The lines below from Soc.women Message 8 are taken from a long message where the author presents an argument for lightening up.

In the 64 lines that follow lines 4870-4878, the author recounts

situations from his work with grieving family members, and uses these as a basis for arguing that there are circumstances in life where people should lighten up. He uses personal information in lines 4870-4871 to both lend context to the situations he describes, as well as a voice of authority to the larger debate of which this message is a part: that women in Soc.women should lighten up about sexism.

Soc.women Message 7:

4790. In article <1379@csib.csi.UUCP> lgold@csi.UUCP (Lynn Gold) writes:
4791. >
4792. >I'm used to getting mail to "Mr. Lynn Gold" (my name is gender-neutral;
4793. >they do not always know whether I'm male or female), but NEVER have I
4794. >gotten mail to "Mr. Lynn ANN Gold!"

4795. (except recently from American Express)

4796. I am a data entry operator and I think your credit card application was
4797. processed at 4:55 PM on a Friday.

Soc.women Message 8:

4870. As a physician and forensic scientist, I am frequently in the position of
4871. dealing with families of people who have died violently or unexpectedly.
4872. Now, some of these decedents more or less brought death on themselves
4873. through sheer stupidity or self destructive acts, and some deaths
4874. could have been avoided had, for instance, parents been a little more
4875. responsible, caring, or just not as ignorant as some folk are.

4876. I have some strong feelings about some of these behaviors -- feelings
4877. which, if verbalized, would do a little to make me feel better about
4878. my anger and frustration, but would hardly be helpful to the family.

Along with sharing workplace-based access to Soc.women, it appears that most Soc.women participants are well educated. Although more men appear to contribute to the group than women, the average number of messages submitted by women is higher than that of men. It may be that because fewer women are participating in the Soc.women group, those that do participate feel compelled to speak more frequently in efforts to win the continual battle for control of the group. Although we know that the majority of Soc.women participants work in scientific fields, in a general sense, we know very little about them. For the most part, when reading Soc.women one

gains little sense of what the day to day lives of its participants are like.

THE FEMAIL MAILING LIST

From reading Femail messages, one gains a much more in depth sense of who participants are and what their lives are like, than what results from reading Soc.women messages. Although the removal of message headers strips messages of what little surface clues about participants inherently exist in messages on a distributed multi-node network, at the same time it protects participants from having the identity of their employer known, as well as from receiving unwanted electronic junk mail. The removal of headers (both a technical decision related to the use of non-Usenet software, and a social decision related to the emergence of Femail out of dissatisfaction with Soc.women) contributes to the more personal tone of messages that make up the Femail dialogue in general, and the greater abundance of personal information contained in Femail messages in particular.

WORK AND ACCESS

Like Soc.women contributors, Femail contributors also gain access to that group through nodes of wide area networks (such as UUCP and ARPAnet) in their workplaces. However, with the removal of message headers from Femail messages, in the absence of knowing anything about network structure, this would not be as obvious as it is in Soc.women messages. In general, the individuals who come together to form the Femail mailing list are in some cases former and/or current Soc.women readers (see Femail Message Excerpts 3, p. 183), or they may have heard about the list from a friend.

Although the removal of message headers in the Femail group makes it more difficult to capture a sense of the places that Femail participants

work compared to Soc.women contributors, we get a much more detailed sense of what their work lives are like. Because headers have been removed from Femail messages, we know less about the time of day messages are submitted to that group. However, Femail messages contain references to submitting messages from work, and Femail participants occasionally indicate that they are dependent upon workplace computers for access to the group.

Femail Message Excerpts 3:

48180 Hi, I'm new here (well, I used to be around, but then I went away,
48181 but now I'm back...) My name is Marie desJardins, I'm a PhD
48182 student in CS (AI/machine learning) at UC Berkeley. I am here
48183 because I got fed up with soc.women (if you read that group, you
48184 know what I'm talking about). I'm married to a wonderful, feminist
48185 man (kept my birth name), no children yet. First, to Jaye: It
48186

48290 After several months of reading the femlist and attempting to
48291 continue posting to soc.women, I'm going to attempt to move some of
48292 my discussions here due to the high flame content in .women
48293 recently. So here it is, my first posting to the feminist mailing
48294 list ...

Given that the nodes that carry the Femail mailing list are located in similar places (academia, the corporate sector) to the Usenet nodes that accommodate access to Soc.women, it is not surprising that Femail contributors have a great deal in common with Soc.women contributors. Like Soc.women contributors, Femail participants tend to be highly educated; they are likely to be students, professors, or professionals working in areas related to the sciences.

In contrast to Soc.women messages that provide a wealth of information about contributors in headers and a minimal amount of information about contributors in text, Femail readers can easily gain a sense of who contributors to that group are from the text of messages submitted to the group. The tradition of including 'personal data' in Femail

messages began quite early in that group's history. A Femail contributor requested demographic information in the fifth message submitted to Femail (see lines 18334-18335 of Femail Message Excerpts 4 p. 183), and in the third message submitted to that group a contributor presents demographic information in the context of a story (lines 18250-18255, Femail Message Excerpts 4).

From reading through the remainder of Femail Message Excerpts 4, we see that Femail contributors appear to be quite candid in messages they submit to the mailing list. Personal data may include a synopsis of a contributor's past relationships (lines 18399-18255 of Femail Message Excerpts 4, p. 185), an overall profile (lines 18438-18441), or a personal commentary (lines 18646-18655). Although the inclusion of personal information appears to be almost secondary in Soc.women messages, personal information appears to be primary to the Femail mailing list (see Presentation of Self: Personal Information, p. 178).

GENDER COMPOSITION OF FEMAIL CONTRIBUTORS

The probable gender of message authors can be determined with greater accuracy in Femail messages, than in Soc.women messages. First, a contributor's ability to submit messages to the Femail group anonymously (or with an alias) is controlled by the moderator, in conjunction with the group (see Moderation: Negotiating Group Process On-line p. 233). Second, the focus on personal issues in the Femail group (beginning with introductions) accommodates an easy assignment of gender to gender neutral names, as well as anonymous contributions.

In contrast to Soc.women, where nearly two thirds of the participants were men, just over one fourth of Femail participants were men. Although

Femail Message Excerpts 4:

18334. Second, I would like to know some of the demographics of the mail group.
18335. Are we young? old? childless? educated? divorced?
18336.
18337 To start the ball rolling, I am 31, married, childless, with a Ph.D. in
18338. Psychology. I have a commuter marriage (i.e., I couldn't stand the commute,
18339. so we get together on weekends). (Maybe there is a better term for this
18340. style of marriage?).....

18250. The biggest question in my life right now is whether to have
18251. children or not. I'm almost 28, I'm a hardware design engineer,
18252. I will be married in August. Right now, my fiance and I are in
18253. a discussion group called Parenthood, Should I or Shouldn't I?
18254. Hopefully, it will help us explore the various factors to help
18255. us make this decision....

18399. My personal data is: I am 30 years old; always single (have had live-in
18400. affairs twice, though); childless; my current love affair has been
18401. going on for 2 years.

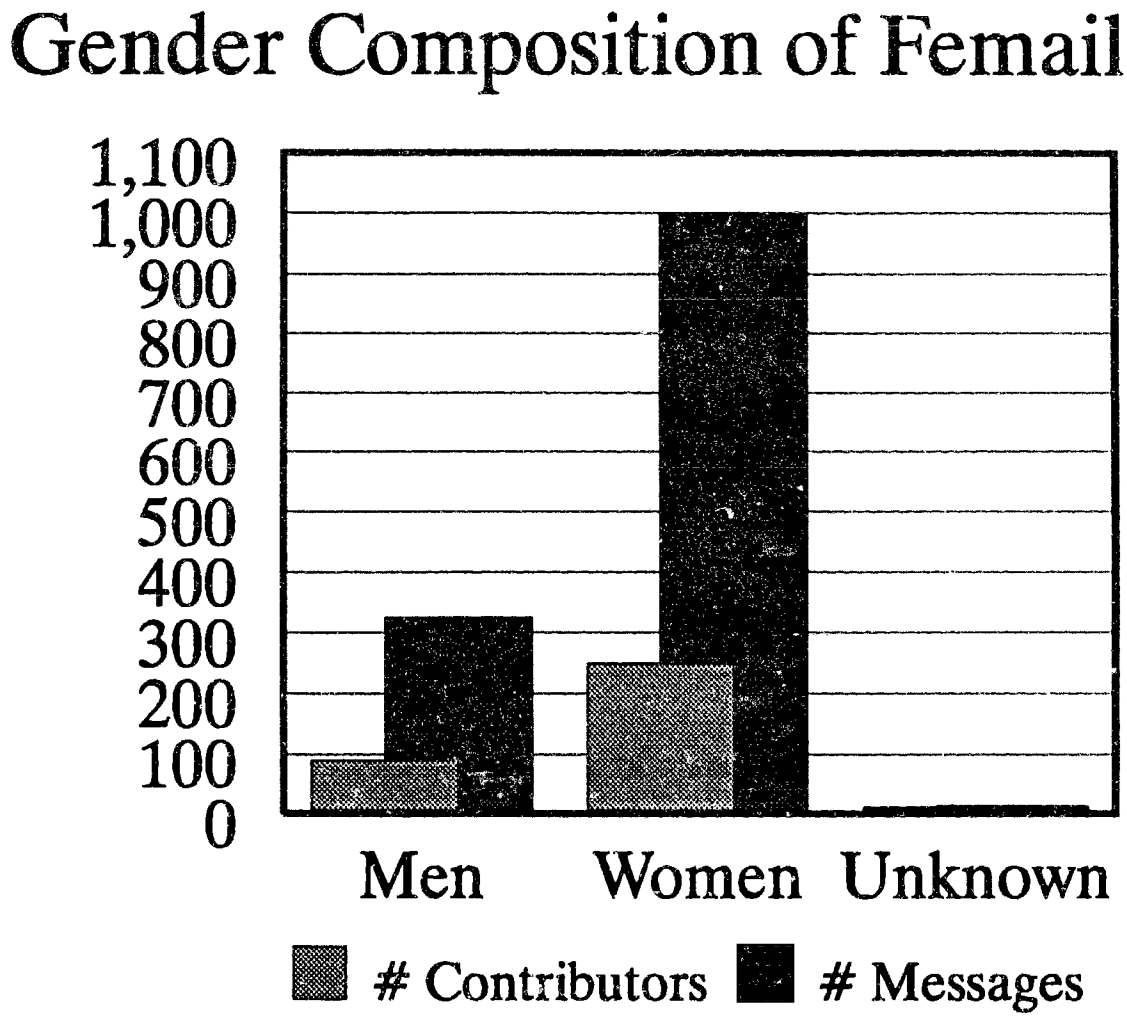
18438. Let me introduce myself. My name is Francie Hunt, I am 30 years old
18439. (a terrific age to be), recently married, recently Ph.Ded, and recently
18440. employed as an assistant professor at Case Western Reserve Univ
18441. (where recently means in the last year or so)....

18646. On to the vital particulars: I am 24, a perpetual senior in computer
18647. science at the University of Texas, also employed part-time as a
18648. hacker, although I like to tell myself that my heart really lies in the
18649. liberal arts. I am unmarried but very much attached to a woman whom
18650. some of you may remember from earlier discussions in net.singles and
18651. elsewhere: Pauravi is an American of East Indian heritage. (There was
18652. once some discussion of whether or not we constitute an interracial
18653. couple.) Our relationship is also a bit atypical because of our diverse
18654. career goals. I am basically a lazy sort, content enough to earn my
18655. keep but not particularly eager to build a bright and shining Career.

19601. Since I think it is very good for all of us to know who
19602. we are, I'll add my personal history. I'm 23 years old. I got
19603. my Masters in Operations Research last year, but I haven't used
19604. it yet. I currently feel more like a computer hack than a Masters
19605. of anything. I am currently searching for a new job. I have more
19606. to say on this but I'll save it until later. I live with my
19607. fiance. We've been engaged since December, and have been going
19608. together since last April.

19820. Hi. My name is Susan Finkelman. I am a software engineer with Varian
19821. Associates in Walnut Creek CA. I've been reading this group for
19822. months, but I'm finally prompted to write in response to Ginger's
19823. query about Catholic school (#698).

Figure 6.2:[46]



	Men	Women	Unknown
# Contributors	89	249	11
# Messages	325	1,000	14

[46]Figures for men and women include annonymous contributors whose gender could be assumed based on message text. Data derived from archive of Femail Mailing List from its inception in February, 1984 to January 1988. Approximately 200 messages are missing from the archive.

women constituted slightly over one fourth of the contributors to Soc.women, and they contributed nearly half of that group's messages. In contrast, the number of messages contributed to Femail by both men (25%) and women (74%) over four years closely approximated the representation of men (26%) and women (71%) in that group.[47]

The gender composition of the Femail mailing list group has from time to time been a topic of discussion in that group. By looking at Femail Message 3 (p. 188) several interesting points emerge. Of the forty one people who responded to a message on Soc.women about beginning a new group, three quarters were women. Within three months, two thirds of the people known to be reading the list were women, one third men. At that time, eighty-two percent of the contributors were women, and eighteen percent were men. In other words, shortly after the group began, the number of men reading Femail increased. However, contributions to Femail by gender did not reflect that change. Unlike Soc.women where women contributed more messages per person on average than men, the contributions to Femail by gender have remained in proportion to the number of men and women contributors in that group.

Ten months after the inception of Femail, the percentage of contributions by men had increased slightly, from twenty one to twenty seven percent. On average, men contributed more messages per person to the list than women (see Femail Message Excerpts 5, p. 190). The slight increase in contributions made to Femail by men continued into April of 1985, when the

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[47]One percent of Femail messages were authored by three percent of contributors whose gender could not be determined from either names or message content.

moderator again presented a gender breakdown of contributions to the group (see Message 613, April 1985, line 13854 of Femail transcripts, 1991).

Femail Message 3:

30649. April 18, 1984 from the moderator

30650. As some kind of aid in the woman-space discussion, I am posting some statistics
30651. on the ratio of women/men, in the mail group. I determined each person's gender
30652. based on their name (eg. Peter, Martha) or something they said in a mail
30653. message or from knowing them personally.

30654. Readers:
30655. There are 79 people (that I know of) who are receiving the mailing list. The
30656. group consists of 49 (62%) women, 28 (35%) men and 2 (3%) people whose sex I
30657. could not determine. They are on 51 different machines.
30658. When I sent the first message out, there were 31 women and 10 men on the list.

30659. Posters:
30660. Of the first 115 (real) messages (#2 - #116), 91 (79%) messages were from women
30661. and 24 (21%) were from men.
30662. If one looks at the individuals who posted (some individuals made more than one
30663. posting -- like me), there were 36 different women who posted articles and 8
30664. different men who posted articles. That breaks down to 73% of the 49 women and
30665. of the 28 men, who decided to speak up.

30666. So, the ratio of women/men is changing from 3/1 to 3/2 but more of the men are
30667. simply reading and more of the women are being heard from.

30668. I had a look at the latest postings (I chose the 35 messages I received, so
30669. far, in April). There were 25 (71%) from women and 10 (29%) from men. So, there
30670. is a slight increase in the number of articles from men, lately.

At that point (fifteen months after the group began) thirty percent of the contributions to Femail were authored by men. However, returning to Figure 6.2 (p. 185) that breaks down contributions to Femail by gender over four years, contributions by men constituted only twenty five precent of the total. The extent that men and women 'speak out' to Femail readers fluctuates over time. This is addressed in greater detail in the section titled Moderation: Negotiating Group Process On-line (p. 233), in chapter seven.

THE PRESENTATION OF SELF: PERSONAL INFORMATION

In contrast to Soc.women messages where personal information appears to be almost secondary, personal information occupies a central place

in the communicative processes that together constitute the Femail mailing list. Although the process of introducing oneself to the Femail group often

Femail Message Excerpts 5:

1087. November 8, 1984 Message 356 from the moderator

1088. For you statistics buffs:
1089. Just went over my list of recipients. As of today, the total number of people
1090. (that I know about) who receive the list is 163. There are probably others
1091. who are getting the list forwarded to them, that I do not know about.
1092. Judging from names and other information, there seem to be 104 women and
1093. men. I cannot determine the sex of the other 7 people.
1094. A quick look at the headers of articles 1-355 shows 73% of the articles are by
1095. women and 27% by men. There were 84 unique people posting those articles and
1096. exactly 2/3 were women and 1/3 were men.

involves divulging personal information, the presentation of personal information to Femail readers does not stop with introductions. All of the material in Femail Message Excerpts 6 (p. 190) was signed by contributors with their names.

Lines 4413-4414 of Femail Message Excerpts 6 are taken from one of the first contributions by a man, who in subsequent contributions to the Femail mailing list recounts the process of discovering he is a transsexual, and legally changing his sexual identity to female. Subsequent messages submitted to the Femail mailing list by this individual query readers among other things about side effects of estrogen therapy and where to buy size 13 women's shoes. Through messages, readers are informed of the individual's highs and lows as he comes out as a male to female transsexual to parents, friends, and co-workers.

Lines 10262-10270 are from a message that is part of a never ending discussion of birth control. The word "it" on line 10263 refers to a diaphragm. "SO" on line 10266 refers to significant other - a term that is used commonly amongst Femail contributors to refer to the person with whom they are

having sex, who they may or may not be married to or living with. This message received a number of replies from both women and men,

Femail Message Excerpts 6:

```
4413.   I would like to thank those of you who sent me advice about getting my
4414.   ears pierced.  Now, if I could just get my eye shadow right :-) :-)
----
10262.  That leads me to another question (sort of embarrassing for me to
10263.  ask over a public 'airway').  The only time I do not want it in
10264.  ahead of time is if we're going to have oral sex before/instead
10265.  of intercourse.  I never figured the spermicide would taste that
10266.  hot, but my SO says that the real problem is "numb tongue."  I'm
10267.  not that inexperienced, but this is the first person who ever
10268.  mentioned this to me.  He says it's pretty common.  Is this true,
10269.  and everyone else was just being polite by not mentioning it?
10270.  Comments from the men?
----
24408.  re: pubic hair, shorts, and bathing suits

24409.  I have rather dark and extensive pubic hair.  I've mostly decided
24410.  to ignore it, but when I feel self-conscious, I trim it with a pair
24411.  of small scissors.  Cutting it down to about a quarter or eighth of
24412.  an inch makes it less noticable but not scratchy.  I trim my underarm
24413.  hair about once a month in the same way.  I still shave my legs below
24414.  the knee because the hair is too dark and it bothers me.  During the
24415.  winter it grows fairly long.  I sometimes pluck out the hairs that
24416.  grow up toward my navel.  But that gets tedious.  I agree with Judy.
24417.  If someone doesn't like it, that's their problem.  My boyfriend
24418.  doesn't seem to mind although he doesn't like stubble.  I do not think
24419.  that many people really notice.
```

who often recounted their own experiences with spermicide in their responses. Other responses included suggestions about brands of spermicide that did not taste so bad. Lines 24408-24419 are from one message of many where women discussed body hair in general, what their body hair was like, what if anything they did about it, and what their attitudes and society's were about it.

Among the other topics of a personal nature that Femail participants speak openly about are fears about getting married, becoming pregnant, pursuing promotions, and moving with or away from a significant other in relation to professional opportunity. Women talk about sexual abuse they

suffered, abortions they received, and relationships they ended. Through reading the list, one woman began to see her husband as a batterer, and with the support of Femail readers went through the transition of leaving her husband, moving into a transition house, and getting her life back together. Although not all messages in Femail bear out the intimate details of contributors' lives in what is at times shocking detail, this phenomenon is quite common to messages that give or seek advice (see Seeking and Giving Advice On-line, p. 229 of chapter seven).

The personal tone of Femail messages reflects a number of factors. First, in most cases an individual must make more of an effort to receive Femail messages than their Usenet counterpart, Soc.women messages. This perhaps weeds out participants looking for convenient, easy amusement that one can find in Soc.women. Second, the group's size (both in terms of readership and number of contributors) is undoubtedly limited by the difficulties associated with constructing paths for messages to travel to and from the moderator. Third, messages may be submitted to Femail one week, and distributed to the group's readers a week or more later. Potential contributors, knowing this time delay exists, may choose to compose submissions to the group sometime after reading messages, rather than instantly, as is often the case with Soc.women messages. The time delay related to the distribution of Femail messages (as opposed to a sense that if a response is not submitted right away it will be dated, as is often the case with Soc.women messages), may lead to reflection prior to submitting messages. In turn this may allow participants to think twice about antagonistic replies.

Since all readers in theory receive all messages in the same order, and software used to submit messages to Femail does not automatically

prompt users to include text verbatim from previous messages, discussion on Femail is less likely to follow the form of a point /counter-point debate than that encouraged by attributions and attributed text. Finally, the presence of a moderator who takes responsibility for both creating group norms in relation to the character of the discourse, and enforcing those norms facilitates a more personal exchange.

COMPUSERVE INFORMATION SERVICE MEN'S AND WOMEN'S ISSUES SECTION

Of all of the networks considered in this section, we know the least about participants of the CompuServe Men's and Women's Issues section. Although a sense of participants can be gained from a range of message headers in Soc.women messages, as well as through text in Femail messages, CIS messages offer scant information in either message headers or text about participants in the Men's and Women's Issues Section.

As a single node network, authors of CIS messages submit their messages to the Men's and Women's Issues Section of that network through CIS software. All participants potentially access CIS from different physical locations, and once they have connected to CompuServe, their messages are moved around by the CIS software. The headers supplied by that software do not betray the location through which the author of a message has gained access to CIS. Consequently, we know virtually nothing about where CIS message authors are contacting the CIS network from.

ACCESS

A review of the time and date message headers from messages submitted to the Men's and Women's Issues section over a one month period showed that thirty percent of the messages were submitted between 7:00 a.m. and 6:00 p.m. Eastern Standard Time (EST), and seventy percent of the

messages were submitted between 6:00 p.m. and 7:00 a.m. EST. The CIS rate structure, with lower hourly charges at night encourages higher use during night hours.

Keeping in mind that CIS participants are potentially located in all time zones, but that their messages are stamped with whatever time it was in the eastern time zone when their message was submitted, we can make some rough assertions about where CIS participants are when they submit messages. Assuming most participants in the Men's and Women's section hold jobs requiring their presence at work during normal business hours, it appears that the majority of participants access CIS from computers in their homes, after their workday ends.

Unlike the other networks discussed in this section, one's access to CIS is dependent upon steady access to cash or credit. Upon signing up for CompuServe, perspective users must supply either a credit card number for direct billing, or a chequing account number for direct withdraws. If a subscriber is outside of the U.S., the only billing option available is a credit card number. This requirement, along with the hourly fees charged for use of CIS ensures that regular CIS users (not Sysops, who use the area of CIS they operate for free) are relatively affluent.

GENDER COMPOSITION OF CIS MEN'S AND WOMEN'S ISSUES SECTION CONTRIBUTORS

Over roughly a one month period[48] three hundred and fifty three messages were contributed to the Men's and Women's Issues Section of

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[48]Message dates used here span the entire month of February, although access to CIS for this sample occurred between February 6 and February 28.

CompuServe. These were organized into three threads. Seventy percent of the participants (n=7) were men, who contributed fifty seven percent of the messages in the section. Women, who constituted thirty percent of the contributors (n=3) authored forty-three percent of the messages. Although the gender composition of contributors was similar to that of the Soc.women sample, and the CIS section showed a similar pattern to Soc.women in terms of women contributing messages in a higher proportion than their representation in the group, a significant difference exists between the Soc.women and CIS samples that is worthy of note.

In the Soc.women sample, the ratio of contributors to messages was one to 2.5. However, in the CIS sample, the ratio of contributors to messages was one to 35. A large number of people were engaged in debates in the Soc.women newsgroup. However, only a small number of people joined in the dialogue of the CIS Men's and Women's Issues Section. Of the 353 messages that comprised the CIS sample, 272 (or 77% of the total) were contributed by two people; a man who authored 126 messages, and a woman (also the sysop) who authored 146 messages. The woman sysop's messages, together with messages from two other sysops involved with maintaining the Issues Forum (where the men's and women's issues section is located) accounted for 48% of the total message flow in the men's and women's section of CIS. By the time CIS was monitored for this study, the number of women using it to discuss women's issues had fallen off dramatically.

THE PRESENTATION OF SELF: PERSONAL INFORMATION

From reading the Femail mailing list one gains a detailed sense of that group's participants, and what their lives are like. Information about the personal attributes and lives of participants is sparse in the Soc.women

newsgroup, though it is frequently included incidentally in messages. In contrast, information about CIS men's and women's issues section participants is rarely included in message text. This makes participation in that group's discussions a bit disorienting at times. In reassuring a new CIS user about participating in a discussion, a seasoned CIS contributor comments on what it feels like to join a discussion on CompuServe:

> &Hi, Preston. Your parti cipation isn't premature at all. You got here pretty &much at the beginning of the thread, actually--an unusual thing in CompuS erve. Usually it feels more like dropping in late on a conversation, and it's always a little nerve-wracking to do that (CIS.90.1120, lines 1102-1105).

After reading a thread in the men's and women's issues section of CompuServe for one month, a participant is likely to know no more about participants than their marital status or educational background. The message excerpts below (CompuServe Message Excerpts 2, p. 195) contain all of the information participants included about themselves in CIS men's and women's issues section messages over a one month period. The excerpts come from messages that were part of the "Feminist vs. Libber" thread. It appears to have begun shortly before CompuServe Message 1 (p. 156) was written.

CompuServe Message Excerpts 2:

[Male 1]
2222. I have spent a long time in academe, dealing with the extremists
2223. usually comfortably ensconsed in various "Women's Studies" departments, so I
2224. appreciate your distinctions. I use the phrase libber for the more reasonable
2225. group for two reasons. First of all, the very word "feminist" denotes a
[Female 1]
2257. You and I must have experienced very different "academic worlds." In my
2258. experience. I do not know anyone who is "comfortably" in a Women's Studies
2259. program unless she first earned tenure by publishing more and working harder
2260. than many of her male colleagues. In several cases, women have sacrificed
[Male 1]
2288. I have spent 16 (almost 17) years at 13 universities, and have good
2289. contacts at many more. In that time, I have yet to see any significint number
2290. of "Women Studies" Departments that aren't havens for ideologues and
[Male 1]
2572. departments (and the ones that my wife informs me about at the schools that she
2573. has attended) lead me to believe that the %tage in those departments may indeed
2574. by higher.

(CIS.207; material inside brackets added for clarification.)

Like information about the personal attributes and lives of participants in Soc.women, personal information included in CIS messages appears to be included incidentally, rather than as a focal point of the message itself. In addition, similar to the personal information included in Soc.women messages, it appears that personal information in CIS messages often is included to lend a voice of authority based on experience to claims made by contributors.

For example, in CompuServe Message Excerpts 2 (lines 2222-2225), that message's author includes information about his previous experiences in academia in response to a previous message where a contributor made a distinction between extreme or lunatic fringe feminists, and "the rest of us." In this case, personal information is included to both contextualize Male 1's current response, as well as his previous message (CompuServe Message 1, p. 156). In line 2257 of CompuServe Message Excerpts 2, Female 1 incidentally mentions her involvement in academia, and then uses this as the source for her comments in lines 2258-2260, that challenge Male 1's view of Women's Studies expressed in line 2223. Male 1 includes additional personal information in subsequent messages to Female 1. In lines 2288-2290 of CompuServe Message Excerpts 2, he refers to his varied exposure to academic environments in an effort to establish himself as an authoritative source in relation to the claims he makes about Women's Studies departments. Finally, in lines 2572-2573 Male 1 incidentally mentions his wife in a final bid to assert the validity of his claims.

If CIS participants find the lack of information about participants to be too disorienting, they can search a user directory for additional information about message contributors. The directory menu allows CIS users to search the user directory by a person's name, a CIS I.D. (this is

automatically appended to CIS message headers), or by interest. Searching by interest allows the user to specify a word to search for. If a CIS user has created a directory entry (this is optional) that contains that word, their directory entry will be retrieved. Searching for the word 'women' would produce a list of entries like those in the CompuServe User Directory Entries, below.

CompuServe User Directory Entries:

307. Avery Ray Colter 71067,606
308. Fat-Activism / Chasing Fat Women <grin> / All Things Japanese / Raquetbal
309. & / Skiing / P hotography / Dungeons & Dragons / Hot-Chatting / Swimming

310. MARCIE BURROW 71345,172
311. & METHODISM, SEMINARY STUDIES, PROFES SIONAL WOMEN, COMPUTER USE, NON-FICTION
312. WRITING,CAREER CHANGING / MID-LIFE REMARRIAGE / INDUSTRIAL CHAPLAINCY

313. &CHUCK 7 1361,2562
314. UFO's /scuba diving/british legends(gam-153)/fast cars and not so fast
315. women

316. vicki 71650,1470
317. & Disablities and Education / Women's Rights / Country Music

321. Nancy Zingrone 72240,3357
322. & history of science, medicine, psychiatry, psychology / women's history /
323. parapsychology / UFOs / cryptozoology / co-pub. a newsl. on marginal
324. science

325. Sysop Elvira Casal 72247,3505
326. mens/womens issues, feminism / parenting, childrearing / education,
327. & teaching / cultu re, languages, humanism / literature, sci-fi, mysteries,
328. writing.

339. SHERYL 73517,3275
340. & women's issues / racial issues / Black American issues

347. ROBERT W. SEXTON 76220,1772
348. & MODERATE CONSERV ATIVE / COMPUTERS / SPACE FLIGHT / SCIENCE FICTION /
349. & TRAVEL / PRO-CONTRA / PRO-OLLIE NORTH / INTERESTING WOMEN / MAKING MO NEY !!

The length of entries in the CIS user directory is limited by the CIS software. In light of length limitations, participants who choose to include a directory entry will often list their interests, perhaps something indicating what activities they engage in (e.g. lines 323-324), and in some cases their political beliefs. User directory entries may provide additional information

about CIS participants, however placing one's name in the directory is an optional activity. This often means that no information about a given participant exists. Nonetheless, in the absence of other information about participants, the user directory may aid participants in accessing their audience and communication partners.

The absence of full headers in CIS messages combined with social norms that do not demand self disclosure in messages makes it difficult to characterize the participants in the CIS men's and women's issues section. From a technical standpoint, the physical structure of CompuServe (a single node wide area network) would easily accommodate the inclusion of more personal information about CIS contributors. For example, if more space were allocated to user directory entries, CIS users could present more information about themselves in these directory entries. Similarly, if old messages were available on CIS for longer periods of time, CIS participants might gain a greater sense of participants through reading dated messages. Although communication in both the Soc.women newsgroup and the Femail mailing list take advantage of the one-to-many or many-to-many communication possibilities afforded by computer networking technology, CIS communication may to a greater extent be predicated on the assumption that communicators will engage in one-to-one communication (e.g., all messages have a from and to header). Such communication, along with use of CIS over an extended period of time may allow participants to gain a sense of one another that would otherwise be difficult.

THE WOMEN'S BULLETIN BOARD SYSTEM

Women's Bulletin Board messages, like CompuServe messages contain limited information in message headers about participants. However,

participants tend to be more candid about themselves on the WBB than on CompuServe. Where CompuServe message threads often read like a conversation already in progress, in contrast, reading the WBBS feels more like entering a small town, and getting to know people as you run into them in a variety of settings. This sense is facilitated by the separation of the WBBS into several topically distinct areas. Contributors may offer extensive personal information in some areas, but not in others. As participants explore the WBBS, they 'run into' contributors in different contexts, and are able to gain a sense of what participants are like.

ACCESS

Because of the limited information contained in WBBS message headers, we know very little about where that network's users gain access to it. Most users appear to call the WBBS from within the New York City local calling area, where the WBBS is located. Occasionally users mention in message text that they are calling from outside of the New York City area, via PC Pursuit (a value added carrier service that allows users to make calls from and to selected U.S. cities for a flat monthly fee in the evenings and on weekends). A review of the Date: header in 990 Women's Bulletin Board messages indicates that 41% of the messages on the WBBS were placed there during normal business hours (8 a.m.-6 p.m.), and 59% of the messages were posted between 6:01 p.m. and 7:59 a.m.[49] WBBS contributors appear to gain access to that network from both home and the workplace.

Several contributors appear to work for women's organizations. At least one contributor regularly posts informational messages of interest to

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[49]Since not all contributors are located in the Eastern time zone, these figures should be considered estimates.

the women's community on the WBBS as part of her job (see lines 4098-4102, Women's Bulletin Board Message Excerpts 2, p. 200). In addition, feminist organizations appear to be points of access for some WBBS contributors (see lines 952-956, Women's Bulletin Board Message Excerpts 2).

Women's Bulletin Board Message Excerpts 2:

4098. This board, with the rather cryptic title meaning something like information,
4099. feminism, is about feminist events, meetings, etc. around the world. I work at
4100. the resource center of the International Women's Tribune Centre and am
4101. responsible for putting up information on the board Eg.which i come across in
4102. various feminist publications from all over the world.....
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952. Hi, my name is Reidun Brusletten I am here today with two other women
954. from Norway. There names are Grete Eldorhagen and Agnete Stroem.
955. We are here on behalf of NGO's of Norway and we are all impressed by what
956. we have learned and seen here at Intern'l Women's Tribune Centre.

GENDER COMPOSITION OF THE WOMEN'S BULLETIN BOARD CONTRIBUTORS

As of February 27, 1988, the WBBS listed 639 users in that system's user directory. Based on assigning gender to names, twenty six percent were men, sixty one percent were women, and thirteen percent of users had gender ambiguous names. The WBBS user directory lists people who have become permanent users of the WBBS. However, the listing in the user directory neither lists people who access the system, look around and do not come back, nor provides an indication of who contributes messages to the WBBS. A scan of 990 message headers however indicated that 70 of the contributors were women (61%), 36 were men (32%), and 8 (7%) had gender ambiguous names. Only 114 of the 639 people who signed on to the WBBS left messages. Clearly, a large number of people read the WBBS or visit it, but do not contribute.

Organizers of the WBBS observed that over time, the use of the WBBS changed. The WBBS was started by a group of activists with organizational affiliations interested in creating a resource for the New York City women's community. However, over time the WBBS was used less by

feminist activists and more by members of the bulletin board community. During a group interview (November. 25, 1988, New York City) WBBS organizers commented that as more bulletin boarders began using the system, representation of the women's community dropped off. And, in the words of one organizer, "these two groups just did not see things the same way...we were more concerned with providing a service, and group process among the sysops; the BBSers were more concerned with the hardware and software...we did not see things the same way at all."

THE PRESENTATION OF SELF: PERSONAL INFORMATION

Where CompuServe messages provide little information about the personal attributes of message authors, reading WBBS messages often leaves readers with a good sense of what the day to day lives of WBBS participants are like. Some WBBS participants post introductions similar to those found in Femail messages (see lines 1191-1193 and 1650-1659 of Women's Bulletin Board Message Excerpts 3), on board 1 (the Guest/Comments board). Other participants will introduce themselves in response to a message posted on one of the other boards (see lines 19949-19959 of Women's Bulletin Board Message Excerpts 3, that are from a message in the Lounge Board, and respond to an earlier message on that board requesting contact with lesbians).

Finally, a frequently used mechanism for presenting personal information on the WBBS is to include it in a story, as the authors of Women's Bulletin Board Message Excerpts 4 have done. Lines 1063-1066 are from a message that recounts the work life of a 911 (emergency) dispatcher. Lines 12648-12666 weave a woman's lived experience in a particular instance (lines 12648-12649; her daughter being sick) together with her larger

political concerns (improving resources about and access to daycare; lines 12663-12669) with more general personal information (lines 12655-12663).

Women's Bulletin Board Message Excerpts 3:

1191. Hi, I'm Nancy. This is my first time on this board. I'm 24, a law student,
1192. Jewish, lesbian. I love my Macintosh, and am not into cats. I found out about
1193. this board from the Alternative BBS in California.

1650. Hello All!!!
1651. Allow me to introduce myself. My name is Daniel B. Holzman.
1652. I am a student at Antioch College, currently on co-op programming for
1653. Bellevue Hospital's AIDS team. I will be in New York until September, when I
1654. will be returning to Antioch for 3 months for study, before I go out on co-op
1655. again. My hobbies include gaming (wargaming, RPG, etc.), computers (it's
1656. also my job, but my prefered field is Physics), and SF. I write a monthly
1657. article for PANDEMONIUM magazine, and have had my stories published in
1658. THE BLUE DIAMOND, an Ohio SF magazine. I am a Representative of the New
1659. York Fandoms Alliance, and am active with NYCLONE, a SF convention in N.J.

19949. Hello, there are lots of Dykes in Albuquerque, New Mexico! We have a
19950. great bar here called Champagne Taste -- nice, well ventilated, and
19951. decent music. Every Memorial Day Weekend we have a huge celebration
19952. called Wiminfest. The desert is great. I'l like to make some chat
19953. friends on this BBS. I do not log on too often because of the phone
19954. bill (plan to get PC Pursuit in the fall). I work in market research.
19955. My interests are communication for liberation and feminist theology.
19956. I am 36 and I have two children, a dog and a cat (the cat is my favorite).
19957. I like to ride bicycles in the mountains, read Marian Zimmer Bradley
19958. books (among others), and think about how to change the world as I
19959. endeavor to grow myself. So hello from Albuquerque! Pamela

Lines 13159-13166 and 13204-13209 come from a series of messages about clothing and gender identity. Personal information in lines 13159-13161 contextualizes the story presented later in that message. Similarly, in responding to that message, the author of lines 13204-13209 tells us about her work in lines 13204-13205, also contextualizing the story presented in the remainder of her message.

Like Femail, WBBS members are at times very candid about their lives in messages. However, unlike Femail and other networks discussed here, several types of messages are posted to the WBBS, depending on the section of the board one is reading. Personal information tends to be

presented more on some boards than others, and is not explicitly encouraged by group norms to the extent that personal disclosure is on the Femail mailing list.

Women's Bulletin Board Message Excerpts 3:

1063. Years listening to the same stories over and over again. I am a 911 operator
1064. and a dispatcher. I am the person people yell at or cry to before the police
1065. arrive. In my hands are life and death decisions which must be made at times by
1066. me and a typographical error can cost a life.

12648. I am sitting here tonight after spending the day taking care of my sick
12649. daughter who has a wicked case of chicken pox. After reviewing the various
12650. boards, I realized something which truly angers me. This whole bbs has
12651. been created for/by/about women, as I understand it. We have boards here
12652. on women's issues, women of color, the story board, survivor's, etc. Where
12653. the hell is the board for child care? Surely this would not fall under the
12654. category of "women's issues" - although perhaps it could collaborate with
12655. Survivor's! I am a 32-yr. old single parent of a 5-yr. old. I am fortunate
12656. enough to have a good job at AT&T, and can afford to support myself and my
12657. daughter living in a 2-bedroom apt. in Morris County. I receive no alimony
12658. or child support, and between rent, daycare, groceries, gas & electric,
12659. and a few little allowences for me (this being my primary $eater), things
12660. can sometimes get tight. But...where is there information for working
12661. parents on this board? I am active in the AT&T Working Parents' Support
12662. Network, and would be happy to share any/all information I receive with
12663. anyone who is interested. I want to create lists of decent daycare centers
12664. which concerned parents have approved; local sitters (day/evening) who have
12665. been tested and can be contacted. Wouldn't it be wonderful to move into a
12666. community and have this kind of information available to you?

13159. I am fortunate to be the superintendent of the Lesbian and Gay Community
13160. Services Center, and am no required to wear anything but boots and comfortable
13161. work clothes. Last summer they honered me with accolades and flowers, and one
13162. of my employees dared me to wear a dress. I did...and pumps...and I haven't
13163. lived it down yet. It had been over fifteen years since I had donned a dress..
13164. and I may NEVER EVER wear one again. Besides I had to borrow the dress and the
13165. high heeled shoes since I do not own any.
13166. Eat your hearts out...

13204. You are one lucky woman. I work in the conservative land Wall Street and am
13205. forced to wear a dress -- every day! My rebellion comes in the form of
13206. forsaking stockings once the tempurature stays above 75. The credo in my
13207. company is that women "can't wear anything they can't take off over their
13208. heads." Is that sick, or what? Amazingly, I've gotten quite used to it,
13209. although the minute I land another job, I'll be back in pants!

CONCLUSION

Computer networks are accessible from some locations and not others. The specific locations that a particular computer network can be accessed through are determined to a large extent by the network structure.

For example, because Usenet netnews software easily supports the transfer of newsgroup messages between all Unix sites, Soc.women is potentially accessible from all Unix sites. In contrast, Femail messages are distributed through a moderator at a central node, who must construct addresses to forwarding nodes. The accessibility of the Femail mailing list is constrained by technical difficulties related to addresses and paths.

Both the Soc.women and Femail groups are only accessible to women and men with institutional and organizational affiliations (usually through work) that allow the costs of participating in these groups to be absorbed by the institutions where nodes that serve as points of access to these groups are located. Access to the Soc.women and the Femail groups is neither random nor heterogeneous. In a general sense, access to both of these groups is limited to people that are educationally privileged, and most likely to either enjoy the financial benefits of a job, or by virtue of their educational status, expect to become financially privileged in the future.

Interestingly, although both Soc.women and Femail are accessible from workplaces where women are employed in occupations that are not primarily scientific or technical (e.g., data entry clerks and secretaries), these workers are virtually invisible on these work-based networks. Several factors may contribute to this. First, cultural perspectives result in higher status being attached to jobs typically held by men (e.g., scientific) compared to those typically held by women (e.g., clerical). The prevalence of these attitudes may effectively silence potential group participants who occupy these lower status occupations. Second, notions of professionalism and relaxed supervision of scientific workers (relative to clerical workers) may foster a sense of entitlement of access among scientific/technical workers to these networks. Non-technical women workers are likely to experience a very

different set of social relations on the job, including closer supervision and less discretion over how time is spent. Non-technical workers may have their access to these networks constrained by the social relations of their jobs.

Finally, as Benston (1988) points out, most Western women have been excluded from active practice in scientific and technical fields as well as basic training in relation to technology, "and are marginal to a male-created and male-dominated technology" (Benston, p. 17, 1988). As a consequence, non-technical women workers may not have access to the information and skills required for participation in these workplace based computer networks.

Interestingly, Usenet was designed to be an "accessible" system. Ironically, although in an absolute sense the network is accessible, Soc.women appears to have limited appeal to women. Access in the physical sense clearly does not guarantee use. In contrast, the Femail mailing list (that in a physical sense is much less accessible than Soc.women) has a higher appeal to women (as indicated by both the percentage of women contributors and the percentage of contributions authored by women). Clearly creating a network that is widely accessible to women does not ensure that it will be used by women, even when the stated purpose of its existence is to foster discussion about women's issues.

Access to the CIS Men's and Women's Section of the Issues Forum depends upon one's ability to demonstrate credit-worthiness and pay an hourly use fee that varies depending upon where one lives. The costs associated with access to CIS favour users in highly populated urban areas. Judging from the high portion of messages that are submitted to that network at night, it is likely that most CIS participants are in an income bracket that allows them to own computer equipment (or gain access to it through a friend). Like Soc.women and the Femail mailing list, the structure

of CIS (combined with its existence as a profitable business) favours financially privileged people, who are more likely to be men than women. Although cost is not the only factor that determines the gender composition of an on-line community, it is not surprising that the overwhelming majority of contributors to this forum were men. Two of the three women that participated in CIS discussions were women, who as sysops were able to use CIS at no cost.

Access to the WBBS is free to users in the local calling area where the WBBS is located, who have access to a personal computer either through their workplace, a women's organization or a friend. Some out of town callers to the WBBS are able to take advantage of a cut-rate value added carrier in accessing the WBBS. However, the cut-rate value added carrier is only available in a handful of highly populated U.S. cities. The WBBS is not accessible through either the institutionally based or commercial value added carriers, with the exception of the cut-rate value added carrier (PC Pursuit). The fact that the WBBS cannot be accessed through wide area value added carriers other than PC Pursuit contributes to the local orientation and community focus of that network. Finally, evidence of WBBS organizers' goals of creating a network that meets the needs of the New York City Women's Community are reflected in the diversity of participants on that network. Like the Femail mailing list the WBBS boasts more women contributors than men. And like the Femail mailing list, control of the WBBS rests with women.

The degree that participants discuss their own lives varies from network to network. Participants learn about one another through a combination of cues contained in headers, and information contained in message text. Although some network configurations (e.g., Usenet) seem to

work against the inclusion of personal information in message text, the extent that participants discuss their lives on-line seems to be a function of who controls the network, who network participants are, and the processes they engage in as a group to establish communicative norms.

CHAPTER 7:

GROUP FUNCTION AND PROCESS

INTRODUCTION

When people communicate electronically via computer networks, the messages that together form an ongoing dialogue reflect a number of things. First, the physical structure of a computer network has implications for the availability of that network, and consequently, it has an impact upon who can participate in electronic exchanges. Each network structure, together with the software used to organize messages into groups of messages or discussions creates a communicative space or environment. When individuals come together within this environment to communicate, they in a sense form a speech community. As Painter (1980) points out, a speech community should not be viewed as a place, but rather as an ongoing process.[50]

Each of the computer networks discussed at length here constitutes a distinct speech community, marked by different types of interaction, different message styles, and different group processes. In looking at the anatomy of network messages, it becomes clear that variation in the structure of messages exists; this variation is related to or reflects network structure. In

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[50]Painter (1980), building on earlier work by Hymes (1972), defines a speech community as "A group of individuals who share rules for the conduct and interpretation of rules for the interpretation of at least one linguistic variety. The existence of a speech community must be viewed as an ongoing process, not as a place" (Painter, 1980, p. 134).

looking at who participates in network discussions about feminism and women's issues, it becomes clear that, although there may be similarities in terms of the places that people gain access to computer networks from (for example there is considerable overlap in the locations that Soc.women and Femail are accessible from), differences exist in the processes that taken together constitute the negotiation of electronic speech communities concerned with feminism. This point is perhaps best understood through an examination of message content and style on different networks, with a focus on the group's function and the processes used to maintain that function. Through examining message content and style, it becomes clear that participants in each of the different network discussions engage in different practices and processes, that make up different parts of their lives.

THE SOC.WOMEN NEWSGROUP: FEMINISM AS A CONTESTED TERRAIN

On the surface, the range of topics discussed in the Soc.women newsgroup (as indicated in Soc.women message headers; see Soc.women Message Excerpts 2, p. 210) appears to be quite broad. Although the content of Soc.women is topically varied, the processes that characterize the communication within the Soc.women newsgroup and the style of messages that form that group's dialogue follow a fairly predictable pattern.

From examining the Subject: headers that appear in Soc.women Message Excerpts 2, it appears that a wide range of pragmatic topics are discussed in that newsgroup, including women's feelings about not wanting (or in some cases liking) children (line 4), how to deal with last names upon marriage (line 486), whether men are good childcare providers (line 172), sexism in fairy tales (line 215), women's roles in movies (line 616), non-sexist children's books (line 1285), views on rape (line 1406) and abortion (line

4285), the relationship between beliefs and actions (line 2675), and science education and women (line 5741). In addition, a number of messages address issues related to network structure (for example line 445 is from a message proposing new newsgroups of potential interest to Soc.women readers), especially forgery (lines 2976, 3494, 3836, 3927). Finally, a portion of Soc.women messages address the dynamics of participation within the Soc.women newsgroup itself (lines 681, 1061, 1332, 3494).

Soc.women Message Excerpts 2:

4. Subject: Re: Despising Children (Re: Mikki Barry)
39. Subject: Re: last names
66. Subject: Re: children != women
102. Subject: Re: Something completely different
172. Subject: Re: men and childcare
215. Subject: Re: Fairy tales
414. Subject: . . . the Black Woman
445. Subject: soc.equal-rights,comp.equal-rights
486. Subject: Re: last names
519. Subject: Re: Earthsea is Juvenile?
616. Subject: Re: Diane Keaton (was: Trifling Sexist Assumptions...)
681. Subject: Re: What we should think
1061. Subject: Re: Flamage re Mark Ethan Smith/Netiquette
1092. Subject: Re: soc.equal-rights,comp.equal-rights (moderated? just say no)
1285. Subject: non-sexist children's stories
1332. Subject: Re: What we should think
1365. Subject: Re: children, and lack thereof
1406. Subject: Re: Rape: a reproductive advantage?
1807. Subject: Re: men and childcare
2675. Subject: Beliefs never harm; only actions do
2976. Subject: Forgeries and "style"
3494. Subject: Re: Flamage, pseudoposters, and a conditional apology to MES
3836. Subject: Re: Yet Another Forgery!
3927. Subject: Re: Forgeries and "style"
4285. Subject: Re: Safe Legal Abortion?
4945. Subject: Re: Humor for a Change -- Girl's Guide to Condoms by Mimi Coucr
5741. Subject: Science education for women
5818. Subject: Re: the same dynamic in soc.women and soc.motss: minimizing won

From both Soc.women message headers, and reading that newsgroup over a period of time one thing is immediately apparent. Nearly every subject line contains the word Re:. Although the subjects assigned to messages by authors are varied, messages tend to be responded to or address earlier messages in a particular way. Very few messages introduce new topics;

message content appears to be driven by a constant need to clarify portions of text in earlier messages, and to dispute the interpretation of message text articulated by other Soc.women contributors in an ongoing stream of messages. In a general sense the content of Soc.women messages falls into three categories, that overlap. These are topic introductions and information, contentions, and messages related to network structure.

TOPIC INTRODUCTIONS AND INFORMATION

A small proportion of messages introduce new topics. Soc.women Message 9 (p. 212) is an example. In addition to new topics motivated by a need for advice, some messages that introduce new topics are primarily informational, such as Soc.women Message 10 (p. 212). Though infrequent, a small proportion of Soc.women messages are primarily informational, and respond to topics already under discussion (see Soc.women Message 11, p. 213).

Within the context of Soc.women, topic introductions and informational messages are used to steer the group outward and away from its own internal workings and processes. Even though it appears that many of the women contributors would prefer to discuss things such as good books they have read, problems with PMS (pre menstral syndrome) and how to deal with a stranger's assumptions that they are someone's wife, these topics represent the background dialogue of the Soc.women newsgroup. The foreground of discussion space in Soc.women is occupied by a seemingly endless struggle about what role Soc.women should fill, whose voices should be heard over the network bandwith, and what to do about group problems related to network structure, including forgery of messages.

Soc.women Message 9:

I came upon a situation the other night which I thought
I'd ask about here, just to start a new topic.

I live with my SO, and sometimes get called by people
who know him (vaguely) and who call ME by his last name
(as in Ms. or Mrs. X, when my last name is Y).

Now, in some cases it's a phone solicitor that he has
already talked to (like the cable company).
It may be one of his bosses who knows nothing
about his private life. When I
answer the phone and get "Mrs. X?" I want to:

1) let the caller know that they have the right number,
. BUT:

2) I do live here and make decisions for the household,

3) My last name is NOT X, whatever our marital status,

4) I do NOT want to tell them what my last name is in
case it's a really bogus solicitor we do not want to
talk to.

I also do not want to get into the big thing of lecturing
the caller, especially if it's someone I do not want to
be rude to (like an employer). I just want to let the person know that
s/he has the right number, s/he can talk to me if s/he
has anything to say, and let them know as little about
myself as possible.

How would you answer this?

The only thing I can come up with is "The only 'X'
here is Joe, and he's not here." It's to the point,
isn't rude, and says nothing about our status.

Any other suggestions?

Soc.women Message 10:

Subject: Re: Subjugation of Women in Christianity
Summary: not just Christianity
Keywords: Women Christianity Religion

A GREAT book to read on this subject is _The Skeptical
Feminist_ by Barbara Walker. In her essays she explores
the effect of patriarchal religions on today's society,
and ties it in with her own experiences.

I just gave this book as a present to my SO's mother,
raised Catholic, who enjoyed it tremendously.

Soc.women Message 11:

29450. >In article <2677@zodiac.UUCP> booter@deimos.ads.com (Elaine Richards) writes:
29451. >.As for PMS, I only get that once a month.
29452.
29453. I have finally totally eliminated PMS and most cramps. As a teenager
29454. I needed Darvon and sometimes atropine for cramps every month that
29455. made me want to die. The menstrual blood was always full of clots
29456. (which are a cause of cramps). Later I developed PMS--sometimes for
29457. two weeks of every month. All that is gone now. Treating my candida
29458. (with diet and oral nystatin) and allergies, and lowering the toxin level in my
29459. diet (red meat rarely, except organic; organic veggies) has smoothed
29460. out that PMS craziness. My bleeding is light and free of clots.
29461. What a relief. I do not mind menstruating at all.

CONTENTIONS: DEALING WITH DISAGREEMENT ON-LINE

By far the majority of messages in the Soc.women newsgroup are what I call contentions. In the simplest forms, contentions challenge points contained in an earlier message, or provide an alternate interpretation of text contained in an earlier message. For example, in Soc.women Message Excerpts 3 (p. 214), in lines 7684-7687 the author disputes the idea presented in a parent message (referenced in lines 7675-7682) that social factors should be considered of equal importance to technical competence in hiring decisions. In lines 8738-8742 the author of the parent message equates a failure to respond to messages with rudeness. In the original text of that message (lines 8744-8746) that notion is questioned. Soc.women Message 12 (p. 215) is written by a woman whose son was killed by a male child care provider. After referring to an interpretation of one of her earlier messages (lines 180-183) the author of Soc.women Message 12 goes on in lines 186-205 to clarify her original point, and in lines 206-209 she ends her message by introducing a contentious comment.

Another form that Soc.women contentions take are messages that as well as being contentions, address as their topic contentious messages themselves. In Soc.women Message 13, (p. 215) in lines 336-340 attributed text is supplied, and an alternate explanation for the phenomenon it refers to

(a 'flame war' about a comment made by a woman about despising children) is provided in lines 342-344. As well as providing an alternate explanation for the attributed text, lines 342-344 of Soc.women Message 13 provides an explanation for why contentions exist in Soc.women: they are a response to dealing with threatening views of the world. In this case, the threatening view is a woman's admission that she despises children (lines 346-350).

Soc.women Message Excerpts 3:

7675. In article <1174@hp-sdd.HP.COM> nick@hp-sdd.UUCP (Nick Flor) writes:
7676.
7677. >"I'm not going to hire you because you obviously haven't learned that
7678. >brown shoes do not go with a grey business suit.
7679. >Since you do not pay enough attention to social detail, you're obviously
7680. >not qualified for this detail-intensive job. Nevermind the fact that
7681. >you single handedly programmed all of Reagan's SDI satellites. No
7682. >siree. You are obviously possessed of a miniscule mind."
7683.
7684. What I find interesting in this argument is the contention that because
7685. you are TECHNICAL, you do not have to live in the real world, nor
7686. interact with it. Therefore, only TECHNICAL ability should count in
7687. your evaluation. Horse puckey.

8738. > Obviously, it's impossible to understand, because Mikki's failure to reply
8739. > "at all" is rude.
8740. >
8741. > Yours in Hell,
8742. > Mangoe the Malapert
8743.
8744. Why is it we are expected to keep on replying over and
8745. over again toethe same mindless arguments? And if we
8746. do not, horrors upon horrors, we are considered rude.

FEMINISM AS A CONTESTED TERRAIN

Contentions are the predominant type of message found in the Soc.women newsgroup. In a sense they represent the lifeblood of the group; the one thing that never changes over time as participants come and go. Although contentions can be read as mere disagreement, through taking a more detailed look at the topics addressed, one begins to wonder if contentions are the primary reason for the group's existence. By looking at the topics addressed through contentions we are reminded that feminism is still very much a contested terrain, and that women must still struggle in order to

have a place to speak among themselves.

Soc.women Message 12:

In article <3230005@hpcnof.UUCP> mike@hpcnof.UUCP (Mike David) writes:
>It is ironic that if this tragedy had not occurred the little boy which you
>loved would have ultimately become a rotten, viscious "MAN" inherently in-
>capable of love.

Gee! I do not remember saying anything like that. What I did say was:

1. That I wouldn't say that all men are bad childcare givers.

2. That men do not understand how much stronger they are than children.

3. That men do not realize how delicate a child is.

4. That each generation brings us closer to a time when these things will
. no longer be a problem.

5. And that I choose not to have a male childcare giver, but I wont tell
. others what to do.

I did not label anyone as rotten or viscious. If you saw that in my posting,
you were reading things that weren't there. If I felt that way, I would not
allowed the man who killed my son to take a plea bargain for involuntary
manslaughter when he was charged with murder. You see, even the prosecuter (sp)
could not convince me that the man meant to kill Nicholas.

Also, I was trying to raise Nicholas as a gentle, caring person. I do not
know if I would have succeeded, but I doubt if he would have been the type
to post thoughtless flames with no basis in fact. Perhaps you think men are
rotten and viscious. If you do, I feel sorry for you.

Soc.women Message 13:

In article <7906@eddie.MIT.EDU>, ooblick@mit-eddie.UUCP writes:
> What I find interesting, however, is that the main point of my original
> article is forgotten once I said I despise children. Suddenly, defining
> women based on parenthood is unimportant. It's saying something honest
> about CHILDREN that brings the most verbiage.

Naw, Mikki, it's not being honest that's the problem, its that
some of the folks here will grasp at ANYTHING in order to put
down a viewpoint that threatens their ideas of the world.

Face it, your not liking children is (to at least some of these
folk) just an excuse to put you down as "not a REAL woman"
<read "not a willing slave"> so they can dismiss your
point. Of course, if they had a good argument, perhaps
they wouldn't need to be deceptive in order to put you down.

Contentions, particularly those related to gender roles and feminism take on a life of their own in Soc.women, and are frequently the topic of

messages, along with the related topics of netiquette, who does and should control Soc.women, and forgeries. These topics are addressed in a series of messages that include titles such as "Our own goddamn newsgroup, and yes, Dear Sir"; "Beliefs never harm, only actions do"; "Control (what they say, what we hear)"; "Lightening Up"; "Mikki bashing"; "Snow White and the Net Police"; "the same dynamic in soc.women and soc.motss: minimizing women"; "Trashing of soc.women"; "What we should think"; "Why It Matters to Notice Sexism"; and "Women-bashing." One contributor to Soc.women commented on the nature of that group in the subject line of his message: "My first posting to soc.women. I'm going to regret this."

The tension within Soc.women is readily apparent to even a casual reader of that group. In addition, most contributors are in one way or another drawn into the debates that together comprise that tension. The dynamic of the Soc.women group itself is a frequent topic of contentious messages. The author of Soc.women Message 14 (p. 217) provides one explanation for why that tension exists. He feels the group participants view the group in one of two competing ways; as a forum for women's perspectives, or alternately as a forum for the discussion of gender issues from anybody's perspective. As a result, women feel men are trying to dominate the group, and men feel pushed out.

In an omitted portion of Soc.women Message 14, the author of that message proposes the formation of a new newsgroup as a solution to the problem he has outlined. In response to this proposal, a second contributor suggested an alternate solution to the problem: that messages only appear in one of the two groups, and that further discussion of topics occur in the group (Soc.women or Soc.men) that matches the contributor's gender. The contributor who proposed this idea suggests that this would allow Soc.women

to have a women's perspective, and Soc.men a men's perspective. However, a third contributor found this idea problematic (see Soc.women Message 15 p. 217).

Soc.women Message 14:

16604. Subject: My news group? Or yours? (was: Time for a gender-issues newsgroup?)

16613.)Lately, in my reading of soc.men, and soc.women, I've been noticing
16614.)two phenomena:
16615.)
16616.) -- Articles (like this one, in fact :-) are heavily crossposted
16617.) between soc.men and soc.women. In a recent batch, all but 5
16618.) of 40 articles in soc.men were crossposted to soc.women.
16619.)
16620.) -- Various soc.women readers complain that men are trying to
16621.) dominate soc.women, when the group should be a forum for women's
16622.) perspectives. Other readers think that the group should be a
16623.) discussion of gender issues from anybody's point of view, and
16624.) complain that they are being shoved out. (These men's articles
16625.) are often among the articles crossposted to both groups.)
16626.)
16627.)I think the problem here is that the two groups (and especially soc.women)
16628.)are serving a double duty. One of them *is* a forum for the perspectives,
16629.)support, and opinions of women or men. The other is general discussion/
16630.)debate on gender issues. It seems that the first group I mentioned above
16631.)wants soc.[wo]men to serve the first duty, while the second group wants
16632.)it to serve the second.

Soc.women Message 15:

17788. Wouldn't this defeat the purpose of following up articles?
17789. I'm posting this because I think that the same people would be
17790. interested in this article as in yours -- if I didn't, this would be
17791. in e-mail. And also because I want to dispute your point; I do not
17792. think it should go unchallenged. To do this, I need to respond to
17793. your article in its original forum.
17794.
17795. The latter point is particularly important in a highly
17796. flammable setting like this one. Suppose I get hit by one of the
17797. occasional Flying Libels that appear here. Or I hit the Mikki Barry
17798. Jackpot o' Flames. Or even worse, someone could post here viciously
17799. slandering my entire sex! (Of course, this couldn't possibly happen
17800. in such an Enlightened Forum. :-) I'm supposed to reply to a
17801. different group? Sorry, but the other group isn't the one with the
17802. behaviour problem. Or rather, it has its own behaviour problems.

Rather than disallowing cross postings, the author of Soc.women Message 15 supports the formation of the new newsgroup, Soc.gender-issues. The author of Soc.women Message 15 envisions Soc.gender-issues as:

17807. somewhere where we can discuss our mutual problems, without (much)
17808. fear of:
17809.
17810. "Get this ^%&$ out of soc.xxxx!"
17811. "What gives you the right to say..."
17812. "There's a newsgroup for you; post there and stop bothering us!"
17813. "But what can you expect -- it was written by a xxxx!"
17814. "Of what possible worth could a xxxx's opinions be..."
17815. "Take your drivel to soc.xxxx!"
17816. "What could you know about <subject>? You're a xxxx!"
17817. or the ever-popular
17818. "We xxxxs in soc.xxxx all agree on certain points. If you
17819. do not, then your postings do not belong here!"

(Continuation of Soc.women Message 15).

Like many men who contribute to Soc.women, the author of Soc.women Message 15 would prefer that women engage in a discussion with men about the difficulties that women and men experience in relation to changing gender roles, rather than sit on the sidelines as women discuss the difficulties they experience as gender roles evolve in response to feminism.

Another arena of struggle in Soc.women marked by contentions are discussions about flaming. Like many debates in Soc.women, discussion of flaming often becomes dichotomized along gender lines. Lines 8192-8205 of Soc.women Message Excerpts 4 (p. 220) point out what would have been obvious to even a casual Soc.women reader: that one contributor (Mikki) was being flamed extensively. Lines 8207-8210 and 10571-10576 of Soc.women Message Excerpts 4 were written by two different women who felt compelled to respond directly to the text in lines 8192-8205. The author of lines 13068-13071 (a man) also commented on that text. Lines 13073-13077 and 12888-12895 are two women's responses to the man's comments (lines 13068-13071).

Along with the varied explanations for why Mikki is getting flamed (expressing opinions that violate traditional sex roles, bad luck in an explosive environment, and lines 13068-13071 that attempt to dismiss or minimize the flaming), Soc.women readers become aware of both the struggle

for what Femail contributors have referred to as "electronic women's space," and one of the mechanisms used in Soc.women to guard that space: the net.police (line 12895). In Soc.women Message 16 (p. 221), we find out more about who the net police are, as well as gain a greater sense of the struggle for control of Soc.women.

In lines 2229-2234 of Soc.women Message 16, (p. 221) the author of that message first presents attributed text from an earlier message, where the author of the parent message first attempts to defend himself in relation to accusations that he finds sexism acceptable (line 2230) or tolerable (line 2232). Then, in lines 2232-2234 he goes on to suggest that people (read 'women') should spend less time looking for and analyzing sexism. In lines 2235-6, the author of Soc.women Message 16 first responds, and emphasizes a typographical error the original author made (with caret or ^ symbols underneath), and then labels it a Freudian slip. In lines 2238-2243 the author of Soc.women Message 16 chastises the author of the parent message for minimalizing or trivializing women's concerns about sexism. The author of Soc.women Message 16 then returns to the parent message (attributed text in lines 2245-2248), to provide an example to illustrate her claim.

It appears that lines 2250-2251 are attributed text that appeared in the message that the author of Soc.women Message 16 is responding to. Although the attributions are somewhat unclear, one of the contributors cited in the parent message appears to have found another's attempt to impose limits on content in Soc.women offensive, and attempted to call attention to it with the comment in line 2253 about the net police. The author of Soc.women Message 16 takes issue with the notion that Wilder (the author of the parent message) act as the net police, and asserts that Wilder has no right to act in such a capacity. She argues that allegiance with the net police is reserved for

Soc.women Message Excerpts 4:

8192. > In the last several months, I've noticed that Mikki is coming in
8193. > for an enormous amount of flammage. Since the topics have been
8194. > so widely varied, it makes me think there must be something about
8195. > Mikki herself which is causing it. Could it be because she's a woman
8196. > who's not afraid to speak bluntly and forthrightly, instead of
8197. > pussyfooting around and apologizing every other sentence for her
8198. > opinions and ending on a questioning note, like women are supposed
8199. > to? (Reference - Robin Lakoff.) Could it be because she's a women,
8200. > yet runs a company in a male-dominated field, and so is obviously
8201. > "unfeminine"? Could it be because the things she talked about like
8202. > not wanting children and rejecting sexist applicants threaten people
8203. > with "traditional" values?
8204. >
8205. > Nah - of course those couldn't be the reasons.

8207. Yes, of course those are the reasons. She's not doing what she's
8208. "supposed to", as you say. VERY threatening. Just the Xenophobic
8209. factor alone would explain a lot of resistance... but violating the
8210. dominant gender roles? Serious NO NO.

10571. Seems to me, that if that was all it took, we'd be seeing a lot MORE
10572. flames around here. Lots of other people's articles are just as
10573. flame-worthy as Mikki's.
10574.
10575. I'd say it's just luck -- posting here is a lot like throwing rocks
10576. into a minefield, and Mikki has set off a few lately.

13068. >This sort of question wouldn't be bothered with if some male were being
13069. >flamed a lot in this group. Very many of the women would consider such
13070. >flamage to be right and proper; few if any of the males would feel the need
13071. >to say "quit picking on him."
13072.
13073. Maybe you haven't noticed, but this is soc.women. WOMEN. Men who are flamed
13074. here are usually those who also haven't noticed that. Women who go over
13075. to soc.men and start talking about how all men should be castrated are
13076. just as likely to be flamed, and deserve it just as much as the men who
13077. flame women for expressing non-traditional attitudes, here.

12888. Ah, but Charlie - what does it say right up at the top of the article?
12889. This is soc.WOMEN. WOMEN. WOMEN. soc.men is _another_ group. By and large
12890. (and I know I'll get corrected if I'm wrong), the people who post here are
12891. interested in WOMEN's voices. It's always nice to hear from _supportive_
12892. men, but others can go ELSEWHERE to vent their spleens. WOMEN speak here.
12893. WOMEN can disagree. Men can shut up and listen (for once).
12894.
12895. [Please send a net.police uniform and badge.]

the female members of Soc.women. It is worth noting that on line 2257, in connection with who the net police are, the name Mark appears. In this context Mark refers to Mark Ethan Smith. Mark, who frequents most of the

computer networks concerned with feminism, claims to be a woman who has legally changed her name to Mark in order to point out to people through day to day interaction how privilege is associated with maleness. Many network contributors claim Mark is a pseudo, or fabricated identity (see section titled Messages Related to Message Structure, p. 222).

Soc.women Message 16:

2219. Subject: Snow White and the Net Police

2228. In article <3689@ihlpl.ATT.COM> kgb@ihlpl.ATT.COM (Wilder) writes:
2229. >In article <1505@cartan.Berkeley.EDU>, desj@brahms.Berkeley.EDU (David desJard
2230. >Never, have I suggested that "sexism" was acceptable! In fact, I have on
2231. >several occassions, commented on how much I disagree with the whole idea.
2232. >And never, have I suggested that "sexism" doesn't exist! But if a person
2233. >spends all their time analyzing everything they see and hear for sexist
2234. >intent, they're gonna miss a whole-lotta other impotant aspects of life!
2235. ^^^^^^^^
2236. A Freudian slip, I have no doubt...but an apt one.
2237.
2238. You continue to tell women who are offended by sexism that it is not as
2239. "impotant" to recognize sexism as it is to enjoy other aspects of life.
2240. Once again, you are telling us what to value and belittling our own
2241. perceptions of what is harmful. Hope you do not mind too much if I decide
2242. to ignore you and the "impotant" aspects of life, and continue to fight
2243. sexism, racism, and homophobia, all of which affect me daily.
2244.
2245. >Snow White has, if you choose to look for them, everything "most" people
2246. >on this net have accused it of having. But, why spend your time looking
2247. >for something that you have no control over, when you can spend that
2248. >same time enjoying the movie for what it is; a classic fairy tale.
2249.
2250. >> P.S. Please do not post any more on this topic unless you have something to
2251. >> say about women (that is what this newsgroup is about, remember).
2252.
2253. >Who are you - the net police?
2254.
2255. Not on this group, Wilder. On this group, *I* am the net police.
2256. Valerie is the net police. Marie and aMAZon and Marcia and Wendy
2257. and Hilda and Mark and Pooh and Dorothy and Doretta and Darci and
2258. Inna and Karen and Miriam and Cheryl and Mikki and C.E. and Moira
2259. are the net police. This is OUR newsgroup. Stop condescending to us.

The struggle for women to control Soc.women is echoed over and over again in message text, as well as message signatures. The selections in Soc.women Message Excerpts 5 (p. 223) are representative of the mechanisms or tactics employed by women in the Soc.women newsgroup in attempts to have Soc.women function as a "forum for women's perspectives,"

rather than "a discussion of gender issues from anyone's point of view." In the first excerpt, (lines 12650-12655), the author (a woman) comments on attributed text in lines 12650-12651, where the original author suggests that men should refrain from electronically speaking. Line 12653 in a sense summarizes the struggle. Normatively, the newsgroup is for women. Through her reference to Ripley, the author implies it would be a bit of a miracle if this were the case. And, in line 12655 she pledges her allegiance to the net.police, through mention of the "blue togs and shield."

Line 23681 and line 13560 are from message signatures. Line 23681 identifies two inappropriate behaviours (bashing women, and men talking about women), and line 23560 suggests that an appropriate behaviour is to allow women's perspectives to serve as the basis for the discussion, rather than men's. Lines 23564-23569 and 23591-23593 are from the same message as line 23560. The author of that message has used line 23560 as a springboard into a discussion of why people do not listen to women (lines 23566-23569). She ends that message with lines 23591-23593, where she outlines appropriate behaviour for men in the group, and asserts that the group should be used for discussing women's experiences.

MESSAGES RELATED TO NETWORK STRUCTURE:

A third type of message found in the Soc.women newsgroup are messages related to network structure. Although occasionally messages related to network structure direct a contributor to a more appropriate newsgroup for the topic they brought up (for example, any discussion of abortion should take place in Talk.abortion, rather than Soc.women), typically, these messages address forgery and the identity of (and in some cases the dubious existence of) Soc.women contributors. Messages related to

network structure revolve around two themes: solutions (both technical and social) to the forgery problem, and contentions that dispute and debate whether or not messages are forged, and whether or not the proposed solutions to forgery will work.

Soc.women Message Excerpts 5:

```
12650.      >WOMEN speak here.
12651.      >WOMEN can disagree. Men can shut up and listen (for once).
12652.
12653.      Normatively, yes. Descriptively... anybody got Ripley's number?
12654.
12655.      Blue togs and shield enclosed.
----
23681.      Soc.women. Not soc.bash-women. Not soc.men-talking-about-women.
-----
23560.      >  In soc.women, a woman's perspective provides the basis. Not a man's.

23564.      I find the article and the .signature quote says it all.
23565.
23566.      It's not surprising to me that folks do not listen to women. Women
23567.      are supposed to be powerless in a patriarchal society. And when
23568.      a woman "dares" to speak up, she's vindictive, bitchy, oversensitive,
23569.      inappropriate, unladylike, "too much like a man".
----
23591.      In this space, women's voices should be listened to. Then decide
23592.      if you agree with what is being said. But listen first.
23593.      Soc.women - a place for affirming the rights and experience of women.
```

An example of a technical solution to forgery is found in Soc.women Message 17 (p. 223). In Soc.women Message 18 (p. 224) we first see a social solution to forgery (contained in attributed text in lines 7906-7912), followed by the author of Soc.women Message 18's initial response to that proposal.

Soc.women Message 17:

```
7256.       If anyone feels strongly enough about protection against
7257.       forgeries, one system which does not involve any fixes by anyone
7258.       but the user himself is to post a large number which is the
7259.       product of two large enough (say, ~10^30) primes or pseudoprimes.
7260.       In any subsequent article you wish to authenticate, you give a
7261.       pointer to the previous article and the factorization. Then you
7262.       supply a new composite number.
7263.
7264.       I admit it is sort of goofy, but it could easily be automated
```

Then, in lines 7917-7920 we see another contributor's response (in attributed text) to that same proposal. Finally, in original text in lines 7921-7925 the

author of Soc.women Message 18 points out that the solutions proposed fail to solve the problem of forged messages.

Soc.women Message 18:

7902. In article <7086@ihlpa.ATT.COM> gadfly@ihlpa.ATT.COM (Gadfly) writes:
7903.
7904. >In article <14316@oddjob.UChicago.EDU>, pooh@oddjob.UChicago.EDU
7905. >(for you to know and me to find out) writes:
7906. >> Anyone who feels they are currently victims of a campaign
7907. >> to forge their articles can easily solve the problem.
7908.
7909. >> Announce publicly that you are now withdrawing from posting
7910. >> to the net for a specified period (three months or so), and
7911. >> that in this period of time, any and ALL postings from "you"
7912. >> should be ignored as a forgery...
7913.
7914. I was going to point out that the "reasoning" here was seriously
7915. flawed, but then I found:
7916.
7917. >Do not go to sleep! And for Heaven's sake, do not stop posting!
7918. >If you do, the pod-people will take over. Why would Pooh even
7919. >mention such an unthinkable strategy, unless...
7920.
7921. I thought of that possibility too. In fact, the fact that I
7922. "did" have to think of it should alert people to the fact that
7923. merely because you are unaware of any forgeries going out under
7924. your name does not mean articles you write will automatically be
7925. above suspicion.

In the Soc.women newsgroup, contentions that dispute and debate whether or not messages are forged are quite varied. Consider, for example Soc.women Message Excerpts 6 (p. 225). In lines 1071-1072, text attributed to Mark Ethan Smith (who is frequently referred to as MES) is presented, that disclaims that Mark has authored the message referred to. The basis for the disclaimer is an error (the appearance of the letter o rather than a zero in the message I.D.). Then in original text (lines 1074-1078) Mark's disclaimer that the message under discussion is a forgery, is disputed. The basis for the disclaimer is disputed, on both social grounds (the error is well known), and technical grounds (that it is easier to type zero than the letter o). Finally, in lines 1080-1083 an alternate explanation of the social role that forgeries are

filling (allowing people to write things without being held responsible for them) is presented.

Soc.women Message Excerpts 6:

1068. In article <1841@epimass.EPI.COM>, jbuck@epimass.EPI.COM (Joe Buck) writes:
1069. > In article <3108@killer.UUCP> era@killer.UUCP (Mark Ethan Smith) writes:
1070. >
1071. > The article I'm following up to is a forgery. Note the Message-ID: it
1072. > has an O instead of a zero in the number.
1073.
1074. It seems to me that some of these "forgeries" might not be forgeries. There
1075. have been enough postings pointing out the O as opposed to 0 errors that
1076. any forger would have to know about it, and yet they keep occuring. Also, it
1077. is significantly easier to type 0 than O so I find it hard to see the
1078. mistake being made in the first place.
1079.
1080. I am reluctant to get into this MES flame stuff as I do not know the background,
1081. but it looks to me as though he/she is using the "forgeries" to make postings
1082. without any blame being attached, especially since he/she was the first to
1083. bring it up about article numbers.

4213. In article <3089@killer.UUCP> era@killer.UUCP (somebody) writes:
4214.
4215. >Karen, the article you are responding to is a forgery!
4216.
4217. I see. Now you are all me, instead of Rich Rosen, and I'm supposed
4218. to guess who wrote which forgeries. I think I'll start with this one,
4219. since it seems to be the easiest.

Lines 4213-4219 are from a message (presumably) written by Mark. In line 4213 we see the text "era@killer.UUCP"; this is the I.D. that Mark usually uses. The word "somebody" following the I.D. on that line together with line 4215 put us on notice that the identity of the author of the message referred to may be someone other than Mark Ethan Smith: in other words that a message claiming another message was a forgery, was forged. In lines 4217-4219 of that excerpt, an explanation of the allegedly forged forgery is provided. We learn from this paragraph that Mark believes several people are forging his/her messages ("now you are all me, instead of Rich Rosen"). Presumably Rich Rosen has been previously accused of writing messages under Mark's name. In the remainder of the message lines 4213-4219 came from, we find out who Mark thinks wrote the forgery under discussion. The

quote below was written by the person Mark acused of forgery, and copied by Mark from a computer bulletin board system run by the alleged forger, into a Usenet message. It illustrates how some Usenet users view forgery.

> You do not have to be a Usenet administrator to post untraceable articles. Anybody can do it just as well as the site administrator. If only white males know how, it is only because only white males have bothered to read the news documentation (posted and publicly available). If women and minorities would bother to read the documentation, they could post libelous or defamatory anonymous postings on the net and not be held responsible either.

The remainder of this message, and other messages written about Mark and the forged articles on Usenet debate whether the style of the contested messages matches Mark's writing style, accuse Usenet netnews administrators of ignoring the forgery problem, and provide an acknowledgement as well as an explanation of why this is the case (disinterest, inability, or possibly malice). In the course of discussing forgeries, two people are accused of being "pseudos" (not existing in a flesh and blood sense, but rather only as fabricated identities or personalities communicated through Usenet newsgroups). The people accused of fabricating pseudos deny doing it, and suggest that such accusations might be the basis for libel suits.

One Soc.women contributor points out that Usenet is not a secure networking system and never will be, and suggests social measures (i.e. avoid authoring inflammatory messages) as a mechanism for avoiding forgeries. Another contributor argues that the notion of anarchy in the Usenet community is used to defend defamatory messages as "free speech," however the existence of defamatory messages themselves suppress free speech. In a message that parodies the forgery problem, one contributor writes "I believe

that being an AI [artificial intelligence] program means never having to say you're sorry, and that forging a posting is the sincerest form of flattery. And that you're nobody till somebody flames you."

Clearly, along with the contentious nature of feminism, the structure of Usenet itself contributes to the problematic group process that characterizes Soc.women. The network structure along with netnews software easily accommodate both flames and forgeries. These in turn contribute to the prominent struggle about who should control the newsgroup, and what it should be used for.

MESSAGE STYLE

Excluding messages that are primarily informational in nature (for example Soc.women Message 10 on p. 211 and Soc.women Message 11 on p. 211), most Soc.women messages can be characterized by one of two styles. Material in Soc.women messages tends to be presented in either a logical, linear, point by point manner (i.e. Soc.women Messages 9 and 12), or as a parody (i.e. lines 342-344, Soc.women Message 13). Occasionally the two styles are combined in one message (i.e. lines 17795-17802 of Soc.women Message 15, or lines 7914-7920 of Soc.women Message 13).

The emphasis on rational, point by point discussion in Soc.women is not surprising. First, Usenet is accessible primarily from science departments of colleges and universities, and businesses engaged in scientific work. The people who have access to Soc.women through these locations are likely to have been extensively trained to present information in this fashion. In addition, the combination of Usenet's structure (that in the absence of a moderator does not allow chronological message sequencing), and software features that encourage contributors to quote from reference messages all

contribute to the prevalence of a linear, rational message style in Soc.women.

THE FEMAIL MAILING LIST: CONCIOUSNESS RAISING ON-LINE

Given that the Femail mailing list started as a result of dissatisfaction with Soc.women it is not surprising that although there is some overlap in Soc.women and Femail participants, the communicative norms and processes that Femail participants engage in are quite different from those found in Soc.women. Although the general feeling of Soc.women is one of disagreement and struggle, the Femail mailing list can be characterized by the ongoing processes of participants attempting to find solutions to day to day life problems as well as larger life issues, and the negotiation of an environment that supports an honest open exchange of personal information.

Femail participants tend to communicate with Femail readers overwhelmingly through stories, about a wide range of issues. Among the topics discussed on the Femail mailing list are being mistaken for a secretary, seeking out the services of women, someone's boyfriend saying "I'll propose when you lose 30 pounds", names and titles, the '60s, repair manuals, males acting in a 'queer' manner, women's vs. men's earnings, support, discrimination in the workplace, the career/time-of-one's-own dilemma, dumb things officials say, the biblical woman "caught in the act of adultery", "I now pronounce you man and wife", sharing the housework, death and grieving, cervical caps, marriage ceremonies, housework, unconditional acceptance vs. growth, playing the corporate game, bodies, staying in computer science, treating clerks as non-persons, birth control and teenagers, menstrual sponges, pheremones and perfume, Montessori schools, menstrual and other cycles, superwomen, opening doors, not scaring people,

secondary relationships, naming the children, the femail mailing list group, conversations and interrupting, looking for a "so" [significant other], feminist periodicals, attitudes toward singleness, crying in bad situations, flames about the mailing list, beautiful strong women, emotions at work, witchcraft, transsexuals, meeting others on the list, and time to unwind after work.

Soc.women messages can be categorized in terms of topic introductions, contentions, and messages related to network structure. Femail messages are not as easily separated into different message types. In general, Femail authors write narratives. In the narratives they introduce new topics, seek and give advice, and tell their personal stories. Although occasionally messages are primarily informational (see Femail Message Excerpts 7, p. 229), the content of Femail messages most often revolves around seeking and giving advice related to day to day and life issues. Another prevalent theme of Femail messages is group process: what the rules of the group are, what they should be and whether they should change.

Femail Message Excerpts 7:

33640. This from NARAL's legislative update LU#86-9 (6/6/86)
33641.
33642. HUMPHREY AMENDMENT TO DENY TAX-EXEMPT STATUS TO INSTITUTIONS WHICH
33643. PERFORM ABORTION --- IMMEDIATE ACTION NEEDED!!!

35109. An upcoming event of interest to feminists and those interested in
35110. feminist theology and politics:
35111.
35112. AN EVENING WITH STARHAWK*:

5670. Subject: Women *are* winning tenure cases
5671.
5672. In this week's Chronicle of Higher Education there is an
5673. article which announes that President Derek Bok of Harvard has
5674. reversed a tenure decision made against Theda Skocpol in 1980 by the
5675. senior faculty of the Sociology department at Harvard.

SEEKING AND GIVING ADVICE ON-LINE

Femail participants appear to use the Femail mailing list group primarily as an electronic place to go for advice on a wide range of questions

and issues, and a place to share experiences, opinions and solutions. Requests for advice come in a variety of forms. For example, lines 5498-5504 of Femail Message Excerpts 8 (p. 231) are a simple request for information, and lines 21213-21222 of Femail Message Excerpts 8 integrate a request for advice in a narrative that discloses the author's opinion about abortion (lines 21216-21218), her sense of desperation about attempts to recriminalize abortion (line 21213), her past behaviour in relation to "women's rights" (line 21220), and her desire to act differently in the future (lines 21221-21222).

In the Femail group new topics are often introduced through one contributor's response to another's message. In other instances new topics are brought to the Femail group when an event in the life of a contributor presents a problem. For example, in Femail Message 4 (p. 231) the author of that message describes how her health has deteriorated over a period of time when she has been taking birth control pills. She recounts her interaction with her doctor about it (lines 9478-9479), and her dissatisfaction with the doctor's response (line 9479-9480). After providing additional information about her interaction with the doctor (lines 9480-9481) and her health (9483-9484 and 9487-9488), she seeks advice from Femail readers (lines 9486-9493).

Femail Message 4 drew several responses, including the text in Femail Message Excerpts 9 (p. 232). Lines 9792-9801 are from a message that included more information from the PDR, a comment about headaches, warning of additional medical complications resulting when smokers use birth control pills, the assumed logic behind a doctor's recommendation of vitamins as a solution to the problem, a comment about the convenience of birth control pills and an assertion that the pill may be an inappropriate technology. The remainder of that message recount a story about the

importance of second opinions about medical problems.

Femail Message Excerpts 8:

5498 . Request for children's books:
5499. I'm searching for children's books which are both interesting
5500. for kids, and non-sexist (or at least less sexist than the masses
5501. of children's books available at the book stores). I'm especially
5502. interested in books aimed at young children. If you have
5503. any titles to suggest please send me mail. I'll summarize
5504. if there is interest.

21213. Help!!!!
21214. I went on vacation and came back to hear that the movement is ever
21215. stronger to deny a woman's right to seek a pregnancy termination through
21216 abortion! Although I am sad to hear about ABUSE of abortion, I feel that
21217. terminating a pregnancy is a woman's issue, for a woman, her God (conscience),
21218. and her physician. It is NOT an decision for the government!
21219.
21220. I have never been an 'activist' for women's rights -- it may already be too late
21221. -- I must start standing up for my beliefs. Where do I start from Portland,
21222. Oregon?

Femail Message 4:

9471. A new (?) subject.
9472.
9473. I have been on the Pill for about four years. In about the last 6 to 12 months
9474. I have noticed that I have been more depressed, irritable, and have had wide
9475. mood swings that I didn't seem to have before.
9476. I also get these horrid headaches -- up to about 2 years ago, I never had
9477. headaches.
9478. I talked to my doctor, and she just shrugged it off as "PMS" and gave me some
9479. vitamins. This made me really angry, because I felt she just wasn't
9480. interested in my problem. (At the time I asked her if i should 'go off it'
9481. for a while or switch brands to see it the problem went away.)
9482.
9483. I guess I should say that I haven't had any problems other than what was
9484. mentioned.
9485.
9486. Does anybody else seem to have this problem?
9487. Could it really be "PMS"? I really doubt it, because I seem to be this way all
9489. the time, not cyclicly.
9490.
9491. Does anybody have a good suggestion? I would rather stay on some kind of Pill
9492. (convenient), but at this point I realize I need to do something....

As Femail participants submit messages to the list and receive responses with advice about their questions and problems, their lives often change. For example, one woman submitted a message to the Femail group seeking advice about moving out of her parents home at age twenty four (see lines 36181-36202, Femail Message Excerpts 10, p. 234). She received many

responses that encouraged her to leave home. About two weeks later, she submitted the message that lines 43473-43493 are taken from. Finally, two and a half months after making her initial request for advice she submitted the message that contained lines 61201-61214. In this series of messages, she moves from being nearly phobic about leaving home (line 36200-36201) to taking a stand about it (lines 43473-43493) to taking action (lines 61201-61214).

Femail Message Excerpts 9:

9792. I am really surprised that your doctor was unconcerned about your
9793. headaches. There is good evidence that using the birth control
9794. pill can increase the risk of cerebrovascular disorders. The follow
9795. is from the Physician' Desk Reference (PDR) and is available to any
9796. M.D. that takes the time to read it. (This quote is from the
9797. information for Ortho-Novum, but applies to all oral contraceptives)
9798. This is based on "Oral contraception and increased risk of cerebral
9799. ischemia or thrombosis" N.Engl. J. Med. 288:871-878, 1973; and
9800. "Oral contraceptives and strokes in young women: associated risk factors"
9801. J.A.M.A. 231:718-722.

10016. Regarding your headaches, my SO is a doctor, and though she is
10017. reluctant to give medical advice over the 10Mbit line, she urges
10018. you to get a second opinion. (I will mention that she muttered
10019. "bullshit" when she read what your doctor said. (:-))
10020.
10021. Second opinions can be wonderful things. Several years back, when
10022. I had a suspicious lump on my thyroid, my doctor had the choice of

The author of Femail Message Excerpts 10 was one of Femail's original contributors. She read and contributed to the Femail mailing list for at least three years, taking breaks from the list when her access to computers diminished or when work and other demands became too great. In addition to moving out of her parents house, she requested advice from group participants about body image, problems with her menstral cycle, and about changing her name when she got married. She gave advice to participants about changing self images, planning weddings, taking self defence classes, and men and relationships. She submitted messages to the Femail list that dealt with sexist images of women in science fiction books, a well known

woman professor in computer science failing to get tenure, and a handful of other items.

Like many other Femail participants, this woman appears to have used the list as a place to get feedback on issues that for several reasons might otherwise have been unavailable to her in her immediate geographical area. For example, although people may have existed in her environs who could address these issues, she may have rejected their opinions (as in the case of leaving her parents' home), or may not have been integrated into a peer network that could supply the information she needed (for example, with regard to her menstral problems). In some instances (such as dealing with her body image and self image) the anonymity of communicating with people she never met may have been a requisite to addressing these issues.

Clearly, as the authors of Femail Message Excerpts 11 (p. 235) indicate, Femail readers benefit from that group's existence, as they learn that others have experienced similar difficulties in their own lives. They come to see what many women learned in the late 1960s and early 1970s through conciousness raising groups: that difficulties women experience as personal problems are often shared by many women. Through sharing experiences and talking about a range of potential solutions, women are able to pursue new courses of action (see lines 19112-19229, Femail Message Excerpts 11).

MODERATION: NEGOTIATING GROUP PROCESS ON-LINE

Participants in the Femail mailing list, like Soc.women participants engage in a continual dialogue about group dynamics. However, unlike Soc.women where the debate about group process takes place through contentions and messages that address social problems (such as forgery and

Femail Message Excerpts 10:

I'm thinking about moving out of my home (really this time!). I'm
24 and have never lived away from home (we've even always been
in the same house). The reasons I have for moving out are: I'd
like to be independent, and 24 seems a reasonable age (well, 23
and 9 months, but anyway); I have NO privacy at home (if I lock
my door, my sister or mother will knock and ask if I'm mad about
something, or upset, and then talk for a while); related to that
is that I can't study at home - there's always interruptions and
discussions, and I just can't tell my family to shut up and leave
me alone. Thinking about my reasons, it seems like a pretty good
idea -- but then my father says, why leave home? You might as well
wait until you have a real job (I'm a TA and work parttime at NIH),
and if you move out I can't claim you as a dependent, and mom says,
oh, you're leaving, do not you like us anymore? (jokingly, of course,
but they say it everytime I mention moving out)

Actually, I'm not sure what kind of advice to ask. Maybe, am I making
a mistake? I mean, it seems pretty stupid to waste my money when
I could have a rent-free room, free food, gas, ect. Also, I'm
TERRIFIED of moving out. I do not know why, really; it's like
a phobia, but I know I have to sometime. I also have trouble
making decisions ...

Thanks to all who wrote about me moving out. I need the support. As I
mentioned, my parents and family are not really supportive. Neither
are my friends - they do not say anything, but I can tell by their
attitude that they think I'm crazy to leave home before I graduate.
One person (I'm not sure I want to really call him "friend")
definitely told me I was making a big mistake, especially when he
learned the guy renting the room was Indian. I was considering his advice
(about it being difficult to live with a male apartment mate) until he
started saying things like, "you won't like it, believe me."

[lines omitted]

and so on, with Vic never mentioning anything specific. It made me
want to take the place just to spite him. Well, I did. I can't back
out know. It leaves me kind of breathless. At least, Raman is really
nice (he even wants to go to Disclave (local SF con) with Bob and I).
So, here goes... Any hints on how to move with a minimum of confusion?

Well, I did it. I actually moved out. I can hardly believe it, and
it's not nearly as "traumatic" as I was expecting. It's actually been
rather exciting, and the guy I'm renting from (Raman) is really nice.
I've met several of his friends - Ingrid from Germany, her husband
from Iran, June from Ghani (I think that's it), several other people
whose names I do not remember, from Venezuela, India, and other interesting
places. Ingrid's parents were there for a visit. They spoke only
German, so I got to practice, and they invited me to visit them when
my sister and I tour Europe later this summer (I hope I hope I hope!).
Ingrid's mother scribbled her number and address on a napkin, and
hugged me goodbye, and I can't help but feel good when someone does
that. I am really glad I had the courage to do it - and believe me, I
was scared. I still get pangs of unease sometimes, but I'm kind of
committed.

Femail Message Excerpts 11:

20075. I am really glad to have been able to read the discussion about crying-at-work.
20076. As with so many things i had no idea so many other people felt this way,
20077. and felt so much better as soon as i relaised that they did
20078. - the benifits of mailing lists like this!

19112. Now to get to what I really want to talk about, but find
19113. so difficult to do.
19114. I have been helped so much by the open discussion that has
19115. taken place here regarding what I guess I'll call lifestyle
19116. (for lack of a better term).
19117. Being the age I am, I was brought up in a world which did
19118. not prepare me for the world I find myself in.
19119. I think that I have done a good job of changing my
19120. attitutes and expectations, but when the rules change as
19121. drastically as they have during my lifetime, it's hard
19122. sometime to know which of the old rules are worth keeping,
19123. which of the new are harmful, which are useful.
19124. Throw a teenage daughter into the pot, and you can get
19125. mighty confused, especially when most of the information
19126. you get about changing mores comes from the media.
19127. That's where this list has been especially helpful to me.
19128. It has helped give me feedback on what real people are doing
19129. in their lives, and how those lives are going as a result.

flaming) that are related to the structure of Usenet and the netnews software, Femail participants discuss group dynamics through dialogue with the moderator, and between participants. Among the topics addressed in the continual negotiation of group process among Femail participants are the purpose the group should serve, the role of men in the Femail group, the role of the moderator in the Femail group, participants' dissatisfactions with the group, participants' ideas about changing the group norms and/or structure of the mailing list (e.g. making it a moderated Usenet group), and technical issues related to network structure that may have an impact on the moderator and/or Femail readers.

The negotiation of group parameters (in terms of function, membership and communicative norms) began with the first message sent out to Femail readers. Referring back to Femail Message 1 (p. 137), we can see that the process of the moderator working with the group (and in a sense being responsible to it) began with the first Femail message. From lines

18164-18165 we find that a proposal queried potential Femail readers about whether the Femail mailing list should be women-only or feminist. After presenting the results of the query to the group (lines 18166-18170) and indicating the difficulty involved in making a decision about group membership (line 18171), we learn the decision made by the group's moderator was to include everyone in the group. In lines 18173-18175 we learn that with one third of the initial query respondents in favour of a moderated group, the author of Femail Message 1 assumed the role of moderating Femail. In lines 18182-18184 the moderator first informs the group about her criteria for having a message forwarded to the Femail readership, and also invites the Femail readership to help her define the criteria for message exclusion.

Shortly after the Femail mailing list was formed, one contributor described why she joined the group (to discuss women's issues with adult women in an intelligent manner), and suggested that several ideas be accepted as axioms in the group. These appear in lines 31619-31624 of Femail Message Excerpts 12. In commenting on the four axioms, another contributor brought the concept of 'womenspace' to the Femail readership, in lines 12032-12038 of Femail Message Excerpts 12 (p. 237). The notion of womenspace became central to the ongoing negotiation of group process amongst Femail participants.

Among the issues addressed through the discussion of womanspace in Femail were male group member's adherence to the idea that the group existed to "talk about women's issues, not how women's issues affect men" (Femail Transcripts 1991, Message #35), that within the context of the Femail mailing list it is appropriate to discuss women's problems, to the exclusion of the larger problems of the world (Femail Transcripts, 1991,

Message #42), a distinction between 'woman-oriented things' and 'feminist-oriented things' and agreement that both were appropriate discussion items in Femail.

Femail Message Excerpts 12:

31619. 1. Women do not like to be called girls. Period.
31620. 2. Women really are discriminated against in the job market.
31621. 3. Girls really are discriminated against in presentation of
31622. options (I mean in school when they tell you what you can
31623. be when you grow up, ect.)
31624. 4. Women do not like to be raped.

12032. Now, I realize there are men reading these mail messages but I am quite
12033. prepared to treat this (for most purposes) as "woman-space" and I am not
12034. in the mood, here, to really care that men are also discriminated against.
12035. Just because they also have these troubles does not invalidate the troubles
12036. of women. As a woman, I do not want to fight for men to become nurses -- except
12037. in a very general way -- but I WILL write letters, argue, march, ect. when
12038. another woman gets the shaft just because she is a woman.

The conditions under which men were welcome to participate in the Femail group were laid out early in the group's evolution, and re-negotiated over time. For example, in the forty-second Femail message (written about one month after the group began), a woman contributor reminds men that although they are welcome to sit in and even contribute, that they "are on the list on sufferance." In the same message men are reminded that the Femail list was created because women wanted a space where they would be safe from the preaching and hostility of Usenet. About two months after the group began a male contributor both expressed his frustration with the group's moderation (lines 12089-12094 of Femail Message Excerpts 13, p. 238), and presented his interpretation of the group's limits in relation to messages from men (lines 12095-12097). In writing that he did not treat Femail as a forum where he was welcome to post anything that came into his head (line 12095), he attempted to convey to the group the efforts he was making to adhere to the group's norms.

In response to lines 12089-12197 of Femail Message Excerpts 13, the

moderator of Femail again reminds readers of the concept of womanspace, and stepping out of her role as moderator (line 12103, "I personally...") indicates her preference for hearing what women have to say (lines 12103-12104). She then makes a distinction between her preference as a group participant, and her role as group moderator (line 12104 "but as moderator..."). In lines 12104-12107 she indicates a willingness to transcend her personal preferences in her role as moderator, and again invites group participants to work with her in defining acceptable limits for the group.

Femail Message Excerpts 13:

12089. I've tried to keep that in mind in subsequent postings. And I did have one
12090. paragraph deleted by the moderator once. She was quite fair about it,
12091. sending mail that indicated she intended to delete that paragraph and giving
12092. me a chance to try to convince her that it was appropriate after all,
12093. but it ended up being cut nonetheless. (This is not to fault Judy - I
12094. understand why she thought it inappropriate; I just disagree.)
12095. But I do NOT treat this as a forum where I'm welcome to post anything
12096. that comes into my head, and I'm under the impression that that's what
12097. the group prefers.

12101. Re: womanspace
12102. We discussed the idea of the mailing list as "woman-space" by mail, as the
12103. group was being formed, as well. I, personally, am most interested in what
12104. the women have to say but, as moderator, I am quite happy to post all
12105. submissions that do not make me see red (watch out, my screen display is
12106. orange so I do not have far to go!). I depend on the comments of others to
12107. know whether they object to any of the postings.

From time to time a Femail participant became dissatisfied with some aspect of the group, and appealed to the group for feedback about the perceived problem. For example, in lines 12148-12158 of Femail Message Excerpts 14 (p. 239), the author of that message uses the notion of womanspace as a mechanism for pointing out that messages authored by men are making her angry, and she fears that Femail is slowly becoming more like its Usenet counterpart. She then invites other readers to indicate if they share her dissatisfaction (line 12152), and defines the problem as a group problem by indicating that she expects men, women and the moderator

to address it. Like many Femail contributors, she is interested in accommodating men in the Femail dialogue via compromise (line 12158), rather than the confrontational tactics employed in the Soc.women newsgroup.

Femail Message Excerpts 14:

12148. Now for a quick whine. Why, since this is supposed to be womanspace,
12149. have my last three letters contained large sections dealing with
12150. remarks from MEN that have left me feeling angry, frustrated,
12151. and/or misunderstood? I get a strong feeling this is slowly
12152. and insidiously turning into net.women.mail. Has anyone else sensed this?
12153. What can we (and I mean WE - men and women and not just Judy *[the moderator]* do about
12154. it? My feeling is what we've tried to do is a good thing but because
12155. of the medium we're never going to have a true womanspace here.
12156. I'm not suggesting we give this up, just venting a little
12157. disappointment/frustration. Maybe we should allow interested men
12158. to read but not contribute? Is that a reasonable compromise?

Another participant who felt her womanspace had been invaded offered an alternative suggestion about how to deal with the problem: prohibiting additional men from joining Femail while allowing men already in the group to stay. Later in the same message the disillusioned Femail participant politely indicates a difference she has observed in how men and women view the purpose of the Femail group (lines 12191-12199 of Femail Message Excerpts 15, p. 240). At the same time that women appear to want to chat about their lives and experiences with a group of friends, men seem to be more interested in engaging in more abstract discussions of feminism and sex roles. Around the same time, another participant commented on what she termed 'a schism in style and substance' she perceived in messages (lines 12202-12212, Femail Message Excerpts 15). After making the distinction between messages written 'from the heart' and messages consisting primarily of 'analytic, critical prose' she implies the latter message form (presumably written by men) poses a threat to Femail as womanspace. Similar stylistic differences were pointed out by a male member of Femail as well.

During debates about womanspace, though many women felt their womanspace from time to time was being invaded or corrupted, they

Femail Message Excerpts 15:

12191. I have noticed another trend and am wondering if anybody else has noticed it:
12192. the men seem to have a very different idea of the purpose of this group than
12193. the women do. I've noticed that quite a few men have tried (unsuccessfully)
12194. to start more abstract discussions on feminism and sex roles while the women
12195. seem to be more interested in chatting about their lives and experiences
12196. with a group of friends. I personally also prefer chatting, but I also like
12197. to exchange information, which I thought was what net.women would be about.
12198. This was just a remark in passin. I thought the difference was interesting.

12202. On Our Womanspace:
12203. With only a few days of reading in this mail group, I am
12204. troubled by a schism in style and substance I perceive in the messages.
12205. At the risk of labeling with over-simplified terms, I would say that
12206. some messages are from the heart and others are from the head. What
12207. I hear are people sharing from their hearts, asking questions about
12208. things that are very close to their souls. While some responses are
12209. "in kind," coming from the heart and responsive to the person's feelings,
12210. others seem to ramble in (dry) analytic, CRITICAL prose, missing the point
12211. (as I read it) in the message. I share Sherry M's anger and frustration.
12212. I feel determined not to see our womanspace corrupted!!!

consistently attempt to accommodate men, and veto suggestions that Femail be closed to message submission by men. These sentiments are echoed in Femail Message Excerpts 16 on p. 241. In addition, one participant offers a rationale for continuing to allow men to contribute messages to Femail. "Not only do I appreciate men who understand and try to empathize with women's problems, I appreciate the support and suggestions about how to overcome some of the dogmas we have grown up with." In lines 12231-12235 of Femail Message Excerpts 16, after indicating her preference that men be allowed to contribute to Femail, the author of that message suggests that Judy (the moderator) has both a sense of the tone desired by Femail group members, and the capability of dealing with inappropriate contributions. As a tangent to the womanspace discussion, another contributor reminds the group that they need not agree with everything said by a woman in Femail, though they

should be able to acknowledge that topics someone brings up are important to them.

Femail Message Excerpts 16:

12221. First some feed-back on men horning in on "our space." I feel
12222. that not letting men contribute would be a real shame, especially
---
12230. Regarding woman space and whether men should be allowed to contribute.
12231. I for one really enjoy most of the contributions by males. I think
12232. Judy has a fairly strong feeling for the type of tone we are trying
12233. to preserve in the group and that she is capable of deleting any
12234. male/female contributions that are way off the mark. I would rather
12235. leave it that way.

In addition to taking a lead from the Femail readers about the role of the moderator, from time to time the moderator requested feedback from the group about her role. For example, by appending a note to a message that read 'moderators note: is the following "educating" men about feminism?' (previously deemed an inappropriate activity of Femail) the moderator invited Femail participants to comment on whether or not a particular message was appropriate. Occasionally the moderator may make a decision that she senses is inappropriate (see lines 10372-10373 of Femail Message Excerpts 17, p. 242), or that a participant feels is inappropriate (lines 5944-5948). In the case of lines 5944-5948, the moderator is chastised for including a message (authored by Phil) that indicated the name of a participant's former employer. The participant had intentionally omitted this information in a previous message. In lines 5964-5967, the moderator apologizes for her careless behaviour, that led to infringement on a participant's privacy.

The tasks undertaken by the moderator appear to have evolved over time as the Femail group grew and changed. For example, about nine months after the group began a contributor suggested that due to the increase in group size, its readers consider turning it into a moderated Usenet newsgroup, rather than remaining a mailing list. In relation to that

discussion the moderator collected votes and summarized the results to Femail readers, who were 2-1 in favour of remaining a mailing list. As the group grew, the moderator assembled excerpts from earlier messages that taken together provided some guidelines for appropriate group behaviour. The moderator periodically sent these messages and information about how to submit messages to the list, to Femail readers.

Femail Message Excerpts 17:

10372. I hate to see flames in the mailing list but Marion expresses so much so well
10373. I just had to post this! I hope she's cooled down a bit by now!

5944. I would like to say also that I believe that this is one
5945. instance where our moderator should have moderated, at least to
5946. the extent of delaying distribution of Phil's message and
5947. contacting me. To my knowledge, there have been no problems
5948. with mail delivery between wateng and calmasd.

5964. Gail is quite right. I SHOULD have asked her before sending out Phil's
5965. comment. I saw Gail at USENIX last week and we talked about it. However,
5966. I would like to make my apologies public. I regret having been careless
5967. and I am sorry.

Other tasks undertaken by the moderator included providing information to readers about network routing changes and node name changes (in theory increasing readers' chances of submitting messages to the group), reminding readers of problems with the medium (i.e. that sometimes messages go undelivered and the sender receives no indication), setting up an efficient delivery system for the messages, and reminding participants of how certain group norms (e.g. stripping message headers to ensure anonymity) came into existence.

Over time, participants commented on how the group had changed or was changing. Among the changes participants identified were an increase in the proportion of messages where women expressed their anger at men, a tendency towards circular and repetitive topics, and an increase in variety in the tone of submissions. After two years there were over five hundred known

Femail readers, as well as an unknown number of 'lurkers': people who through friends or an institution received Femail mailings, but were not registered with the moderator of Femail. Solutions to each of these potential problems were negotiated through messages submitted to the group.

Although communication in the Femail group was from time to time problematic, it appears to have never become hostile in the way that Soc.women frequently is. The constant negotiation of appropriate group behaviour and constant attention towards having the group fill a set of needs articulated by its members, along with the relevance of the messages to their lives, appear to foster an atmosphere similar to a consciousness raising group for Femail participants. Though group membership is fluid, many members have participated in the group since its inception. Occasionally participants lose access to Femail (they change jobs or relocate), and submit almost tearful goodbyes as they leave the group. On occasion Femail members have relocated to areas where they know no one other than their electronic Femail friends, who they arrange to meet in person. For the women and men who have access to and read Femail, the group appears to fill a real need in their lives, and often gives them access to a social network otherwise not available to them.

MESSAGES ABOUT NETWORK STRUCTURE

As a wide area central node network, Femail is relatively free of the problems related to network structure that are prevalent in Soc.women. For example, in messages over a four year period, only one forgery (that occurred via private electronic mail in relation to the moderator) was brought to the group's attention. The fact that the network structure accommodates chronological message ordering (making attributed text unnecessary) and the

rejection of potentially offensive messages may contribute to the more personal nature of messages submitted to Femail, relative to Soc.women. In addition, the time delay between when contributors read messages and when they have to compose their responses may also contribute to the more congenial nature of Femail. One participant's comments on this are found in lines 58555-58560 of Femail Message Excerpts 18 (p. 245). In lines 63797-64809 of Femail Message Excerpts 18, another Femail participant attributes the more congenial nature of Femail (relative to Soc.women) to the fact that participants read Femail and submit messages to Femail through their electronic mail systems (typically e-mail is private), rather than a program like Usenet's netnews that was designed explicitly to foster a public exchange.

Although from the tone and content of Femail messages it appears that most Femail participants treat that network as a form of private communication, messages frequently indicate (through opening lines such as "I have been a read-only member of this group for quite some time", or "I want you to know that it is gaining popularity here at U.C. San Diego and that I have begun a distribution list here. I forward this list each time mail comes in. As yet, they too are lurkers") that silent readers or lurkers exist. Although for the most part the lurkers and silent readers pose no problems, occasionally, in spite of the constant reminders that Femail is not private, someone will contribute something with the assumption that messages are private. This leads to problems.

In Femail Message Excerpts 19 (p. 246) we learn of two incidents where the assumption of privacy proved problematic for contributors. In the first (lines 47272-47276) a contributor wrote a positive message about a woman she knew. Apparently when the subject of the message saw it, she

became embarrassed, and let the author of the message know. The second incident (lines 37225-37232) involved a woman writing a message about her husband, from whom she was seeking a divorce. A silent reader told the husband about the message. This proved problematic for the author of lines 37225-37232. In the context of discussing whether or not the list should become a moderated Usenet newsgroup, one contributor first points out that the means of transmission of Femail messages is not private (line 67102 of Femail Message Excerpts 19), and goes on to characterize the problem: that the mail group provides an illusion of privacy.

Femail Message Excerpts 18:

58555. The lack of real-time interaction in this group is a strength (there's time
58556. for reflection) and a weakness. The discussion can get out of hand, due
58557. to the lack of immediate feedback. But we can use our intellect and emotional
58558. sensitivity to counter this-- to stay in tune with the trends of the
58559. submissions and to act accordingly, much as one might steer the conversation
58560. at a party away from particularly distasteful subjects.

64797. A few months ago, Kim Wallen (of the mail group) and I discussed the difference
64798. in tone and came up with what seems to be a plausible explanation. Because
64799. mail is used for our messages, we feel they are more personal, more directed
64800. to us individually than is the case with Usenet articles. There is much more
64801. tendency to reply to a personal letter than to a "public posting". The
64802. most important effect of this is that more "positive" replies are sent; it
64803. seems that people usually reply to public postings only if they are incensed.
64804.
64805. We all know we like to get mail. So, consciously or not, we do things to
64806. elicit mail. On Usenet, that means flaming-- generates mail. But
64807. in the mail group, we are more likely to get a positive response by a
64808. thoughtful article. The reward structure is different, so the tone is
64809. different.

Another frequent topic of Femail messages that relates to the structure of the Femail network is distribution paths, or addresses. Although computer network site addresses and path names have become more uniform in general in the six years since Femail began, problems such as those outlined in Femail Message Excerpts 20 (p. 247) remain a constant problem for most people communicating via a non-Usenet wide area multi-node network. In lines 29010-29014 we learn that not all sites (computers serving

as message transfer nodes) interpret messages the same way. We also learn (line 29012-29013) that in some cases, more than one address/path exists between two computers. Lines 38677-38681 alert readers to a link in the distribution chain that should be two way, but which, however is functioning improperly as a one way gateway. In lines 41358-41363 we learn that a site has changed names. This name change caused some sort of problem (perhaps large amounts of bounced or undeliverable mail) for the mail administrator of that site.

Femail Message Excerpts 19:

47272. A while ago, I submitted an article (quite favorable) about a
47273. female role-model for successful family/career balance. The mailing
47274. list is sufficiently widely distributed (bulletin boards included)
47275. that this posting proved somewhat embarrassing for the subject.
47276. This is just a note of caution...

37225. In the past I never worried about the contents of my messages, but
37226. a recent incident has made me think twice about anything I might post
37227. in the future. One of the "silent readers" of the list mentioned my most
37228. recent message to my estranged husband (you know, the guy I am being
37229. divorced from). I didn't need that, and I do not think anyone else here
37230. does either. Knowing that anything I write *here*, of all places, might
37231. get passed along certainly inhibits me from speaking freely on a number
37232. of topics.

67102. Uucp mail is not private anyway. What the mail group
67103. provides is (1) an illusion of privacy and (2) a way to identify
67104. crashers. Perhaps if you maintain the subscription list -- the list
67105. of permitted posters -- and require that people ask to be added to the
67106. list that will maintain sufficient privacy.

Another problem related to network structure is the need to reconstruct paths to all sites that distribute Femail messages to group readers when there is a change in moderators (assuming the past and present moderators are at different sites). This proved somewhat problematic when the group's original moderator went on maternity leave and passed the job of moderation on to another group member. Distribution of messages slowed down as the new moderator identified paths from her site to distributing sites, and submissions to the group slowed almost to a halt as

potential contributors constructed new paths to the moderator's node. In Femail Message Excerpts 21 (p. 247) Femail's new moderator makes reference to address and path problems (lines 32730-32735), as well as other circumstances that led to an interruption in Femail message distribution (lines 32736-32741 and lines 38665-38668).

Femail Message Excerpts 20:

29010. It's possible that some sites would misinterpret this address
29011 by sending watmath!iallen.wbst to xerox.arpa. To be ultra safe,
29012. you can use an all-uucp address like
29013. ...!watmath!xerox.arpa!iallen.wbst
29014. Watmath will rewrite xerox.arpa!iallen.wbst to iallen.wbst@xerox.arpa.

38677. For the arpanet people: Our link to the arpanet gateway umcp-cs
38678. seems to be only one-way at the moment; i.e., I can send to it but
38679. it can't send to me. So the best path is still from umcp-cs to
38680 seismo to gatech and then to me. Liz Allen at umcp-cs (umcp-cs!liz)
38681. can help you with syntax.

41358. I have received several messages lately from a sympathetic (but
41359. beleauguered) system administrator at the site "cci632". This site
41360. USED to be called "ccice5" and it appears that I did not reach
41361. enough people to tell them to switch the address. So, again, any of
41362. you who mail to me through CCI in Rochester, NY, the name is now
41363. "cci632". Thanks, Heather.

Femail Message Excerpts 21:

32730. Here, at last, is the next batch of messages. I am terribly sorry
32731. that there was such a delay, but circumstances prevented me from
32732. doing it any sooner. First, I got a phenomenal number of returned
32733. messages from mailer daemons all over the world and I didn't want to
32734. send out another mailing until I could be reasonably sure that at
32735. least the majority of the people on the list were receiving it.
32736. Then our phone lines to our mail feed were accidentally disconnected
32737. and it took a while to locate it. Then we moved our entire computer
32738. facility to a new building and were down and/or incommunicado for
32739. about a week. Everything is as normal as we can hope for now, and
32740. the address hasn't changed (although our phone number has changed,
32741. for those of you who might dial in), so I hope for smooth sailing
---
38665. While I was away our send mail programs and the spool directory
38666. conspired to keep me from getting anything addressed to
38667. "rayssd!femail". That's been fixed now, so if you got any bounced
38668. mail that we didn't catch, please resend it. Please note that mail

Although the structure of the Femail network may lead to a more supportive and congenial atmosphere than what is typically found in Usenet

newsgroups such as Soc.women, the use of a distributed multi-node network with a central node through which messages are funnelled is not without problems. In technical terms, the smooth operation of the group is contingent upon the expertise of the moderator, the reliability of computer equipment at the moderator's site, the reliability of computer equipment that messages pass through along the way, and finally, the capability of potential participants who must construct paths to the moderator in order to submit messages to the group. Although Usenet is also a multi-node wide area network, many of these problems are minimized on Usenet because it was designed for the explicit purpose of allowing Unix based computers to pass messages between multiple sites. Soc.women contributors do not need to know any paths or addresses (these are built into the Usenet software), they are not dependent upon the expertise of a single person to get the messages out (this task is automated), and because of how messages are sent around the system, even with non-functional nodes along the way more messages are likely to reach group readers.

COMPUSERVE INFORMATION SERVICE MEN'S AND WOMEN'S ISSUES SECTION: AGREEING TO DISAGREE

Unlike the Soc.women newsgroup and the Femail list, participants in the CIS Men's and Women's Section number in the tens rather than the hundreds. In addition, although on both of these multi-node networks several participants typically commented on any given topic, conversation on the CIS Men's and Women's Section tended to occur between two participants at a time. Subject headings for topics addressed on CIS during the data collection period were Sexism on Sesame Street, Boy Scouts, the terms Feminist vs. Libber (see CompuServe Message 1, p. 156), and two advertisements for an on-line women's conference (the conference drew two sysops, myself and one

man).

CONTENT OF COMPUSERVE MEN'S AND WOMEN'S SECTION MESSAGES

The boy scouts message thread (that included only a handful of messages) revolved around the story of a woman boy scout leader who became a troop leader in efforts to keep the troop from disbanding when the former leader retired and no men volunteered for the position. One of the messages generated by this story pointed out that the woman was only allowed to act as a leader, and the boy scouts' organization refused to give her proper credit. One contributor on this topic (a woman) indicated that she was bothered when an organization "gets into legal trouble just by labelling itself males only," and ends with an innuendo suggesting that she might like to be a boy scout leader if all the scouts were over eighteen.

The 'sexism on sesame street' thread (that was slightly more popular than the boy scouts thread) began when a contributor wrote a message that pointed out that "except for the =adult human= characters (that are about equally balanced between male and female), a large portion of the 'cast' of Sesame Street is male." The message went on to point out that all of the well-known Sesame Street Muppets are male, as well as most of the monsters on the show. The message thread included a few messages that reported on a content analysis of Sesame Street, and the thread ended after a small debate broke out when one contributor commented that throughout history humans have largely depicted monsters as male.

After a few messages about the gender of monsters in mythology, one contributor signaled a debate by beginning a message, "I suggest that you go do some in-depth research into the idea of 'Monsters' in the various world cultures." The first contributor responded with CompuServe Message 2 (p.

CompuServe Message 2:

13941. I =have= done some research on the subject. What I said was not that there are
13942. &an equal number of male and female monsters in
13943. world culture but that there are
13944. plenty of female monsters =and= that the image of the woman as a monster is not
13945. &unknown in
13946. &western so
13947. ciety.
13948.
13949. I also suggested that one reason that we know of more male monsters is that the
13950. &"default" value for gender is male.
13951. & Thus a hermaphro
13952. ditic or sexless monster
13953. is still a "he" and a monster of unspecified sex might easily be seen as a male
13954. &monster. It is not
13955. surprising, furthermore, that more monsters are male than
13956. &female since more =heroes= (that is, the ones who battle monsters) a
13957. re male
13958. &t
13959. han female. My point was merely that there is nothing about the concept of
13960. &"monsterhood" that makes a female monster unlikely
13961. & EXCEPT the very
13962. type of
13963. sexual prejudice we are discussing.
13964.
13965. I find it interesting that the only female monsters on Sesame Street are
13966. &"comp
13967. anions" to the male monsters. (Oscar's friend Grungetta and Telly's new
13968. &girl friend come to mind.) Especially when you consi
13969. &der that p
13970. art of the
13971. purpose of the "monsters" on Sesame Street is to ease childhood fears about
13972. &monsters by making monsters appealing,
13973. it would seem a good idea to also deal
13974. &with sympathetic =female= monsters. But in our culture, the concept of
13975. "good
13976. woman" and "monster" seem to be further apart than the concepts of "good man"
13977. &and "monster." (The monster, after all,
13978. &is often seen as
13979. another =side= of the
13980. hero -- as in Jekyll and Hyde, but it is invariably seen as a =distortion= or
13981. &curruption of the female
13982. self.)
13983.
13984. In short, I do not consider the argument that there are fewer female monsters on
13985. &Sesame Street because there are fewe
13986. &r female m
13987. onsters in world mythology quite
13988. convincing. To me, a better explanation is that there are almost no female
13989. &monsters on Sesa
13990. &me Street for the
13991. same reasons that there are fewer female
13992. monsters in world mythology. Do you see what I mean?. /Elvira/

250). Line 13941 of that message responds to the call to debate introduced in the message that preceded it. The equal signs on either side of the word 'have' in line 13941 were added by the author of the message for emphasis. Line 13941 also signals contention. Like many Soc.women messages, CompuServe Message 2 is dedicated in part to reiterating and reinterpreting text of a previous message.

The debate continues on for a few messages, and moves through both a tone and topical transition when one contributor writes a message in numbered, point form, complete with references. The tone and topic of the thread changed when the other contributor thanks the first for the reference, and continues the discussion by focusing on a tangential point (see CompuServe Message Excerpts 3, p. 251). A few messages after the argument is settled, the thread ends.

CompuServe Message Excerpts 3:

14119. Thanks for the reference. My main reference on this subject has been Stone's
14120. &=Ancient Mirro
14121. rs of Womenhood= which tends to focus mostly on goddesses, not a
14122. &lot on monsters at all (unless you count "demons" as mons
14123. ters).
14124.
14125. It is interesting that you say the African cultures do not have many female
14126. &supernatural figures besides the "Earth M
14127. other" because, according to Stone

Feminists Vs. Libbers

By far, the discussion that took up the most space in the CIS men's and women's section during the data collection period was the feminist vs. libber debate. It began with CompuServe Message 1, on p. 156. After the first contributor defined the terms feminist and libber in CompuServe Message 1, the second contributor made a distinction between "extreme or lunatic fringe feminists and the rest of us, who are not out to take over the world." The next message begins when the first contributor (a man) labels members of

women's studies departments extremists, and goes on to present justification for the use of the phrase libber to describe the "more reasonable group." The rationale provided is that the term feminist (that the author of the message claims originated in the 1970s) denotes a woman-oriented rather than people oriented mode of thought, and hence is antithetical to the notion of equality.

The message thread continued with debates about when the term feminist originated, what it meant, what the term libber means to the second contributor, and a discussion about the working conditions of women's studies instructors, the calibre of research conducted in the name of women's studies and whether or not women's studies should exist as a discipline. At one point the discussion turned to the relationship of language to meaning, and then returned to the debate about the quality of scholarship within women's studies. After the female contributor in this dyad commented that she has never taken a women's studies course, the male responded with, "I know that you haven't been in Women's studies, you write far too well, and far too cogently."

The discussion lay dormant for a week, when finally, a third person joined the discussion with one message that acknowledged the distinction the first had attempted to make between feminists and libbers. The newcomer indicated his preference for the terms used by the woman contributor. A fourth person (also a man) joined the discussion and attempted to clarify the initial contributor's assertion that a movement that focuses on only women will never result in equality, but that instead, a "people's movement" will bring about equality. From here, the first contributor acknowledges the support of the fourth, and the two men carry on for a few messages about how men are scapegoated by feminism, and each asserted that "the alleged 'victim' is part of the problem." One man suggests to the other that he will

CompuServe Message 3:

4167. There's no way to get back a msg that has scrolled off. Maybe if Scott kept a
4168. &copy, he can epx it to
4169. you. Scott's argument has been that the word "feminist"
4170. &itself suggests that the interests of feminists are focused only on i
4171. ncreasing
4172. power for women. He proposes "libber" (from "women's liberation") as
4173. &suggesting a greater concern for equality. Se
4174. veral in the forum, including
4175. myself, have pointed out that "libber" has quite a few negative populat
4176. &connotations. My posit
4177. ion in this argument has been that there is nothing in
4178. &the =word= feminist nor in its origins (the 19th century) that impli
4179. es that the
4180. movement is interested only in advancing the position of women. My comment
4181. &about raising women to the same level
4182. as men was in the context of this
4183. discussion. My point was that if women are agitating to (for instance) get more
4184. &women in C
4185. ongress, this isn't necessarily because they think women are better
4186. &than men but because there are more men than women in Cong
4187. &res
4188. s.
4189.
4190. So far, this thread has not dealt with whether women have advantages that men
4191. &do not as well as vice-versa. The main iss
4192. &ue has simply bee
4193. n whether a feminist
4194. is (by definition) out to put the interests of women ahead of the interests of
4195. &"equality" or not. My po
4196. sition is that there are many different types of
4197. feminists (and not all of them are women!). Among feminists some, no doubt,
4198. fit the stereotype that so bothers Scott. But there are many others who
4199. &identify themselves as feminists (myself among them)
4200. who are truly concerned
4201. with achieving equality through the re-evaluation and denial of old sexual
4202. &stereotypes. Basical
4203. ly we believe that, in a perfect world, a woman should be
4204. &able to be president of General Motors (if she has the ability and t
4205. he desire)
4206. and a man should be able to stay home and care for the kids (if he wants to)
4207. &without suffering a social stigma. W
4208. &e would li
4209. ke to see men and women sharing
4210. more of =all= the duties involved in raising and supporting a family.
4211. &like to see m
4212. &en "allowed" to c
4213. ry, and women "allowed" to get angry and curse
4214. without being labeled "unstable".... and that's just for starters.

find like minded people by joining the Coalition of Free Men, and then the two go on to discuss strategies for curing feminism.

The woman contributor rejoined the message thread with CompuServe Message 3 (p. 253). In lines 4167-4168, the woman contributor is responding to a question addressed to her as the section sysop, about whether the old messages in the thread can be restored to the system. In lines 4169-4173 she summarizes the first contributor's (Scott) original message. In lines 4173-4175 she refers to others in the forum in an effort to add authority to her assertion, that she reintroduces in lines 4176-4188. In lines 4190-4195, the sole woman contributor in the debate recaps what the message thread has addressed so far, and in connection with that reiterates her position in greater detail than she has previously, in the remainder of the message (4195-4214). After describing two groups of feminists and identifying the group that she belongs to, she begins in line 4202 to speak as a member of the group ("we believe"), rather than in the singular as she has up to that point in the message thread.

After the woman rejoined the dialogue, she and the fourth participant wrote messages back and forth about various aspects of the previous messages in the thread, including her assertion that men should "fight back in an organized manner." The male contributor provided an explanation of why this was so hard for men to do, and then Scott (the first participant) returned to his original cause of pointing out that women's organizations are not fighting for equality. The two original discussants returned to a debate about affirmative action, parental leave, and finally the tone of their debate.

At various points throughout the message thread, the woman participant (also the section sysop) attempted to soften the tone of the debate, if not end the feminist vs. libber debate all together. For example, at one point she writes to Scott, "clearly this is another area where we must agree to

disagree" (CompuServe Transcripts, 1991). In CompuServe Message Excerpts 4 we see other evidence of the woman contributor/sysop's attempts at altering the tone of the debate.

MESSAGES ABOUT INTERACTION IN COMPUSERVE MEN'S AND WOMEN'S SECTION

In Soc.women, the group's process is addressed through contentions and messages related to network structure. Although debates often occur in relation to individuals, it is quite common for other group participants to comment on a debate, elevating it to a group issue, as was the case for example with the flame war about Mikki Barry. Though much of the debate in Soc.women about group process is not initially dealt with as such, as we saw through the emergence of the net police, conflict between individuals evolved to take on significance as a group problem. In contrast, on the Femail mailing list, issues related to group process tended to be addressed explicitly as group issues, often beginning with a query from the moderator, or occurring in relation to the moderator's action or inaction. Though group process is handled very differently on these two networks, within the context of each there is a sense of a group, struggling either over divergent interests (Soc.women), or to establish shared interests (Femail mailing list).

In contrast, dialogue in the CompuServe men's and women's section rarely reads as though it is shared by a group. Rather, reading the CIS men's and women's section feels a bit like observing a conversation that was really meant to be private, but through some misfortune has occurred in a public place, to be heard and observed by all. And, though the interaction of participants in the CIS men's and women's section may from time to time become a topic of message exchange (see for example CompuServe Message 4, p. 257) in the case of the feminist vs. libber debate, it remained a discussion

between two individuals about how they were interacting, rather than a discussion about interaction amongst individuals who were part of a group.

CompuServe Message Excerpts 4:

9936. What else is there to say? Shall we agree that we both have trouble
9937. &communicating our ideas without becoming overbearing and
9938. offensive? I'm really
9939. exhausted. Aren't you?. /Elvira/

9955. Hey! What do you know, we AGREE! What have I been talking about all along
9956. &except the necessity of some "parent

Where the Femail mailing list boasts a moderator, the CIS men's and women's section has a sysop. In theory, the Femail moderator and the CIS men's and women's section sysop fill similar roles. Although the moderator of Femail engages in a continual negotiation of group process with that group's participants about both the group and her role, no similar process occurs on CIS. There are many factors that may contribute to this difference. First, with only ten people participating in all of the debates in the CIS men's and women's section during the data collection period, and with most exchanges occurring between two people, one rarely has a sense of CIS participants as a group. From reading the message threads, the overwhelming sense is that conversation occurs between individuals. Second, CIS is not a shared resource in the sense that Soc.women and Femail are.

Soc.women and Femail are both run through workplace computers and are administered voluntarily. Participants themselves incur no financial costs in using either of these networks. The costs of equipment that passes messages between machines and that participants send and read messages through (as well as the costs associated with the use of value added carriers), are absorbed by institutions and businesses. The labour that keeps these networks' messages freely flowing over value added carriers is provided by workers at the network nodes (probably to a large extent on company time).

CompuServe Message 4:

10166. &Scott: Why is it "crick
10167. et" for you to imply that I am stupid or sexist while
10168. it is not "cricket" for me to imply the same about you?
10169.
10170. &Why am I supp
10171. &osed to take sugg
10172. estions that I am either a fool or a hypocrite
10173. &"as good clean fun" while, when I suggest that your statements suggest "sexism"
10174.
10175. &to me, you star
10176. t complaining about the 'slurs' I'm casting on your character?
10177. &I am quite ready to believe that you meant no harm, but, neith
10178. er did I.
10179.
10180. The fact is that I generally take my 'tone' from the way in which I am
10181. &addressed. If a person is courteous and s
10182. &eems to be
10183. making an honest effort to
10184. understand what I've got to say, I try to do the same for him/her. If a person
10185. &is consistently h
10186. &ostile and overbe
10187. aring, I also counter in kind.
10188.
10189. You may be right that you are only following a style of debate where your
10190. &insults to me are
10191. somehow "good clean fun" but my response to you was
10192. &inexcusably rude. But you have to understand that, according to =my= code
10193. of
10194. &debat
10195. ing, what I said to you was well in keeping with what you had said to ME.
11836. &Okay. So we've both said that we didn't mean to of
11837. fend each other, and we've
11838. both communicated that we think =the other= didn't "play fair" in the debate.
11839. &Let's learn from th
11840. is experience and try to understand each other better in the
11841. &future. It's easy to get over-excited about this type of issue a
11842. nd, of course,
11843. it isn't personal at all.. /Elvira/

Although Soc.women and Femail participants do not own the hardware and transmission lines that allow these networks to exist, participants and their co-workers control them. And, to the extent that the operation of these networks is dependent upon each of the nodes involved, the ownership as well as the control of these networks is decentralized. These computer networks are in a sense a commons; the information equivalent of a town's open space, owned by no one, used (and in theory), run by all. Since no one

'owns' either of these networks, administration of each of them becomes a collective enterprise, shared by participants.

Unlike Soc.women and Femail, CompuServe is a public company, whose success depends upon generating revenue by selling use of a computer. CompuServe does that by providing a range of products. Some products allow consumers to perform a task (such as booking an airline reservation from home), and others provide a vehicle for interaction (such as forums and e-mail). Participants in CompuServe forums are consuming a service. Lacking a sense of ownership or control (with the exclusion of Sysops), CIS participants are far removed from decisions that may have an impact on what tasks they can perform, the software that organizes their interaction, and a great deal of the information available for their consumption.

As sysops and assistant sysops, CIS participants are contractual employees of CompuServe who may or may not receive financial remuneration for their labour, and who are likely to have little input into decisions about software, and no input into decisions about larger issues affecting CIS users (such as the cost of an hour on-line). Although sysops will send welcome messages to new users, answer participants' questions and, as was the case with the men's and women's section, contribute with great frequency to the dialogue on-line, they have little ability to substantially alter on-line interaction. Perhaps these factors contribute to the fact that participants in the CIS men's and women's section do not appear to address issues related to group interaction.

Another factor that probably contributes to the lack of a sense of group in relation to the CIS men's and women's issues section is the small number of participants involved. Finally, CIS boasts the highest proportion of both male participants and percentage of contributions by men. Ironically,

CIS was one of the first computer networks that brought women together to communicate electronically about feminism and women's issues. And, from a combination of published accounts (Van Gelder, 1985), files that were located in the Issues Data Library during the data collection period, comments about CIS on other computer networks, and both electronic and phone conversations with previously active CIS Men's and Women's section participants, it is clear that at one time many women participated in feminist discussion and debate via CompuServe. The two most common reasons former participants cite for discontinuing their use of the CIS Men's and Women's section are money (one participant reported a three hundred dollar bill for one month's use of CIS, that took her six months to pay off), and irrelevance of the debate.

THE WOMEN'S BULLETIN BOARD SYSTEM: GREAT EXPECTATIONS

As a single node network, the Women's Bulletin Board System (WBBS) is most similar in organization to CompuServe. With forum sections set aside for a multitude of topics ranging from a to z, to someone interested in women's issues and feminism the CompuServe men's and women's issues section is like a single, possibly edible plant in a forest. To the same network user, the WBBS is like an edible garden; not as large as a forest, perhaps not as varied in its offerings, but more reliable in filling a hunger for feminist dialogue and information. Where CIS offers role-playing games, electronic encyclopedias and an electronic mall in addition to electronic mail and forums, the WBBS offers information about arts and political events of interest to women, the opportunity to participate in the creation of a feminist story, or if you are a woman, exchange messages only with women on the lounge board.

The Organization Of The Women's Bulletin Board System And Message Content

The organization of the Women's Bulletin Board System into several sub-boards, each accommodating its own range of topics results in a diverse communicative environment. Both the content of messages and the ways participants interact with one another vary from board to board, within the Women's Bulletin Board System. Each of the other networks discussed so far provide participants with only one electronic space within which to interact about feminist and women's issues. However, the WBBS offers several, each with its own feel.

The difference between the WBBS and the other networks discussed here is somewhat like the difference between attending a party held in one room versus attending a party held in an entire house. With the Soc.women newsgroup, the Femail mailing list and the CompuServe men's and women's section, participants are offered only one electronic space (all messages appear in one place, and are organized minimally or not at all by topic). Participants may be communicating in small groups about different topics within that space, much as a roomful of people at a party might interact face to face. At a party held within the confines of one room when one dialogue becomes particularly loud or raucous, in the absence of sound or visual barriers, often all participants are drawn into that interaction, and assume new roles in relation to the dominant communicative event. It appears that a similar phenomenon occurs when participants in computer-mediated discussions about feminism attempt to communicate in an environment that prohibits the separation of competing communicative events.

Each of the networks discussed here accommodates a different degree of topical and tonal separation. As a multi-node wide area network with a

fast paced message distribution system (the software easily accommodates quick response to messages and messages are removed from the system after brief, regular intervals) and no moderator, the Soc.women newsgroup offers the fewest opportunities to separate messages according to topical content or tone. Although the Femail mailing list is also a wide area multi-node network, the difficulties associated with sending messages to the central node, the time delay that results as the moderator waits until there are enough messages to form a bundle of messages for distribution, the threat of message rejection by the moderator, and the moderator's role in facilitating communication all contribute to a communicative environment that is topically varied, and more consistent in tone (and certainly less confrontational) than Soc.women. Although in the Femail mailing list group participants and the moderator engage in a continual discussion and negotiation of group norms and policies, the roles assumed by both CIS sysops and participants appear to reflect a more traditional separation between people designing and maintaining technological systems, and users. Even though the physical structure of CIS can accommodate greater separation of messages than Soc.women or Femail, its fee structure and its offerings appear to restrict its use within feminist communities, making greater message organization impractical from the standpoint of profit generation.

At the time the WBBS was begun, and specifically in relation to the computer hardware that was donated to WBBS organizers, most software available for running community based bulletin board systems allowed only one sysop. After evaluating several computer networks WBBS organizers chose the software they did because it allowed not only multiple sysops, but also allowed sysops to perform their duties from a remote location - a feature

that at the time was not available in most bulletin board software. The selection of this software meant that several sysops could share responsibility for running the WBBS. When the WBBS began there were two technical sysops (one dealt with hardware and software changes, the other with day to day tasks such as validating new users and answering questions from users), as well as moderators responsible for different discussion areas. In addition to communicating through a closed discussion area on the WBBS, WBBS sysops and moderators met face to face on occasion to discuss the WBBS. The existence of multiple discussion areas (each with its own sysop) allows the Women's Bulletin Board system to be used for a number of purposes and to support a number of dialogues.

Women's Bulletin Board Message Excerpts 5:

884. Just out of curiosity, and using the above two messages as reference --
885. I'd be interested to know how many people here are using WBB more for
886. private conversations about issues & stuff, rather than posting on the
887. public boards.

888. You see, I can only judge how busy the board is by how many people sign on
889. per day, and how much they leave on the public boards -- which hasn't been
890. an awful lot. If people are actually posting more private than public
891. messages, it would mean that this BBS is getting more of a workout than
892. I thought!

1004. ... about emailing & posting. The reason I asked was because I suspected
1005. that there was more activity going on than could be seen from the messages
1006. being posted -- glad to see my suspicions were correct.
1007.
1008. So here's my next question for all and sundry: what do you think of the
1009. software used here? Is it too difficult? Reasonably simple? If you've
1010. been having trouble using it, what kind of changes would you want to
1011. make things easier for you?

Board 1, the guest/comments board is a general area where new participants often introduce themselves, one-time visitors leave comments, and new users experiment with the software used to compose messages. People leave messages of general interest (advertisements for cars for sale and job announcements). In addition, the guest/comments board is the place where participants may leave their comments and suggestions about the

WBBS, and where sysops leave messages soliciting feedback from users, as Women's Bulletin Board Message Excerpts 5 (p. 262) indicates.

Lines 884-892 of Women's Bulletin Board Message Excerpts 5 drew a number of responses, that indicated that some people were using the guest/comments board primarily as a one to one open discussion area. In addition, other responses indicated that many users frequently accessed the WBBS to read messages, but infrequently left messages. Lines 1008-1011 of Women's Bulletin Board Message Excerpts 5 drew several responses, including many from men. Some of the responses are included in Women's Bulletin Board Message Excerpts 6 on p. 264. Most of the responses indicate that users are dissatisfied with the WBBS software. The responses from women (lines 1046-1048, 1102-1106, 1128-1133, 1139-1146) were in general more charitable than those from men, and much more likely to indicate that users had interacted with either the sysops through e-mail or someone else about technical difficulties (lines 1103 and 1128-1131).

Board 2, the action alert board contains messages of a time dated matter, and request that the reader in some way take action. Messages might alert readers to upcoming demonstrations (anti-racism, peace, a women's candlelight march) or events (the Aids Memorial Project, an Audre Lorde film, PeaceDay), inform readers about women in need of all forms of aid throughout the world (nurses in Sri Lanka, a Chilean women's centre), and offer suggestions about how to support them. It appears that a few women working in women's organizations in the New York City women's community type information into WBBS messages on boards 2, 9 (events link), and 10 (research/policy) as part of their jobs.

Women's Bulletin Board Message Excerpts 6:

1019. You're not going to love me for saying this, but:
1020.
1021. The software is so bad it should be completely junked after you find something
1022. which gives the user more control with more natural (i.e., instinctive) ways
1023. of doing things. The command structure here is so arcane it takes a broad and
1024. deep background in hacking at various systems to figure out how to use it.
1025.
1026. I hope to god you do not ask me to cite examples. Trying to explain why this
1027. software is so bad is roughly akin to trying to explain to a 5-year-old who
1028. has proudly presented to you his drawing of meaningless scribbles just what,
1029. exactly, is "wrong" with it: I just do not know where to start.

1046. ...in response to your question...this is an extremely tedious and boring
1047. system to get use to...but since it is a very exciting board, it difficulty
1048. of learning your software is well worth it.....

1055. I think the software is baeutiful ... and fast, too. I do miss the ability to
1056. confirm whether or not E-mail was receoved to someone you wrote.

1062. Barbar, any BBS software that has no word wrap in the editor nor true
1063. message threading in this daynage is disgraceful. Also, the command syntax
1064. is arcane, compared to modern menuing or tree-based systems.

1102. I do not think this system is that difficult to use once you've figured it out,
1103. but if I hadn't had help ! would have had a hell of a time doing so. I do not
1104. suppose it would ever be possible to have simultaneous users with the hard-
1105. ware the system has, would it? That would really be something.

1128. Barbara, I must confess I had some difficulty with the software when I first
1129. started - but I managed to get enough of a message through to let you
1130. realize I was having difficulties, and you were very gracious in letting
1131. me have help pronto. Now that I am used to it I do not mind it at all. In
1132. fact it seems quite easy compared to the environment I've been working
1133. in lately - the University's VAX, and BITNET.

1139. I'm glad to see that I'm not the only one having problems with this board. I
1140. always feel real frustrated when I can't get around. It made me feel outright
1141. stupid, in fact since I'm often unsure of what I'm supposed to do next. So I
1142. do not call as often as I'd like,and do little posting. On my Brother's board,
1143. the Unknown Cave, I had 105 replies/posts last week. It's an easy board to get
1144. around on. I do have a big mouth, but I'm not comfortable when I keep being
1145. told I do not know what I'm doing...which is what this board does. I've
1146. improved some, but I still have problems.

Board 3, the women's issues board contains a wide range of material pertaining to women's issues, including requests for information (about the League of Women Voters, for an alternate term for "unskilled workers") and general comments and discussions (about politics, women and modems/ computer networking, recent supreme court decisions affecting women,

wearing high heeled shoes).

Board 4, (the technical help board) as the name suggests, is the place to go to leave a message requesting help with the WBBS, or look for answers to technical problems. In addition, the technical help board contains an electronic column (regularly featured on another bulletin board system and uploaded to the WBBS) that addresses general issues related to computer use (software piracy, backing up hard disks, the next generation of microcomputers), and an article about Grace Hopper (one of the first computer programmers in the United States). Several messages provided information about new computer viruses, and participants left messages requesting information about such things as reducing telephone line noise that interferes with modem operation.

Of all the computer networks considered here, the WBBS provided perhaps the best access to sysops for help. As wide area multi-node networks, neither Soc.women nor Femail included a forum for obtaining technical help. In the case of Soc.women, access to Usenet occurs largely through locations where users are assumed to have a high degree of knowledge about computer systems. Often indications (in message text) that a contributor was less than proficient in using Usenet drew a rash of criticisms addressed towards the unsuspecting novice participant. Although some Usenet newsgroups exist to provide users of a particular computer program or programming language with access to help, these too can be vicious places where contributors are likely to receive responses such as "you would not ask such stupid questions if you read the manual."

In the case of Femail, since each user is likely to be using different hardware and software to access the discussion group, and addresses to the central node are different from each location, Femail participants are not

likely to have answers to each other's questions. On CompuServe, participants gain access through a handful of microcomputers and communications programs. A number of technical forums exist on CIS. Perhaps the greatest obstacle to obtaining help through a forum on CIS is finding the right forum, and once in the forum, finding the answer to a question without going broke.

A message left on the guest/comments board (Women's Bulletin Board Message 3, p. 266) both describes board five (the artnews and reviews board), and indicates that it was altered in hopes of encouraging more activity. The artnews and reviews board contains messages informing readers of upcoming performances and events, as well as contributors' responses to movies, plays and other events.

The holistic health board (board 6) appears to have contained messages about a range of health issues including stress, and attitudes towards alternate health care strategies. Prior to August of 1988 the board seems to have been fairly active. However, between August 1988 and February 1989, no messages were posted. Like board 6, activity on the wnews News Board (board 7) appears to have fluctuated a great deal over time. After a burst of messages containing information about a wide range of conferences and organizations, no new message appeared for several months.

Women's Bulletin Board Message 3:

875. Title: board change (17/146)
878.
879. B5, formerly arts info/inflo has been changed to artnews/reviews to
880. really encourage you to use the board both to list, talk about, discuss
881. books, movies, events you have seen, want to see ect. as well as bring
882. up issues or bits of information about the arts. It should be a place
883. you can check out to see what others think about "that film" or where
884. you can go for suggestions of good books to read--or bad ones to avoid--
885. or current events of interest to the women's bulletin board. Please
886. participate with your comments, ideas ect. We should be able to do
887. way better than old arts & leisure!!!!

Low message activity and large time gaps between messages occurred on other sub-boards that served primarily as a vehicle for broadcasting information (board 9, the events link board and board 10, the research/policy board), rather than a forum for two way dialogue. Although the research policy board had the lowest message activity, as Women's Bulletin Board Message Excerpts 7 (p. 268) indicates, at least one attempt was made to generate some activity there. One possible explanation for this is that women engaging in research often have access to not only a community of other researchers, but also other computer networks. Another board with very low message activity (the second lowest of all of the boards) was board 8, the women of colour board. Although it is only possible to speculate about the reason for the low activity on the women of colour board, one plausible explanation is that non-white women in the feminist community have even less access to computer networking technology and/or the time to participate than their white sisters.

Board 11 (the modern life board) lay dormant for about five months, and picked up when one participant began uploading humorous tales about life in New York City to that board. In addition, a male participant selected board 11 as the place to leave an ad seeking a position serving a woman. This generated activity when women questioned the man about why he wanted to be submissive, and suggested that women were not likely to be interested. Board 12 (the fifth estate board) also lay dormant for a time before picking up with a discussion about the 'information revolution.' Once a discussion was active, contributors who were not engaged in the discussion began leaving messages about other items related to the media. Board 13, the story board allowed participants to collectively author a story, line by line. Lines 14200 and 14207-14208 of Women's Bulletin Board Message Excerpts 8 are

taken from two consecutive messages on that board.

Women's Bulletin Board Message Excerpts 7:

625. This is just a quick note to tell the world (or at least the Women's BBS users)
626. that Board 10 the Research bulletin board is back in action. We are currently
627. seeking stimulating dialogue on hot research topics. Come join the fun!

Women's Bulletin Board Message Excerpts 8:

14200. ...DAY WAS BRIGHT AND BEAUTIFUL AND NOTHING HAPPENED...BUT THEN.....
—
14207. .....A loud explosion startled Rose (only for a moment). As she stood her
14208. guard, slowly turning around, she was faced with....

By far the most active public board of the women's bulletin board system was the Battleground, board 18. Women's Bulletin Board Message 4 (p. 268) from the WBBS sysops explains the origins of the Battleground.

Women's Bulletin Board Message 4:

569. We have instituted a new board on the system = B18, known
570. as the Battleground. This was instituted so that there will
571. be a place for any confrontational discussions -- expecially
572. those between men and women -- that develop here. We are
573. certainly not encouraging these discussions; however, we
574. cannot ignore the fact that, with the influx of new users to
575. this system, they are more likely to occur. In this manner,
576. we have provided a place for those who have strong opinions
577. on gender roles and other topics without disturbing the majority
578. of users on this system who may want to concentrate on the
579. more informational and/or subtle issues concerning women.
580.
581. The sysops of this board therefore reserve the right to
582. transfer any such discussions off B1 and onto B18 when we
583. feel it has stepped into this category. Moderators of other
584. boards will also either tranfer such discussions or request
585. that they be transferred, if they wish to -- it is totally
586. up to them. Notice will be placed on the original boards
587. for those who wish to continue the transferred discussions..

As well as gaining a general sense of the function of the Battleground from Women's Bulletin Board Message 4, that message raises a number of important points. First, the battleground apparently grew out of a need to control confrontational discussions between men and women (lines 571-573). Confrontation increased with an influx of new users (lines 573-575). Lines 577-579 indicate that at the time the battleground was instituted (August 1986) the majority of WBBS users were using the WBBS to obtain

information, or discuss subtle issues concerning women. As well as outlining the procedures that will be followed with regard to the battleground, we learn in lines 583-586 that board moderators were given discretion to move messages to the battleground.

A wide range of topics made it into the battleground, including Israel and Palestine, the U.S. presence in the Middle East and elsewhere in the world, a comment made by a woman (assumed by a few users to be a teenage boy in disguise) implying that men are superior to women, the role of men on the WBBS, socioeconomic class and computer technology, whether or not computers are a luxury item, the Tawana Brawley rape case, Ronald Reagan, Dan Quayle and other topics related to U.S. politics.

Women's Bulletin Board Message Excerpts 9:

14533. Do you think it would be possible to conduct a discussion of the events
14534. and media coverage of Tawana Brawley's ordeal in this space? I know that it
14535. is an almost unmentionable topic in my workplace, which is an integrated space.

Women's Bulletin Board Message 5:

26079. Chris....I think you are ignoring some of the data in the Tyson-
26080. Givens quarrel.
26081.
26082. To the sysops...If there is a continuation on this topic appearing
26083. on this board, can they all be moved to B18, The Battleground, which is
26084. the locus for identification with male heroes and the expression of
26085. antagonisms towards females?

From time to time a participant would introduce a topic on the Battleground, believing that discussion of the topic would be controversial. Discussion of the Tawana Brawley rape case began this way (see Women's Bulletin Board Message Excerpts 9, p. 269). It appears that participants both appreciated and utilized the battleground. For example, in Women's Bulletin Board Message 5 the author of that message first indicates to another contributor her disagreement with the issue under discussion (lines 26079-26080), requests that any further discussion of the topic be moved to the

battleground (lines 26082-26083), and finally articulating her understanding of the function of board 18, makes it clear to another participant what she thinks of his message (lines 26083-26085).

As a social intervention, the battleground appears to have worked well. Unlike the other networks discussed here, where confrontational messages are interspersed with non-confrontational dialogue (and often deter non-confrontational dialogue), the existence of the battleground allows users totally to avoid confrontational communication on the WBBS, if they desire to do so. This performs a similar function to leaving one room at a party and going to another when the activities in the first room become unpleasant. Although the moderator of the Femail mailing list also works as a deterrent to confrontation, when confrontation does occur on that network users are unable to avoid it entirely, as they are on the WBBS.

Women's Bulletin Board Message 6 (p. 270), which appeared on board 1 describes board 19, the Pen Tangle. In addition to messages that contained original writing and comments on original work, contributors to board 19 discussed journal writing, Sylvia Plath, publishing and whether or not word processors help non-professional writers to write. Like many of the WBBS boards, board 19 periodically became inactive, and after a period of a few months, came back to life.

Women's Bulletin Board Message 6:

591. Title: Pen Tangle (7/146)
595. Announcing the latest board on the Women's Bulletin Board System!
596. Pen Tangle (B19) is a board for writers to discuss their writings,
597. other writings, their agents, blocks, freelancing, paidlancing,
598. poetry, prose, fiction, nonfiction, and anything else that has
599. to do with the written word.
600.
601. Anybody who writes -- for fun or profit (or both) is welcome!

Board 20 of the WBBS began as a teen board. It not only suffered from low activity, but also appeared to have few, if any women contributors.

Early in 1989 it was changed to the EarthWise board, dedicated to the discussion of environmental concerns (see Women's Bulletin Board Message 7 p. 271 for a description). Topics included the New York Green party, problems associated with the disposal of plastic diapers, fascism and environmental exploitation and global warming and the greenhouse effect. A sequence of messages on the EarthWise board also listed a number of classes offered in the New York City area that addressed environmental concerns.

Along with the battleground, the Lounge (board 21) appears to meet a need that is left unaddressed by the other computer networks considered here. As the description of the lounge (see Women's Bulletin Board Message 8, p. 272) indicates, the Lounge is a restricted board, accessible only to women users. Conceived of as an area for women to "sit around and schmooze," WBBS users gain access to the Lounge by sending electronic mail to either the moderator of that board, or the WBBS sysops. Unlike all areas of the WBBS other than the survivors' board, within the lounge, participants are able to leave anonymous messages.

Women's Bulletin Board Message 7:

25151. The purpose of this board is to provide a forum for discussion of our
25152. environment and of our place in it. It has become increasingly clear that the
25153. uncontrolled exploitation of nature is leading to ecological disasters such as
25154. the greenhouse effect, extensive soil erosion, and hazardous pollutants in our
25155. air and water. This exploitation is also linked to the exploitation of women
25156. and people of the Third World. Because of this connection, human rights issues,
25157. workplace safety, and housing are also environmental issues.

Although the occasional Soc.women or Femail message either mentioned lesbianism or indicated that a contributor was a lesbian, from participating in either of those networks or the CIS Men's and Women's section one might easily have the impression that lesbians do not use computer networks, or are unwelcome in these electronic spaces. For example, at one point when a Femail contributor queried that group about an

issue related to lesbianism, another contributor responded with a message indicating that a Usenet group (called MOTSS, for members of the same sex) was a more appropriate place for her message. A male contributor then responded with a message suggesting the lesbian join in the discussion in the MOTSS newsgroup, that, like many instances where lesbians and gay men work together, was dominated by men. Although many contributors to the WBBS lounge were clearly not lesbians, unlike the other networks discussed so far, lesbians had a strong presence in that area. The fact that access to the lounge was restricted to women, that authoring messages anonymously was possible and that access to the WBBS did not have to occur through users' workplaces probably helped foster an environment in which lesbians felt comfortable.

Women's Bulletin Board Message 8:

659. For years and years, the male has had a place to call their own where they
660. could sit and enjoy the atmosphere of a men only domain. Some of those places
661. were called: The Health Club, The Locker Room, The Club House, do not forget the
662. treehouse that belonged to many a little boy ect. The WBB system, not to be out
663. done hereby presents a first in BBSdom in NYC,
664. Fanfare,
665.
666. THe Lounge.
667. Fanfare dies down slowly.
668.
669. The lounge is a place for women of all lifestyles to sit back and have a good
670. time in an atmosphere similar to the good ol' dayz previously shared by males
671. only. Basically what I would like to see is a sub-board where females can be
672. alone and tackle issues that are female orientated. Women can be themselves and
673. not fear pressure from males and post away to their hearts content. Gossip is
674. permitted provided it does not defame any user of the system or of any other
675. system. Laughter is a requirement for anyone who accesses this sub-board as are
676. the tears which may show up too.
677. The lounge will give gay females and heterosexual females a chance to communi-
678. cate with one another and do so if they wish anonymously. The problems of being
679. in the closet or coming out can be shared as some problems of being straight in
680. a gay world is spoken of. The idea here is to share and meet people in a more
681. relaxed atmosphere and to enjoy.
682.
683. And that is just what I hope all shall do.

Topics addressed in the lounge were varied. One woman who had always been a lesbian (i.e., had never had sex with a man) asked other

readers to comment on whether or not they saw lesbianism as a choice. In response, a few women wrote messages about their coming out process, including one woman who had come out at age fifty eight. Several women wrote messages about issues related to being closeted as lesbians or out as lesbians in their workplaces, and some messages addressed homophobia. A series of messages bearing the title "terminology" reflected on how contributors felt about the word "dyke." Other contributors wrote romantic poetry, and the occasional message advertised other computer bulletin boards catering to lesbians or sex. After a message was posted seeking an S/M sex partner, one contributor expressed her disgust in a message, and another contributor who had spent time in the New York S/M community attempted to demystify that community for other lounge participants. Participants discussed breasts (including one woman's difficulties with wearing a bra for the first time in ten years), advertised lesbian events, explored stereotypes associated with roles and clothes, and the relationship between clothing and passing as heterosexual. Women wrote erotic stories, and asked other lounge participants about the current status of New York City women's bars. It appears that the lounge provides its participants with a sense of relief (see Women's Bulletin Board Message Excerpts 10).

Women's Bulletin Board Message Excerpts 10:

32373. Isn't it nice to be Lounging around, away from all the strife and fuss
32374. on b18 (not to mention the NYC subways)? Even though I'm just an illogical,
32375. emotional, diminuitive female, I can be happy here.

The agism and aging board (board 22), as the name implies is a place for participants to comment about any aspect of aging. In two and a half years, just thirty-three messages were left on this board. Though one can only speculate about why participation on this board was so low (this topic has become increasingly important in the lesbian community as women have

become older), it seems quite possible that women who engage in face to face dialogues about aging lack access to computer networking technology. In general, older women did not work with computers growing up, and may be less likely to have gained workplace or home access to computers.

Mom's Apple Pie (board 23), as Women's Bulletin Board Message 9 (p. 274) indicates, is there for anyone who has ever participated in childcare. The portrayal of fathers in children's books, fathers' roles in childcare, alternative forms of families, and social prejudice against women who are not parents are among the topics discussed on Board 23.

On the Mixed Media board (board 24), participants are encouraged in the introductory message to write about all aspects of the airwaves, including telecommunications. Among the topics suggested to contributors are computer bulletin board systems, legal telephone communications, Cable TV, satellite TV, Radio and regular TV.

Women's Bulletin Board Message 9:

714. Announcing a marvelous new board, courtesy of WBBS! Mom's
715. Apple Pie (B23) is there for everyone who is now or has
716. ever participated in the care and feeding of children.
717. Parents, grandparents, siblings, baby sitters, foster
718. parents, or just friends are all invited to share advice,
719. concerns, and stories. You can even bring your photo.

Participants inform one another about other bulletin boards, and sysops from other boards leave announcements about their boards in hopes of gaining new users. Callers from across the country ask others if they know of feminist computer bulletin boards in the region they are calling from (sadly, only Chicago had one, and it received poor reviews). Participants post reviews of other bulletin boards they liked or found useful, including a number of gay bulletin boards. Messages contain information about the changing legal climate surrounding computer bulletin boards, encourage

users to protest proposed regulations affecting computer bulletin boards, and express their feelings about the growing trend of pay (as opposed to free) bulletin board systems. Participants talk about bulletin board etiquette, sysops' relationships with and attitudes towards the systems they run, and whether or not computer bulletin boards constitute a subculture.

Although most discussion on board 24 is concerned with computer bulletin board systems, other topics addressed on the mixed media board include obscene phone calls and the politics of a New York city cable television company. In addition, one woman writes about the installation of a new phone system at her workplace, and the problems that result in relation to modem use. In response, another woman writes a message describing the difference between voice and computer communication, and a man offers to ask a friend who works for a telephone interconnect company for more information. As the woman suffering through the implementation of a new phone system learns more about the equipment that is being installed, she informs board 24 users about it.

Like the Lounge, the contributors to the Survivors' board (board 25) are permitted to author anonymous messages. Among the topics addressed on that board are child abuse, love and abusive relationships, books about COA's (children of alcoholics), eating disorders, alcoholics anonymous and the twelve step tradition. On board 27 (the women and AIDS board), in addition to news and information retyped and uploaded from other sources, messages in this section address the use of mice in AIDS research, the relationship of female circumcision to the prevalence of AIDS among women in Africa, heterosexual interactions about AIDS and the spread of AIDS amongst heterosexuals, lesbians and AIDS, and AIDS treatment strategies.

THE WOMEN'S BULLETIN BOARD SYSTEM AS A COMMUNITY

With the exception of the WBBS, each of the networks discussed here has followed a fairly predictable pattern, with the tone of dialogue remaining fairly consistent over time. Regardless of the content under discussion, Soc.women follows a pattern of contention and struggle. The Femail mailing list follows a pattern of participants addressing issues through stories, and group process through continual dialogue with each other and the moderator. In the CIS Men's and Women's section, participants began discussions that escalated into debates, and died down when the participants agreed to disagree. In contrast, interaction on the Women's Bulletin Board system is as varied as the number of boards found there. Although it is true that one can pretty much always expect the battleground to be contentious, and the lounge to contain an abundance of material concerned with lesbianism, the content and tone of messages on the guest/comments board, the women's issues board and the mixed media board vary over time. Some boards (the action alert, wnews, events link and research/policy boards) appear to be primarily used for broadcasting information. Other boards (modern life, the fifth estate, pen tangle, holistic health, artnews and the fifth estate) cycle through periods of inactivity and activity as time passes. Like a party held in a large house with many discreet spaces, the locus of activity changes over time on the WBBS. Similar to a well planned multi-use urban space, the WBBS appears to be used by many people in their efforts to meet diverse needs.

GROUP PROCESS AND GROUP NORMS

Within the Women's Bulletin Board community, the creation of norms occurs in multiple sites, through a variety of processes over time. For example, many of the messages describing the function of a particular sub

board (for example, Women's Bulletin Board Messages 3, 4, 6, 7, 8 and 9 above) appear on either the guest/comments board or as the first message on the board described in the message. These messages alert readers to both the purpose of a given board and its operating principles. With one of the explicit functions of board 1 being a place for users to leave comments about the WBBS, a fair bit of dialogue (for example see Women's Bulletin Board Message Excerpts 5 and 7, above) occurs there between participants and the sysops, that helps establish norms. Also, board 1 is the place where users are informed of operational changes (see Women's Bulletin Board Message 10, p. 277) by the sysops.

Women's Bulletin Board Message 10:

806. Title: Time Limit (15/146)
809.
810. Because of several complaints about not being able to get on-line here, a
811. TIME LIMIT of 1 hour, 30 minutes is now in effect. If anyone has trouble with
812. this limit, please let WBB sysop know at id=1. Thanks

Women's Bulletin Board Message 11:

7071. Actually, the relative safety of this bbs beats hell out of me -- and I'm
7072. one of the sysops! When I agreed to play referee for WBBS, I assumed that
7073. I would be constantly deleting obscene references and anti-woman polemics
7074. from peeved adolescents. The result? I've only had to actually delete messages
7075. outright two times -- one time, it was something on the order of "Ladies,
7076. if you want a good time..." and quite frankly, I was more offended at the
7077. lousy grammer than the message itself. The second time was a series of
7078. two obscene and violent messages left by a user who has not been back.
7079.
7080. It's nice to know we're doing something right. Or maybe people are just
7081. nicer than we give them credit for?

In some instances, users provide feedback about the WBBS as a spin-off of another discussion, as was the case with Women's Bulletin Board Message 11 (p. 277), that grew out of a discussion on the mixed media board about sysops' attitudes towards and relationships with the boards they run. Occasionally information is broadcast to the entire WBBS community through a sign-on bulletin, that all readers see upon accessing the system (see Women's Bulletin Board Message 12 on p. 278). In addition, on each of

the sub-boards, participants are likely to contribute to creating norms as they comment in messages about things they like or do not like that are occurring on-line (see Women's Bulletin Board Message 5, p. 269).

The Women's Bulletin Board is not without problems, and as Women's Bulletin Board Message 12 suggests, (line 25998) one of those problems is low participation. Although I was the 11,568th caller to access the system twenty two months after it began, slightly less than twenty two hundred messages had been posted. By the end of February, 1989 (two months short of three years after it began) at least 2,600 messages had appeared on the WBBS. Although the total number of messages per year appears to have at one time been nearly three times that of the Femail mailing list, often no new messages would appear on a given board for a few weeks or months, leaving participants with the sense that the WBBS suffered from chronic inactivity.

Women's Bulletin Board Message 12:

25990. Bulletin: Updated 02/24/88
25991.
25992. THIS IS YOUR VOICE!
25993.
25994. WBBS is a cooperative venture that runs solely on the work of three
25995. groups: its sysops, its moderators, and its users. We need the
25996. participation of all in order to survive.
25997.
25998. WBBS is not so much a service as a forum for all its users. We are
25999. here to publicize your concerns, your events, your information. is
26000. your group having a fundraiser? Post it in the Events board. Are you
26001. worried about the side effects of certain spermacides? Ask about it in
26002. Holistic Health. Your two-year-old is making you crazy? See if there's
26003. anyone with advice in Mom's Apple Pie. Feel that you're all alone with
26004. your drug/alcohol/emotional problem? Post anonymously in the
26005. Survivor's board. The "No girls allowed" atmosphere in your local BBS
26006. getting on your nerves? Sound off in Mixed Media.
26007.
26008. Many people sign on to WBBS each week from around the country. What do
26009. you need that somebody else might be able to provide? What do you know
26010. that could help somebody else? WBBS can be a valuable tool -- but only
26011. if you choose to use it.
26012.
26013. PLEASE PARTICIPATE!

Unlike the Femail mailing list, Soc.women or the CIS Men's and Women's section that offer only one area for communication, with a number of sub-boards (or sites for communication) the WBBS may appear to participants to be less active than it is in reality. One way to think of the plight of participation on the WBBS is found in returning to the analogy of a party. With all of its sub-boards, the WBBS is like a party of two hundred people being thrown in a football stadium. Though several conversations may be taking place at any given time, it may appear from any location within the stadium that not a lot is going on, and the overall volume of noise in the stadium is low.

Women's Bulletin Board Message 13:

785. Title: Politics & Modems (6/253)
788.
789. Is this business of modems and bulletin boards itself a women's issue? Or a
790. pain in the neck? Or a fascinating hobby? I've been thinking about the
791. politics of it lately, since our lady sysops are worried that it's too hard
792. for most new users to get satisfaction -- or even minimal utility -- from a
793. system such as this.
794.
795. First, I want to say (without much hope of being believed) that, even for com-
796. puter professionals (such as myself) and for veterans of many such "boards,"
797. computers and telephone lines spell TROUBLE (with a capital T). The only
798. difference between such hardcore types and your tremulous beginner is:
799.
800. The veteran **expects** complications and frustrations, while
801. the beginner is convinced that problems are the result of her
802. own stupidity or ignorance.
803.
804. The number of "online" veterans is growing, and most of them seem to be men.
805. Here comes the politics. The world is coming more and more to turn on the
806. rapid flow of information, and on human ingenuity in finding better ways to
807. sift out the meaningful and useful from this great flood. We women tend to
808. be very good at the "meaningful sifting" part, but I think we get left out
809. of that process because we aren't yet able to do the "rapid flow" part
810. (electronic/telephonic communications).
811.
812. So I see this modest bulletin board as a technical training ground for us
813. women -- to gain experience and confidence and (least of all, since there is
814. less of it around on this subject) information01 Lastly, let me note that,
815. as ever, language is power -- if you learn the buzzwords (and a fuzzy idea
816. of their general area of significance), you're on your way to veteran status.

Unlike both Soc.women and the Femail mailing list that are

accessible primarily to women who, at the time they began participating in those groups, had a background in computing, the WBBS is both run and used by people who lack extensive experience with computers and computer networking technology. The collective lack of experience within the target group of WBBS users also acts as a constraint to participation. One WBBS participant commented on this issue in Women's Bulletin Board Message 13 (p. 279).

Unlike each of the other networks discussed here, that relied on no single individual (Soc.women), a single moderator (Femail) or a single sysop (CIS), running the WBBS is dependant upon a group of sysops and moderators. The collective management of the WBBS is consistent with feminist organizational principles, and in theory could protect the WBBS from collapse (decentralized power and control allows the system to function even if someone leaves or quits). However, sysop and moderator turnover have proven to be problematic for WBBS organizers.

After failing to reach the WBBS in the fall of 1990, I phoned one of the board's founders, Beva Eastman, to inquire about it. I learned that around June of 1990 the WBBS modem had died during a thunder and lightning storm. Around the same time one of the sysops had left. Although the WBBS at the time of this writing is not in operation, plans are to move the WBBS equipment to a new location and get it back on-line. One of the things Eastman had learned was that a great deal of time was required to keep a community bulletin board system running. Eastman also commented that beginning and maintaining an electronic community for women is like other feminist organizing - it takes a lot of energy and often proceeds slowly, over a long period of time.

CONCLUSION

From looking at the differences in message content and the processes that together constitute the negotiation of on-line speech communities on the four computer networks discussed at length above, a number of things are evident. First, despite the perception of Usenet as a grassroots network, and the belief that decentralized management of computer networking resources can lead to a more participatory form of democracy, Usenet fails as a vehicle for communication about women's issues and feminism. The combination of unrestricted access and lack of control on Usenet leads to an environment in Soc.women where message content about women's lives and women's issues becomes secondary to women's efforts to maintain space and have their voices heard. Although multi-node networks were initially designed to maximize participation and were seen as a mechanism for increasing communication possibilities at the grassroots level, both Soc.women and Femail are frequently plagued by technical problems that often turn the discussion on those networks to social problems (e.g., forgeries). Ironically, many of these social problems result from the technical environment system designers developed in efforts to make these systems more accessible.

The extent that system users have some sense of ownership or control of the systems they are using seems to be related to the extent that users of those systems interact about group process. Of all of the networks considered here, CIS stands out in terms of the lack of discussion about group process. It is also the only commercial network discussed here, and as such, its users appear to have little potential to alter how it is run.

Although both Soc.women and the Femail mailing list are multi-node networks, only the Femail mailing list has a moderator. Clearly, when a computer network exists via multiple nodes as both of these networks do, the

use of a moderator can mitigate some of the difficulties associated with the multiple-node structure. However, as the dialogue on Femail also suggests, moderating an on-line discussion requires a great deal of time and continued input from group participants. From looking at discussion in the CIS Men's and Women's section it is clear that the use of a moderator or sysop does not guarantee that group process will be explicitly addressed. This suggests that the task of moderating an on-line discussion should be explicitly addressed on an ongoing basis by participants in group discussions.

From looking at all of the networks discussed here in depth it is clear that in a general sense computer networks support a range of types of communication. These include argumentation (Soc.women), personal narratives (Femail and the WBBS), information exchange (the broadcast oriented boards of the WBBS), and dyadic debates (CIS). Although it is impossible to ascertain which aspects of a computer network are most influential in setting the tone and content of the communication that occurs on-line, it does appear that the active engagement of a group in establishing group norms for communication is an essential aspect of building a network that supports personal narratives about women's lives.

Although all of these networks can potentially support broadcasting of information, the phenomenon of placing information of general interest to the community occurred most on boards intended for that purpose on the WBBS. Ironically, though informational messages were more in evidence on the WBBS than on other networks, the areas of the WBBS intended for the purpose of broadcasting information were among the most problematic of the system. As environmentalists have often pointed out, when a commons exists, it is easy for users to take, without giving. On the computer networks discussed here, it appears that participants would much rather author

messages than copy-type material of general interest to the community onto a computer network. Although it appears that setting aside particular areas of a computer network for information broadcast may encourage users to provide more information of general interest to the community, if these areas are not actively used it may create the impression that the entire network is dormant.

PART C:

THEORETICAL BACKGROUND

CHAPTER 8:

COMPUTER NETWORKS, FEMINISM, AND SOCIAL CHANGE

In considering the use of computer networks in the context of feminist social change, two issues are of particular importance. First, it is important to understand how past uses of computer networks by women interested in discussing women's issues and feminism are related to the larger arena of feminist social change. Second, it is important to consider the potential usefulness of computer networks in terms of feminist social change, and to identify issues that might arise as feminist organizations increasingly attempt to utilize computer networks in organizing efforts. A brief review of the concept of feminism, and the unique form of social change it suggests is an appropriate starting point in considering the use of computer networks in the context of feminist social change.

GENDER AS AN ANALYTIC TOOL

Feminism is concerned with understanding gender relations. The central concern of feminism is to understand gender-based inequities, while the central task of feminism is to correct gender-based inequities. Although feminism has often eluded definition, Hartsock (1979) has characterized it as "a mode of analysis, a method of approaching life and politics, a way of asking questions and searching for answers" (Hartsock, p. 1979), and identified three characteristics, that, when taken together make a feminist perspective unique. First, feminism focuses on everyday life and experience, that makes action a necessity. Second, the nature of our theoretical

understandings are altered and brought into an everyday relation with practice. Third, a transformation of social relations, both in consciousness and reality follows directly from theory, because of its close connections to real needs.

Feminism has provided a forum for women to explore the differences between women's and men's experiences in the world. A number of tools and theories have emerged that have helped us identify a range of cultural assumptions that support asymmetrical power relations between men and women. Feminist activism seeks to alter gender-based inequities. By working with new sets of assumptions derived from feminist theories, feminist activists develop strategies and implement programs aimed at balancing gender-based power relations.

At the root of feminism is the concept of gender, distinctly different from sex. Although the terms 'sex' and 'gender' are often used interchangeably, many feminists make a distinction between the two. Warren (1980) for example points out that gender is often used as a synonym for sex, referring to biological maleness or femaleness. However, feminists widely use the term gender to refer to socially imposed masculine and feminine roles and character traits that are dichotomous. In both uses sex is physiological. However gender, in the latter usage, is cultural.

For Warren (1980) and other feminists, the concept of gender (masculinity and femininity) as a socially constructed phenomenon is crucial. If the categories of masculinity and femininity were viewed as biological rather than socially constructed, then interaction between people of opposite sexes could be viewed as fixed and immutable. The absence of women in scientific and technological professions and in positions of power could be dismissed as a result of nature, implying little possibility for change. Since

feminism is all about changing interaction between men and women, it must be built on and reflect the premise that ways of interacting organized around sex roles can change. Feminism is built upon the premise that gender roles are changeable, and comes from the realization that in general, women and men in our culture have very different experiences in nearly every aspect of life, including in relation to technology.

As Briskin (1991) points out "Feminism is not a unitary discourse or a unitary practice" (p. 25). Indeed, there are both many layers of feminism and many frameworks one might adopt in describing feminist theory, feminist practices, and the relationship between feminist theory and practice. Although controversial,[51] with the aim of both identifying how women's past use of computer networks to discuss women's issues fits into feminist practice, and identifying issues that might arise in the future use of computer networks by women's organizations, it is useful to think of feminist social change as occurring on three inter-related levels. These are an individual or personal level, a group level, and at the level of the dominant power apparatus of our culture.

First, feminist social change occurs on an individual level. That is, individuals become aware of and concerned with gender-based inequities. Many of these individuals seek out groups where they attempt to further the goals of feminism. In light of the emphasis inherent to feminism of everyday practice reflecting theory (and vice versa), within groups feminists often attempt to apply and practice feminist theory. This has led to feminist

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[51]Linda Christiansen-Ruffman and Frances Wasserlein have both disputed this formulation in conversations that unfortunately remain unfinished. I am grateful to both women for challenging my ideas, and look forward to future dialogue about the problems with this formulation.

organizational practices (such as consensus decision making, cooperatives and collectives). Hence, a second dimension of feminist social change has to do with how women work together in groups, and within organizations. A third dimension of feminist social change has to do with how groups interact with the larger power apparatus.[52] All feminist theories, diverse as they are, either imply or explicitly suggest a strategy for social change that involves interacting with (or opting out of) the power apparatus. The three dimensions of feminist social change outlined above evolved along with the contemporary women's movement in Canada.

THE EMERGENCE OF THE CONTEMPORARY ENGLISH WOMEN'S MOVEMENT IN CANADA

In discussing feminism and social change below, the focus is on what is frequently referred to as the contemporary women's movement, or the second wave of feminism. Though not distinctly different from the "first wave," the second wave of feminism is generally considered to have emerged in the 1960s in Canada and the United States. Where the first wave of feminism in the late nineteenth and early twentieth centuries focused on and secured basic human rights (such as the right to vote and own property), the second wave of feminism "has been more sweeping in its demands and successes" (Wine & Ristock, 1991, p. 2).

A number of forces combined to give rise to the contemporary women's movement in Canada in the late 1960s. First, there was a general climate of activism that in the United States included the civil rights and

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[52]Some feminists consciously choose to *not* interact with the power apparatus. In referring to how feminist groups interact with the power apparatus, I mean to include these groups under the general category of interacting with the power apparatus.

anti-war movements, and in Canada, the peace and New Left student movements. These popular movements pulled women into social change activities, where they experienced many contradictions. Women's experiences showed them that while they were fighting for the rights of oppressed groups in protest organizations, they were not full-fledged members in these organizations. Relegated to menial tasks, objections were raised when women attempted to play the same role as men in terms of action and thought in organizations fighting for human rights (Dumont, 1986). Women's dissatisfaction with the male New Left is often identified as a major factor in the emergence of the contemporary women's movement in Canada.

In contrast to the United States, where most of the organizations that had formed during the first wave of feminism had ceased to exist by the 1960s, in Canada there were a number of groups (such as the YWCA, the Canadian Federation of University Women, the National Council of Jewish Women etc.) that continued to exist after the first wave of the women's movement, and remained in existence in the 1960s. Adamson, Briskin and McPhail (1988) argue that these groups played an important role in the re-emergence of the Canadian women's movement. In addition, the Voice of Women (VOW) (a women's peace organization formed in 1960 in Toronto) played an important role. The VOW quickly became a national organization and expanded its focus to other issues of importance to women. It provided an opening for many women who might not otherwise have become involved in women's movement activities that characterized the late 1960s.

Women from thirty two (Anderson, 1990) of these organizations (who were mostly white, middle-class, professional women) formed The Committee for Equality of Women in Canada (CEWC). The CEWC lobbied the federal government for the formation of the The Royal Commission on the Status of

Women (RCSW), that was formed in 1967 (Wine & Ristock, 1991). The RCSW produced a report in 1970, that led to the creation of positions in both the provincial and federal governments in 1970 to address women's issues and concerns (Wine & Ristock, 1991). By this time women who had come to feminism through their dissatisfaction with the New Left had begun organizing consciousness raising groups, autonomous women's organizations, and lobbying the federal and provincial governments for change.

Since the late 1960s thousands of women's groups have been organized around numerous issues. Dumont (1986) identified four major objectives of feminist change, that she identified under the headings of the body, employment, a voice and power. Issues addressed under the heading of the body include contraception, abortion, pornography, battered wives, rape, control of one's health, intervention against sexism in therapy, self-defense techniques, support for single mothers, pregnant women and lesbians. Issues addressed under the heading of employment include sexual discrimination in jobs, salaries and promotion; access to training programs, maternity leave and day-care, sexual harassment and the workplace, the impact of new technology on women's work, access to non-traditional occupations, housework and financial support of women in the home. Issues addressed under the heading of a voice include homes for women, consciousness-raising groups, publishing houses and bookstores, plays, shows, films, magazines, publications of all kinds, research groups, conferences and courses, programmes of study, and associations. Finally, women have challenged power in all of its forms, including women's access to party politics.

The scope of feminist organizing efforts has been extensive and varied. Although women's organizations are diverse in the forms they take, they often share a rejection of traditional organizational structures based on

hierarchy. The evolution of alternative organizational forms in the women's movement is related to the notion that 'the personal is political', that was central to conscious ss-raising groups of the 1960s.

PERSONAL CHANGE

Central to the concept of feminism is that the personal and political are inexorably linked, as are theory and practice. These close ties between the personal and political, and between theory and practice can be traced back to the emergence of the contemporary women's movement in North America. In both Canada and the United States the consciousness-raising group (CR group) was an important unit of social interaction and source of personal change.

For many women working in social change activities during the 1960s, a contradiction surfaced. Women participated in activities and belonged to organizations whose goals were to end oppression (class oppression, race oppression), and, within the context of those activities, and within those organizations, they came to realize that they were oppressed *as women*. Women began to develop a consciousness of themselves as women. MacKinnon (1989), in discussing where consciousness comes from describes this process of becoming aware: it

> seems to be a response to an unspecific, often unattached, but just barely submerged discontent that in some inchoate way women relate to being female. It has not escaped women's attention that their femaleness defines much of who they can be (MacKinnon, 1989, p. 85).

Although it is still difficult to say just what causes this awareness, it led women to form small women-only groups (consciousness raising groups), where women further explored the common social reality they share as women. The temporary absence of men in CR groups helped women feel more

free of the immediate imperative to compete for male attention and approval, to be passive or get intimidated, or to support men's version of reality. Equality within CR groups was a goal. It reflected a value of non-hierarchical organization and a commitment to confronting sources of inequality that were the basis of member's exclusion or subordination. The content of discussions in CR groups was the personal experience of group participants. Women's lives were discussed in all of their momentous triviality; their lives were discussed as they are lived through. As both a method and practice, consciousness raising is not confined to groups organized explicitly for that purpose (MacKinnon, 1989).

Consciousness-raising techniques explore the social world each women inhabits through her speaking of it, through comparison with other women's experiences, and through women's experiences of each other in the group itself. CR is a means of sharing reliable information about female experience, as well as a way of learning to see and feel the previously invisible effects of patriarchy. In consciousness raising groups, the point of sharing information about personal life and experiences was to connect those into something that could transcend the personal (Adamson, Briskin & McPhail, 1988; Eisenstien, 1983; MacKinnon, 1989).

Instead of internalizing problems and blaming themselves, through the CR process women talked about what happens everyday, and in doing so uncovered realities hidden under layers of myth. Taken together, these details documented the kind of world women inhabit socially, as well as what it feels like to live in that world. Women explored how they are systematically deprived of a self, and how that process of deprivation constitutes socialization to femininity (MacKinnon, 1989). In CR groups, women were allowed to vocalize their often hidden problems; this gave them

legitimacy beyond each woman's personal experience (Adamson, Briskin & McPhail, 1988). Through CR, women learned that many of their problems were common to women, rather than specific to an individual. The discovery that problems once identified as a function of an apparently unchangeable natural order were in fact a result of powerful social conventions left women relieved; what had been seen as individual failure no longer appeared so individualized.

A first assumption about CR was that what women had to say about the details of their daily lives and their personal experiences and histories not only mattered, but was significant and valid. This sense of validity was encouraged by corroboration of the other women in the group. Women were the experts, authorities, and sources of knowledge about themselves (Eisenstien, 1983). The exploration of personal experience was seen as central to personal change, as well as central to the development of theory based on women's experiences. The CR process bridged the gap between the public and private realms. In order to acknowledge and understand the problems of women, a whole range of questions previously shoved aside as private had to be analyzed, discussed and made part of our social theories. This allowed women to confront issues, and moved those issues from the privacy of the home into the political realm. By encouraging women to speak about what were apparently personal problems, and by discovering the common character of these experiences, the CR process played a key role in exposing the institutionalized, entrenched oppression of women in our society (Adamson, Briskin & McPhail, 1988).

CR helped break down the numbing isolation of personal experience. Women's pain and anger could now be given an external focus, and their helplessness was often transformed into a conviction that social change could

be achieved through political action. Consciousness raising had a double aspect; it both examined the means of women's oppression (this led to an analysis of the workings of patriarchy, based on participants' experiences), and it sought to create a small piece of the world where the experience of women mattered, had authority, and was directly useful to other women. The CR process actually changed the view of women as unimportant (that had depoliticized women), and empowered women to become politically active (Adamson, Briskin & McPhail, 1988).

The CR group made a significant contribution to the women's movement for several reasons. First, CR groups lead to the development of the notion that the personal is political. The personal is political was an assertion that the shape of women's personal lives is not the result of individual choices, or even laws of nature. It asserts that the reverse is true: the overall direction of women's lives are shaped by the particular ways that society is structured. This challenged the dominant understanding of how change took place; change was not the responsibility of the individual woman and the decisions she made in her life, and it was not subject to ungovernable laws of nature. Personal concerns were seen as manifestations of the larger social organization, and consequently as belonging to the public or political realm (Adamson, Briskin & McPhail, 1988).

Consciousness raising was also significant in that it played an important role in the development of feminist theory. MacKinnon (1989) points out that feminism is the first theory to emerge from those whose interest it affirms. MacKinnon, along with Hartsock (1975) credits consciousness raising as feminist method: "the collective critical reconstitution of the meaning of women's social experience, as women live through it" (MacKinnon, 1989, p. 83).

CONSCIOUSNESS RAISING GROUPS AND THE DEVELOPMENT OF FEMINIST THEORY

Hartsock (1975) credits the CR group as the clearest example of method basic to feminism. With its emphasis on examining and understanding experience and on connecting personal experiences to the structures that guide our lives, it allowed women to develop an analysis of patriarchy beginning with women's experiences, and at the same time signaled the importance of this approach. The examination of personal experiences in a small group setting led to connections between women's personal experiences, and political generalities about the oppression of women.

Consciousness raising groups claims Hartsock (1975), in encouraging women to focus on daily life and everyday experiences, made it clear to women that they were active in creating and changing their lives: that they produced their existence as a response to specific problems posed by reality. This led to the unavoidable realization that women experience patriarchy on a daily basis, and that ending the oppression of women would require daily opposition to the male institutions, as well as opposition to male institutions in every area of women's lives.

Following from this line of reasoning came the idea that a fundamental redefinition of the self is an integral part of action for political change. Hartsock (1975) argues that rather than living in a vacuum that produces and reproduces our lives, that individuals take their meaning from a social whole. Changed consciousness and changed definitions of the self can only occur in conjunction with a restructuring of the social and personal relationships in which individuals are involved. This in turn requires a rejection of the institutions of capitalism and patriarchy. The development of

new selves requires a recognition of the large-scale forces of change, and requires simultaneous recognition that the individuals we are trying to become are products of history and struggle; we can transform ourselves only through transforming the social relations that define us.

Hartsock (1974) points out that CR groups stressed clarification of the links between the personal and political, and that this led women to conclude that a change in consciousness and in the social relations of the individual is one of the more important aspects of political change. Hartsock asserts that this could only occur in conjunction with a restructuring of the social relationships that dominated women's lives. This suggests that altering the dynamics of social institutions is an essential component of feminist social change.

Since the emphasis in the early stages of the contemporary women's movement was on the personal, theory also grew out of personal experiences. Hartsock (1975) asserts that for feminists, theory is an articulation of what our practical activities have already shown us in reality. For feminists, the practical problems we face in our lives become the basis for our study, and consequently our theories. We use theory to make the problems we experience in our lives coherent. Political theory and political action do not occur in separate realms, but rather the concepts we employ in understanding the social world emerge from and are defined by our activities. Thus our practices as feminists derive from our theories, and out theories are derived from our experiences in the world.

COMPUTER NETWORKS AND PERSONAL CHANGE

The material presented in Part B suggests that computer networks, under certain circumstances, can provide participants with an experience

akin to the CR groups of the 1960s and early 1970s. Through the Femail mailing list, and in certain areas of the Women's Bulletin Board System, participants were able to explore the social reality they shared as women, and develop a consciousness of themselves as women. Through discussion of personal experience, participants were able to discuss personal problems (such as violence within their marriages and dissatisfaction with their sex lives), and see these issues as legitimate areas of concern. In several cases (e.g., the woman who at the onset of the Femail mailing list queried readers about leaving home), participants moved from a state of helplessness to one of political action (e.g., after three years of participation in the Femail group, the woman who had difficulty leaving home had moved across the country and become involved with the women's self defense movement). Through communication with others via computer network, women's consciousness often changed (e.g., the Femail participant who came to see herself as the victim of domestic violence), and women began to restructure the social relationships that governed their lives (e.g., the victim of domestic violence left her husband and began to rebuild her life).

As the dialogue that occurred between members of the Femail group indicates, computer mediated communications offers participants the possibility of exploring the common characteristics of their day-to-day experiences, and appears to lead participants to change their lives. Unlike the CR groups in the 1960s, the Femail mailing list is not a woman-only group. Although many women would have preferred a women-only group, as it exists the Femail group is unusual in that women's voices are heard by men. This offers women who are uncomfortable with excluding men an opportunity to participate in the type of dialogue found on that network, and also offers men an opportunity to 'listen in'. Although there is a fine line

between men 'listening in' and dominating the discussion, and some women are undoubtedly reluctant to participate fully in the discussion because men are listening in, this type of mediated discourse provides a unique communicative opportunity that deserves to be further explored. The struggles that occurred in Soc.women and the CIS Men's and Women's Issues section between men and women indicate that discussions that begin with women's experiences still pose a threat to many men.

Although the physical structure of the Femail network limits the group's membership on the basis of institutional affiliations, at the same time it brings feminism within earshot of a population (women scientists, applied scientists and engineers) that has traditionally been underrepresented within feminism. Although feminists are often discouraged because we are 'preaching to the converted', networks such as Femail offer the possibility of widening the appeal of feminism to women who might otherwise not take an interest in it. However, under other circumstances, women-only groups designed to promote the type of dialogue found on the Femail network could be formed.

One of the important things to recall about the Femail mailing list is that the network it is run on was not designed (but rather was appropriated) for the purpose of feminist dialogue. With hardware and software designed to meet a set of explicitly articulated feminist goals, and attention focused on social issues such as user support, it is likely that even a multi-node network could better meet the type of communicative needs that are currently being met through the Femail mailing list.

TURNING THEORY INTO PRACTICE: FEMINIST ORGANIZATIONS

Consciousness raising groups accommodated a process of discovery,

that in turn contributed to the development of a process oriented feminist theory. The theory that began to emerge from CR groups suggested that change for women would require new organizational forms. Lamoureau, Mayer and Raymond (1989) describe the relationship between alternative organizational structures and social change. They describe community organizing as a series of activities that can be carried out only by bringing together people who either directly or indirectly have common interests. They further point out that community organizing

> is democratic, in the sense that the action has a democratic objective....The democratic aspect of community organizing should be reflected in the internal functioning of the group, in terms of both decision making structures and the emphasis placed on the participation of all members. Community organization is also an educational process that validates people's existing knowledge and skills and enables them to acquire new ones (p. 7).

Although not writing specifically about feminist activism, Lamoureau, Mayer and Raymond (1989) capture the essence of feminist organizational efforts designed to promote social change. From their description, it would appear that organizing for social change is simply a matter of beginning the endeavor with the proper ideological commitments. Evidence from the women's movement however, suggests that feminist organizations are fraught with numerous problems.

Writing about feminist organizations covers a variety of topics, including the relationship between organizational structure and personal change (Hartsock 1975 & 1979; Woolsey & McBain, 1987), organizational structure and social change (Hartsock, 1974), alternative organizational structures (Nurminen, 1989; Ferree & Hess 1985), the different types of functions feminist organizations serve (Barnsley, Ellis & Jacobson 1986;

Freeman & Macmillian, 1976), problems inherent to women's organizations (Freeman, 1973), feminist organizations as workplaces (McDonald, 1976), and strategies employed by feminists in their social change efforts (Bunch, 1974 & 1986; Egan, Gardner & Persad, 1988; Hartsock, 1974; Jones & Jonasdottir, 1988). In addition, related to the general theme of what happens in women's groups and how women's groups work are the topics of power and leadership. These topics are addressed by many of the authors above, as well as Bunch (1987), Downton (1973), Giele (1984), Jenkins (1980), Sacks (1984), and Stamm (1984). The first Canadian collection to address feminist organizing practices, Women and Social Change: Feminist Activism in Canada (Wine & Ristock, 1991) addresses virtually all of these issues in a specifically Canadian context.

Several authors differentiate between two types of organizational structures adopted by feminists in their social change groups. Freeman (1975), for example, in writing about the contemporary women's movement in the United States differentiates between the older and younger branches of the women's movement, and argues that each adopted different organizational infrastructures. The style of organization adopted by the older branch can be characterized as traditionally formal, "with numerous elected officers, boards of directors, bylaws, and the other trappings of democratic procedure" (Freeman, 1975, p. 449). In a Canadian context, Adamson, Briskin and McPhail (1988) make a distinction between institutional feminism (exemplified by groups such as the Canadian Federation of University Women, the YWCA and the National Council of Jewish Women), and grass-roots feminism, typified by loosely organized groups that avoid traditional hierarchical structures. Finally, Briskin (1991) makes a distinction between two poles of attraction in feminist activism -

disengagement and mainstreaming - that refer to strategies feminist organizations pursue in hopes of effecting change. Disengagement "operates from a critique of the system and a standpoint outside of it, and a desire, therefore, to create alternative structures and ideologies" (Briskin, p. 31). In contrast, mainstreaming "operates from a desire to reach out to the majority of the population with popular and practical feminist solutions to particular issues" (Briskin, p. 31).

Ferree and Hess (1985) characterize the organizational structure that Freeman associates with the older branch of the women's movement as bureaucratic, and the organizational style Freeman associates with the younger branch of the women's movement as collectivist. They identify eight organizational characteristics[53] and outline how each would function in the ideal bureaucratic and collectivist organization.[54] Bunch (1974) and Freeman (1975) acknowledge the use of the terms 'reform' and 'revolutionary' to describe these differences, however, both argue that these are inappropriate stereotypes that do not really reflect the differences between these two types of organizations, that mostly have to do with style and surface content,

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[53]These are authority, rules, social control, social relations, recruitment and advancement, incentives, social stratification and differentiation (Ferree & Hess p. 50, 1985).

[54]Nurminen (1989), who discusses organizational structure in the context of introducing computer systems into work environments, identifies three organizational structures, that he links to transaction structures: the market structure, the bureaucratic structure and the clan or group structure. Although he is certainly not writing about feminist organizations, the characteristics he associates with clans are useful in understanding the dynamics of women's organizations. In addition, the link between organizational structure and transaction structure is useful in terms of understanding problems I have observed in women's groups.

rather than substantive content or ultimate goals.

Regardless of the terms one employs in describing the two types of organizational structures common to women's organizations, one form (bureaucratic) follows traditional hierarchical organizational principles, and the other (collectivist) attempts to embody principles that grew from realizations gained through consciousness raising groups. In some cases lacking a critique of traditional organizational structures (and in other cases, perhaps finding collectivist process too cumbersome for the size of the organization),[55] typically, bureaucratic women's organizations retain the structures and processes that characterize traditional bureaucratic organizations. They rely on a hierarchical structure, have set rules (and often operate with the aid of Roberts Rules of Order), pay that reflects position and so on. However, they may modify these structures to meet their needs (Adamson, Briskin & McPhail, 1988). An example of such modifications might include working with a much larger than required board of directors or executive, in order to insure regional and ethnic representation.

Although in the early years of the contemporary women's movement in North America bureaucratic organizations tended to be organized nationally, in contrast, several groups formed spontaneously and independently of each other in major cities in Canada and the United States, beginning in 1967-1968. These groups tended to be organized around issues

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[55]This may be true for the National Action Committee (NAC) in Canada. NAC is the largest women's lobbying organization in Canada, representing over five hundred women's groups ranging from women's caucuses in organized political parties and unions to small collectivist organizations that exist to address local needs in their communities. See Vickers (1991) and Greaves (1991) in Wine & Ristock (1991) for extended discussions of NAC.

of local concern, and were linked by journals, newsletters and cross-country travelers. Rather than adopting formal organizational structures, these groups tended to pride themselves on their lack of organization and their rejection of hierarchy and formal leadership.

CHARACTERISTICS OF FEMINIST ORGANIZATIONS

The term 'collectivist organizations' (here used to represent the same organizational forms that Bunch (1974) and Freeman (1975) term revolutionary, and what Adamson, Briskin and McPhail, (1988) term grass-roots) does not refer to a single rigidly defined organizational form, but rather to a multiplicity of forms that share some characteristics.[56] Collectivist feminist organizations (particularly early organizations) can be seen as much as an exercise in process, as they can be viewed as an ideal organizational form.[57] Hartsock (1975) captures this concept in arguing that feminism does not prescribe an organizational form, but rather leads to questions about organizational priorities. She stresses the need to use our organizational experiences to transform the organizations themselves.

Among the characteristics of collectivist organizations are that authority resides in a collectivity as a whole, although it may be temporarily delegated. Rather than a hierarchical structure and fixed rules, collectivist organizations strive towards consensus, and fluid rules (that are situational and ad-hoc, rather than fixed and impartial). Social control is exercised through personalized appeals and shared values, rather than through

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[56]See Ferree and Hess (1985) p. 50 for a comparison of the ideal bureaucratic and collectivist organizations.

[57]See Echols (1989) for coverage of this phenomenon in a U.S. context.

supervision and formal sanctions. Within the ideal collectivist organization, there is no hierarchy of positions, and rewards (pay and benefits) are distributed in an egalitarian manner with limited differentials, rather than by office or status. There is a minimal division of labour, with administrative tasks often combined with performance tasks, and a generalization of jobs and functions. Rather than specialized roles, competency in a wide range of areas is stressed.

Interestingly, in none of the literature reviewed here about the women's movement in general, and organizational structures of the women's movement in particular, has there been a discussion of the differences between collectives and cooperatives. Without going into too much detail one of the things that distinguishes these two organizational forms has to do with the division of labour. In a true collective, the division of labour is minimal, with all members rotating between all tasks. In a cooperative, there is usually a greater division of labour, with certain members responsible exclusively for certain tasks. In addition, cooperatives often function internally according to prescribed rules (such as one member, one vote; there may be a director and so on) that bear some relationship to the internal structures of a bureaucratic organization.

In a sense, and to the extent that feminist organizations operate outside of the state/institutional structure, they are free to practice collectivism as they see fit. In contrast, many feminist organizations (that, especially in Canada are often tied to state funding, and are ultimately concerned with exerting pressure on the state), must maintain a certain amount of legitimacy in the eyes of the state. If an organization is a non-profit organization, by law it is required to maintain a certain organizational structure, if only on paper. In situations where this is the case, a feminist

organization, by virtue of not disengaging from the state, must reconcile the competing demands of practicing a collectivist organizational strategy within the organization, as opposed to running the organization according to the criteria established by law. In the best situations, this is easily resolved: everyone consciously agrees on a structure that will make funding sources happy, that is simultaneously consistent with feminist organizational principles. In the worst possible cases, this tension between competing demands remains unresolved, and the organization collapses.

Perhaps because of the emphasis within feminism, particularly during the early years of the contemporary women's movement, of developing an analysis of women's oppression that held some truth for all women, there is very little written material concerned with the needs of individuals, and the actions of individuals as feminists within organizations. Echols (1989) briefly mentions personality issues that surfaced in the emergence of early U.S. radical feminist organizations, and notes the existence (also prevalent in the New Left at the time) of a belief that the needs of the movement were more important than individuals' needs. Freeman (1973) in the now classic Tyranny of Structurelessness also mentions personality in her discussion of covert power structures within feminist organizations. Ironically, in discussing the demise of many feminist organizations, frequently individuals and/or personality conflicts are identified as the problem.

FUNCTIONS OF FEMINIST ORGANIZATIONS

Women's organizations address not only a number of issues, but exist to perform a number of functions, including lobbying the government, and providing services and education (Barnsley, Ellis, & Jacobson, 1986). Freeman and Macmillian (1976), identify the functions a women's

organization can serve. These include the production of a product (e.g., books or media resources) or provision of a service (e.g., crisis counselling); the provision of a job and/or skill development for workers (this is often an implicit characteristic of collectivist organizations, and in Canada is made more explicit when government job training funds are relied on for staff salaries); the provision of research or educational services, and the transmission of education and ideas through the media. In Canada in particular it is not uncommon for coalitions to form to plan events (e.g., the March 8th Coalition plans the annual International Women's Day celebrations in Toronto), or collaborate in hopes of improving service delivery in relation to a specific issue. For example, despite suspicions held by members of both collectivist organizations and state agencies, the Inter-Agency Committee on Violence Against Women was formed in St. John's, Newfoundland. It includes representatives from all agencies involved in providing service to women who have experienced violence in St. John's, including the police force and government social service providers.

ISSUES ARISING IN FEMINIST ORGANIZATIONS

Briskin (1991) points out that the emphasis on the 'personal is political' has led to an over-emphasis on experience inside the women's movement. Although it challenges the public/private split, and the over-valuation of the rational and validates experience over expertise, it has at times been translated into an intense validation of personal experiences that in turn has led to a competitive hierarchy of oppression, and an opposition to any kind of theory. The tendency towards anti-intellectualism and anti-theory can promote individualism.

Wine and Ristock (1991) point out that the feminist movement in

Canada is somewhat contradictory, since it has been shaped by competing aims. On one hand, the feminist movement pursues goals related to restructuring the state. On the other hand, the movement is largely a state-funded movement. Briskin (1991) points out that as a result of funding practices in the Canadian women's movement, "feminist alternatives then are not able necessarily to provide a lived experience or a prefigurative vision of social transformation" (p. 31).

Briskin (1991) and Ristock (1991) both point out that feminists have faced serious difficulties in attempting to build alternative organizational structures. Ristock describes this process: "working collectively can feel like working in a structureless group where consensus is difficult to reach and where organizing efforts are stuck in a web of conflict" (p. 42). Freeman, writing about collective organizations in 1973 urged women's groups to formalize leadership, so that those in positions of authority would be made accountable. Freeman argued that where leadership remains informal, it can become manipulative and undemocratic. Ristock, writing nearly twenty years after Freeman points out that Freeman's focus on authority, leadership and power was prophetic; these remain key issues for feminist collectives in the 1990s.

A largely undocumented issue is the relations between paid staff members and volunteers in feminist organizations. Often feminist organizations, operating with minimal resources have an inadequate number of paid staff members, and rely on collective members for substantial portions of work. This leads to many difficulties, including tensions between voluntary staff members and paid staff, a blurring of responsibilities, the devaluation of work performed by voluntary staff, difficulties associated with trying to enforce work standards and deadlines among voluntary staff

members, and long term organizational instability that occurs when voluntary staff leave an organization.

FEMINIST ORGANIZATIONS AND COMPUTER NETWORKS

With such great variation in the goals of feminist organizations, their infrastructures and characteristics, there are no hard and fast rules to govern the introduction of computers in general and computer networks in particular into feminist organizations. Clearly, the introduction of computer networks into feminist organizations will add an additional layer of complexity to what is in many cases already a complex and unstable organizational environment.

Contributors to the collection Computers for Social Change and Community Organizing (Downing, Fasano, Friedland, McCullough, Mizrahi, & Shapiro, 1991) identify several issues that have emerged in their efforts to implement computer systems in social change organizations. Fasano and Shapiro describe these organizations as "small non-profit political and community-based organizations...with small staffs, low budgets, lack of formal bureaucracies, [that are] value driven..." (p. 130). These organizations are structurally similar to women's organizations, and hence can provide valuable insights in terms of the use of computer networks by women's organizations.

Cordero (1991), in writing about a non-profit community development organization, reports that internal organizational problems related to a new computer system revolved around training and staffing. She reports that it was easier to get money for hardware, or donations of hardware than it was to get money for staff, training, or software. Observations of a St. John's Newfoundland women's organization suggest that this situation also exists in

women's organizations. In the organization Cordero writes about, college interns with little commitment to the organization carried out initial programming tasks. The resultant system had many "bugs" (technical problems). High staff turnover made it difficult to both train people to use the new computer system, and obtain information about its effectiveness.

In Cordero's workplace, the organization benefitted from having one person assigned the responsibility of maintaining the computer system. In addition, a computer specialist (employed part-time as a consultant) was involved with computer implementation on an ongoing basis. Finally, Cordero (1991) observed that even when a need for computers was recognized and computer facilities existed within an organization, users may not use computers because they lacked the time to learn (Balka, 1986 reports a similar phenomenon). To counter these difficulties, Cordero advocated computer support groups geared for non-profit organizations.

Several of the computer consultants specializing in non-profits that Fasano and Shapiro (1991) interviewed reported problems when organizations did not have a person in the organization who was willing to "champion the process" of computerization. A woman consultant interviewed by Fasano and Shapiro stated that

> I, in fact, don't even take jobs now unless an organization has one person who is the computer champion/guru. And if an organization can't come up with that person, then I tell them they're not ready to install a database system (p. 132).

The quote above suggests that specialization of tasks may be a desirable state of affairs in terms of implementing computers in an organizational context. Along these lines, the Femail mailing list benefitted from the assignment of tasks related to group moderation to one person. And, perhaps the greatest problem with the Women's Bulletin Board System was that

although different women performed different tasks related to the maintenance of that system, areas of the WBBS set aside for broadcasting information were chronically under-utilized. The task of placing information on broadcast areas of the WBBS was left unassigned.

Ironically, although collectivist feminist organizations have stressed the development of skill and sharing of work tasks, observations suggest that with regard to the use of computer systems these noble goals have often been abandoned. Often male friends of collective members voluntarily maintain an organization's computer systems for a period of time, or paid consultants are hired to fix what seems like a never ending stream of computer problems. In both collectivist and bureaucratic organizations, the skill required to maintain computer systems is rarely available in-house, and despite an awareness of both work processes and group process, computer systems have fallen outside of the scope of feminist analyses and practices.

In the few cases where information is available about the use of computer networking systems in feminist organizations, overworked staff members have consistently expressed concern about the increased tasks related to the use of computer networks. Despite rhetoric about the equal valuation of traditional women's work and work usually performed by men (e.g., management tasks), one interviewee (who maintained her organization's computer systems) indicated that in her organization computer work was equated with clerical work, and was devalued. Preliminary research conducted by a student in a communications research methods course I taught at Simon Fraser University in the fall of 1989 indicated that in one Vancouver women's organization, all work that required use of a computer was conducted by volunteers, rather than paid staff. In that organization, a paid consultant was responsible for

implementing and maintaining the organization's computer systems.

Despite these potential problems, computer networks can potentially be used to both perform tasks (such as the collection and sharing of information) in which many organizations are already engaged, and expand the scope of an organization's activities. In the tradition of good feminist organizing, the adoption of computer networks by feminist organizations should be accompanied by a heightened awareness of group process and concern for working conditions. In addition, material presented in part B suggests that organizations should engage in an explicit process that allows groups to articulate the social goals they wish to attain in adopting computer networking technology. The adoption of computer networks by feminist organizations should address explicit social goals, rather than foster what merely is possible with off-of-the-shelf hardware and software. Extensive care should be taken to ensure that whatever computer networking system is selected will meet the communicative goals explicitly articulated by group members.

CONCLUSION

To date, most of the information we have about the use of computer networks in the context of feminist social change addresses the uses of computer network in terms of personal change, or change on an individual level. The success of the Femail mailing list as a vehicle for consiousness raising is encouraging. Although there is still very little information about the use of computer networks in terms of group process, the success that members of the Femail mailing list enjoyed in terms of managing process issues that arose in that group, and the evidence from the Women's Bulletin Board System (e.g., the discussion in the Lounge about S/M sex) suggests

that computer-mediated communication might well accommodate feminist group process, and the discussion of heated issues that are often ill-suited in face-to-face meetings.

Although we have little information about the processes that surround the implementation of computer networks in women's organizations, data presented in part B and writing that addresses issues that have emerged as social change groups attempt to implement computer systems in an alternative organizational setting suggests that the adoption of computer networking systems by women's organizations (particularly collectivist women's organizations) is likely to be problematic. However, the desire to use computer networking systems within women's organizations can be seen as an opportunity to clarify issues related to roles within organizations, and issues that arise in terms of group process.

We know very little about how computer networking systems can be used by women's organizations to effect change at the level of the state. However, observations made by PeaceNet administrators, that groups using PeaceNet increased contact with other groups on that system and became more aware of the activities of other groups suggest that computer networks could potentially expand the capacity for coalition organizing in the women's movement. Alternatively, if each organization pursues computer networking in isolation of others, use of computer networks could potentially decrease the potential for collaboration and cooperation between groups.

CHAPTER 9:

GENDER, TECHNOLOGY AND SOCIAL CHANGE

In response to the question "What exactly does technology do to us?" Schulman (1988, p. 99) comments that the question, in general as well as for communications, remains unresolved. In a sense, this is an essentially epistemological question, that does not invite a single, discrete, commonly accepted answer. Schulman suggests that what we need is not an absolute definition of the process of technological change, but rather a range of possibilities, or a sensitizing concept to use in our efforts to understand how technology and society interact. Although questions about how society and technology interact are essentially epistemological, the perspectives that guide our understanding of technology and culture also guide our interaction with technology.

Although there are numerous frameworks one might adapt in discussing the process of technological change, in light of the focus here on analyzing current uses of computer networks, and suggesting how we might more effectively design and implement computer networks to meet the specific social goals of feminist social change, it is useful to begin with a review of the development of technology as a feminist concern.

WOMEN, TECHNOLOGY AND SOCIAL CHANGE

For as long as there has been technology, there have been social critics concerned with how technology affects culture. Among those concerned with the social impacts of technological change have been academics,

governments, workers and activists (luddites, the alternative energy/appropriate technology movement, the peace movement). As new technology has been introduced and the pace of technological change has quickened, concern about the social impacts of technological change has grown. Before the late 1960s, only the odd book about the impact of technology on society appeared, most notably Mumford, (1934) Giedon, (1948) Ellul, (1967) and Walker, (1962); since that time entire bodies of literature have emerged, representing various perspectives about the interaction of technology and society.[58]

Since the early nineteen seventies, feminists have been thinking about and writing about the role of technology in women's lives. A great deal of the early writing on this topic focused on household technology. Vanek (1974) asserted that women spent as much time doing housework in 1966 as they did in 1926. As washing technology changed, so too did clothing (it gets dirtier faster), wardrobes (we own more clothes), and standards of cleanliness

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[57]Historians of science and technology include Vanderbilt (1974), and Flink (1970). Rosenberg (1972 & 1979) is concerned with the economics of technological change, while Pursell, (1979) Kasson (1976), Noble (1977), and York (1976) have been concerned with the relationship of technology to government. For material which addresses how workers are affected by technological change see Braverman (1974) and Noble (1984). Luddism is addressed by Robins and Webster (1985) and Kohl in Processed World 14 (1985). Since the late 1960s the impact of technology on society has become a topic of university courses, as evidenced by texts edited by Bereano (1976), and Burke and Eakin (1979). Material in praise of technology includes Florman (1976), Frekiss (1969), and Drucker (1970). Material questioning the extent to which humans control technology includes Commoner (1972) and Winner (1977). For coverage of technology assessment which became institutionalized in the United States in 1972 see Porter et al. (1980). Two anthologies, edited by Zimmerman (1983) and Rothschild (1983) marked the emergence of a body of literature concerned with women and technological change.

(clothes now must be whiter than white). Cowan (1974 & 1976) demonstrated that women and men were differently affected by changing household technology. She argued that although the quality of women's lives rose in general as household technology changed, women's status relative to men declined. Bush reached this same conclusion in relation to the impact of new farm technology on women, and the impact of the horse on the lives of native American women (Bush, 1983).

These articles, along with anthologies edited by Rothschild (1983) and Zimmerman (1983) in some senses marked the emergence of technology as a feminist issue. They reminded us that technological change stimulates social change, and provided us with a place to start our investigations of how women's lives are affected by technology, and how changes related to new technology differ for men and women. Though technology is still not a major concern in the women's movement, many articles have appeared that look at the impact of technology on women's paid work, on the absence of women in scientific professions, and a number of related topics.

Many recent feminist analyses of technology focus on technology as a force that reproduces patriarchal and/or capitalist ideology in society. They revolve around a few basic claims that have been widely discussed in literature on the social relations of the workplace (Braverman, 1974), as well as the relationship of capitalism to patriarchy (Benston, 1969; Hartmann, 1979). The basic starting point of these analyses is that the power relations of capitalism play a role in legitimating gender relations and that gender relations help legitimate the power relations of capitalism.

Most of the work conducted from within this theoretical perspective has focused on the effects of technology in workplaces. In a sense, the analysis of computer networks presented in part B documents the claim that

technology is an expression of a class and gendered system, and in embodying the values of that system, reproduce it in the realm of production. Computer networking technology acts as a reproductive force in society: that is, a force that reproduces divisions along class and gender lines. Computer networking technology was developed largely by economically and technically privileged men. It remains accessible primarily to men, economically privileged women.

With the exception of a few recent articles the focus of research conducted from this theoretical perspective is on technology as a product or artifact that perpetuates class and gender divisions that already exist in society. Before turning to recent works that focus on the processes of producing, designing, and implementing technology, and the role of these processes in relation to the reproduction of class and gender divisions, it is useful to consider popular views of technology.

In developing a feminist analysis of technology, it is important to understand what popular views of technology imply about how women are affected by technology. It is also useful to consider the various courses of action each of these views suggests for women in relation to technology in the future. Only after we identify how these views of technology structure and limit our understanding of issues related to women and technology can we begin to develop a feminist analysis of technological change and understand the role these views play in strategies employed by women in using computer networks for social change.

POPULAR VIEWS OF TECHNOLOGY

Debates about the interaction of technology and society have been varied. Among the topics addressed have been the role of technology in

environmental destruction, the effects of technology on home and work life, and how to assess the impacts of technology. Despite this variety, the characterizations of technology that these arguments are often built upon do not encourage us to look beyond effects and impacts of technology for ideas about and strategies for changing technology. Few studies have been conducted about people's general views of technology. Those that have been undertaken (Balka, 1986; Taviss, 1972; Pion & Lipsey, 1981) support theoretical claims that culturally we view technology as either neutral and value free, as inevitable doom, or as inevitable progress. Bush (1981 & 1983) refers to these views of technology as technology as tool, technology as threat, and technology as triumph. Work by Bush and others is useful in developing an understanding of the limitations these views pose in relation to women's interactions with technology.

Bush (1983) points out that the belief that technology represents a triumph of human intelligence is one of America's most cherished cultural myths. Indeed, just a quick glance at advertisement headlines confirms this. Statements such as "The Revolution Continues With Our New Turbo C" (an advertisement for a computer programming language) lull us along in our thinking that new technology is revolutionary and future oriented, that technology smooths the edges of human existence.[59] One extension of this belief is that technology exists to fix problems, and there are no problems that technology cannot fix. Karpf (1987) calls this technophoria, and argues that it leads us to believe that technology has, or can potentially liberate women. We see evidence of this view in the processes that characterize the

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[59]From PC Magazine, Vol. 7 # 17.

adoption of computer networks by social change groups. However, this view has not survived careful scrutiny. It is this simplistic view of technology that much of the critical writing about technology and social change has attempted to counter.

Like all generalizations, this myth is at least partially true (Bush, 1983). Technology has decreased hardships and increased the standard of living in industrialized countries. However, industrialization has not been entirely unproblematic. It is not difficult to see through bold claims that technology represents unmitigated progress. Indeed, the prevalence of pollution and the incidence of car accidents are enough to encourage some people to question whether or not automobiles really represent progress, or to question the very concept of progress at least. It is not difficult to see that along with the benefits of fast, individualized transportation there are some costs. In relation to computer networking technology, along with the potential of communicating quickly (and at times inexpensively) with people in other geographic locations come potential threats to privacy.

It is the costs associated with technological developments that proponents of the 'technology as threat' argument have focused on. Those who argue that technology is a threat to human existence see everything from pollution to tasteless tomatoes as the result of increasing attempts to control nature through technology. This set of beliefs perhaps motivates claims that computer networks do not accommodate intimate or personal communication. It is precisely these attempts to solve problems with technology that lead to more problems. And again, this generalization is partially true. Technology has caused some problems as it has set out to solve others.

Although it is easy to see through claims that technology is a triumph

or a threat, it is much more difficult to counter claims that technology is a neutral tool. One of the leading proponents of this view is Mesthene (1970), who argued that technology has both positive and negative effects, that often occur at the same time. Several views underlie Mesthene's model of the technology/society relationship. Included among them are that technology is progress, it is neutral and value free, and how it is used determines if it is good or bad. Along with this is the underlying idea that ultimately the negative effects will be overcome (by the application of more technology) and that progress will result. It is this view that has perhaps guided the implementation of many computer networks in the social change sector. For example, when a PeaceNet administrator was questioned about what steps PeaceNet organizers had taken to ensure that the PeaceNet computer network would meet the needs of the social change community it serves, it became clear from his response that he assumed that by virtue of its use by the social change community, the technology as it existed would meet its users' needs.

Karpf (1987) refers to this as the use/abuse model, and argues that to view technology as neutral is to view it without any intrinsically good or bad moral or political values. Like Benston (1989), Bush (1983) and others, she reminds us that this view of technology assumes that it is the human application of technology that abuses and misuses it. Once again, this generalization is true, at least partially. Technological development has been both positive and negative. And, the values of those responsible for the implementation of technology do to some extent have an effect on how technological change is experienced. For example, Femail participants were able to mitigate some of the problems associated with the use of a multi-node network through the use of a moderator, and adherence to some operating

rules.

The three views of technology outlined above appear initially to differ from one another. In some respects, these views do differ. If one subscribes to the theory that technology is triumph, the course of action called for is support of technological change. If one subscribes to the theory that technology is a threat, the course of action called for is a rejection of technological development. And, if one subscribes to the theory that technology is a neutral tool, the course of action called for may be to increase women's access to technology, so that technology can be used and experienced in a more benign and convivial way by women. However, data from Soc.women suggests that even when women do have access to technology, women's interaction with it is not necessarily convivial. Or, one might accept technological development as it occurs (as the Board of the American Association of University Women and users of the CompuServe Men's and Women's Issues Section did), or alternatively accept technological development and at the same time push for more moral uses and applications of technology (as Femail group founders did).

This approach has been central to the implementation and use of computer networks in the context of feminism. Each of the networks discussed at length in part B (as well as many others) were adopted by their users as they initially existed 'off the shelf.' Although Femail members were able to alter their communicative environment to a certain degree through the designation of a central node and a moderator, Soc.women and CIS users have accepted the technology their communication depends upon with little question. Of all of the networks discussed in part B, only the organizers of the Women's Bulletin Board System relied extensively on social goals articulated by users in choosing network software. The WBBS also stands out

among the networks discussed in part B in that it was the only network that was modified after implementation by its organizers in attempts to better meet users' needs.[60]

Despite the differences in these views, some important similarities exist. None of these models of the technology/society relationship encourages an in depth analysis of technology. The technology as triumph argument suggests that "since it is the job of technology to solve problems, there are no problems that technology cannot solve" (Bush, 1981, p. 6). All problems (e.g. acid rain, nuclear waste, exploding space shuttles, collapsing bridges) are seen as temporary glitches in a perfectible system. This assumption is appealing because it allows people to remain focused on the technical aspects of a problem, and at the same time ignore the social circumstances surrounding its development. Accepting technology as triumph allows us to drop the entire matter of the relationship of technology to social change from our list of concerns.

Believing that technology is a threat blinds us to the benefits of technology. Given this assumption, the solution to problems is seen as a retreat from technology. As Bush (1983) points out, the technology as threat assumption appeals to us because it provides an enemy for the focus of our frustration and discontent. This view also offers one simplistic solution to many extremely difficult problems: get rid of the machines.

The assumption that technology is a neutral tool is appealing because it focuses on the human side of technology, implying that technological

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[60]For example, in addition to implementing the Battleground after the WBBS had been in operation, WBBS organizers also implemented a command (getall) that allowed users to quickly and easily capture all or a portion of the material posted to the WBBS since a user's previous sign-on.

problems are really only social problems, and suggests that a simple change in those who control technology will ameliorate technology's negative effects. Benston (1989) has noted that this view allows us to admit that there are negative effects associated with modern technology, and allows us to assume that progress will result when the right people gain control over the technology. The struggles that characterized communication in the Soc.women group reflects this view: it focused on who controlled the network, rather than the relationship between network structure and communication possibilities. Data from the Femail mailing lists suggests however that even when "the right people" control the technology (in this case women), problems (e.g. with message routing and privacy) still persist. This view of technology falls short of suggesting that the experiences people have in relation to technology often occur along class and gender lines, as labour and feminist studies of technology have suggested, and the material in part B substantiates.

For example, material in chapter six suggests that when efforts are not made to control group membership (e.g., Soc.women and the CIS Men's and Women's section), that computer networks are more accessible to men than women. In addition, network structure helps determine where networks are accessible from, and who has access to them. If founders of the Amazon Line had approached the development of that network with the assumption that it was being introduced into a class and gender-based social context, they might have realized that their target user group lacked the knowledge required to use the service they were offering.

Several people (Bush 1983; Gay 1986; Linn 1987; Noble 1984) have recognized the threat popular models of the technology/society relationship pose to the fight for women's equality. Bush explains this phenomenon:

> The assertion that technology is beneficial lulls people into believing that there is nothing wrong that can't be fixed, so they do nothing....The argument that technology is value-free either focuses on the human factor in technology in order to obscure its valance or else concentrates on the autonomy of technology in order to obscure its human control. In all cases, the result is that people feel they can do nothing...rhetoric wars draw public attention away from more important questions such as who is making technological decisions?, on what basis?, what will the effects be? (Bush, 1983, p. 156).

Linn (1987) points out that possible areas for political action are narrowed by the taken for granted nature of technology; that the given-ness of technology gives it its power. For example, Soc.women participants rarely, if ever focused on altering the technological infrastructure of Usenet. By taking Usenet's structure for granted, a range of communication possibilities were eliminated, while other options were given preference. Questioning Usenet's structure however, might result in the removal of the ability to use aliases. This in turn might reduce the volume of messages related to forgery.

In discussing socialist and feminist perspectives of technology, Linn reminds us that often feminist and socialist critiques of technology view it as a mechanism for control; feminists often see technology "as an instrument of male power" and socialists often view it as "a weapon wielded by capitalist management to discipline paid labour" (Linn p. 128, 1987). The focus has been on technology and hardware. This gives pre-eminence to material science, out of a mass of other social factors. In recent years, some scholars and activists have begun to address shortcomings inherent to these earlier approaches, by viewing technology as a social, as well as a technical phenomenon.

REDEFINING TECHNOLOGY

For Linn (1987) and others,[61] there is more to technology than hardware. For women, technology never exists in an asocial sense. It is reflected in social practices, including language and other forms of representation, in traditions of use, techniques and training practices, in domains of knowledge, and in relation to production and consumption. Technology is, in short a cultural product (Linn). Along similar lines, Noble (1979) and Karpf (1987) both argue that it is people and social forces that shape and create technology; technological products both bear the imprint of their social context, and themselves reinforce that social context. Technology is constituted by, and also helps constitute social relations. The development and use of computer networks in general, and Usenet in particular validate this claim. Network developers were preoccupied with technical wizardry, and determined to create a system difficult for others to control. Not surprisingly, many computer networks today are difficult for lay people to use, and just as difficult to alter.

Bush (1981 & 1983), Benston (1989), Bernard (1983 & 1985) and

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[61]See also Benston (1988), Bernard (1983), Bush (1983), Cooley (1980) and Noble (1979).

others[62] have gone beyond this focus on hardware, and work from the assumption that technology operates in several contexts, one of which is a social context. Bush's (1983) definition of technology captures this concept. She defines technology as:

> a form of human cultural activity that applies the principles of science and mechanics to the solution of problems. It includes the resources, tools, processes, personnel, and systems developed to perform tasks and create immediate particular, and personal and/or competitive advantages in a given ecological, economic and social context (Bush, 1981, p. 1).[63]

Through examination of the effects of a technology within the various

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[62]Pacey (1983) uses the term technology-practice, which is composed of the technical, organizational, and cultural aspects of technology....The technical aspect includes knowledge, skill, technique, tools, machines, chemicals, liveware, resources, products and wastes. The organizational aspect includes economic and industrial activity, professional activity, users and consumers, and trade unions. The cultural aspect of technology-practice includes goals, values and ethical codes, belief in progress, awareness and creativity. There is a rough parallel between these and Bush's (1983) design, user and cultural contexts. There are only a few others who try to broaden the definition of technology in this way and these are not generally as successful. For example, Hanny and McGinn also considered "external contexts of modern technology." They outline five of them: the governmental context, the environmental context, the financial context, the social context and the political context.

[63]These are: the design or development context, the user context, the environmental context and the cultural context. The design or development context includes all the decisions materials, personnel, processes, and systems necessary to create tools and techniques from raw materials. The user context includes all the motivations, intentions, advantages, and adjustments called into play by the use of particular techniques or tools. The environmental context refers to the effect of the technology on the environment in which a technology or tool is developed and used. The cultural context includes all of the norms, values, myths, aspirations, laws and interactions of the society of which the tool or technique is a part (Bush, 1983).

contexts in which it operates, Bush (1981) locates technology in a social context. By defining the user context that technology operates within, technology is given a human dimension. By defining technology as a human cultural activity, through inverse logic technology becomes something that can be subject to collective action. People are no longer entirely subjects of technology, but somehow create it as well. This view of technology gives the effects of technology on the user priority, along with another neglected area, the effects of technology on the culture. Unlike more popular views of technology, this definition encourages an in depth analysis of how the process of technological change occurs.

Benston (1989), Bernard (1983) , Linn (1987), Noble (1984), Suchman and Jordan (1988) and others have relied on similar views of technology in developing an analysis of technology that suggests that social bias is built into machines and technological systems. Before turning to a discussion of this perspective, it is useful to consider the courses of action each of these views implies for women in relation to computer networks.

If technology is seen as the root of contemporary problems (technology as doom), individuals and organizations are likely to reject computer networking technology. In fact, many individuals and organizations in the early and mid nineteen eighties did reject computer technology, on the grounds that it represented a threat to privacy, security and potentially, freedom. Although computer technology certainly can (and does) pose a threat to privacy and security, in flatly rejecting technology we give away the potential of changing it. In addition, we continue to view technology solely in terms of hardware and technical systems, rather than recognizing that, as Bush (1981 & 1983), Linn (1987) and others have argued, the processes surrounding the design and implementation of

technology are essentially social processes. A focus on hardware and technical systems discourages us from investigating the social context within which technology is developed and discourages us from pursuing the type of information that was presented in chapter two. We are discouraged from investigating the goals surrounding the development of technology (e.g., military control) that are manifest in the technology we use.

If technology is viewed as inevitable progress (technophoria or technology as triumph), then women's groups and other social change groups might either accept or pursue new communication opportunities made possible as a result of computer networking technology. However, in doing this, it is likely that an "off the shelf" form of technology will be selected: that is, little attempt will be made to determine whether computer networking technology *as it exists* will best meet an individual's or organization's social goals. Again, technology is viewed as a product (in this perspective, one that brings with it progress), rather than a series of social processes. It was perhaps this narrow conception of technology that contributed to the failure of the Amazon line: in focusing on selling their product, Amazon Line organizers failed to consider social processes that might inhibit women's use of computer networks, such as lack of access to peer assistance, or the lack of comfort many women experience when dealing with male computer professionals. The recognition of these issues on the part of the WBBS organizers has, no doubt contributed to the success of the Women's Bulletin Board System.

Similarly, the use/abuse (or technology as neutral tool) argument leads to a narrow conception of designing and implementing computer systems. Based on the premise that the effects of technology stem not from the technology per se, but those in charge of it, adherence to this view might

leave organizations believing that by merely using computer networking technology within their organizational context, organizational goals and needs could be met. Such a view fails to recognize that in spite of who controls a computer network, some network configurations are well suited to some forms of communication, and ill-suited to other forms of communication.

This view appears to have been common amongst early researchers involved in investigating computer mediated communications, as well as activists interested in using computer networks in the context of social change work. In looking at previous research about human aspects of computer networks, we can see a transition from a focus on hardware and software concerns (technology as product) to a greater recognition that technological development and change is composed of a series of processes that involve numerous social decisions that have an impact on how the resultant technology is both used and experienced.

PREVIOUS RESEARCH ON COMPUTER-MEDIATED COMMUNICATION SYSTEMS

A great deal of early research concerned with computer-mediated communication focused on the effects of computer networking systems on users, as well as how to properly implement computer networking systems. Although this work has been important in terms of contemporary debates surrounding the design and implementation of computer networking systems, the notion of technology as a product (rather than a series of social processes) dominated much early research. As computer networking systems were implemented and they failed to deliver the desired outcomes, both researchers and activists have increasingly challenged the conception of technology as product, and begun to look instead at the social processes

surrounding the design, development, implementation and use of computer networks.

The objectives of previous research in this area have been varied, and have included identifying the impacts of system design on acceptance and use of computer-mediated communications systems and identifying the impacts of those systems on individuals and groups (Kerr & Hiltz 1982). Case studies of groups (primarily in business, scientific, professional, and academic settings) using computer-mediated communications systems have addressed issues such as reactions to the systems studied, effects of system use on the group, individuals and scientific community, and determinants of system use (Hiltz, 1984; Hiltz, Kerr & Johnson, 1985; Kerr & Hiltz, 1982; Tapscott 1982; Eveland & Bikson, 1987).

Research conducted to date concerning the use of computer networks can be categorized a number of different ways. Given the focus here on the use of computer networks by women's groups for social change, it is useful to look at user groups and implementations studied. Most research concerned with the use of computer networks addresses issues related to either business or academic users and uses of the technology.

Studies can be further categorized as quantitative or qualitative. Most studies to date have been largely quantitative. The studies by Kerr and Hiltz (1982), Hiltz (1984), Tapscott (1982), and Rice (1980) as well as that of Hiltz, Kerr and Johnson (1985) are all quantitative studies based on quantitative social science methodologies. Such research yielded valuable information about parameters of acceptance and use of computer communications systems, their impact on individuals and groups, their effectiveness and impacts of design alternatives. Such an approach does have its limits however.

In addition to the range of methodological problems raised by Rice and Rogers (1985), such studies may be less objective than they appear since they often rely on respondents' impressions and recollections. In addition, quantitative studies do not deal with the introduction of such systems as processes, or with the relationship between different aspects of that process. They do not deal with relationships between the technology and group process nor with the social context where development and use takes place. An exception to the bulk of reported research is The Network Nation: Human Communication Via Computer (Hiltz & Turoff, 1978). This study is one of the few examples of research concerned with computer networks where both qualitative and quantitative methods of inquiry were employed in a single study.

In addition to grouping studies as quantitative or qualitative, other methods of categorization are possible. Tapscott (1982), for example, proposes a conceptual scheme for electronic office systems, that he applies to previous research.[64] This conceptualization may be useful in some contexts, such as the design and evaluation of electronic office systems. However, such conceptualizations are of little use when working with non-profit organizations whose goal is social change.

An important dimension of research about computer networks focuses on strategies for system design. Most implementations simply assume a "top-

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[64]His conception of approaches to electronic office systems employs the following categories: 1) organizational communications approaches; 2) functional approaches; 3) information resource management approaches; 4) decision support system approaches; and 5) quality of work life approaches. For each approach he outlines underlying assumptions, strengths and weaknesses, and variations of each approach. See Tapscott (1982) chapter 3.

down" approach (described but not advocated by Tapscott, 1982). A number of researchers, however, focus on the need to take group or organizational processes into account. Johnson and Rice (1985), for example, describe aspects of such system design approaches in the case of word processing systems. Johnson-Lenz and Johnson-Lenz (1984) attempt to deal with this systematically by introducing the general concept of groupware. Groupware is the coupling of "intentional group processes and procedures to achieve specific purposes" with software tools designed to support and facilitate the group's work. The concept is based on the premise that software for group communications via computer will best aid the group if the software supports and facilitates processes and procedures used by the group.

Tapscott's (1982) concept of orgware developed as part of his "user-driven design process" is similar to groupware in its emphasis on procedures and other elements in addition to hardware and software: "Orgware consists of the procedures, workflow, job redesign, training strategies, implementation plan, educational activities, system responsibilities, and so on which optimize the social component of the new work system" (p. 17).

Besides recognizing the importance of group goals and processes, these approaches to design, whether of groupware or orgware, also include participatory design processes, and extensive communication between designers and users. A group's needs are articulated by a few of its members, and significant group characteristics (e.g., size and leadership style) are considered. After group characteristics and processes are made explicit in this way, procedures and structures are chosen. Procedures include choices of characteristics such as individual versus group work, anonymity versus signed responses, and so on. Johnson-Lenz and Johnson-Lenz (1984) include a list of standard group procedures that have been developed and used

successfully with groups having, they say, different purposes and characteristics. These procedures however are generally based on assumptions that seem more suitable to businesses than to voluntary or community groups. These procedures are matched with the group process, and then the groupware designer chooses appropriate software tools from the range of available choices.

These approaches are departures from the traditional emphasis on hardware and software alone. This does not, however, guarantee that these strategies can be universally adopted. Tapscott's (1982) user-driven design process is developed explicitly for use in a business setting and the suggested groupware procedures are also aimed at very structured business applications. In both of them, control of the design process still rests with the system designer, who ultimately is responsible to higher management, rather than to the people he or she is working with, and creating a system for. Overall organizational goals (most often of productivity and efficiency) then dominate the design process.

In contrast, many of the groups that are interested in adopting computer-based communications networks for their work have as their goal social change. They operate outside of a profit geared market, and are often managed participatively, rather than via traditional management schemes that assume a separation of workers and management. Such groups have, consequently, quite a different relationship to the design process and to technical feasibility. Efficiency and success may be harder to define in terms of group process and group goals than in the situations envisaged by Tapscott (1982) or Johnson-Lenz and Johnson-Lenz (1984).

In addition, Noble (1985) and others have made the argument that the people who will use a technology need to be actively involved in its

creation. If users are to be involved as more than informants, then the design strategy must deal with the fact that potential users may have had little or no experience with the technology prior to the design process, and that if they are to participate in a meaningful way, there is a period of education that must take place.

Often, the introduction of new computer systems has fallen short of meeting initial expectations. To address this problem, over the last decade increasing attention has been paid to the role of end users in the development process. Integrating system users into the design process has followed a progression of pragmatic and theoretical steps (Kyng, 1988). Initially, managers and system developers sought more information from users about their current work, as a basis for developing systems that would to a greater degree meet the needs articulated by management (for example, see Tapscott, 1982). As problems continued in spite of these efforts, users became more closely tied to the development process as both informants and evaluators of new designs. However, user influence on development has been low, and users who participated in development projects controlled by management were unable to explore visions of their own and pursue their interests as a group (Kyng, 1988).

In efforts to understand and overcome the limitations associated with integrating users into the process of developing technology, several researchers have examined the theoretical basis of the design process, and developed a number of approaches aimed at creating a development process that supports cooperative systems design. Researchers working in this area (Bermann & Thoresen, 1988; Floyd, 1987; Grudin, 1988; Kyng, 1988; Suchman & Jordan, 1988) have argued that much of the early work concerned with human-computer interaction failed to develop a critical

assessment of the technology that would lead researchers to study the ways that social context, power relations, and social bias may affect the actual systems that are created. Even those who recognize that "user input" is a desirable goal in developing new systems (Hiltz 1984; Kerr & Hiltz 1982; Tapscott, 1982; Rice, 1980) do not stress the importance of the context where that input takes place. Those advocating cooperative design reject the view of new technology as the inevitable result of experts applying "objective" scientific principles.

In the context of systems development, Berman and Thoresen (1988) refer to this technological determinism as the "technology push" approach, characterized by assumptions such as "the desirability of using the technology is sufficient to create common objectives." Floyd (1987) characterizes system development that reflects this technological determinism as the product perspective. It assumes that interaction between a (computer) program and environment are assumed to be prescribed by the program design. The referent system (the part of the world we take into account when developing programs) is pre-selected for aspects relevant to the software, and the software itself remains outside of the analysis. Most forms of software design follow linear phases, and embody the product oriented view almost entirely (Suchman & Jordan, 1988). Out of this theoretical perspective comes an understanding of computer systems as hardware and software (that people must adapt to), as well as a distinction between the design of computer systems, the applications of computer systems, and the implementation of the technology. Finally, this tradition emphasizes a distinction between experts (who perform design tasks) and end users.

An increasing number of analysts are working with a more complex view of technology, that suggests that any machine, tool, or system, designed

in a specific context reflects that social context to a greater or lesser degree. Assumptions about social organization and distribution of power, unconscious prejudice, and much more are all factors in the design of new technologies (Noble, 1985; Dickson 1974; Benston 1989; Debresson, Benston and Vorst, 1987; Suchman and Jordan, 1988). Although some system designers have worked from an assumption that users are central to the design process for some time, we are only beginning to realize the implications of this view of technology (Kyng, 1988).

This theoretical perspective of technology leads to what Berman and Thoresen (1988) call the "demand pull" approach. Unlike the technology push approach to system design, it takes for granted the existence of a need that manifests itself as objectives. In addition, it focuses on computer system development as organizational development. Floyd (1987) refers to this as the process perspective. Here, the part of the world we take into account when developing programs is composed of human work, learning, and communication, that are assumed to be subject to continuous change as designers and users change their relation to the technology. Adherents to this view include in their definition of systems people, social relations and the applications of software, in addition to hardware and software. Rather than a linear design process that sees system development and implementation as separate, discrete steps, this approach views system development as a continuous or rolling process, where design is only fully completed in use (Suchman & Jordan, 1988).

When systems are seen as complex relationships of socio-technical processes, systems development requires an understanding of how groups and organizations function. Tapscott (1982) and Johnson-Lenz and Johnson-Lenz (1984) recognize this. Along with Scandinavian based researchers

(Bermann & Thoresen, 1988; Grudin, 1988; Kyng, 1988) they have been among the few exploring the integration of group structure and goals into the development of complex systems. The matching of group needs and software possibilities, such as that advocated by Johnson-Lenz and Johnson-Lenz (1984) is a crucial concept in developing an action oriented approach to cooperative systems design.

However, Johnson-Lenz and Johnson-Lenz (1984) and Tapscott (1982) have in their approach left unchallenged the distinction between the privileged role of the technical expert and the end user. The systems analyst is the one who makes the ultimate design choices, and users act mainly as informants. The Scandinavians however, recognize the need for an approach that is action oriented, and warrants the development of activities that will comprise a participant process that can address a range of issues including questioning existing 'solutions', creating visions of different futures vis-a-vis the computer communications system, and designing new systems. Such an approach challenges participants to break down barriers separating experts from users, as well as development from implementation. Technical people are still needed in such a development process, but can be used as resources, rather than as the sole arbiters of what is or is not desirable (Benston, 1986). This process is, in theory, compatible with organizational processes that guide interaction between members of women's organizations.

To the extent that Johnson-Lenz and Johnson-Lenz (1984) developed specific procedures, these were intended for business settings. Similarly, Scandinavian research concerned with cooperative systems development, although useful in terms of describing theory and context specific practices, has focused on systems development in the context of waged workplaces (Bermann & Thoresen, 1988; Grudin, 1988; Kyng, 1988). The most hopeful

initiatives in user control over the design process are from Scandinavian participator research projects in cooperative systems development (Bjerknes, Ehn, & Kyng, 1987).

These initiatives range from the Utopia project - cooperative systems development in typographical equipment, to the Carpenters Workshop Project - a participatory design method for shop layout for small carpentry shops, to a "cooperative systems development" in a surgical unit in a large Norwegian municipal hospital (Berman & Thoresen, 1988). This last article described one of the few projects that have occurred where women were the majority of user/designers. Similarly, there are a few British and Canadian examples where user control over the design process has actually been attempted in workplaces (see Hartman & Benston, forthcoming; Cooley, 1980; Wainwright & Elliott, 1982). All of these have fallen victim to the constraint of workplace labour/management power relationships.

WOMEN AND COMPUTER NETWORKS

To date there has been minimal research intended to establish a set of procedures that might allow the social organization and egalitarian principles of women's groups to be taken into consideration in implementing technological change. And, although Scandinavian research does address mechanisms that can be used to aid participants in making informed and real choices between system options, little has been published regarding the particular issues related to cooperative systems development in women's organizations (for exceptions see Bjerknes & Bratteteig, 1988; Suchman & Jordan, 1988). I know of no published studies of cooperative systems development in the context of voluntary women's organizations.

There is considerable evidence for gender differences in approaches to

science, technology, and machines (Benston, 1982; Bush, 1983; Collis, 1985; Keller, 1986; Rothschild, 1983; and Zimmerman, 1983). There is however relatively little work that addresses gender issues around computer communications networks, even though gender differences seem to exist in this area. For example, where use is voluntary, women seem to use such systems much less than do men (Hiltz, Kerr & Johnson, 1985; Kerr & Hiltz, 1982; Smith & Balka, 1988). Hiltz, Kerr and Johnson report a five to one male/female ratio in their sample. Such evidence is scanty, however, and Kerr and Hiltz (1982), who synthesized findings from a number of studies of the impacts of computer-mediated communications on groups, found that generally gender differences were not studied. Recent work by Smith and Balka (1988), Benston (1988), Brecher (1985) and Suchman and Jordan (1988) that does address gender differences in use of computer communications systems is theoretically important, but not pragmatic in its focus. Even though not much information about gender issues in relation to computer-based communications exists, the attempt to create women-only services such as the Amazon line, the National Women's Mailing List in the U.S., and services such as the Women's Bulletin Board System indicate that electronic communications needs for women are not being adequately met through existing structures.

Research on women and technology in general, and early research on computer mediated communications suggests that gender differences may occur in the use of computer networks. More recent work (concerned with co-operative systems design) suggests that popular views of technology which focus on technology as product rather than technology as process, may support, rather than challenge gender inequities in relation to computer mediated communications.

Work by Suchman and Jordan (1988) begins to bring together material concerned with cooperative systems design, and gender and technology. They begin by pointing out that both the design and use of technology involve appropriation. Most technologies are designed at a distance from the situation of their use. For example, computer bulletin board systems were developed for computer hobbyists to exchange technical information. The Women's Bulletin Board System is an example of how computer networking technology has been appropriated.

This leads to an inevitable gap between scenarios of design and circumstances of use. Regardless of the accuracy of the designer's understanding of end use, the gap exists and has to be filled by users; hence design is only fully completed in use. Suchman and Jordan have observed that women lack both the authoritative knowledge in relation to computers as well as involvement. These shortcomings prohibit women from appropriating this technology.

Suchman and Jordan (1988) point out that in settings where women are primary participants, the legitimacy of their knowledge is subordinated to claims on authoritative knowledge put forth by men. For example, in discussions that occurred in the Soc.women newsgroup, women participants were frequently subjected to assertions of authority by men about both social and technical issues.

Suchman and Jordan (1988) argue that technological innovation has contributed to that subordination in two important ways. First, subordination occurs indirectly through the representations of knowledge and expertise surrounding the design of new technology. More directly, subordination occurs in the form of ideological commitments that are manifest in the development and implementation of new technologies. For

example, development of computer networks grew in part from a workplace based struggle between managers who were attempting to uphold military goals that included strict control of network technologies, and hackers, who attempted to ensure that computers would continue to be available as a source of personal intellectual stimulation and amusement. Multi-node networks require that users possess a high degree of technical expertise for successful use. As a result of unequal access to technical expertise, the technology that results from a design process built upon the guarding of expertise is less likely to address the interests of women than the interests of men. In addition, the gap that exists between the design and use of technologies often leads women to reject technologies (that are often ill-suited to their needs).

To counter these difficulties, Suchman and Jordan (1988) stress the importance of demystifying technology and legitimating women's knowledge in the system development process. Of the four computer networks discussed in part B, the network that most closely followed this model (the Women's Bulletin Board System) was also in many respects the most successful network. Suchman and Jordan argue that the demystification of technology and the legitimization of women's knowledge in the system development process will require a dramatic shift in how we view knowledge and skills that go into system development. This shift will include incorporating a sophisticated understanding of the social world into the system development process. Finally, Suchman and Jordan suggest that we look at computerization as an opportunity to articulate unacknowledged forms of expertise and to take that knowledge seriously in the design process. Such a process would present a unique opportunity to women's groups in terms of clarifying organizational processes and role, and revaluing users' knowledge

as authoritative.

Both theory and research concerned with gender and technology, particularly the work of Suchman and Jordan (1988) points to a clear need to go beyond consideration of women as subjects of study in relation to technology, to a more action oriented approach that enables women to be the creators of technology. The notion of social bias in machine design is central to this approach and, as such, warrants additional coverage here.

SOCIAL BIAS IN MACHINE DESIGN

Noble (1979, 1984) has contributed a great deal to the development of a perspective that suggests that social bias is inherent to the process of machine design. Noble's (1979 & 1984) work on the social bias of machine design takes as its starting point Braverman's (1974) now classic notion: "technology, instead of simply producing social relations, is produced by the social relations represented by capital" (Braverman, 1974, p. 20).

Noble's research (1979, 1984) on social choice in machine design reflects a comprehensive understanding of automatically controlled machine tools. In his first book, America By Design Noble (1977) shows that technology is not autonomous, but rather is the product of a social process, "a historically specific activity carried out by some people, and not others, for particular purposes" (Noble, 1979, p. 18).

In describing the development of technology Noble points out that there is always a range of possibilities or alternatives that are delimited over time. Some are selected while others are not, based on social choices of those with the power to choose. These choices of course reflect "their intentions, ideology, social position, and relations with other people in society... technology bears the social 'imprint' of its authors" (Noble, 1979, p. 19).

Noble (1979) asserts that with technology, the relationship between cause and effect is not automatic, but rather is mediated by a complex process whose outcome depends upon the relative strength of the parties involved. This, of course, implies that people can and do have an impact on the shape of technology in their lives. Technological development is a social process, and, like other social processes is marked by choice, conflict, and struggle, and an indeterminate outcome (Noble, 1984).

Linn (1987), Suchman and Jordan (1988) and others have suggested we shift our attention from the view of technology as product, to the processes surrounding the design, development, and implementation of technological systems. These authors argue that the views typically held of technology prevent us from understanding the role that the processes surrounding the production of technology play in producing technologies that reproduce a gender and class differentiated society.

Linn (1987) provides a theoretical examination of how Marxists and socialists have gone awry in their theoretical treatment of technology, as well as in their efforts to produce socially useful products. Suchman and Jordan (1988) illustrate through two case studies how ideological commitments override the realities of what women know and dictate a model of a given activity. This in turn becomes embodied in technology and reinforces that ideology. Central to their argument, as well as Benston's (1988), is the assertion that to design technology relevant to women's needs requires legitimization of the authority of women's knowledge, based on their everyday experience. Ironically, one of the things women repeatedly attempt to use computer networks for is the exploration of their everyday experiences. And, the two least successful networks discussed in part B (Soc.women and CIS) are similar in that to a large extent they both discourage women from

validating their everyday experiences. Finally, Benston (1989) focuses on questions of control of knowledge and expertise in the context of designing computer systems. Among her contributions are three alternative conceptions of social relations surrounding the design of new technological systems.

THE CONSEQUENCES OF VIEWING TECHNOLOGY AS DEAD LABOUR

Much of the feminist work that critiques technology in terms of class and gender relations takes as its inspiration Braverman's (1974) Labor and Monopoly Capital. Linn (1987) reminds us that the political consequences of viewing technology as a weapon wielded by capitalist management and/or the patriarchy have been disastrous. Technology has been held responsible for a range of unwanted workplace problems, including the deskilling of workers, job loss, worsening health and safety conditions, speed-ups, the control and surveillance of workers and so on, "all of which focus on technology and hardware, and its importance as fixed capital" (Linn, p. 128).

Linn (1987), along with Benston (1989) and Suchman and Jordan (1988) argue that there is more to technology than hardware. Along the lines of Bush's (1983) analysis of technology, Linn sees technology as a cultural product. Linn makes a useful distinction between living labour (people) and dead labour (tools and materials) to illustrate her claim. She points out that Braverman (1974) and his followers have paid little attention to the relations between living and dead labour, other than to emphasize the oppressive ways that capital's technology acts *on* living labour. The critical point that Linn makes in her discussion (a point taken up by both Benston (1986 & 1989) and Suchman and Jordan (1988)), is that only living labour can set purposes, reflect, reconsider, etc., because only living labour (consciousness) has the power to respond to the variabilities in the social world.

Linn (1987) points out that the network of relations in which the technology (a cultural product) is embedded are neglected in favour of an emphasis on dead labour. Linn reminds us that the political consequence is to again accept unchallenged the physical efficacy of the product. Linn cautions readers through a discussion of London's Technology Network, and the concept of socially useful production, that an emphasis on the physical efficacy of the product can still occur in an alternative setting. Discussions with PeaceNet administrators, as well as data from Soc.women substantiate this claim.

In describing her involvement with the Technology Network, Linn (1987) discusses in detail the problems that result when a good idea is seen as a starting point and project development progresses solely in terms of the physical product. Products are emphasized over processes and it becomes difficult to keep people in the foreground. Technological change is conceived of as merely a matter of different design and new production techniques, rather than as a consequence of changed working relations. The real work (the efforts of those involved in setting up a particular project, in terms of organizing the work, ensuring that everyone has information, etc.) is ignored. A focus on the physical product reinforces the apparent rigidity and immutability of technical work. In some senses, Usenet has followed this development scenario. When the social assumptions that informed the development of computer networks are questioned (as was the case with the Women's Bulletin Board System), computer networks are more likely to meet women's needs.

Authoritative Knowledge And The Design Of Technological Systems

Suchman and Jordan (1988) begin their discussion of the question of

involvement with the design process by introducing the concept of authoritative knowledge. They describe authoritative knowledge as that knowledge taken to be legitimate, official, consequential, worthy of discussion, and useful for justifying actions by people engaged in tasks. Next, they assert that both the design of technology and the use of technology involve appropriation; where technology is designed at a distance from the situation of its use, an inevitable gap exists between system design and use.[65] The gap will have to be filled by the user, as the technology is interpreted with respect to local concerns and circumstances. It is in this sense that the design of technology is only fully completed in the use of that technology. Again, Soc.women is an excellent example of this phenomenon. Although Soc.women participants largely possess technical expertise (authoritative knowledge) about computers, and have attempted to appropriate Usenet technology to meet their needs, ideological commitments (expressed in the desire to build an uncontrollable network) override women's realities, and dictate a model of activity, that when embodied in the technology, results in a form of interaction that enforces an ideology of control of women by men.

Appropriation occurs either in the design or use of technology, and in either case is ultimately a matter of ownership, of integration of a technology into one's activities in a way that constitutes the basis of one's competence. Suchman and Jordan (1988) maintain that it is this process of appropriation that is noticeably absent from women's relations to computers. *For example, Women's Bulletin Board organizers expected that the WBBS would be used*

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[65]This is inevitable, they claim, because to some extent technologies have to be designed for unknown users, in unknown circumstances.

more by women's groups than it was. The WBBS was not appropriated by women's groups, and did not become an essential element (basis of competence) for women's groups in the New York City area

When the two concepts of authoritative knowledge and appropriation are taken together, argue Suchman and Jordan, we can begin to see that ideological commitments override the realities of what women know, and dictate a model of activity that, when embodied in technologies enforces that ideology. *Again returning to Soc.women, although many Soc.women users possessed authoritative knowledge in relation to computers, and had appropriated the technology for their use, nonetheless an ideological commitment to the notion of free, unrestricted speech as the basis for democratic communication (put forth by Usenet founders and users) overrode what women participants in Soc.women discussions 'knew': that Soc.women as a forum did not work for women.*

After illustrating this argument through two brief case studies - one of childbirth in the Yucatan, the other of office work - Suchman and Jordan (1988) argue that there is a politics of technology (that contributes to women's subordination) that comes from this close relationship of ownership and control of technology to authoritative knowledge and competence. They point out that technological innovation has been a resource for women's subordination, in two ways: indirectly through the representations of knowledge and expertise that the design of new technology is based upon (that fails to account for the experiences of women, that are not viewed as authoritative knowledge), and directly, through the ideological commitments that manifest themselves in the development and implementation of technology. *We see this phenomenon clearly in the case of Soc.women where ideological commitments to create a difficult to control network resulted in a*

specific design. When women expressed their frustration with that design in the Soc.women newsgroup, despite their collective technical knowledge and attempts to appropriate that technology, their experiences were considered invalid.

Suchman and Jordan (1988) suggest a strategy for system development that revolves around concepts similar to those introduced by Linn (1987). Where Linn discusses the failure to look at the relations between living and dead labour, Suchman and Jordan in a sense are advocating this as a starting point in the design process of technology. In the remainder of their article they discuss Scandinavian approaches to the design of technology, and include a discussion of product and process perspectives on software design.

The product perspective of software design considers the interaction between a computer program and the environment within which it exists, as prescribed by the program's design. In contrast, the process perspective on software design suggests a dynamic relationship between a program and its environment. This latter view demands that we both appropriate women's knowledge as part of the design process, and develop new types of relationships between system designers (living labour) and the product they develop (dead labour). In women's organizations, this would require an iterative design process that focused not only on the potential uses of computer networks within an organization, but also considered the fit between design options and the group's desired communicative goals, and applied a feminist analysis to the processes surrounding the design of the networking system. Benston's (1989) work proposes a model for approaching interactions that must take place between system designers, their products, and system users.

ALTERNATIVE CONCEPTIONS OF AUTHORITY

Benston (1989), like Linn (1987), opens her discussion by outlining Braverman's (1974) analysis of technology. After pointing out that the need for alternate technologies that reflect alternate values has been shown, she begins her task of demonstrating how the combination of a social bias view of technology and a feminist view of technology can be applied. After outlining Dickson's (1974) concept of technology as providing a "vocabulary for social action," and illustrating this concept, Benston argues that one of the ways that a feminist approach to the design of technology would differ from more conventional approaches is in its inclusion of an analysis of the role of experts and authorities in scientific and technical work. From here, Benston considers science, technology, and authority, beginning with a discussion of the role of experts, and their relationship to power in society.

Among the many points Benston (1989) makes is the idea that the term "expert" refers to someone who is not simply extremely knowledgeable, but a person with privilege and authority as well. As such, the expert is part of the structure of power and control in society. After discussing gender and the current practices of science and technology (that rest on the belief in domination and control of the physical world), Benston, like Suchman and Jordan (1988), goes on to discuss the devaluing of women's knowledge. Benston (1989) presents three alternative conceptions of science and scientific authority: the "science for the people" approach, the "science with the people" approach, and the "science by the people" approach. Only the last of these, the "science by the people" model, challenges the notion of expertise, and the relations between living and dead labour.

The concept of "science for the people" suggests a model of science with a sense of social responsibility. Practicing scientists and technical

experts attempt to develop socially responsible applications of technology and/or make their expertise available where needed to groups in the social change sector. In this model, scientists attempt to shed their training and attempt to identify with those on the bottom, rather than those on the top. This model, popular in the social change community (see Downing, Fasano, Friedland, McCullough, Mizrahi, & Shapiro, (1991), Computers for social change and community organizing) neither challenges the traditional separation of expert and lay person, nor the mystique of technical expertise (Benston, 1989). As well as replacing "bad experts" with "good experts" this approach fails to remove barriers to women's participation that contemporary science presents (Benston).

The "science with the people" approach attempts to heal the separation of experts from non-experts by having both groups work together in an environment where (in theory) different types of skill (e.g., technical knowledge and user knowledge of a work process) are weighted equally. People with specialized technical knowledge are utilized in a design process as resource people, available to comment on technical feasibility, but not to dictate the design process. This approach requires that the non-technical participants learn a great deal about the technical aspects of whatever is being designed, and requires cooperation and interaction among all participants. Personal values and ethical concerns can be brought into the design process through discussions of participants' social goals. Although this approach offers many benefits (e.g., it reinforces the importance of everyday non-credentialed knowledge), its success requires an enormous time commitment from participants (Benston, 1989). This approach, though more consistent than the "science for the people" approach with feminist group process (that suggests that skills and knowledge should be shared, and that

non-credentialed knowledge should be given authority) is likely to be problematic in terms of the demands it will place on already over-burdened workers in women's organizations.

The final approach, "science by the people" has as its goal the reintegration of science into everyday life. Benston (1989) argues that this approach is most usefully understood as a possible future goal, that is the natural outgrowth of a revaluing of everyday knowledge. Science would no longer be a completely separate realm; specialized scientific knowledge would be made more accessible so that a person interested in a scientific area would have access to knowledge that is now reserved for members of a credentialed elite. Under such circumstances actual knowledge (rather than the social role of an expert) would be recognized.

CONCLUSION

The development of computer networks occurred in the normal environment of science - one that assumed that scientific discovery and application should serve the interests of scientists, who occupy a privileged place in the power structure of our culture. Computer networking technology is not neutral and value free, but in fact is anchored in a class and gender stratified society, and has a propensity towards recreating the relations of domination that have surrounded its development. Though not immediately evident, the computer networks that exist today incorporate the values of those who created them. As women have increasingly attempted to appropriate computer networking technology for alternative social goals (discussing women's issues and feminism), the social biases built into computer networking technology have become increasingly evident.

Popular views of technology deter us from investigating the social

conditions surrounding the design and production of technology. One consequence is that we have been discouraged from exploring how non-credentialed forms of knowledge (such as a user's feelings about a computer system, or her knowledge of work processes in her job) are simultaneously socially and politically significant, and devalued. When we focus on social goals as users (as Women's Bulletin Board organizers did), and weight these equally alongside technical issues in the design and use of computer networks, we have both an explanation of why present day computer networks pose the limitations they do in terms of the discussion of women's issues and feminism (social goals were subordinated to technical feasibility), and a model for the future development of such systems (science with the people). We are at once encouraged to pay increased attention to the social processes surrounding the development of technology in order to better meet our social goals through the use of computer networks.

CHAPTER 10:

CONCLUSION

As more women gain access to computer networking technology, women's groups have increasingly begun to consider using computer networking technology in the context of feminist organizing. Although there are still few examples of women's groups using computer networks, there are some lessons to be learned from looking at the use of computer networks by women who, through conversations via computer networks emerged as groups. In considering how women's organizations might use computer networking technology in the context of feminist social change it is important to consider how the computer networks in use currently by feminists are relevant to the larger picture of social change, the nature of computer networks as technological systems, and what relevance this has in terms of women's organizations using computer networks in the future. After addressing these issues it becomes possible to consider in greater depth how women's groups might use computer networking technology in the context of feminist social change in the future.

WOMEN'S PAST USE OF COMPUTER NETWORKS: APPROPRIATING TECHNOLOGY

In looking at women's past use of computer networks it is useful to return to some of the concepts presented in chapter nine. Suchman and Jordan (1988) argue that most technologies are designed at a distance from the situation of their use, and that this leads to an inevitable gap between

scenarios of design and circumstances of use. In the case of the use of computer networking technology in the context of feminist social change, this has been the case. Computer networking technology was originally designed to support military communication and the physical structure of early computer networks (i.e. Arpanet) reflected this goal. However, as Jordan and Suchman point out, both the design and use of technology also involve appropriation. Although Suchman and Jordan argue that the process of appropriation is noticeably absent from women's relations to computers, it is important to recognize that in using computer networks to communicate about feminism and women's issues, women have begun to appropriate computer networking technology. One way of looking at women's past use of computer networking technology is in terms of a progression in appropriating that technology to better suit the social goals of communication concerned with feminism. Although computer networks were not designed to support communication about feminism, networking technology was appropriated first through use to meet that end, and is being appropriated increasingly through innovation to support feminist goals.

The predecessor of Soc.women (Net.women) constituted one of the first attempts undertaken by feminists to appropriate computer networking technology to meet a set of goals related to feminism, that had not been accounted for in the design of computer networking technology. It seems plausible that the existence of Soc.women was fueled by a technology push mentality, and built on the assumption that the desirability of using the technology would be sufficient to create common objectives. However, as we have seen, Soc.women boasts little in the way of common objectives. And, the very design of the technology itself (a design that easily accommodates forgery and almost encourages an argumentative style of communication)

seems at times to preclude the evolution of common objectives.

The Femail mailing list can be seen as a subsequent stage in the appropriation of computer networking technology to meet feminist goals. Dissatisfied with the results of Soc.women, and still relying on available off the shelf technology, Femail participants entered into a continual negotiation of social issues and group process in efforts to use computer networking technology to discuss women's issues and feminism. Though we often think of technology in terms of hardware and product, it is important to recognize that in engaging in social processes to fill the gap between the design of technology for military purposes and its use as a vehicle for discussing women's issues and feminism, Femail participants further appropriated computer networking technology. Reflecting on Bush's definition of technology that stresses social processes surrounding the design and use of technology, it becomes clear that Femail participants made contributions to the design of technology, through their use of it.

Of the four computer networks considered in depth here, the Compuserve men's and women's section perhaps represents the greatest failure. Although Soc.women is an inhospitable place in many ways for feminists, it succeeds as an arena for struggle. Although an investigation of the reasons Soc.women participants engage in the debate on that network would be a fruitful direction for further research, at this time it is only possible to speculate that participants may derive some benefit from speaking strongly about the issues addressed in that group, in a relatively safe environment. To the extent that both women and men are able to engage in heated debates about issues they feel passionate about, Soc.women succeeds as an arena of struggle. Although CIS participants also engage in debate, both the low message volume and small number of participants does

not offer participants such a strong sense that their concerns (be they in support of or in opposition to feminism) are widely held. In addition, of all of the networks considered here, CIS participants appear to engage less than participants of the other groups in any kind of dialogue related to altering the terrain of their communicative environment. They have purchased access to a communicative infrastructure, that, in the absence of ownership they have been either unable to alter (several women reported failed attempts at communicating with CIS management about reinstituting a women-only forum), or accepting their role as consumers, have not attempted to alter.

Of the four computer networks considered here, the Women's Bulletin Board System grew out of what was perhaps the most conscious attempt to appropriate computer technology for use related to feminist social change. Although minimal changes were made to the WBBS software, the software itself was selected because it would accommodate collective management of the WBBS; this was perceived as consistent with feminist organizational principles. Although participation in discussions on Soc.women and Femail was a byproduct of workplace-based access and word of mouth, and participation in CIS discussions among other things was determined by one's ability to pay, access to the WBBS was not dependent upon workplace-based access to a computer network. Once a participant had access to a computer or terminal and modem, if they lived in the New York City local calling area, use of the WBBS was free. Many participants appeared to access the WBBS through PC Pursuit, a value added carrier marketed to computer bulletin board users allowing them to call bulletin boards in other cities and states for twenty-five dollars a month. In addition, unlike the other networks discussed here, WBBS founders attempted to broaden the accessibility of the WBBS by mailing flyers about it to women's organizations, and making on site visits to

distressed users, whom they helped. In addition, social innovations such as the battleground and controlled anonymity can be seen as further stages in the appropriation of computer networking technology for use in supporting a feminist dialogue.

Many of the limitations of these networks in terms of their use in the context of feminism can be understood in terms of Noble's (1979 & 1984) concept of social bias in machine design. For example, many of the problems women confronted in Soc.women in terms of being unable to restrict who contributed to that group, forgery and pseudo identities were directly related to social decisions that operationalized the values of the developers of Unix and Usenet. The fact that Unix remains one of the most difficult computer systems in wide use reflects the importance hackers attached to the pleasure derived from mere involvement with a project, rather than ease in accomplishing a goal. The problems associated with constructing addresses and paths between computers receiving the Femail mailing list are a direct outgrowth of the initial goals that informed the development of multi-node computer networks: of ensuring that in the event of a military emergency, the failure of one node would not cripple the entire system. One of the social consequences of this addressing scheme is that expertise is involved in getting a message to its desired destination. The profit imperative of Compuserve Information Service results in higher costs to users in locations not served by the CIS owned value added carrier. Users in highly populated urban centres are able to use CIS at a lower cost than users in rural areas.

The logical structure of computer networks, together with the regulatory environment that value added carriers and local telephone lines exist within, to a large extent determine the general parameters of access to computer networks. The circumstances surrounding the evolution of value

added carriers and the use of local phone lines as gateways into community based bulletin board systems is a largely unexplored area. It is interesting to note that although in North America access to voice telephone lines is in theory universal, access to data communication lines is not universal. Although there are some exceptions, it is primarily those with university and corporate affiliations that have no-cost access to value added carriers. Access to Usenet newsgroups and mailing lists such as Femail is restricted to those locations serving as nodes in each of these networks. Community based networks such as Fidonet have attempted to provide a wide area message delivery system that accommodates echo conferences (similar to bundled mailing lists such as Femail). When this study began Fidonet was fraught with technical as well as organizational problems. Although increasingly there are gateways between networks (such as Usenet and Fidonet), for the most part information is not shared between these networks. The availability of data lines (and local phone lines in the case of community bulletin board systems)[66] acts as a filter to access of computer networks, allowing some groups of people access to some networks.

Despite the valiant efforts of Community Memory activists to make computers in general and computer networking in particular accessible to the masses, issues of access have been all but abandoned as the use of computer networks has increased. With the exception of the Berkeley Community Memory project and its Vancouver offshoot, the conception of computer networking technology as a private technology has been left unchallenged.

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[66]Over the last several years several attempts have been made to restrict the use of low cost, residential telephone lines for community bulletin board systems.

Although 'public access' computer terminals have begun to appear in places such as airports, use of these facilities requires an account with a costly commercial value added carrier; the fact of the terminal's location in a public place fails to increase most people's communication possibilities or connectivity. The privatization of computer technology acts as a secondary filter, prohibiting all who do not use computers at work and do not have computers at home from enjoying the potential benefits of computer networking.

The physical structure of a computer network (including where terminals are located) has implications for who has access to which networks and at what cost. Although access issues are complex and are mediated by many factors, the choice of one network structure over another represents a choice about who will be able to communicate electronically, and the form their communication takes. The structure chosen for a computer network is built upon and reflects assumptions about social organization and the distribution of power that should be explicitly addressed in future efforts to use computer networks in the context of feminism. Before going on to address these, it is useful to consider the processes that together bring about feminist social change.

FEMINISM ON-LINE

As I argued in chapter eight, there are at least three dimensions of feminism. Feminist social change occurs on an individual level as individuals become aware of and concerned with gender-based inequalities. Individuals often seek out groups where they can both enjoy more egalitarian social relationships, and work towards more widespread social change. In working towards social change, groups engage in a complex series of relationships

with one another and the state. Engaging in activities related to feminist social change entails engaging in a series of interconnected relationships, that are likely to change in some way if the means of communication that these relationships are based upon is a computer network. Although the use of computer networks in the context of feminist social change to date has largely involved individuals who, with shared interests and access to networking technology, have come to form groups, these early experiments provide a starting point for a discussion of how the use of computer networks might alter the communication that constitutes these relationships.

The Femail mailing list provides insights into how computer networks can be used in relation to the individual dimension of feminism. Clearly, one of the potential benefits of a network like the Femail mailing list is that it can bring feminism within reach of many women who would not otherwise have had access to either the communicative processes that characterized the Femail group, or the information contained in Femail messages. Sharing many characteristics with consciousness raising groups, despite the presence of male participants in the Femail group, many women sharpened their awareness of and mechanisms to cope with gender-based inequities through participation in Femail. Like CR groups, the content of discussions on the Femail mailing list consisted primarily of the personal experiences of group participants.

Equality within CR groups was a goal reflecting the value of non-hierarchical organization. Despite the presence of a moderator in the Femail group, control of the communicative environment remained horizontal. Like CR groups, the Femail mailing list allowed many of its participants to escape isolation. Although the extent that the personal and political were linked in Femail is unclear, we know from message text that with the support of

Femail group members some women in the group did begin to restructure the social relationships in their lives. Although it is frequently assumed that computer mediated communication will be impersonal, Femail offers proof that this need not be so. Although there are many issues related to access with a multi-node wide area network such as Femail if these can be addressed computer networks potentially offer participants a sense of community, as well as access to solutions to day to day problems.

In looking at the differences in communication that bring Soc.women and Femail participants together within each of those groups, we can also see that mere access to the requisite technology neither results in common objectives, nor ensures that communicative goals will be met. In choosing the hardware, software and physical structure of a network to be used in communicating about feminism, it is important to both consider how communications might be structured by technical choices, as well as social interventions, such as moderators and sysops.

The Women's Bulletin Board System provides a sampling of the uses that a feminist computer networking utility might provide. Though sub-boards of the WBBS were used by women's organizations, we know little about how these groups made use of the WBBS, and the issues they confronted. However, the WBBS offered its users an environment where they could communicate about a wide range of issues, as well as find information on a variety of topics. Though we know nothing about how effective sub-boards such as the action alert board or events link boards were in increasing participation in the activities they advertised, these types of services have many potential benefits. Theoretically, such services could provide women's organizations with opportunities to increase both support for their work and access to it. If several organizations share access to a single network, the

potential exists to share information between organizations, and perhaps increase the dialogue between organizations. Ironically, though providing multiple groups with access to a single network is probably considerably easier to do on a local level than a provincial or national level, both the need for and potential benefit of improved communication on a provincial or national network are greater.

If we take as our starting point a view of technology that suggests that any machine, tool, or system designed in a specific context reflects that social context to a greater or lesser degree, and that assumptions about social organization and distribution of power, unconscious prejudice, and much more are all factors in the design of new technologies (Noble, 1985; Dickson 1974; Benston 1989; Debresson, Benston and Vorst, 1987; Suchman and Jordan, 1988), this theoretical perspective leads us to the demand pull approach to designing technological systems. This approach focuses on computer system development as organizational development, and the design of technology as a process, rather than a series of discrete events.

The use of computer systems in general, and computer networks in particular can contribute to organizational change in a number of important ways. In discussing the effects of computer technology on clerical workers, Feldberg and Glenn (1983) point out that technological change affects work and workers on three levels: the occupational structure, the organizational structure and the work process. In considering the use of computer networks by feminist organizations, it is important to address the interaction of networking technology within each of these contexts.

Returning to material in chapter eight, feminist organizations can be structured in a variety of ways, each supporting a different distribution of power and responsibilities, and characterized by different patterns of

communication. Often the structure of feminist organizations loosely follows either the form of a traditional bureaucratic organization (characterized by a hierarchical structure, set rules, pay that reflects position and so on), or a collectivist organizational structure, characterized by distributed authority, consensus rather than hierarchy, fluid rather than fixed rules and a minimal division of labour. In the adoption of computer networks by feminist organizations, care should be taken to explicitly alter the organizational structure and work processes in conjunction with computer networking, rather than as an undesired outcome of network use.

For example, if an organization decides one of the ways it will participate in the discourse of a feminist computer network will be through retyping informational flyers and advertisements and placing them in a message on a computer network, as a group, members of the organization will need to decide which individual or individuals will be responsible for this task. If a decision is made to have the task rotate between members, care must be taken to ensure that all those responsible for the task have the knowledge to do the task, and feel comfortable doing it. It is important to recognize that a task so seemingly small might well either interfere with other tasks, or overload an already busy worker.

Rubinyi's (1989) findings that groups with a centralized decision making process were more likely to be successful in utilizing computer technology signal a warning; since many women's groups do not conform to this model extra care should be taken as feminist organizations that are operated with decentralized decision making adopt computer networks.

In adopting computer networking systems, organizations should follow a participatory design process to ensure that the resulting computer network is consistent with organizational goals. Rather than a linear design

process that sees system development and implementation as separate, discrete steps, this approach views system development as a continuous or rolling process, where design is only fully completed in use (Suchman & Jordan, 1988). Here, the part of the world we take into account when developing programs is composed of human work, learning and communication, that are assumed to be subject to continuous change as designers and users change their relation to the technology. In this view people, social relations, and the applications of software, in addition to hardware and software are given primacy.

However, in engaging in a participatory design process to create a computer networking system, feminist organizations should recall one of the valuable insights gained through earlier feminist organizing: that experience is as important as credentialled expertise. This insight can be put into practice by engaging in a design process that follows the 'science with the people' model, rather than the traditional (and appealing) "science for the people" approach (Benston, 1989). Organizations must be willing to dedicate time to this task, and consider it an organizational priority, if they want to avoid the painful (and usually expensive) realization that the system does not meet their needs.

In looking at CIS over time as well as the American Association of University Women's experiences with computer networking, some important issues come up in relation to system ownership. The use of existing networks may be initially appealing to women and women's organizations. However, as was the case first with the women only section of the Issues forum, and later with the sale of The Source to CIS and CIS's decision after one year to discontinue its support of the software being used by the AAUW, lack of system ownership and control leaves a group or organization vulnerable to

losing their means of communication. The advantage of such an arrangement however is that the burden of running and maintaining the hardware and software a computer network is run on is not left to an individual, and does not add to the workload of already stretched staff in a woman's organization.

COMPUTER NETWORKS AND FEMINIST SOCIAL CHANGE: DESIGN ISSUES

One of the barriers Scheer (1990) identifies to the successful design and implementation of computer systems in organizations is that often the goals of users and developers are not fully supported by an organization's management. Many feminist organizations are in a good position to engage in a participatory design process because users are responsible for the organization's management. In the absence of traditional barriers that occur between workers and management, participatory system design in a feminist organization is bound to be more successful than in traditional organizations.

Ristock (1991) advocates challenging the false dichotomies of empowerment and power, and the individual and the collective in feminist organizations. Her work suggests that it is necessary to grapple with power relations in order to build solidarity and foster alliances within feminist collectives. Computer network design can potentially offer a feminist organization an excellent opportunity to clarify organizational issues related to leadership, authority and power, as part of the process of participatively designing a computer networking system.

Perhaps the largest issue the women's movement faces with respect to the adoption of computer networking technology is access. Access issues occur on several levels. The first relates to communication constraints imposed by the infrastructure of data lines and value added carriers. As I've pointed out above, access to computer networks is also determined by the

location of computer networks and terminals: whether they are located in a public place and available for use free of charge as Community Memory terminals were, or whether they are located in a private home or office.

Although many women's centres and organizations in Canada currently own microcomputers and in many cases modems, for the most part these organizations do not have access to a computer network. Although the location of computers and modems in women's centres and organizations may be an important step in widening the sphere of access to feminist computer networks, the accessibility of the equipment and the existence of a network to call do not guarantee that potential users will have access to computer networking. The third level of access that must be addressed if computer networks are to be successfully utilized for feminist dialogue and organizing is access to the knowledge and related support mechanisms that will allow a novice user successfully to make a call to a computer network. The feasibility of providing adequate user support services increases when computer network use occurs on a coordinated, rather than episodic basis.

If French speaking and English speaking feminists wish to communicate via computer network, steps will have to be taken to ensure that the development of adequate bilingual software is developed. (SoliNet, run by the Canadian Union of Public Employees currently uses software that allows a user to interact with the computer in either French or English, but offers no translation capabilities.)

Finally, communication by computer offers some interesting communication possibilites that may enhance the ability of Canadian women's organizations to communicate about difficult issues. For example, an implementation of an on-line Delphi polling system that allows unsigned responses might allow system users to communicate candidly and honestly

about difficult issues while encouraging participants to think before speaking. A widely accessible computer network could increase the number of voices represented in an organization's decision-making process. To realize these goals however, feminists will have to apply the insights gained from years of productive organizing, and at the same time investigate the social biases of technological systems, that, left unconsidered threaten to create computer networking systems that reproduce, rather than challenge power relations characteristic of western capitalist societies.

APPENDIX

COMPUTER CHATTING- TYPES OF APPLICATIONS

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Computer chatting is a relatively new term, used by feminists and others who are interested in demystifying the world of computer telecommunications. It refers to communication between two or more people who use computer equiptment to overcome communications barriers, such as distance and telephone tag. Since the development of computer networks in 1968, several related applications have emerged.

Most forms of computer communications (e.g. electronic mail, computer bulletin boards, computer conferencing) revolve around the concept of sending messages from one computer to another. Despite their differences, all of these applications are similar in that they require:

- A 'host' computer and some means of accessing it, either a terminal or another computer.
- Telephone lines or other communications links. - An interface, usually a device called a modem, between the computers and the telephone lines.
- Computer programs (software) specifically designed for the desired application.

Most differences in applications are due only to differences in computer programs.

The computer hardware and software determines limits such as how many people can use the system at once and how much information can be stored on the computer at any given time. Since all of these applications utilize similar hardware and even software that is related, not surprisingly, overlap exists in the provision of these services.

FORMS OF COMPUTER-BASED COMMUNICATIONS

ELECTRONIC MAIL refers to sending messages electronically from one terminal, or computer acting as a terminal, to another to a recipient specified by the sender. Like most mail sent through the postal service, it is private. Most computer systems which offer any of the applications mentioned here also have an electronic mail (e-mail) program. Electronic mail can be sent between users sharing one 'host' or central computer, or between users with different hosts. In the latter case the sender specifies an address which contains information that specifies the route the message must follow, as well as its final destination. It must be 100% correct in syntax, symbols, capitalization and the name the intended recipient is known by on their system, or it will not be delivered.

COMPUTER BULLETIN BOARDS (BBS) were designed to exchange messag and computer programs. Initially they were set up by and devoted to computer hobbyists, who left messages about equiptment for sale, technical problems and solutions, and exchanged "public domain" or free software. As bulletin boards have evolved, the uses to which they are put have become more varied. Unlike other forms of computer networks, using BBS is generally free of charge. The costs of starting and maintaining BBS are paid for by the sysop (short for "system operator"), who is often still simply a computer hobbyist. Though present day bulletin board systems often allow users to send and receive private messages, their primary function is for the exchange and dissemination of public information. Typically bulletin boards are run on relatively small 'personal computers' using home telephones lines, though some of the commercial services also have bulletin board software in addition to other services.

A COMPUTER CONFERENCE is a collection of messages related to a particular topic. Typically a computer conference includes information about who reads and contributes to the messages, as well as a brief discription of the topic. These conference systems typically run on larger computers than do BBS and the messages/discussions are more organized. Conference messages tend to be more topic specific than bulletin board messages, and tend to read more like a conversation, where one comment follows from the last. Electronic bulletin boards, on the other hand, tend to read like ordinary bulletin boards with not-necessarily related comments and messages. Computer conferences are sometimes called "forums".

Some computer conferences are carried on in "real time," which means all participants are connected to the "host" or central computer at the same time, so messages are read and responded to almost instantly. This is less common than conference systems which allow participants to send messages to the

host computer, where they are stored, read and commented on by others at a later time. (Some e-mail programs, typically on large computers, also accomodate 'real time' communications.)

Another aspect of computer chatting has to do with searching for and retrieving text stored on a computer. Frequently some provision for searching can be found in e-mail and BBS programs. However, it may be limited to searching for the name of the sender of a message (email) or searching for a word that may appear in a message. Conferencing systems which are more sophisticated than e-mail and BBS may allow keywords to be associated with an entry. Users can then search 'discussions,' and if the word they are searching for is linked to any entries, they will find those entries.

Electronic mail, bulletin board systems and conferences all require some text editing facility. This allows users to correct typing errors. The level of sophistication of text editing varies with the computer used and the application.

ON-LINE DATA BASES are programs which store information (i.e. adresses, bibliographies, abstracts, data) on a computer, and allow that information to be referenced in a variety of ways. Search and retrieval techniques form the backbone of these systems. Users can search for and retrieve information that meets whatever criteria were specified for the search. The success of a data base system is dependent upon the success of the referencing or cataloguing of data, as well as the flexibility the program allows in retrieving it.

COMMERICAL COMMUNICATIONS NETWORKS available to the general North American public typically include electronic mail, bulletin boards and conferencing, in addition to on-line searching of data bases which contain a variety of newspaper and magazine articles, reference materials and advertisements. In addition, one network allows subscribers to carry on individual and group conversations in real time, by simulating a Citizens's Band (CB) radio. Subscribers can also review airline schedules for all airlines and book reservations on selected airlines, as well as order merchandise from selected stores. The cost of using commercial services vary, the least pensive being a one-time $40.00 hookup fee, and $6.00 per hour use fee. In addition, depending upon your location, a fee for use of special phone lines may also be charged.

HOOKING COMPUTERS TOGETHER

The basic ingredients required to hook computers together are:

At your end:

- a computer,
- a modem (and a cable connecting it to your computer unless your modem is an internal one),
- a connection between the modem and the telephone lines or other communications link,
- communications software to allow your computer to transmit and receive information.

At the other end:

- a computer to call--usually referred to as the "host" computer.
- the software for the e-mail, conferencing or data-base system desired,
- a modem connected both to the computer and to the telephone lines,
- communications software for transmitting and receiving information.

Successfully connecting a computer to another computer which is running electronic communications software requires some knowledge of each of these basic components.

The term **NETWORK** refers to an interconnected system of computers and terminals. The simplest network consists of a host computer with a number of users (with their attached computers or terminals). The WEB in Canada or Peacenet in the United States are examples of non-profit networks with a single host computer (in Toronto for the WEB and in Berkeley for Peacenet). More complicated networks involve a number of host computers (each with its own set of users) which have arranged to communicate with each other. Once you set up such a proceedure for host to host communication, you have a network such as BITNET or MAILNET (largely university computers) or Usenet (a wide variety of computers using an operating system called UNIX). In these more complicated networks, an e-mail user in Vancouver can send mail destined for someone in New York, say, by sending it to the local host with the correct address for the recipient. The mail is then forwarded from the Vancouver host to the host the recipient uses in New York and delivered to the recipient through that host computer.

TELEPHONE LINKS

MODEMS enable computers to use telephone lines to exchange information with another computer. They change the signals that a computer produces into a form that can be sent over telephone lines, and then they change the signals sent over telephone lines back into a form that can be used by a computer at the other end. Electonically speacking, the modem changes the signals by modulating and demodulating them, hence the name modem. Modems also slow down computer generated signals to a speed which can be handled by regular telephone lines.

In the simplest situation, if you call a computer bulletin board system located in your town for example, your call is handled over regular voice lines. It leaves your house over wires, travels to the switching centre, and is routed on to the lines for the appropriate prefix. If you call a mainframe computer (typically a business, university or commercial network), the process may be slightly different. Your call leaves the house on normal voice lines and goes to the switching centre, where it is routed to what is referred to as a data trunk line. These are similar to long distance telephone lines in many ways. However, they are a higher quality line which accomodates speedier transmission and hopefully ensures that your file is not a mess when it gets where it is going. Trunk lines are sometimes operated by phone companies. They are also operated commercially by a few companies.

If you want to call a host computer that is out of town, you need to use the long distance lines. To improve the economics of such communications, 'value-added' carriers such as Datapac in Canada and Telenet and Tymnet in in the U.S. offer a transmission facility that uses existing lines with specialized message processing services that improve the efficiency of data transmission and so dramatically lower the cost. Where these services are available, the sender can dial a local telephone number which connects her or his computer to the value-added network's computer. There the data is converted to 'packets' with sender's and receiver's addresses attached and sent, along with many other packets, to the value-added network's computer at the destination city. There the data is sent to the receiver's modem and computer. In order to use this system, a univeraity or a business or commercial network must pay a subscription fee. Calls are automatically billed to the computer which is being called and, internally, to the account the user signs on to. This means that where such a value-added service exists, an organization can run a network with a computer at one location and users having inexpensive access over a wide area.

One can only take direct advantage of Datapac or similar services if they have an account on the computer they are calling. Even where users do not

have accounts on remote computers however such services can be a factor in the sending and receiving of electronic mail. Networks like Mailnet or Bitnet exist to send messages from one host computer to other hosts in distant locations and these messages travel on Datapac. They are dispatched to designated hosts in the system which act as 'nodes'. These are computers which are set up with special routing or switching programs which process the addresses encoded with the message. If I send a message from Vancouver to Montreal, it may go through three or four nodes on route. Because of the way in which messages are bundled together and sent at low-rate hours, the costs are very low. In most cases, these costs are so low that access to such networks through universities is simply pa free fringe benefit of having an account on the university computer.

TYPES OF MODEMS

STAND-ALONE MODEMS are generally housed in flat oblong metal or plastic boxes, usually an appropriate size to fit underneath a regular telephone. At the rear end of stand alone modems are sockets for three or four connections, including a power supply, a telephone line, and a place where a cable coming from your computer plugs in. An off/on switch may be located in the front or rear of the modem.

ACOUSTIC COUPLERS, or acoustic coupled modems are used with telephone lines that can't be unplugged at the wall. Slightly larger than stand-alone modems, the distinguishing feature of acoustic couplers is the pressence of circular cups on top of the box which have a microphone and speaker in them. The hand-held portion of a standard telephone is placed in the cups, and information from the computer is sent into the box, and through the microphone into the reciever, where it is then carried over the phone lines in the same fashion as a stand-alone modem.

INTERNAL MODEMS are printed circuit boards designed to work inside a particular computer. Internal modems do not exist for all computers; however for some computers, such as the IBM PC and compatibles, many internal modems are available. Unlike standalone modems, internal modems generally have only two connectors, ich are visable on the back of a computer which has an internal modem. One jack is for the cable that plugs into the telephone line, and the other jack allows the user to plug a phone in, which can be used to make voice calls when the modem is not in use.

The type of modem you purchase will depend on your needs. Stand-alone modems sometimes come without a cable or software, and can not be used unless you can unplug the phone from the wall. So, if you travel alot, you may want an acousticly coupled modem. However, acousticly coupled

modems are sensitive to background noise, while stand alone and internal modems are not. Internal modems require no cable, and often come with software. However, they are not available for many computers, and, unlike other modems (given the right cable) they can not be used with a computer other than the one they are installed in. So, if you use more than one computer, or anticipate using a different computer in the future, this is not the solution.

OTHER ASPECTS OF A MODEM

PLACING A CALL with a modem can be done one of two ways. Using most stand alone modems and internal modems, the person who is operating the computer types a command to dial followed by a phone number on the computer keyboard, and then presses the return or enter key on the computer keyboard. If the volume on the modem is turned up, you will here the number being dialed, and either the ring or busy signal. With acoustically coupled modems, the number is dialed on the phone, as if you were calling your next-door neighbor, however, the handset of the phone is placed in the cups on top of the modem. The term "autodial" refers to typing the number on the keyboard, and "mannual" dial refers to dialing it on your phone. Most stand-alone and all internal modems currently available are auto-dial. Some communications software allows users to enter several phone numbers in a directory. The user then either indicates the destination, or through a variety of methods, which number to call and the call is placed.

RECEIVING CALLS from another computer and modem can only be done with a modem which is an originate/answer modem, as opposed to an originate only modem, which only accomodates outgoing calls. Most modems currently available are originate/answer modems. However, if you intend to receive calls with your modem, you should make sure this is the case.

THE SPEED OF A MODEM, (often referred to as BAUD rate)[67] refers to how many bits of data per second (bps) are transmitted. The higher the baud rate, the faster the transmission. Typical modem speeds are 300, 1200 or 2400 baud. Given that 1200 or 2400 baud is faster, such modems will cut down on your long distance phone charges. The faster modems generally cost more than 300 baud modems. While a 300 baud modem is adequate for many uses. 1200 or 2400 baud modems really

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[67]This is technically incorrect, though it is a standard use.

make a difference if you are sending large amounts of information from one computer to another. If you are using your modem mostly for composing messages while you are connected to another computer, a 300 baud modem will suit your needs. Another consideration is the computer on the other end. When connected to another computer, the baud rate your modem is operating at must match the baud rate of the computer at the other end. Many bulletin boards operate at 300 baud only, or 300 and 1200 baud. Many 1200 baud modems also can operate at 300 baud, which is very handy (2400's often can operate at both of the lower speeds). One problem with the 2400 rate is that data tends to get garbled during transmission at higher speeds, and phone lines in many areas cannot handle this speed.

CONNECTING EXTERNAL MODEMS TO COMPUTERS: THE CABLE

Most external modems have connectors known as RS-232-C interfaces. These are oblong D-shaped connectors with either 1) 25 places for wire connections, either as holes (female) or pins (male) or 2) 9 connections, as holes or pins. Most microcomputers either come with these, or have "ports" on the back of the machine where they can be added on. In a perfect world, a cable with the appropriate (male or female) RS-232 connector on both ends would allow us to simply plug our computer and modem together, and they would work. Well, we don't live in a perfect world, and as it turns out, although the RS-232 connector has become standard, there is absolutely no standard for how the wires in your computer are connected to the RS-232 connector, or for how the wires in the modem are connected to its RS-232 connector.

Each of the pins/holes in an RS-232 connector performs a different function during communications (actually only 3 to 12 pins are really used). If my computer has a female RS-232, with pin 2 asigned to transmit data, and my modem has a female RS-232 with pin 4 assigned to transmit data, then I would need an RS-232 cable with male connectors on both ends, where the wiring in the cable connects pin 2 on one end to pin 4 on the other end. What all this means is that when you buy a cable, you should be sure that it will work with your computer and modem. If it is an offthe-shelf cord, make sure it can be returned if it doesn't work. If you either have to or choose to have a cord made for you (look under either computer repair or electronics in the phone book) you will need to take the manual that came with your computer and the manual that came with your modem with you to the shop.

Cables vary in price, and it is often far less expensive to have a cable made. Even here though, the price may vary from between $20.00 and $70.00. Also, some cables are more sophiscated than others. One of my cables has a toggle switch on it that flips the pin assignments, allowing me to use one cable for

more than one computer. A "null modem" can sometimes be used to perform the same function. It is merely another connector, wired to reverse the pin assignments.

COMMUNICATIONS SOFTWARE

There are several functions performed by communications software. Minimally it is the link between your computer and your modem. If you have an internal modem, it probably came with communications software, which may or may not meet your needs. If it dosen't, or if you have an external modem, you will have to get software. Software can cost as little as nothing (public domain software) or as much as $800 or $900, for an integrated software package that includes communications software along with word processing, data base and spreadsheet software. Public domain software is available from computer user groups, computer bulletin boards, and, sometimes universities.

The first thing about the minimal communications program is that it must be compatible with your computer and modem. One of the standard modems, for example is the Hayes, which of course has built in a certain set of capabilities and commands to execute these. If your software is not designed for the Hayes command set, you may be in trouble, or, if you have software designed for a Hayes and you've bought a Hayes compatible that really isn't, you may be in trouble. Again, try before you buy.

Secondly, your communications program will probably come on a disk, which must be formatted to run on your computer. If you are purchasing a program, make sure this is the case. If you are obtaining a free program, there are programs which you can buy which will change the format of a program, so it can be run on your machine. This type of program is well worth having around. If all you want to do is call another computer and while connected compose or read simple messages, virtually any communications program that is compatible with your modem and computer will allow you to do this.

BASIC COMMUNICATIONS SOFTWARE FEATURES

TERMINAL EMULATION

When using your personal computer to enter or read messages to or from a mainframe computer, the minimal level of communications program must be supplemented by a 'terminal emulation' program if you are to have full use of the editing possibilities of the system you are signed onto. That is, you must have software that allows your personal computer to look like (or 'emulate') some kind of terminal that the mainframe recognizes. The differences

between terminals have to do with the conventions for which digital codes are associated with which 'functions,' i.e. backspace, arrow keys ect. of the terminal.

The instructions with your program will tell you what keys will perform these and other functions. It is important then to realize that certain keys that perform certain things on your computer when it is not talking to another computer, will not necessarily do these same things when you are talking to another computer. Arrow keys are a good example. On my particular computer,with the software I use, If I make a mistake while I'm "on-line" and want to backspace, I use the control key and H key, not my backspace key.

If you are planning to communicate with a mainframe computer system, and, for example, work from home, a terminal emulation program is almost a must. If you do purchase a terminal emulation program, make sure it emulates a terminal that the computer you will be talking to knows. If you plan to only call bulletin board systems, this feature won't make much, if any difference.

FILE TRANSFER

If you want to transfer files from one machine to another, there are some specific requirements that must be met. While your computer and the other computer don't need to be the same, the "transmission protocol" (also known as the data transfer protocol) must be the same at both ends.

The data transfer protocol governs how data is sent and received.For example, among the things it is necessary to agree on is the signal for an 'end of line.' Like any other set of rules, if everyone dosen't follow them, the system fails to work. If you are not using the same transmission protocol that the host computer is using, and you try to send a previously created file from the host to your computer (downloading) either it won't work, or, it will probably make a mess of whatever you are sending. (e.g. won't preserve formating, but instead will send a twenty page document as one seven page continuous line). Several different transmission protocols exist. Perhaps the most popular, certainly as far as bulletin board systems goes, is a protocol called XMODEM. It is also refered to as MODEM7, or the Christensen protocol, after its inventor. Another protocol that seems to be popular in University settings is called Kermit, (after the frog). Both of these protocols, which are incorporated into bare bones communications programs, are available for free, from computer bulletin boards and computer user groups. Universities often distribute a program with whatever protocol they support, free of charge. So, if you can't find a copy of the program you need, a call to

the nearest university may prove worthwhile.

Some communications programs support a sort of no protocol transmission, which assumes your computer will act primarily as a remote terminal of the host computer. This type of program typically does not accomodate error checking. Commercially available programs may utilize the XMODEM protocol, or other popular protocols. Some of these even give you the option of using one of several protocols, which allows you to use only this one program to up and download files from a variety of hosts. ProComm, which runs on IBM compatibles is an example. One thing to be conscious of is that some integrated programs also have a proprietary protocol, which no other program supports. This means that successful uploading and downloading using these programs can only occur when both your computer and the host computer are using this program. (I recommend staying away from these.) And, some communications programs only allow you to be in "terminal mode," where you are acting as a terminal- they don't allow you to up and download files.

CONFIGURING COMMUNICATIONS SOFTWARE

Unfortunately for simplicity of operation, there are a number of somewhat obscure items (called parameters) that your computer or terminal and the host computer must agree on. These can vary from host to host and the correct values of each of the parameters must be set (or in the standrad jargon, the communications software must be 'configured') when first using the program. These parameters must be set the same on your computer and the host computer in order for you to gain access to the other system. An important feature of a communications program is the ability to alter these settings. Most software does allow you to change the settings, as well as easily determine what they are. The information about which parameter settings to use must be obtained from the operators of the host computer. In practice, all you need to know is what numbers to put in where but, for general information, a brief description of the parameters follows:

DATA BITS- Computer information is transmitted as data bits. These bits form a code for a letter or symbol such as a period. The most common coding scheme for data bits is the seven-bit ASCII code. An eight-bit coding scheme is also common. The number of data bits, which must be the same on both computers, is set by the user, through a command or menu item issued within the communications program.

STOP BITS- Since each character is represented by a series of seven or eight data bits, (all of which are 0's or 1's) the computer needs to know where each character ends. So, in addition to the seven or eight bits which represent a character, one or two "stop bits" are sent which tells

the computer that the coding for one character is ending, and the coding for the next character is begining.

PARITY- In addition to data bits and stop bits, a parity bit can be sent along with the coding for a character. Parity is used to improve the accuracy of moving information from one computer to another. When parity is used, it attaches an extra bit set at the value of 1 or 0 to each character of information sent. (The parity bit is sent before the stop bit.) If parity is set to odd, if the sum of the data bits is odd, (not including the parity bit) a 0 is added; if parity is set to odd and the sum of bits is even, a 1 is added, making the new sum odd. If all bytes do not sum to odd, the computer sends the byte again. Parity can be set at none, even, odd, or occasionally mark or ignore. 'Mark' means always send a parity bit whose value is one; ignore means ignore parity. If both computers are using parity, the parity settings on both computers must be set the same.

DUPLEX- Half duplex refers to two way communications which occurrs one direction at a time. CB radios operate in half duplex; a two way channel exists, but only one person can transmit at a time. Full duplex refers to a channel that can support simoultaneous transmission in both directions. Full duplex is sometimes called echo-plex.

XON/XOFF- This is a "flow control character, which enable the receiving system to stop the flow of information from another system, so it can catch up.

OTHER COMMUNICATIONS SOFTWARE FEATURES THAT MAY BE USEFUL

There is a wide variety of communications software available, ranging from 'bare bones' implementations (such as Kermit) to 'cadillacs' such as ProComm. The differences between these two extreme types of software are significant. Some examples of differences in the two types of software follow.

DIALING DIRECTORY- Each time you use your 'bare bones'software to call a host computer, you must type in the parameter settings before initiating the call. Then, you must type a modem command to tell the modem to dial the number. Once the host answers, you must then type n some identifying ('sign-on') information before you use the host. ProComm, (cadillac variety) on the other hand allows the user to set the parameters required for a given host once, and store them along with the phone number and sign-on information in a directory. When the user wants to initiate a call, they simply type "call host" (where

host is the name of the host as it has been listed in the directory) and the number is found, the parameters are set, the call is initiated, and the sign-on information is supplied to the host without the intervention of the user. (The automatic sign-on feature may not always be possible in that it may not be possible to set the timing properly, so your computer may be sending your ID while the other computer is still greeting you.) While your bare bones software doesn't allow you to change the baud rate once you are connected to the host, ProComm does. This is a handy feature. If you are reading information from the screen, you want it to be slow enough to read as it goes by (300 baud). When you are uploading or downloading information, you want to do it quickly, (1200 or 2400 baud) especially if using a commercial network which charges a high hourly rate.

CALL PLACEMENT FROM KEYBOARD- While your modem may be designed to allow you to type the phone number into your keyboard, your software may or may not allow this feature.

CALL PROGRESS INFORMATION- If your modem dosen't have a speaker or it cannot be hooked up to the computer's speaker, it may be designed to tell you the status of your call- whether it is being dialed, if it is ringing or if it is busy. If this is the case, you probably want software which will allow you to take advantage of this.

REDIALING- Some programs allow you to redial only after a busy signal, while other computers allow you to dial the last number tried, regardless of what has occurred since then. Other programs will allow you to redial a certain number of times.

CHAIN DIALING- some programs allow you to specify that if the number you tried was busy, to try another number.

UNATTENDED DIALING- Some programs allow you to tell your computer to dial a number at a certain time, sign onto the system, and either print or capture the information as it comes in. These programs are more expensive, but may save you long distance charges. This may also be referred to as batch operation.

DIALING PROTOCOL- this refers to the way the computer sends commands to the modem, to establish the connection with the other computer. If you have a Hayes modem or compatible, typing ATDT tells the modem to dial the number that follows, using tone dialing rather than pulse dialing. Software designed for Hayes modems may over ride these commands with a menu which you select options from.

METHOD OF INTERACTING WITH THE PROGRAM- Programs are frequently menu-driven, which means select an option from a menu of possibilities. If a program is not menu-driven, it is command driven; you must type in commands (such as ATDT to call) rather than selecting a letter from a menu, which then tells the computer you are ready to call.

DISPLAY CAPTURE- This refers to capturing information as it goes across your computer's screen. This is very handy for creating lists of commands used to interact with the other system. (Connect to the other system, "log" your terminal session, explore a bit, and later edit the file. You will have a record of both where things are on the other system, and what the commands are.) This requires some type of protocol to ensure the information is properly transmitted.

PRINTER CAPTURE- This refers to capturing information which comes across your screen onto the printer, as it appears on your screen. This also requires some type of protocol.

BREAK SIGNALS- Can the software recognize a break signal, which tells the host computer to stop sending information to your screen?

LOCAL MODE- While remaining connected to the host computer, can you "escape" to your computer to do things like delete files, begin or end a log of the terminal session?

HELP- Does the software allow you to ask it for help, once you're connected to another computer?

DOCUMENTATION- Does information about how to use the program come with it? (If it's free software, it may not.) Does the information about using the program make sense to you?

ANSWER MODE- Assuming you have an originate/answer modem, can the software be used in answer mode?

MAKING THE CONNECTION

Once your hardware and software are properly configured, your communications parameters are set, and you've figured out what you want to do with the system, the number is dialed. If the line is not busy, the word CONNECTION, or a greeting will usually appear on your screen. At this time, either your modem will send a high pitch squawk back, and then go

silent, or you will depress a botton or issue a command to tell your computer to issue the squawk, which, after a few seconds will disappear. At this point, you should depress the return or enter key on your keyboard, until text appears.

On a bulletin board system, you will usually be greeted with a 'welcome' message, followed by a prompt for your name, and possibly where you are calling from. Then, you will be asked to enter a password, which may be blanked out on the screen, for security reasons. You should write down your password somewhere. After this record keeping is taken care of, a menu of commands will generally appear. It is a very good idea to log your terminal session the first time you use a bulletin board system, so you later have a record of the commands which it understands. In general, if you get lost, typing a ?, H c Help will display a more detailed record of commands.

On a mainframe host, yuou will also be asked for sign-on information (name or account name plus password). After this is entered, you will find yourself communicating with the operating system on the mainframe and so will need to know at least the commands to get into the e-mail, conferencing system or whatever. You will also need to learn the commands in that e-mail or conferencing system.

DOCUMENTATION AND LEARNING ABOUT THE SYSTEMS

The first thing you ought to do is to obtain all of the written information offered by whoever runs or sells the system you are using. It is useful to have on hand manuals about your computer and the host computer, your software and the software the host uses, your modem, and a printer if you will be using one. In addition, a manual about your computer's operating system (i.e. DOS on an IBM compatible) may prove invaluable. This usually comes with your computer.

An important thing to keep in mind about documentation is that it is frequently very poorly written, and usually contains errors. More often that not the documentation for computer systems is written by people who were not involved in the development of the hardware or software. To make matters worse, software is often revised while documentation is being written. Consequently, the version of your software may not correspond with your documentation. Unfortunately, quality control hasn't hit the computer industry yet.

If you are initiating calls to another computer from a mainframe computer, either through business or academia, documentation will be available through that organization. While there is a wealth of information available

about micro-computers in print for all skill levels, this is often not the case with mainframes. However, from my experience, there is a large volume of information available. Often the problem is locating what you need from a enormous amount of text which may be written for a technical audience. While this is problematic for non-technical users, persistence may pay off. In addition, electronic mail systems can be used for sending messages to system operators and administrators requesting help. Finally, if the computer runs conferencing software, several conferences can probably be found online which address problems other users have had, and how they have been solved.

If you are calling a mainframe computer, you will have to secure an account, obtain information about parameter settings, and find out what to do once a connection has been established. Unlike bulletin board systems which can be mastered quickly and provide decent on-line help (usually by typing ?, H, or Help), mainframes are less easily mastered through intuition and exploration. Again, obtain documentation from the system administrators, and look on-line as well. Often you can get a 'recipe' sheet that provides exact instructions for the sequence required to sign on and access the e-mail or whatever system.

If you are calling bulletin board systems which are public (free) you pretty much have to guess the parameter settings and rely on the on-line help. Once you succeed in signing on, you may be greeted with a phone number for the Sysop (short for system operator) which you can call with questions. In addition, you can make your own documentation by logging your session online, if your software allows this. If you log your session, type the commands for help. These will be captured in your computer's memory, where you can look at them or print them out later.

GETTING ONGOING HELP

One of the most important things to know about computer systems is that everyone needs help on a fairly regular basis with them. Even the 'experts' have people to go to in search of answers to unsolved problems. Unlike needing help on a highway when nobody stops, people are usually more than willing to give advice when they can. Seeking advice, as well as giving it, is a learning experience. As one asks questions and takes initiative in solving problems, valuable insights are gained and computers begin to loose their mystery.

There are several avenues to pursue in obtaining help with computer networks. These vary with your situation, the type of learning you prefer, the nature of the problem and the type of hardware and software you have.

Among the options are documentation (a fancy term for the instructions that come with your hardware and software), books, computer stores, computing centres at universities, special interest groups, computer bulletin boards and conferences, knowledgable frineds, and, one of my favorites, trial and error. (You are not likely to damage either your system or the network). Each of these is described below in relation to some of the contexts where they may be most useful.

BOOKS

While the lack of quality control in relation to documentation is inconvenient, this situation has led to a booming computer book industry. If you are using popular software and a popular computer, chances are there are several books out that solve many of the mysteries the manufacturer has created. Many cities now have computer book stores, or book stores with large computerbook selections. In addition to browsing, a good way to find decent books is to ask whoever does the book orders. Books that sell out quickly are often among the better books. If you do go this route, be prepared to spend some money- computer books are fairly costly.

The computer book market is geared towards microcomputer users. If you are using a university computer system to initiate your call, you aren't likely to find popular computer books helpful. However, popular books are an especially good place to look for pre-purchase information about micro-computers. Often books about using computer networks will have tables in the back comparing products. If this is the type of information you are seeking, make sure the book has come out recently. This type of book may also contain trouble shooting information in table form, listing symptoms, things to check, and probable causes. If you are having trouble initiating calls to another computer, or you have difficulty once the call has been made, this type of book is a good place to look.

FORMAL AVENUES FOR HELP

An obvious place to look for more information about computers and computer networks is in computer classes. Computer classes are offered by a variety of people and organizations, including vendors, community centres, community colleges, employment agencies, universities (credit and non-credit courses,) computer stores, and often, through the local ministry of education. The content of courses varies consideribly. Our learning styles vary as well. Because we can not 'see' the product before buying it, a few ground rules are worth keeping in mind.

One of the first things to determine is what you hope to get from a computer course. If your goal is confidence, you might want to take a hands-on course

about specific programs. If you are interested in knowing what happens after you hit the keys on the keyboard, you might find a pass/fail university computer course for non-computing majors, or a community centre course, that provides that information. In considering what courses are appropriate, you may want to examine the tone used in a written course description. If it uses a lot of jargon, chances are the course will be that way. Also consider who the intended audience is. If you are not apt to feel comfortable in a room full of young executives, than a course aimed towards that population is probably not the one for you. If you are looking for a course about computer networks, you are likely to find fairly technical courses geared towards business users. Most of these courses deal with Local Area Networks (LANs). A local area network is a computer network which operates within a three mile area. Not surprisingly, these are most often found in business settings.

HELP FROM FRIENDS AND HELPING YOURSELF

We have found that one of the best ways to learn about computers is to sit down with a friend, have that friend show you a few things, and then turn you loose on the computer, when someone is around to answer my questions. After experiencing a little success, the manuals make a little more sense, and the difficulties seem less insurmountable. Often when encountering difficulties, it is useful to try to solve them yourself before going for help. More times than not your overall knowledge of the system you are working with increases in the process.

Consult friends for help. Find people in computing serivces departments at the host institution. Going to frineds for computer help builds community in a strange sort of way. It often leads to discussions about what people are working on. Tasks can often be accomplished in a variety of ways with computers, and it is both interesting and informative to see how others solve problems. Going to friends for computer help tends to lead to mutual exchanges. People tend to become proficient in certain areas. I showed a friend how to use the message system on my university computer a year ago. She recently taught me how to use the new version of the software.

When micro-computers were initially used by hobbyists, these 'hackers' began special interest groups (SIGS) and user groups to exchange information, computer tricks and software. The industry has grown up around peer sharing, and, many of us would be lost without it.

SOME IMPORTANT POINTS ABOUT PHONE SYSTEMS AND COMPUTERS

HOW TO DISABLE "CALL WAITING"

Call waiting, available through some telephone companies, will interupt a connection to another computer. Check to see if you have this feature.

If you have "Call Waiting" on your telephone line, there is a new way to eliminate it when online. All that's required is a 4 digit code (1170) added to the front of the phone number you are calling. This will cause a busy signal on incoming calls instead of aborting your connection or corrupting files.

For tone dialing systems, *70 can be used instead but all pulse (rotary) systems must use 1170. This eliminates the need for a second phone line, just for using the phone for computer to computer connections. Anyone calling will know that you are home, however, their call to you willnot ruin your files or terminate your session with another computer.

How do you disable the disable? Just hang up! You have to use the code every time you pick up the phone or redial.

CALLING FROM A MULTI-LINE PHONE SYSTEM

Calling another computer from a multi-line phone system can be frustrating or impossible. I have failed more frequently than I have succeeded in my attempts. Multi-line systems often have non-standard jacks, and outlets that are not conventionally wired. If use of a modem with such a system appears after a reasonable length of time to not work, I recommend having a standard jack installed by the phone company. Inexpensive 'restricted' phone service can be purchased. What this means is that you can be billed by the call, or you can purchase service which allows outgoing calls only.The telephone company may insist that you purchase a data line (and pay excessive rates). A data line is not required, and it is advisable to insist that you don't need it.

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